REFERENCES

1. Derse A: Is patients' time too valuable for informed consent? *Am J Bioeth* 2007;7(12):45–46.
2. Moskop J: Informed consent and refusal of treatment: challenges for emergency physicians. *Emerg Med Clin North Am* 2006;24:605–618.
3. *Schloendorff v Society of New York Hospital*, 211 N.Y. 125 (1914).
4. *Salgo v Leland Stanford Jr. University Board of Trustees*, 154 Cal.App.2d 560 (1957), at 579.
5. *Canterbury v Spence*, 464 F.2d 772 (D.C. 1972), cert. denied, 409 U.S. 1064 (1973).
6. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001.
7. Faden RR, Beauchamp TL: The concept of informed consent, in Faden RR, Beauchamp TL (eds): *A History and Theory of Informed Consent.* New York: Oxford University Press, 1986.
8. Menikoff J: *Law and Bioethics. An Introduction.* Washington, DC: Georgetown University Press, 2001.
9. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001.
10. Derse A: What part of "no" don't you understand? *Mt Sinai J Med* 2005; 72:221–227.
11. Easton RB, Graber MA, Monnahan J, Hughes J: Defining the scope of implied consent in the emergency department. *Am J Bioeth* 2008;7(12):36–38.
12. McCullough LB, McGuire AL, Whitney SN: Consent: informed, simple, implied and presumed first. *Am J Bioeth* 2007;7:49–50.
13. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001:79.
14. Post LF, Blustein J, Dubler NN: *Handbook for Health Care Ethics Committees.* Baltimore: Johns Hopkins University Press, 2007.
15. Post LF, Blustein J, Dubler NN: *Handbook for Health Care Ethics Committees.* Baltimore: Johns Hopkins University Press, 2007:46.
16. Moskop J: Informed consent in the emergency department. *Emerg Med Clin North Am* 1999;17(1):327–340.
17. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001:81–83.
18. Gaeta T, Torres R, Kotamraju R, Seidman C, Yarmush J: The need for emergency medicine resident training in informed consent for procedures. *Acad Emerg Med* 2007;14(9):785–789.
19. Schillinger D, Piette J, Grumbach K, et al: Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003;163:83–90.
20. Apter AJ, Paasche-Orlow MK, Remillard JT, et al: Numeracy and communication with patients: they are counting on us. *J Gen Intern Med* 2008; 23:2117–2124.
21. Schenker Y, Wang F, Selig SJ, Ng R, Fernandez A: The impact of language barriers on documentation of informed consent at a hospital with on-site interpreter services. *J Gen Intern Med* 2007;22(suppl 2):294–299.
22. Schenker Y, Lo B, Ettinger KM, Fernandez A: Navigating language barriers under difficult circumstances. *Ann Intern Med* 2008;149:264–269.
23. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001:94–97.
24. Boisaubin E, Dresser R: Informed consent in emergency care: illusion and reform. *Ann Emerg Med* 1987;16(1):62–67.
25. Moskop J: Information disclosure and consent: patient preferences and provider responsibilities. *Am J Bioeth* 2007;7(12):47–49.
26. Beauchamp TL, Childress JF: *Principles of Biomedical Ethics*, 5th ed. New York: Oxford University Press, 2001:84.
27. Post LF, Blustein J, Dubler NN: *Handbook for Health Care Ethics Committees.* Baltimore: Johns Hopkins University Press, 2007:45–47.
28. Iserson K: The three faces of "yes": consent for emergency department procedures. *Am J Bioeth* 2007;7(12):42–45.
29. White DB, Curtis JR, Lo B, Luce JM: Decisions to limit life-sustaining treatment for critically ill patients who lack both decision-making capacity and surrogate decision makers. *Crit Care Med* 2006;34(8):2053–2059.
30. Grisso T, Appelbaum PS: *Assessing Competence to Consent to Treatment: A Guide for Physicians and Other Health Professionals.* New York: Oxford University Press, 1998.
31. Iserson K: Is informed consent required for the administration of intravenous contrast and similar clinical procedures? *Ann Emerg Med* 2006;49(2): 231–233.

REFERENCES

1. Volk WA, Benjamin DC, Kadner RJ: *Essentials of Medical Microbiology,* 3rd ed. Philadelphia: Lippincott, 1987:359–379.
2. Pierce L: Basic principles of aseptic technique. *Plast Surg Nurs* 1997; 17(1):48–49.
3. Adal KA, Farr BM: Central venous catheter related infections—a review. *Nutrition* 1996;12(3):208–213.
4. Tait AR, Tuttle DB: Preventing perioperative transmission of infection: a survey of anesthesiology practice. *Anesth Analg* 1995;80(4):764–769.
5. Maki DG: Yes Virginia, aseptic technique is very important: maximal barrier precautions during insertion reduce the risk of central venous catheter related bacteremia. *Infect Control Hosp Epidemiol* 1994:15:227–230.
6. Belkin NL: Surgical gowns and drapes as aseptic barriers. *Am J Infect Control* 1988;16(1):14–18.
7. Harden WD, Nichols RL: Aseptic technique in the operating room, in Fry DE (ed): *Surgical Infections.* Boston: Little Brown, 1995:109–118.
8. Alessandrini EA, Maller JS: Aseptic technique, in Henretig FM, King C, Joffe MD, et al (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 1997:43–49.
9. American Association of Critical-Care Nurses: Practice alert: preventing catheter related bloodstream infections. *AACN News* 2005;22(10):14.
10. Association of Perioperative Registered Nurses: *Perioperative Standards and Recommended Practices.* Denver, CO: AORN, 2009.
11. Crosby C, Mares AK: Skin antisepsis: past, present, and future. *J Vasc Access Devices* 2001;6(1):16–31.
12. Digison MB: A review of antiseptic agents for pre-operative skin preparation. *Plast Surg Nurs* 2001;27(4):185–189.
13. Tanner J: Surgical hand antisepsis: the evidence. *J Perioper Pract* 2008; 18(8):330–339.
14. ChloraPrep. http://www.chloraprep.com, 2009.
15. Paocharoen V, Mingmalairak C, Apisarnthanarak A: Comparison of surgical wound infection after preoperative skin preparation with 4% chlorhexidine and povidone iodine: a prospective randomized trial. *J Med Assoc Thai* 2009;92(7):898–902.

REFERENCES

1. Accreditation Council for Graduate Medical Education: *Emergency Medicine Guidelines*. Online version available at: http://www.acgme.org/acWebsite/RRC_110/110_guidelines.asp.
2. Cutroneo P, Polimeni G, Curcuruto R, Calapai G, Caputi AP: Adverse reactions to contrast media: an analysis from spontaneous reporting data. *Pharmacol Res* 2007;56(1):35–41.
3. NCRP: *Exposure Criteria for Medical Diagnostic Ultrasound: II. Criteria Based on All Known Mechanisms: (Report No. 140)*. Bethesda, MD: National Council on Radiation Protection and Measurements (NCRP), 2002. Online version available at: http://knovel.com/web/portal/browse/display?_EXT_KNOVEL_DISPLAY_bookid=1643&VerticalID=0.
4. Rothschild JM: *Making Health Care Safer: A Critical Analysis of Patient Safety Practices*. Evidence Report/Technology Assessment No. 43. Rockville: Agency for Healthcare Research and Quality, 2001:245–253.
5. Sea World Animal Info Books: *Bottlenose Dolphin—Communication and Echolocation*. Online version available at: http://www.seaworld.org/infobooks/Bottlenose/echodol.html.
6. Hackmann WD: Sonar research and naval warfare 1914–1954: a case study of a twentieth-century science. *Historical Stud Phys Biol Sci* 1986;16(1):83–110.
7. Goldberg BB, Gramiak R, Freimanis AK: Early history of diagnostic ultrasound: the role of emergency radiologists. *Am J Radiol* 1993;160:189–194.
8. AIUM: Mechanical bioeffects from diagnostic ultrasound: AIUM consensus statements. *J Ultrasound Med* 2000;19:68–168.

REFERENCES

1. Bowra J, McLaughlin R: *Emergency Ultrasound Made Easy.* London, UK: Churchill Livingstone, 2006.
2. Chapman GA, Johnson D, Bodenham AR: Visualization of needle position using ultrasonography. *Anaesthesia* 2006;61:148–158.
3. Cosby KS, Kendall JL: *Practical Guide to Emergency Ultrasound.* Baltimore: Lippincott Williams & Wilkins, 2005.
4. Dogra VS, Bhatt S: *Emergency Ultrasound, An Issue of Ultrasound Clinics (The Clinics: Radiology).* Philadelphia, PA: Saunders, 2008.
5. Gaspari R, Fox JC: *Emergency Ultrasound: Principles and Practice.* Philadelphia, PA: Mosby, 2005.
6. Heller M, Jehle D: *Ultrasound in Emergency Medicine*, 2nd ed. West Seneca, NY: Center Page, 2002.
7. Ma OJ, Mateer J, Blaivas M: *Emergency Ultrasound*, 2nd ed. New York: McGraw-Hill, 2007.
8. Noble V, Nelson B, Sutingco N: *Manual of Emergency and Critical Care Ultrasound.* New York: Cambridge University Press, 2007.
9. Rosen CL, Wolfe RE: *Ultrasound in Emergency Medicine (Emergency Medicine Clinics of North America, 22:3).* Philadelphia, PA: Saunders, 2004.

REFERENCES

1. Rose JS: Ultrasound in abdominal trauma. *Emerg Med Clin North Am* 2004;22:581–599, vii.
2. Lahoda F: Significance of ultrasonic tomography in the diagnosis of blunt abdominal injuries. *Fortschr Geb Rontgenstr Nuklearmed* 1972;suppl:77.
3. American College of Surgeons: *ATLS: Student Course Manual*, 8th ed. Chicago, IL: American College of Surgeons, 2008.
4. Melniker LA, Leibner E, McKenney MG, et al: Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: the first sonography outcomes assessment program trial. *Ann Emerg Med* 2006;48:227–235.
5. Ollerton JE, Sugrue M, Balogh Z, et al: Prospective study to evaluate the influence of FAST on trauma patient management. *J Trauma* 2006;60:785–791.
6. Helling TS, Wilson J, Augustosky K: The utility of focused abdominal ultrasound in blunt abdominal trauma: a reappraisal. *Am J Surg* 2007;194: 728–732; discussion 732–733.
7. Dolich MO, McKenney MG, Varela JE, et al: 2,576 ultrasounds for blunt abdominal trauma. *J Trauma* 2001;50:108–112.
8. Gracias VH, Frankel HL, Gupta R, et al: Defining the learning curve for the Focused Abdominal Sonogram for Trauma (FAST) examination: implications for credentialing. *Am Surg* 2001;67:364–368.
9. Branney SW, Wolfe RE, Moore EE, et al: Quantitative sensitivity of ultrasound in detecting free intraperitoneal fluid. *J Trauma* 1995;39:375–380.
10. Rozycki GS, Ballard RB, Feliciano DV, et al: Surgeon-performed ultrasound for the assessment of truncal injuries: lessons learned from 1540 patients. *Ann Surg* 1998;228:557–567.
11. Rozycki GS, Ochsner MG, Feliciano DV, et al: Early detection of hemoperitoneum by ultrasound examination of the right upper quadrant: a multicenter study. *J Trauma* 1998;45:878–883.
12. Healey MA, Simons RK, Winchell RJ, et al: A prospective evaluation of abdominal ultrasound in blunt trauma: is it useful? *J Trauma* 1996;40: 875–883; discussion 883–885.
13. Rozycki GS, Ochsner MG, Schmidt JA, et al: A prospective study of surgeon-performed ultrasound as the primary adjuvant modality for injured patient assessment. *J Trauma* 1995;39:492–498; discussion 498–500.
14. Ma OJ, Mateer JR, Ogata M, et al: Prospective analysis of a rapid trauma ultrasound examination performed by emergency physicians. *J Trauma* 1995;38:879–885.
15. Miller MT, Pasquale MD, Bromberg WJ, et al: Not so FAST. *J Trauma* 2003;54:52–59; discussion 59–60.
16. Soudack M, Epelman M, Maor R, et al: Experience with focused abdominal sonography for trauma (FAST) in 313 pediatric patients. *J Clin Ultrasound* 2004;32:53–61.
17. Suthers SE, Albrecht R, Foley D, et al. Surgeon-directed ultrasound for trauma is a predictor of intra-abdominal injury in children. *Am Surg* 2004; 70:164–167; discussion 167–168.
18. Coley BD, Mutabagani KH, Martin LC, et al: Focused abdominal sonography for trauma (FAST) in children with blunt abdominal trauma. *J Trauma* 2000;48:902–906.
19. Thourani VH, Pettitt BJ, Schmidt JA, et al: Validation of surgeon-performed emergency abdominal ultrasonography in pediatric trauma patients. *J Pediatr Surg* 1998;33:322–328.
20. Ong AW, McKenney MG, McKenney KA, et al: Predicting the need for laparotomy in pediatric trauma patients on the basis of the ultrasound score. *J Trauma* 2003;54:503–508.
21. Emergency ultrasound guidelines. *Ann Emerg Med* 2009;53:550–570.
22. Plummer D, Brunette D, Asinger R, et al: Emergency department echocardiography improves outcome in penetrating cardiac injury. *Ann Emerg Med* 1992;21:709–712.
23. Soffer D, McKenney MG, Cohn S, et al: A prospective evaluation of ultrasonography for the diagnosis of penetrating torso injury. *J Trauma* 2004;56: 953–957; discussion 957–959.
24. Tayal VS, Beatty MA, Marx JA, et al: FAST (focused assessment with sonography in trauma) accurate for cardiac and intraperitoneal injury in penetrating anterior chest trauma. *J Ultrasound Med* 2004;23:467–472.
25. Blackbourne LH, Soffer D, McKenney M, et al: Secondary ultrasound examination increases the sensitivity of the FAST exam in blunt trauma. *J Trauma* 2004;57:934–938.

REFERENCES

1. Barash PG, Cullen BF, Stoelting RK: *Handbook of Clinical Anesthesia*. Philadelphia: Lippincott-Raven, 1997:573–577.
2. Moore KL, Dalley AF: *Clinically Oriented Anatomy*. Baltimore: Lippincott Williams & Wilkins, 1999:1038–1053.
3. Sellick BA: Cricoid pressure to control regurgitation of stomach contents during induction of anaesthesia. *Lancet* 1961;2:404–406.
4. Miller RD: *Anesthesia*. Philadelphia: Churchill Livingstone, 2005:1617–1652.
5. Block C, Brechner VL: Unusual problems in airway management. II. The influence of the temporomandibular joint, the mandible, and associated structures on endotracheal intubation. *Anesth Analg* 1971;50(1):114–123.
6. Nichol HC, Zuck D: Difficult laryngoscopy—the "anterior" larynx and the atlanto-occipital gap. *Br J Anaesth* 1983;55:141–143.
7. Mallampati SR, Gugino LD, Desai SP, Freiberger D: A clinical sign to predict difficult tracheal intubation: a prospective study. *Can Anaesth Soc J* 1985;32(4):429–434.
8. Longnecker DE: *Anesthesiology.* New York: McGraw-Hill, 2008:685–717.
9. El-Ganzouri AR, McCarthy RJ, Tuman KJ, Tanck EN, Ivankovich AD: Preoperative airway assessment: predictive value of a multi-variate risk index. *Anesth Analg* 1996;82:1197–1204.
10. Vialet R, Nau A, Chaumoitre K, et al: Effects of head posture on the oral, pharyngeal, and laryngeal axis alignment in infants and young children by magnetic resonance imaging. *Pediatr Anesth* 2008;18:525–531.
11. American Heart Association: American Heart Association Guidelines for cardiopulmonary resuscitation and emergency cardiac care. *Circulation* 2005;112(suppl):156–166.
12. Deakers TW, Reynolds G, Stretton M, et al: Cuffed endotracheal tubes in pediatric intensive care. *J Pediatrics* 1994;125:57–62.
13. Newth CJ, Rachman B, Patel N, et al: Comparison of cuffed and uncuffed endotracheal tubes in pediatric intensive care. *J Pediatrics* 2004;144:333–337.

REFERENCES

1. Farmery AD, Roe PG: A model to describe the rate of oxyhaemoglobin desaturation during apnoea. *Br J Anaesth* 1996;76(2):284–291.
2. American Heart Association: Standards and Guidelines for Cardiopulmonary Resuscitation and Emergent Cardiac Care. *JAMA* 1986;255:2184–2202.
3. American Heart Association: 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2005;112(24, suppl);December 13.
4. Negus VE: *The Comparative Anatomy and Physiology of the Larynx*. New York: Grune & Stratton, 1949:192–200.
5. Petcu LG, Sabaki CT: Laryngeal anatomy and physiology. *Clin Chest Med* 1991;12(3):415–423.
6. Pansky B: *Review of Gross Anatomy*, 5th ed. New York: Macmillan, 1984: 64–67.
7. Dorsch JA, Dorsch SE: *Understanding Anesthesia Equipment*, 3rd ed. Baltimore: Williams & Wilkins, 1994:363–398.
8. Sellick BA: Cricoid pressure to control regurgitation of stomach contents during induction of anesthesia. *Lancet* 1961;2:404–406.
9. Honig EG, Ingram HR: Chronic bronchitis, emphysema, and airways obstruction, in Braunwald E, Fauci AS, Kasper DL, Hauser SL, et al (eds): *Harrison's Principles of Internal Medicine*, 15th ed. New York: McGraw–Hill, 2001:1491–1498.
10. Shapiro BA, Harrison RA, Cane RD, et al: *Clinical Application of Blood Gases*, 4th ed. Chicago: Year Book, 1989:77–98.
11. Gillespie NA: *Endotracheal Anesthesia*, 2nd ed. Madison, WI: University of Wisconsin Press, 1950.
12. Stone DJ, Gal JT: Airway management, in Miller RD (ed): *Anesthesia*, vol 2. New York: Churchill Livingstone, 1990:1265–1292.
13. Nandi PR, Charlesworth CH, Taylor SJ, et al: Effects of general anesthesia on the pharynx. *Br J Anaesth* 1991;66:157–162.
14. Stauffer JL: Medical management of the airway. *Clin Chest Med* 1991;12(3): 449–482.
15. Frerk CM: Predicting difficult intubation. *Anaesthesia* 1991;46:1005–1008.
16. Mallompatti SR, Gatt SP, Gugino LD, et al: A clinical sign to predict difficult tracheal intubation: a prospective study. *Can Anaesth Soc J* 1985;32:429–434.
17. Cass NM, James NR, Lines V: Difficult direct laryngoscopy complicating intubation for anesthesia. *Br Med J* 1956;1:488–489.
18. White A, Kander PL: Anatomical factors in difficult direct laryngoscopy. *Br J Anaesth* 1975;47:469–474.
19. Nichol HC, Zuck D: Difficult laryngoscopy: the "anterior" larynx and the atlanto-occipital gap. *Br J Anaesth* 1983;55:141–143.
20. Bannister FB, MacBeth RG: Direct laryngoscopy and intubation. *Lancet* 1944;2:651–654.
21. Samsoon GLT, Young JRB: Difficult tracheal intubation: a retrospective study. *Anesthesia* 1987;42:487–490.
22. Mendelson CL: Aspiration of stomach contents into the lungs during obstetric anesthesia. *Am J Obstet Gynecol* 1946;52:191–205.
23. Kovacs G, Law JA: *Airway Management in Emergencies*. New York: McGraw-Hill, 2008:27–31.
24. Bagshaw O: The size 1.5 laryngeal mask airway (LMA) in paediatric anaesthetic practice. *Paediatr Anaesth* 2002;12:420–423.
25. Davidovic L, LaCovey D, Pitetti RD: Comparison of 1- versus 2-person bag-valve-mask techniques for manikin ventilation of infants and children. *Ann Emerg Med* 2005;46(1):37–42.

REFERENCES

1. Dufour DG, Larose DL, Clement SC: Rapid sequence intubation in the emergency department. *J Emerg Med* 1995;13(5):705–710.
2. Reves JG, Glass P, Lubarsky DA, et al: Intravenous nonopioid anesthetics, in Miller RD (ed): *Miller's Anesthesia*, 6th ed. Philadelphia: Elsevier Churchill Livingstone, 2005:317–378.
3. Fragen RJ, Avaram MJ: Barbiturates, in Miller RD (ed): *Anesthesia*, 5th ed. Philadelphia: Churchill Livingstone, 2000:209–227.
4. Olson RW: Barbiturates. *Int Anesthesiol Clin* 1988;26:245.
5. Price HL, Kovnat PJ, Safer JN, et al: The uptake of thiopental by body tissues and its relation to the duration of narcosis. *Clin Pharmacol Ther* 1960;1(1):16–22.
6. Bischoff KB, Dedrick RL: Thiopental pharmacokinetics. *J Pharm Sci* 1968; 57(8):1346–1351.
7. Franks NP, Lieb WR: Molecular and cellular mechanisms of general anesthesia. *Nature* 1994;367:607–613.
8. Blouin RT, Conard PF, Gross JB: Time course of ventilatory depression following induction doses of propofol and thiopental. *Anesthesiology* 1991;75(6):940–944.
9. Laurin EG, Sakles JC, Prosser B, et al: Safety of etomidate for rapid-sequence intubation (abstr). SAEM 1996 Annual Meeting, Davis, California.
10. Van Hamme MJ, Ghoneim MM, Amber JJ: Pharmacokinetics of etomidate, a new intravenous anesthetic. *Anesthesiology* 1978;49(4):274–277.
11. Giese JL, Stanley TH: Etomidate: a new intravenous anesthetic induction agent. *Pharmacotherapy* 1983;3(5):251–258.
12. Modica PA, Tempelhoff R: Intracranial pressure during induction of anesthesia and tracheal intubation with etomidate-induced EEG burst suppression. *Can J Anaesth* 1992;39(3):236–241.
13. Gooding JM, Weng J, Smith RA, et al: Cardiovascular and pulmonary responses following etomidate induction of anesthesia in patients with demonstrated cardiac disease. *Anesth Analg* 1979;58(1):40–41.
14. Harris CE, Murray AM, Anderson JM, et al: Effects of thiopentone, etomidate, and propofol on hemodynamic response to tracheal intubation. *Anaesthesia* 1988;43(suppl):32–36.
15. Nimmo WS, Miller M: Pharmacology of etomidate. *Contemp Anesth Pract* 1983;7:83–95.
16. Bird TM, Edbrooke DL, Newby DM, et al: Intravenous sedation for the intubated and spontaneously breathing patient in the intensive care unit. *Acta Anesth Scand* 1984;28:640–643.
17. Holdcroft A, Morgan M, Whitman JG, et al: Effect of dose and premedication on induction complications with etomidate. *Br J Anesth* 1976;49:199–204.
18. Wagner RL, White PF: Etomidate inhibits adrenocortical function in surgical patients. *Anesthesiology* 1984;61(6):647–651.
19. White PF, Way WL, Trevor AJ: Ketamine—its pharmacology and therapeutic uses. *Anesthesiology* 1982;56(2):119–136.
20. Wong DHW, Jenkins LCP: An experimental study of the mechanism of action of ketamine on the central nervous system. *Can Anaesth Soc J* 1974;21(1):57–67.
21. Lundy PA, Gowdey DW, Calhoun EH: Tracheal smooth muscle relaxant effect of ketamine. *Br J Anaesth* 1974;46:333–336.
22. Borgeat A, Wilder-Smith OHG, Suter PM: The nonhypnotic therapeutic applications of propofol. *Anesthesiology* 1994;80(3):642–656.
23. Sebel PS, Lowdon JD: Propofol: a new intravenous anesthetic. *Anesthesiology* 1989;71(2):260–277.
24. Ebrahim ZY, Schubert A, Van Ness P, et al: The effects of propofol on the electroencephalogram of patients with epilepsy. *Anesth Analg* 1994;78:275–279.
25. Whitwam JG, Al-khudhairi, McCloy RF: Comparison of midazolam and diazepam in doses of comparable potency during gastroscopy. *Anaesthesiology* 1983;55:773–777.
26. Dickinson ET, Cohen JE, Mechem CC: The effectiveness of midazolam as a single pharmacologic agent to facilitate endotracheal intubation by paramedics. *Prehosp Emerg Care* 1999;3:191–193.
27. White PF: Comparative evaluation of intravenous agents for rapid sequence induction—thiopental, ketamine, and midazolam. *Anesthesiology* 1982;57(4):279–284.
28. Reves JG, Fragen RJ, Vinik HR, et al: Midazolam—pharmacology and uses. *Anesthesiology* 1985;62(3):310–324.
29. Kanto J, Analtonen L, Himberg JJ, et al: Midazolam as an intravenous induction agent in the elderly: a clinical and pharmacokinetic study. *Anesth Analg* 1986;65:15–20.
30. Oda Y, Mizutani K, Hase I, et al: Fentanyl inhibits metabolism of midazolam: competitive inhibition in vitro. *Br J Anaesth* 1999;82(6):900–903.
31. Marty J, Nitenberg J, Blanchet S, et al: Effects of midazolam on the coronary circulation in patients with coronary artery disease. *Anesthesiology* 1986; 64(2):206–210.
32. Bailey PL, Pace NL, Ashburn MA, et al: Frequent hypoxemia and apnea after sedation with midazolam and fentanyl. *Anesthesiology* 1990;73(5):826–830.
33. Jacobs JR, Reve JG, Marty J, et al: Aging increases pharmacodynamic sensitivity to the hypnotic effects of midazolam. *Anesth Analg* 1995;80:143–148.
34. Pasternak GW: Pharmacological mechanisms of opioid analgesics. *Clin Neuropharmacol* 1993;16(1):1–18.
35. Silivotti ML, Ducharme J: Randomized doubleblind study on sedatives and hemodynamics during rapid-sequence intubation in the emergency department: the SHRED study. *Ann Emerg Med* 1998;31:313–324.
36. Flacke JW, Flacke WE, Bloor BC, et al: Histamine release by four narcotics: a double blind study in humans. *Anesth Analg* 1987;66:723–730.
37. Fukuda K: Intravenous opioid anesthetics, in Miller RD (ed): *Miller's Anesthesia*, 6th ed. Philadelphia: Elsevier Churchill Livingstone, 2005: 379–437.
38. Mather LE: Clinical pharmacokinetics of fentanyl and its newer derivatives. *Clin Pharmacokinet* 1983;8:422–446.
39. Groener R, Moyes DG: Rapid tracheal intubation with propofol, alfentanil and a standard dose of vecuronium. *Br J Anaesth* 1997;79:384–385.
40. Spiss CK, Coraim F, Haider W, et al: Haemodynamic effects of fentanyl or alfentanil as adjutants to etomidate for induction of anaesthesia in cardiac patients. *Acta Anaesthesiol Scand* 1984;28:554–556.
41. Kay B, Stephenson DK: Alfentanil (R39209): initial clinical experience with a new narcotic analgesic. *Anaesthesia* 1980;35:1197–1201.
42. Yamakura T, Sakimura, Shimoji K: Direct inhibition of the *N*-methyl-D-aspartate receptor channel by high concentrations of opioids. *Anesthesiology* 1999;91(4):1053–1063.
43. Sperry RJ, Bailey, Reichman MV, et al: Fentanyl and sufentanil increase intracranial pressure in head trauma patients. *Anesthesiology* 1992;77(3):416–420.
44. Bailey PL, Wilbrink J, Zwanikken P, et al: Anesthetic induction with fentanyl. *Anesth Analg* 1985;64:48–53.
45. Cartwright P, Prys-Roberts C, Gill K, et al: Ventilatory depression related to plasma fentanyl concentrations during and after anesthesia in humans. *Anesth Analg* 1983:62:966–974.
46. Martin DE, Rosenberg H, Aukberg SJ, et al: Low-dose fentanyl blunts the circulatory response to tracheal intubation. *Anesth Analg* 1982;61(8):680–684.
47. Pathak D, Slater RM, Ping SS, et al: Effects of alfentanil and lidocaine on the hemodynamic responses to laryngoscopy and tracheal intubation. *J Clin Anesth* 1990;2:81–85.
48. Helfman SM, Gold MI, DeLisser EA, et al: Which drug prevents tachycardia and hypertension associated with tracheal intubation: lidocaine, fentanyl, or esmolol? *Anesth Analg* 1991;72:482–486.
49. Streisand JB, Bailey PL, LeMaire L, et al: Fentanyl induced rigidity and unconsciousness in human volunteers. *Anesthesiology* 1993;78(4):629–634.
50. Li J, Murphy-Lavoie H, Bugas C, et al: Complications of emergency intubation with and without paralysis. *Am J Emerg Med* 1999;17(2):141–144.
51. Walls RM: Airway management. *Emerg Med Clin North Am* 1993;11(1):53–57.
52. Katz RL, Ryan JF: The neuromuscular effects of suxamethonium in man. *Br J Anaesth* 1969;41:381–390.
53. Naguib M, Lien CA: Pharmacology of muscle relaxants and their antagonists, in Miller RD (ed): *Miller's Anesthesia*, 6th ed. Philadelphia: Elsevier Churchill Livingstone, 2005:481–572.
54. Yamamoto LG: Rapid sequence anesthesia induction and advanced airway management in pediatric patients. *Emerg Med Clin North Am* 1991; 9(3):611–623.
55. Martin R, Carrier J, Pirlet M, et al: Rocuronium is the best non-depolarizing relaxant to prevent succinylcholine fasciculations and myalgia. *Can J Anaesth* 1998;45(6):521–525.
56. Konchigeri HN, Lee YE, Venugopal K: Effect of pancuronium on intraocular pressure changes induced by succinylcholine. *Can Anaesth Soc J* 1979;26(6):479–481.

57. Vinik HR: Intraocular pressure changes during rapid sequence induction and intubation: a comparison of rocuronium, atracurium, and succinylcholine. *J Clin Anesth* 1999;11:95–100.
58. Stirt JA, Grosslight KR, Bedford RF, et al: "Defasciculation" with metocurine prevents succinylcholine induced increases in intracranial pressure. *Anesthesiology* 1987;67(1):50–53.
59. Smith G, Dalling R, Williams TIR: Gastrooesophageal pressure gradient changes produced by induction of anesthesia and suxamethonium. *Br J Anaesth* 1978;50:1137–1142.
60. Whittaker M: Plasma cholinesterase variants and the anaesthetist. *Anaesthesia* 1980;35:174–197.
61. Ramerirez JA, Cheetham ED, Laurence AS, et al: Suxamethonium, masseter spasm, and later malignant hyperthermia. *Anaesthesia* 1998;53:1109–1116.
62. Magorian T, Flannery KB, Miller RD: Comparison of rocuronium, succinylcholine, and vecuronium for rapid-sequence induction of anesthesia in adult patients. *Anesthesiology* 1993;79(5):913–918.
63. Sakles JC, Laurin EG, Rantapaa AA, et al: Rocuronium for rapid sequence intubation in emergency department patients. *J Emerg Med* 1999;17(4):611–616.
64. Fleming NW, Chung F, Glass PS, et al: Comparison of intubation conditions provided by rapacuronium (ORG 9487) or succinylcholine in humans during anesthesia with fentanyl and propofol. *Anesthesiology* 1999;91(5):1311–1317.
65. White PF, Schlobohm RM, Pitts LH, et al: A randomized study of drugs for preventing increases in intracranial pressure during endotracheal suctioning. *Anesthesiology* 1982;57:242–244.
66. Yano M, Nishiyama H, Yokota H, et al: Effect of lidocaine on ICP response to endotracheal suctioning. *Anesthesiology* 1986;64:651–653.
67. Hamill JF, Bedford RF, Weaver DC, et al: Lidocaine before endotracheal intubation: intravenous or laryngotracheal? *Anesthesia* 1981;55:578–581.
68. Splinter WM: Intravenous lidocaine does not attenuate the hemodynamic response of children to laryngoscopy and tracheal intubation. *Can J Anaesth* 1990;37:440–443.
69. Hospira, Inc.: *Dosing Guidelines for Precedex*. Lake Forest, IL: Hospira, Inc., 2004.
70. Venn R, Hall J, Grounds R: Respiratory effects of dexmedetomidine in the surgical patient requiring intensive care. *Crit Care* 2000;4(5):302–308.
71. Hall J, Uhrich T, Barney J, et al: Sedative, amnestic, and analgesic properties of small-dose dexmedetomidine infusions. *Anesth Analg* 2000;90:699–705.
72. Perry JJ, Lee JS, Sillberg VAH, Wells GA: Rocuronium versus succinylcholine for rapid sequence induction intubation. *Cochrane Database Syst Rev* 2008;16(2):CD002788.
73. Leigh MD, McCoy DD, Belton MK, Lewis GB. Bradycardia following intravenous administration of succinylcholine chloride to infants and children. *Anesthesiology* 1957;18(5):698–702.
74. de Jong FH, Mallios C, Jansen C, et al. Etomidate suppresses adrenocortical function by inhibition of 11 beta-hydroxylation. *J Clin Endocrinol Metab* 1984;59(6):1143–1147.
75. Allolio B, Stuttmann R, Leonhard U, et al. Adrenocortical suppression by a single induction dose of etomidate. *Klin Wochenschr* 1984;62(21):1014–1017.
76. Tekwani KL, Watts HF, Rzechula KH, et al. A prospective observational study of the effect of etomidate on septic patient mortality and length of stay. *Acad Emerg Med* 2009;16(1):11–14.
77. Tekwani KL, Watts HF, Chan CW, et al. The effect of single-bolus etomidate on septic patient mortality: a retrospective review. *West J Emerg Med* 2008; 9(4):195–200.
78. Ray DC, McKeown DW. Effect of induction agent on vasopressor and steroid use, and outcome in patients with septic shock. *Crit Care* 2007;11(3):R56.
79. Zed PJ, Mabasa VH, Slavik RS, et al. Etomidate for rapid sequence intubation in the emergency department: is adrenal suppression a concern? *CJEM* 2006;8(5):347–350.
80. Jackson WL. Should we use etomidate as an induction agent for endotracheal intubation in patients with septic shock?: a critical appraisal. *Chest* 2005;127(3):1031–1038.
81. Yeung JK, Zed PJ. A review of etomidate for rapid sequence intubation in the emergency department. *CJEM* 2002;4(3):194–198.
82. Ben AR, Adnet P, Glauber V, et al. Malignant hyperthermia. *Postgrad Med J* 1998;74(867):11–17.
83. Cote CJ: Pediatric anesthesia, in Miller RD (ed.): *Miller's Anesthesia*, 6th ed. Philadelphia: Elsevier Churchill Livingstone, 2005:2367–2407.
84. Mazurek AJ, et al. Rocuronium versus succinylcholine: are they equally effective during rapid-sequence induction of anesthesia? *Anesth Analg* 1998; 87:1259–1262.
85. Kovac AL: Sugammadex: the first selective binding reversal agent for neuromuscular block. *J Clin Anesth* 2009;21:444–453.
86. Meeting of the Anesthetic and Life Support Drugs FDA Advisory Committee, March 11, 2008; Silver Springs, MD. Sugammadex NDA 22-225. Presentations by Schering-Plough and the FDA. http://www.fda.gov/ohrms/dockets/ac/08/slides/2008-4346s1-01-Schering-Plough-corebackup.pdf.
87. www.bridion.com. Accessed July 19, 2010.
88. Perry JJ, Lee J, Wells G: Rocuronium versus succinylcholine for rapid sequence induction intubation. *Cochrane Database Syst Rev* 2008;16(2):CD002788.
89. Pühringer FK, Rex C, Sielenkämper, et al: Reversal of profound, high-dose rocuronium-induced neuromuscular blockade by sugammadex at two different time points. *Anesthesiology* 2008;109(2):188–196.
90. Abrishami A, Ho J, Wong J, et al: Sugammadex, a selective reversal medication for preventing postoperative residual neuromuscular blockade. *Cochrane Database Syst Rev* 2009;16(4):CD007362.
91. Naguib M: Sugammadex: another milestone in clinical neuromuscular pharmacology. *Anesth Analg* 2007;104(3):575–581.
92. www.fda.gov. Accessed July 19, 2010.

REFERENCES

1. Ward JT Jr: Endotracheal drug therapy. *Am J Emerg Med* 1983;1(10):71.
2. Kline BS, Winternitz MC: Studies upon experimental pneumonia in rabbits VIII. Intra vitam staining in experimental pneumonia, and the circulation in the pneumonic lung. *J Exp Med* 1915;21(4):311.
3. Graeser JB, Rowe AH: Inhalation of epinephrine for the relief of asthmatic symptoms. *J Allergy* 1935;6:415.
4. Redding JS, Asunicion JS, Pearson JW: Effective routes of drug administration during cardiac arrest. *Anesth Analg* 1967;46:253.
5. Hahnel J, Lindner KH, Ahnefeld FW: Endobronchial administration of emergency drugs. *Resuscitation* 1989;17(3):261.
6. Niemann JT: Endotracheal drugs during cardiac arrest and resuscitation: any port in a storm? *Crit Care Med* 1999;27(12):2839.
7. Jackson RE, Freeman SB: Hemodynamics of cardiac massage. *Emerg Med Clin N Am* 1983;1(3):501.
8. Prengel AW, Lindner KH, Hahnel JH, et al: Pharmacokinetics and technique of endotracheal and deep endobronchial lidocaine administration. *Anesth Analg* 1993;77(5):985.
9. Kleinman ME, Oh W, Stonestreet BS: Comparison of intravenous and endotracheal epinephrine during cardiopulmonary resuscitation in newborn piglets. *Crit Care Med* 1999;27(12):2839.
10. Efrati O, Modan-Moses D, Ben-Abraham R, et al: Atropine aborts bradycardic effect of endotracheally administered vasopressin. *Med Sci Monit* 2005;11(9):CR410.
11. American Heart Association: 2005 American Heart Association Guidelines for 2005; *Circulation* 2005;112:IV-58–IV-66, IV-167–IV-187.
12. Greenberg MI, Spivey WH: Comparison of deep and shallow endotracheal administration of dionosil in dogs and effect of manual hyperventilation. *Ann Emerg Med* 1985;14(3):209.
13. Rusli M, Spivey WH, Bonner H, et al: Endotracheal diazepam: absorption and pulmonary pathologic effects. *Ann Emerg Med* 1987;16(3):314.
14. Palmer RB, Mautz DS, Cox K, et al: Endotracheal flumazenil: a new route of administration for benzodiazepine antagonism. *Am J Emerg Med* 1998;16:170.
15. Efrati O, Barak A, Ben-Abraham R, et al: Should vasopressin replace adrenaline for endotracheal drug administration? *Crit Care Med* 2003;31(2):572.
16. Klastersky J, Carpentier-Meunier F, Kahan-Coppens L, et al: Endotracheally administered antibiotics for gram-negative bronchopneumonia. *Chest* 1979;75(5):586.
17. Jaimovich DG, Osborne JS 3rd, Shabino CL: Comparison of intravenous and endotracheal administration of midazolam and the effect on pulmonary function and histology in the lamb model. *Ann Emerg Med* 1992;21(5):480.
18. Hipp R, Mielke L, Hargasser S, et al: A new tube for the endobronchial application of drugs. *Fortschr Med* 1990;108(29):550.
19. Steinfath M, Scholz J, Schulte am Esch J, et al: The technique of endobronchial lidocaine administration does not influence plasma concentration profiles and pharmocokinetic parameters in humans. *Resuscitation* 1995;29(1):55.
20. Jasani MS, Nadkarni VM, Finkelstein MS: Effects of different techniques of endotracheal epinephrine administration in pediatric porcine hypoxic–hypercarbic cardiopulmonary arrest. *Crit Care Med* 1994;22(7):1174.
21. Rehan VK, Garcia M, Kao J, et al: Epinephrine delivery during neonatal resuscitation: comparison of direct endotracheal tube vs. catheter inserted into endotracheal tube administration. *J Perinatol* 2004;24:686.
22. Prengel AW, Rembecki M, Wenzel V, et al: A comparison of the endotracheal tube and the laryngeal mask airway as a route for endobronchial lidocaine administration. *Anesth Analg* 2001;92(6):1505.
23. Palmer RB, Mautz DS, Cox K: Endotracheal lidocaine administration via and esophageal combitube. *J Emerg Med* 2000;18(2):153.
24. Feferman I, Leblanc L: A simple method for administering endotracheal medication. *Ann Emerg Med* 1983;12:196.
25. Mielke LL, Lanzinger MJ, Entholzner EK, et al: The time required to perform different methods for endotracheal drug administration during CPR. *Resuscitation* 1999;40(3):165.
26. Kattwinkel J, Niermeyer S, Nadkarni V, et al: ILCOR advisory statement: resuscitation of the newly born infant. *Circulation* 1999;99:1927.
27. Niemann JT, Stratton SJ: Endotracheal versus intravenous epinephrine and atropine in out-of-hospital "primary" and postcountershock asystole. *Crit Care Med* 2000;28(6):1815.
28. Manisterski Y, Vaknin Z, Ben-Abraham R, et al: Endotracheal epinephrine: a call for larger doses. *Anesth Analg* 2002;95:1037.
29. Vaknin Z, Manisterski Y, Ben-Abraham R, et al: Is endotracheal adrenaline deleterious because of the beta adrenergic effect? *Anesth Analg* 2001;92:1408.
30. Ben-Abraham R, Stepensky D, Assoulin-Dayan Y, et al: Beta-1- or beta-2-blockers to improve hemodynamics following endotracheal adrenaline administration. *Drug Metabol Drug Interac* 2005;21(1):31.
31. Quinton DN, O'Byrne G, Aitkenhead AR: Comparison of endotracheal and peripheral intravenous adrenaline in cardiac arrest. Is the endotracheal route reliable? *Lancet* 1987;1(8537):828.
32. McCrirrick A, Monk CR: Comparison of i.v. and intra-tracheal administration of adrenaline. *Br J Anaesth* 1994;72 (5):529.
33. Greenberg MI, Baskin SI, Kaplan AM, et al: Effects of endotracheally administered distilled water and normal saline on the arterial blood gases of dogs. *Ann Emerg Med* 1982;11(11):600.
34. Hahnel JH, Lindner KH, Schurmann C, et al: Plasma lidocaine levels and PaO_2 with endobronchial administration: dilution with normal saline or distilled water? *Ann Emerg Med* 1990;19:1314.
35. Naganobu K, Hasebe Y, Uchiyama Y, et al: A comparison of distilled water and normal saline as diluents for endobronchial administration of epinephrine in the dog. *Anesth Analg* 2000;91:317.
36. Orlowski JP, Gallagher JM, Porembka DT: Endotracheal epinephrine is unreliable. *Resuscitation* 1990;19(2):103–113.
37. De Caen AR, Reis A, Bhutta A: Vascular access and drug therapy in pediatric resuscitation. *Ped Clin North Am* 2008;55(4):909.
38. Wyckoff MH, Wyllie J: Endotracheal delivery of medications during neonatal resuscitation. *Clin Perinatol* 2006;33(1):153.
39. Lindemann R: Resuscitation of the newborn. Endotracheal administration of epinephrine. *Acta Paediatr Scand* 1984;73 (2):210.
40. Barber CA, Wyckoff MH: Use and efficacy of endotracheal versus intravenous epinephrine during neonatal cardiopulmonary resuscitation in the delivery room. *Pediatrics* 2006;118(3):1028.
41. Wenzel V, Prengel AW, Lindner KH: A strategy to improve endobronchial drug administration. *Anesth Analg* 2000;91:255.
42. Gilligan BP, Luten RC: Pediatric resuscitation, in Marx JA, Hockberger RS, Walls RM, et al. (eds): *Marx: Rosen's Emergency Medicine,* 6th ed. Philadelphia: Mosby Elsevier, 2006.
43. Alexander R, Swales H, Pickford A, et al: The laryngeal mask airway and the tracheal route for drug administration. *Br J Anaesth* 1997;78:220–221.
44. Liao C-K, Lin H-J, Chen K-T: An easy method to administer drugs into the trachea via the intubating laryngeal mask airway. *Am J Emerg Med* 2008;26(3):370–371.

REFERENCES

1. McCourt KC, Salmela L, Mirakhur RK, et al: Comparison of rocuronium and suxamethonium for use during rapid sequence induction of anaesthesia. *Anaesthesia* 1998;53:867–871.
2. Naguib M, Samarkandi AH, Ammar A, et al: Comparison of suxamethonium and different combinations of rocuronium and mivacurium for rapid tracheal intubation in children. *Br J Anaesth* 1997;79:450–455.
3. Groener R, Moyes DG: Rapid tracheal intubation with propofol and alfantanil and a standard dose of vecuronium. *Br J Anesth* 1997;79:384–385.
4. Sackles JC, Laurin EG, Rantapaa AA, et al: Rocuronium for rapid sequence intubation of emergency department patients. *J Emerg Med* 1999; 17(4):611–616.
5. Silverman SM, Culling RD, Middaugh RE: Rapid-sequence orotracheal intubation: a comparison of three techniques. *Anesthesiology* 1990;73(2):244–248.
6. Gambee MA, Hertzka RE, Fisher DM: Preoxygenation techniques: comparison of three minutes and four breaths. *Anesth Analg* 1987;66:468–470.
7. Smith, CE: Rapid sequence intubation in trauma. The 10th Annual Trauma Anesthesia and Critical Care Society Symposium, May 1997 (poster).
8. Zimmerman AA, Funk KJ, Tidwell JL: Propofol and alfentanil prevent the increase in intraocular pressure caused by succinylcholine and endotracheal intubation during rapid sequence induction of anesthesia. *Anesth Analg* 1996;83:814–817.
9. Kirkegaard-Nielsen H, Caldwell JE, Berry PD: Rapid sequence intubation with rocuronium. *Anesthesiology* 1999;91:131–136.
10. Thwaites AJ, Rice CP, Smith I: Rapid sequence induction: a questionnaire survey of its routine conduct and continued management during a failed intubation. *Anaesthesia* 1999;54:376–381.
11. Muir JD, Randalls PB, Smith GB, et al: Disposable carbon dioxide detector. *Anesthesia* 1991;46:323.
12. Rosenberg M, Block CS: A simple, disposable endtidal carbon dioxide detector. *Anesth Prog* 1991;38:24–26.
13. Dorsch JA, Dorsch SE: *Understanding Anesthesia Equipment*, 4th ed. Baltimore: Williams & Wilkins, 1999:711–713.
14. Jeevendra J.A, Richtsfeld M: Succinylcholine-induced hyperkalemia in acquired pathologic states. *Anesthesiology* 2006;104:158–169.
15. Schneider RE, Caro DA. Pretreatment agents (Chapter 16), in Walls RM, Murphy MF (eds): *Manual of Emergency Airway Management*, 2nd ed. Philadelphia: Lippincott, Williams & Wilkins,2004:183–188
16. Meakin G, McKiernan EP, Morris P, Baker RD. Dose response curves for suxamethonium in neonates, infants and children. *Br J Anaesth* 1989;62: 655–658.
17. Barash PG, Cullen BF, Stoelting RK (eds): *Clinical Anesthesia*, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2006:436.
18. Holzman RS, Mancuso TJ, Polaner DM (eds): A Practical Approach to Pediatric Anesthesia, 1st ed. Philadelphia: Lippincott Williams & Wilkins, 2008:25.
19. Baren JM, Rothrock SG, Brennan J, et al. (eds): *Pediatric Emergency Medicine*, 1st ed. Philadelphia: Elsevier Health Sciences, 2008:33
20. Lerman J, Chinyanga HM: The heart rate response to succinylcholine in children: a comparison of atropine and glycopyrrolate. *Can Anaesth Soc J* 1983;30:377–381.
21. Delay JM, Sebbane M, Jung B, et al.: The effectiveness of noninvasive positive pressure ventilation to enhance preoxygenation in morbidly obese patients: a randomized controlled study. *Anesth Analg* 2008;107(5):1707–1713.

CHAPTER 11

REFERENCES

1. Sakles JC, Laurin EG: Airway management in the emergency department: a one-year study of 610 tracheal intubations. *Ann Emerg Med* 1998;31:325–332.
2. Falk JL, O'Brien JF, Shesser R: Heart failure, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 4th ed. St. Louis: Mosby-Year Book, 1998:1645–1646.
3. Thierbach AR: Airway management in trauma patients. *Anesth Clin North Am* 1999;17(1):70–71.
4. Walls RM: Management of the difficult airway in the trauma patient. *Emerg Med Clin North Am* 1998;16(1):47–55.
5. Gerardi MJ, Sacchetti AD, Cantor RM, et al: Rapid sequence intubation of the pediatric patient. *Ann Emerg Med* 1996;28:58–59.
6. Stone DJ, Gal TJ: Airway management, in Miller RD (ed): *Anesthesia*, vol 2. New York: Churchill Livingstone, 1990:1265–1292.
7. Santillanes G, Gausche-Hill M: Pediatric airway management. *Emer Med Clin N Am* 2008;26:961–975.
8. Murphy MF, Hung OR, Law JA: Tracheal intubation: tricks of the trade. *Emer Med Clin N Am* 2008;26:1001–1014.
9. Marco CA, Marco AP: Airway adjuncts. *Emer Med Clin N Am* 2008;26: 1015–1027.
10. AARC: 2005 AARC Buyers Guide for Respiratory Care: *AARC Times*, July 2005,192–219.
11. http://www.zapconnect.com/search/tradenames/index.cfm. Accessed August 25, 2010.
12. Jabre P, Leroux B, Brohon S, et al: A comparison of plastic single-use with metallic reusable laryngoscope blades for out-of-hospital tracheal intubation. *Ann Emerg Med* 2007;50(3):258–263.
13. Mace SE: Challenges and advances in intubation: rapid sequence intubation. *Emer Med Clin N Am* 2008;26:1043–1068.
14. McGill J, Airway management in trauma: an update. *Emer Med Clin N Am* 2007;25:603–622.
15. Evans DP, Lo BM: Uvular necrosis after orotracheal intubation. *Am J Emerg Med* 2009;27:631.e3–631.e4, doi:10.1016/j.ajem.2008.09.004.
16. Itoman EM, Kajioka EH, Yamamoto LG: Dental fracture risk of metal vs plastic laryngoscope blades in dental models. *Am J Emerg Med* 2005;23:186–189.
17. Fan C-M, Ko P C-I, Tsai K-C, et al: Tracheal rupture complicating emergent endotracheal intubation. *Am J Emerg Med* 2004;22:289–293.
18. Sternfeld D, Wright S: Tracheal rupture and the creation of a false passage after emergency intubation. *Ann Emerg Med* 2003;42:88–92.
19. Carlson J, Mayrose J, Krause R, et al: Extubation force: tape versus endotracheal tube holders. *Ann Emerg Med* 2007;50:686–691.
20. Mellick LB, Edholm T, Corbett SW: Pediatric laryngoscope blade size selection using facial landmarks. *Ped Emerg Care* 2006;22(4):226–229.
21. Daugherty RJ, Nadkarni V, Brenn BR: Endotracheal tube size estimation for children with pathological short stature. *Ped Emerg Care* 2006;22(11): 710–717.
22. Collins JS, Lemmens HJ, Brodsky JB, et al: Laryngoscopy and morbid obesity: a comparison of the "sniff" and "ramped" positions. *Obes Surg* 2004;14: 1171–1175.
23. Brodsky JB, Lemmens HJ, Brock-Utne JG, et al: Morbid obesity and tracheal intubation. *Anesth Analg* 2002;94:732–736.
24. Boyce JR, Ness T, Castroman P, et al: A preliminary study of the optimal anesthesia positioning for the morbidly obese patient. *Obes Surg* 2003;13:4–9.
25. Deakers TW, Reynolds G, Stretton M, et al: Cuffed endotracheal tubes in pediatric intensive care. *J Pediatr* 1994;125:57–62.
26. Newth CJ, Rachman B, Patel N, et al: Comparison of cuffed and uncuffed endotracheal tubes in pediatric intensive care. *J Pediatr* 2004;144:333–337.
27. Knill RL: Difficult laryngoscopy made easy with a "BURP". *Can J Anaesth* 1993;40(3):279–282.
28. Levitan RM, Kinkle WC, Levin WJ, et al: Laryngeal view during laryngoscopy: a randomized trial comparing cricoid pressure, backward–upward–rightward pressure, and bimanual laryngoscopy. *Ann Emerg Med* 2006;47:548–555.
29. Salem MR, Sellick BA, Elam JO: The historical background of cricoid pressure in anesthesia and resuscitation. *Anesth Analg* 1974;53:230–232.
30. Sellick BA: Cricoid pressure to control regurgitation of stomach contents during induction of anesthesia. *Lancet* 1961;2:404–405.
31. Noguchi T, Kaga K, Shiga Y, et al: The gum elastic bougie eases tracheal intubation while applying cricoid pressure compared to a stylet. *Can J Anaesth* 2003;50:712–717.
32. Tournadre JP, Chassard D, Berrada KR, et al: Cricoid cartilage pressure decreases lower esophageal sphincter tone. *Anesthesiology* 1997;86(1):7–9.
33. Ellis DY, Harris T, Zideman D: Cricoid pressure in emergency department rapid sequence tracheal intubations: a risk–benefit analysis. *Ann Emerg Med* 2007;50:653–665.
34. Lerman J: On cricoid pressure: "may the force be with you". *Anesth Analg* 2009;109(5):1363–1366.
35. Ovassapian A, Salem MR: Sellick's maneuver: to do or not do. *Anesth Analg* 2009;109(5):1360–1362.
36. Hoffman RJ, Parwani V, Hahn I-H: Experienced emergency medicine physicians cannot safely inflate or estimate endotracheal tube cuff pressure using standard techniques. *Am J Emerg Med* 2006;24:139–143.
37. Svenson JE, Lindsay MB, O'Connor JE: Endotracheal intracuff pressure in the ED and prehospital setting: is there a problem? *Am J Emerg Med* 2007;25:53–56.
38. Galinski M, Treoux V, Garrigue B, et al: Intracuff pressures of endotracheal tubes in the management of airway emergencies: the need for pressure monitoring. *Ann Emerg Med* 2006;47:545–547.
39. Bassi M, Zuercher M, Erne J-J, et al: Endotracheal tube intracuff pressure during helicopter transport. *Ann Emerg Med* 2010;56(2):89–93.
40. Tollefsen WW, Chapman J, Frakes M, et al: Endotracheal tube cuff pressures in pediatric patients intubated before aeromedical transport. *Ped Emerg Care* 2010;26(5):361–363.
41. Weiss M, Dullenkopf A, Fischer JE, et al: Prospective randomized controlled multi-centre trial of cuffed or uncuffed endotracheal tubes in small children. *Br J Anaesth* 2009;103(6):867–873.

REFERENCES

1. Schwartz DE, Matthay MA, Cohen NH: Death and other complications of emergency airway management in critically ill adults. A prospective investigation of 297 tracheal intubations. *Anesthesiology* 1995;82:367–376.
2. Knapp S, Kofler J, Stoiser B, et al: The assessment of four different methods to verify tracheal tube placement in the critical care setting. *Anesth Analg* 1999;88:766–770.
3. Grmec S: Comparison of three different methods to confirm tracheal tube placement in emergency intubation. *Intensive Care Med* 2002;28:701–704.
4. The American College of Emergency Physicians: *Verification of Endotracheal Tube Placement. Ann Emerg Med* 2009;54(1):141–142.
5. Anderson KH, Schultz-Lebahn T: Oesophageal intubation can be undetected by auscultation of the chest. *Acta Anaesthesiol Scand* 1994;38:580–582.
6. Salem MR: Verification of endotracheal tube position. *Anesth Clin N Am* 2001;19(4):813–839.
7. Kramer MR, Melzer E, Sprung CL: Unilateral pulmonary edema after intubation of the right mainstem bronchus. *Crit Care Med* 1989;17:472.
8. Kelly JJ, Enyon CA, Kaplan JL: Use of tube condensation as an indicator of endotracheal tube placement. *Ann Emerg Med* 1998;31:576.
9. Salem MR, Wafai Y, Joseph NJ, et al: Efficacy of the self-inflating bulb in detecting esophageal intubation. Does the presence of a nasogastric tube or cuff deflation make a difference? *Anesthesiology* 1994;80(1):42–48.
10. Jenkins WA, Verdile VP, Paris PM: The syringe aspiration technique to verify endotracheal tube position. *Am J Emerg Med* 1994;12(4):413–416.
11. Tanigawa K, Takeda T, Goto E, et al: The efficiency of esophageal detector devices in verifying tracheal tube placement: a randomized cross-over study of out of hospital cardiac arrest patients. *Anesth Analg* 2001;92:375–378.
12. Wolf TR, Kimball EJ, Ogden LL, et al: Evaluation of an electronic esophageal detector device in patients with morbid obesity and pulmonary failure. *Prehosp Emerg Care* 2002;6(1):59–64.
13. Lang DJ, Wafai Y, Salem MR, et al: Efficacy of the self-inflating bulb in confirming tracheal intubation in the morbidly obese. *Anesthesiology* 1996;85(2):246–253.
14. Takeda T, Tanigawa K, Tanaka H, et al: The assessment of three methods to confirm tracheal tube placement in the emergency setting. *Resuscitation* 2003;56:156–157.
15. Bhende MS, LaCovey DC: End-tidal carbon dioxide monitoring in the prehospital setting. *Prehosp Emerg Care* 2001;5:208–213.
16. Bhende MS: End-tidal carbon dioxide monitoring in pediatrics—clinical applications. *J Postgrad Med* 2001;47:215–218.
17. Wee MYK: The esophageal detector device-assessment of a new method to distinguish esophageal from tracheal intubation. *Anesthesia* 1988;43:27–29.
18. Cardoso NM, Banner MJ, Melker RJ, et al: Portable devices used to detect endotracheal intubation during emergency situations: a review. *Crit Care Med* 1998;26(5):957–964.
19. Fouch RG, Magelssen MD, MacMillan JG. The esophageal detector device: a rapid and accurate method for assessing tracheal versus esophageal intubation in a porcine model. *Ann of Emerg Med* 1992;21(9):1073–1076.
20. Anton WR, Gordon RW, Jordan TM, et al: A disposable end-tidal CO_2 detector to verify endotracheal intubation. *Ann Emerg Med* 1991;20(3):271–275.
21. Donald MJ, Paterson B: End tidal carbon dioxide monitoring in prehospital and retrieval medicine: a review. *Emerg Med J* 2006;23:728–730.
22. George S, Macnab AJ: Evaluation of a semiquantitative CO_2 monitor with pulse oximetry for prehospital endotracheal tube placement and monitoring. *Prehosp Disast Med* 2002;17:38–41.
23. Zar HA, Wu WW: The inability to detect carbon dioxide after endotracheal intubation as a result of one-way valve obstruction of the endotracheal tube. *Anesth Analg* 2001;93:971–972.
24. Li J: Capnography alone is imperfect for endotracheal tube placement confirmation in emergency intubation. *J Emerg Med* 2001;20:223–229.
25. Ornato JP, Shipley JB, Racht EM, et al: Multicenter study of a portable, hand-size, colorimetric end-tidal carbon dioxide detection device. *Ann Emerg Med* 1992;21:518.
26. Goldberg JS: Colorimetric end-tidal carbon dioxide monitoring for tracheal intubation. *Anesth Analg* 1990;70:191.
27. Bhende MS, Thompson AE, Cook DR, et al: Validity of a disposable end-tidal CO_2 detector in verifying endotracheal tube placement in infants and children. *Ann Emerg Med* 1992;21(2):142–145.
28. MacLeod BA, Heller MB, Gerard J, et al: Verification of endotracheal tube placement with colorimetric end tidal CO2 detection. *Ann Emerg Med* 1991;20(3):267–270.
29. Deiorio NM: Continuous end-tidal carbon dioxide monitoring for confirmation of endotracheal tube placement is neither widely available nor consistently applied by emergency physicians. *Emerg Med J* 2005;22:490–493.
30. Werner SA, Smith CE, Goldstein JR, et al: Pilot study to evaluate the accuracy of ultrasonography in confirming endotracheal tube placement. *Ann Emerg Med* 2007;29(1):75–80.
31. Ma G, Davis DP, Schmitt D, et al: The sensitivity and specificity of transcricothyroid ultrasonography to confirm endotracheal tube placement in a cadaver model. *Emerg Med J* 2007;32(4):405–407.
32. Weaver B, Lyon M, Blaivas M: Confirmation of endotracheal tube placement after intubation using the ultrasound lung sliding sign. *Acad Emerg Med* 2005;8:239–244.
33. Bair AE, Laurin EG, Schmitt BJ: An assessment of a tracheal tube introducer as an endotracheal tube placement confirmation device. *Am J Emerg Med* 2005;23:754–758.
34. Goksu E, Sayrac V, Oktay C, et al: How stylet use can effect confirmation of endotracheal tube position using ultrasound. *Am J Emerg Med* 2010;28:32–36.

REFERENCES

1. Marco CA, Marco AP: Airway adjuncts. *Emerg Med Clin North Am* 2008; 26(4):1015–1027.
2. Savoldelli GL, Schiffer E, Abegg C, et al: Comparison of the Glidescope, the McGrath, the Airtraq and the Macintosh laryngoscopes in simulated difficult airways. *Anaesthesia* 2008;63(12):1358–1364.
3. *Pentax Instruction Manual: Video Intubation Flexible Laryngoscope Pentax-AWS.* Montvale, NJ, 2007.
4. Asai T, Enomoto Y, Shimizu K, et al: The Pentax-AWS video-laryngoscope: the first experience in one hundred patients. *Anesth Analg* 2008;106(1): 257–259.
5. Enomoto Y, Asai T, Arai T, et al: Pentax-AWS, a new video laryngoscope, is more effective than the Macintosh laryngoscope for tracheal intubation in patients with restricted neck movements: a randomized comparative study. *Br J Anaesth* 2008;100(4):544–548.
6. Malik MA, Maharaj CH, Harte BH, et al: Comparison of Macintosh, Truview EVO2, Glidescope, and Airway scope laryngoscope use in patients with cervical spine immobilization. *Br J Anaesth* 2008;101(5):723–730.
7. Suzuki A, Toyama Y, Katsumi N, et al: Cardiovascular responses to tracheal intubation with the Airway scope (Pentax-AWS). *J Anesth* 2008;22(1): 100–101.
8. Sakles JC, Rodgers R, Keim SM: Optical and video laryngoscopes for emergency airway management. *Intern Emerg Med* 2008;3(2):139–143.
9. Suzuki A, Terao M, Fujita M: Tips for intubation with the Pentax-AWS rigid indirect laryngoscope in morbidly obese patients. *Anaesthesia* 2008; 63(4):442–444.
10. Suzuki A, Kunisawa T, Takahata O, et al: Pentax-AWS (Airway Scope) for awake tracheal intubation. *J Clin Anesth* 2007;19(8):642–643.
11. Ueshima H, Asai T, Shingu K, et al: Use of a gum elastic bougie for tracheal intubation with Pentax-AWS airway scope. *Masui* 2008;57(1):82–84.
12. O'Leary AM, Sandison MR, Myneni N, et al: Preliminary evaluation of a novel videolaryngoscope, the McGrath series 5, in the management of difficult and challenging endotracheal intubation. *J Clin Anesth* 2008;20(4):320–321.
13. Osborn IP, Behringer ED, Kramer DC: Difficult airway management following supratentorial craniotomy: a useful maneuver with a new device. *Anesth Analg* 2007;105(2):552–553.
14. Shippey B, Ray D, McKeown D: Use of the McGrath video laryngoscope in the management of difficult and failed tracheal intubation. *Br J Anaesth* 2008;100(1):116–119.
15. Marciniak B, Fayoux P, Laffargue A, et al: Use of the McGrath Series 5 portable video laryngoscope for tracheal intubation in children. *Anesthesiology* 2008;109:A785.
16. LMA: *Aircraft Medical: McGrath Video Laryngoscope Series 5: Operator's Manual.* San Diego, CA: LMA, 2006.
17. Kaplan MB, Ward DS, Berci G: A new video laryngoscope—an aid to intubation and teaching. *J Clin Anesth* 2002;14(8):620–626.
18. Low D, Healy D, Rasburn N: The use of the BERCI DCI Video Laryngoscope for teaching novices direct laryngoscopy and tracheal intubation. *Anaesthesia* 2008;63(2):195–201.
19. Wagner J: The Storz video laryngoscope. *Emerg Physician Monthly* 2008; http://www.epmonthly.com/index2.pho?option=com_content&task=view&id=333&pop=1&page=0&ltemid=38.
20. Karl Storz-Endoscopy: *C-mac Video Laryngoscope: Instruction Manual.* El Segundo, CA: Karl Storz, 2009.
21. Verathon Inc: *Glidescope GVL and Cobalt User's Manual and Quick Reference Guide.* Bothell, WA: Verathon Inc., 2008.
22. Verathon Inc: *Ranger and Ranger Single User's Manual and Quick Reference Guide.* Bothell, WA: Verathon Inc., 2008.
23. Jones PJ, Harle CC, Turkstra TP. The GlideScope Cobalt video laryngoscope—a novel single-use device. *Can J Anaesth* 2007;54(8):677–678.
24. Cooper RM: The GlideScope videolaryngoscope. *Anaesthesia* 2005;60(10): 1042.
25. Doyle, DJ: The GlideScope video laryngoscope. *Anaesthesia* 2005;60(4): 414–415.
26. Dupanovic M: Angle or curved stylet for intubation with the GlideScope. *Can J Anaesth* 2007;54(6):487–488.
27. Rai MR, Dering A, Verghese C: The Glidescope system: a clinical assessment of performance. *Anaesthesia* 2005;60(1):60–64.
28. Chi JE, Kil HK: A maneuver to facilitate endotracheal intubation using the GlideScope. *Can J Anaesth* 2008;55(1):56–57.
29. Clarus Medical LLC: *3000V Video Airway Endoscope: Operators Manual.* Minneapolis, MN: Clarus Medical LLC, 2009.
30. Flores AS, Garber SM, Niesen AD, et al: Clinical application of a novel video camera laryngoscope: a case series venturing beyond the normal airway. *J Clin Anesth* 2010;22:201–204.
31. Robitaille A, Williams SR, Tremblay MH, et al: Cervical spine motion during tracheal intubation with manual in-line stabilization: direct laryngoscopy versus Glidescope video laryngoscopy. *Anesth Analg* 2008;106(3):935–941.
32. Suzuki A, Toyama Y, Katsumi N, et al: The Pentax-AWS rigid indirect video laryngoscope: clinical assessment of performance in 320 cases. *Anaesthesia* 2008;63:641–647.
33. Bathory I, Frascarolo P, Kern C, et al: Evaluation of the Glidescope for tracheal intubation in patients with cervical spine immobilisation by a semi-rigid collar. *Anaesthesia* 2009;64:1337–1341.
34. Griesdale DEG, Liu D, McKinney J, et al: Glidescope video-laryngoscopy versus direct laryngoscopy for endotracheal intubation: a systematic review and meta-analysis. *Can J Anesth* 2012;59:41–52.
35. Carassiti M, Zanzonico R, Cecchini S, et al: Force and pressure distribution using Macintosh and Glidescope laryngoscopes in normal and difficult airways: a manikin study. *Br J Anaesth* 2012;108(1):146–151.
36. Jones PM, Loh FLC, Youssef HN, et al: A randomized comparison of the GlideRite rigid stylet to a malleable stylet for orotracheal intubation by novices using the Glidescope. *Can J Anesth* 2011;58:256–261.

REFERENCES

1. Levitan R: *Airway Cam Pocket Guide to intubation.* Wayne, PA: Airway Cam Technologies, 2007.
2. Levitan R: Design rationale and intended use of a short optical stylet for routine fiberoptic augmentation of emergency laryngoscopy. *Am J Emerg Med* 2006;24:490–495.
3. Pfitzner L, Cooper MG, Ho D: The Shikani Seeing Stylet for difficult intubation in children: initial experience. *Anesth Intensive Care* 2002;309(4): 462–466.
4. Rudolph C, Schlender M: Clinical experiences with fiberoptic intubation with the Bonfils intubation fiberscope. *Anesth Reanimation* 1996;21: 127–130.
5. Abramson SI, Holmes AA, Hagberg CA: Awake insertion of the Bonfils Retromolar Intubation Fiberscope in five patients with anticipated difficult airways. *Anesth Analg* 2008;106:1215–1217.
6. Byhahn C, Nemetz S, Breitkreutz R, et al: Brief report: tracheal intubation using the Bonfils intubation fibrescope or direct laryngoscopy for patients with a simulated difficult airway. *Can J Anesth* 2008;55(4):232–237.
7. Maharaj CH, Costello JF, Higgins BD, et al: Learning performance of tracheal intubation by novice personnel: a comparison of the Airtraq and Macintosh laryngoscope. *Anaesthesia* 2006;61:671–677.
8. Maharaj CH, O'Croinin D, Curley G, et al: A comparison of tracheal intubation using the Airtraq or Macintosh laryngoscope in routine airway management: randomized, controlled trial. *Anaesthesia* 2006;61:1093–1099.
9. Tong JL, Gait AJ, Woolard M, et al: Airway management at floor level: a comparison of tracheal intubation using the Macintosh and Airtraq laryngoscopes. *J R Army Med Corps* 2008;154(1):21–25.
10. Turkstra TP, Pelz DM, Jones PM: Comparison of the Airtraq laryngoscope with the Macintosh laryngoscope for intubation of patients with potential cervical spine injury: a fluoroscopic randomized controlled trial. *J Clin Anesth* 2009;21(1):77–78.
11. Maharaj CH, Costello JF, Harte BH, et al: Evaluation of the Airtraq and Macintosh laryngoscopes in patients at an increased risk for difficult tracheal intubation. *Anaesthesia* 2008;63:182–188.
12. Turkstra TP, Pelz DM, Jones PM: Cervical spine motion: a fluoroscopic comparison of the Airtraq laryngoscope versus the Macintosh laryngoscope. *Anesthesiology* 2009;111(1):97–101.
13. Dhonneur G, Abdi W, Amathieu R, et al: Optimising tracheal intubation success rate using the Airtraq laryngoscope. *Anaesthesia* 2009;64:315–319.
14. Borland L, Casselbrant C: The Bullard laryngoscope. a new indirect oral laryngoscope (pediatric version). *Anesth Analg* 1990;70:105–108.
15. Gutstein HB: Use of the Bullard laryngoscope and lightwand in pediatric patients. *Anesth Clin North Am* 1998;16(4):795–813.
16. Hastings RH, Vigil AC, Hanna R, et al: Cervical spine movement during laryngoscopy with the Bullard, Macintosh, and Miller laryngoscopes. *Anesthesiology* 1995;82(4):859–869.
17. Cohn AI, Zornow MH: Awake endotracheal intubation in patients with cervical spine disease: a comparison of the Bullard laryngoscope and the fiberoptic bronchoscope. *Anesth Analg* 1995;81:1283–1286.
18. Watts AD, Gelb AW, Bach OB, et al: Comparison of the Bullard and Macintosh laryngoscopes for endotracheal intubation of patients with a potential cervical spine injury. *Anesthesiology* 1997;87(6):1335–1342.
19. Ghouri AF, Bernstein CA: Use of the Bullard laryngoscope blade in patients with maxillofacial injuries. *Anesthesiology* 1996;84(2):490.

REFERENCES

1. Wong E, Ng YY: The difficult airway in the emergency department. *Int J Emerg Med* 2008;1(2):107–111.
2. American Society of Anesthesiologists: Practice guidelines for the management of the difficult airway. A report by the American Society of Anesthesiologist Taskforce on the management of the difficult airway. *Anesthesiology* 1993:78:597–602.
3. Cormack RS, Lehane J: Difficult tracheal intubations in obstetrics. *Anaesthesia* 1984;39:1105–1111.
4. Sakles JC, Laurin EG, Rantapaa AA, et al: Airway management in the emergency department: a one-year study of 610 tracheal intubation. *Ann Emerg Med* 1998 ;31:325–332.
5. Orenbaugh SL: Difficult airway management in the emergency department. *J Emerg Med* 2002 ;22:31–48.
6. Nolan JP, Wilson ME: Orotracheal intubation in patients with potential cervical spine injuries; an indication for the gum elastic bougie. *Anaesthesia* 1993;48:630–633.
7. Macintosh RR: An aid to oral intubation. *Br Med J* 1949;1:28.
8. Takenaka I, Aoyama K, Iwagaki T, et al: Approach combining the airway scope and the bougie for minimizing movement of the cervical spine during endotracheal intubation. *Anesthesiology* 2009;110:1335–1340.
9. Arndt GA, Cambray AJ, Tomasson J: Intubation bougie dissection of tracheal mucosa and intratracheal airway obstruction. *Anesth Analg* 2008; 107(2):603–604.
10. Smith BL: Haemopneumothorax following bougie-assisted tracheal intubation. *Anesthesia* 1994;48:91.
11. Kadry M, Popat M: Pharangeal wall perforation—an unusual complication of blind intubation with a gum elastic bougie. *Anaesthesia* 1999;54:393–408.
12. Nolan JP, Wilson ME: An evaluation of the gum elastic bougie. *Anaesthesia* 1992;47:878–881.
13. Wilkes AR, Hodzovic I, Latto IP: Comparison of the peak forces that can be exerted by multiple-use and single-use bougie in vitro. *Br J Anaesth* 2002;89:671.
14. Annamaneni R, Hodzovic I, Wilkes AR, et al: A comparison of simulated difficult intubation with multiple-use and single-use bougies in a manikin. *Anaesthesia* 2003;58:45–49.
15. Hodzovic I, Latto IP, Wilkes AR, et al: Evaluation of Frova, single-use intubation introducer, in a manikin. Comparison with Eschmann multiple-use introducer and Portex single-use introducer. *Anaesthesia* 2004;59:811–816.
16. Kadry T, Harvey M, Wallace M, et al: Frova intubating catheter position can be determined with aspirating oesophageal detection device. *Emerg Med Australas* 2007;19(3):203–206.
17. Braude D, Ronan D, Weiss S, et al: Comparison of available gum-elastic bougies. *Am J Emerg Med* 2009;27(3):266–270.
18. Moscati R, Jehle D, Christiansen G, et al: Endotracheal tube introducer for failed intubations: a variant of the gum elastic bougie. *Ann Emerg Med* 2000;36(1):52–56.
19. Kidd JF, Dyson A, Latto IP: Successful difficult intubation: use of the gum elastic bougie. *Anaesthesia* 1988;43:437–438.
20. Shah K, Kwong B, Hazan A, et al: Success of the gum elastic bougie as a rescue airway in the emergency department. *J Emerg Med* 2011;40:1–6.
21. Dogra S, Falconer R, Latto IP: Successful difficult intubation Tracheal tube placement over a gum-elastic bougie. *Anaesthesia* 1990;45:774–776.
22. Brimacombe J, Keller C: Gum elastic bougie-guided insertion of the ProSeal Laryngeal Mask Airway. *Anaesth Intensive Care* 2004;32(5):681–684.
23. Parotto M, Ori C, Freo U, et al: Difficult proseal laryngeal mask airway placement in a child: made easy by bougie guided technique. Comment. *Paediatr Anaesth* 2008;18(12):1246.
24. Miller JA, Levsky ME, Givens ML, et al: Eschmann introducer through laryngeal mask airway: a cadaveric trial of an alternate means of rescue intubation. *West J Emerg Med* 2010;11(1):16–19.
25. Marciniak D, Smith CE: Emergent retrograde tracheal intubation with a gum-elastic bougie in a trauma patient. *Anesth Analg* 2007;105(6):1720–1721.
26. Smith MD, Katrinchak J: Use of a gum elastic bougie during surgical crichothyrotomy. *Am J Emerg Med* 2008;26(6):738.e1.
27. Braude D, Webb H, Stafford J: The bougie-aided cricothyrotomy. *Air Med J* 2009;28(4):191–194.
28. Hill C, Reardon R, Joing S, et al: Cricothyrotomy technique using gum elastic bougie is faster than standard technique: a study of emergency medicine residents and medical students in an animal lab. *Acad Emerg Med* 2010; 17(6):666–669.
29. MacIntyre A, Markarian MK, Carrison D, et al: Three-step emergency cricothyroidotomy. *Mil Med* 2007;172(12):1228–1230.
30. Arisaka H, Sakuraba S, Furuya M, et al: Application of gum elastic bougie to nasal intubation. *Anesth Prog* 2010;57(3):112–113.
31. Arora MK, Karamchandani K, Trikha A: Use of a gum elastic bougie to facilitate blind nasotracheal intubation in children: a series of three cases. *Anaesthesia* 2006;61(3):291–294.
32. Pandey R, Garg R, Chandralekha, et al: Laryngoscope-guided and bougie-aided correct placement of a double-lumen tube in a difficult airway. *J Cardiothorac Vasc Anesth* 2009;23(4):583–584.
33. Robles B, Hester J, Brock-Utne JG: Remember the gum-elastic bougie at extubation. *J Clin Anesth* 1993;5(4):329–331.
34. Hodzovic I, Wilkes A, Stacey M, et al: Evaluation of clinical effectiveness of the Frova single-use tracheal tube introducer. *Anaesthesia* 2008;63:189–194.
35. Janakiraman C, Hodzovic I, Reddy S, et al: Evaluation of tracheal tube introducers in simulated difficult intubation. *Anaesthesia* 2009;64:309–314.
36. Kumar S, Walker R: Bougie-related tension pneumothorax in a neonate. *Paediatr Anaesth* 2009;19:800–801.

REFERENCES

1. Stewart RD: Tactile orotracheal intubation. *Ann Emerg Med* 1984;13:175–178.
2. Hardwick WC, Bluhm D: Digital intubation. *J Emerg Med* 1984;1:317–320.
3. Snell RS, Smith MS: *Clinical Anatomy for Emergency Medicine.* St. Louis: Mosby, 1993.
4. Hancock PJ, Peterson G: Finger intubation of the trachea in newborns. *Pediatrics* 1992;89:325–326.
5. Moura JH, Silva GA: Neonatal laryngoscope intubation and the digital method: a randomized control trial. *J Pediatr* 2006;6:840–841.
6. Young SE, Miller MA, Crystal CS, et al: Is digital intubation an option for emergency physicians in definitive airway management? *Am J Emerg Med* 2006;24:729–732.
7. Dutta A, Kumra. Guided tactile probing: a modified blind orotracheal intubation technique for the problem-oriented difficult airway. *Acta Anaesthesiol Scand* 2005;49:106–109.
8. Cook RT: Digital endotracheal intubation. *Am J Emerg Med* 1992;10:396.
9. White SJ: Left mainstem intubation with digital intubation technique: an unrecognized risk. *Am J Emerg Med* 1994;12:466–468.
10. Shiber JR, Fontane E: Digital tracheal intubation: an effective technique that should not be forgotten. *Ann J Emerg Med* 2006;6:729–732.
11. Woody NC, Woody HB: Direct digital intratracheal intubation for neonatal resuscitation. *J Pediatr* 1968;73(6):903–905.
12. Hancock PJ, Peterson G: Finger intubation of the trachea in the newborn. *Pediatrics* 1992;89(2):325–327.

REFERENCES

1. Wong E, Ng YY: The difficult airway in the Emergency Department. *Int J Emerg Med* 2008;1(2):107–111.
2. Benumof J: Management of the difficult airway. With special emphasis on awake tracheal intubation. *Anesthesiology* 1991;75:1087–1111.
3. Hung OR, Pytka S, Morris I, et al: Clinical trial of a new lightwand device (Trachlight) to intubate the trachea. *Anesthesiology* 1995;83(3):509–514.
4. American Society of Anesthesiologists: Practice guidelines for management of the difficult airway. A report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology* 1993; 7(3):597–602.
5. Ellis DG, Stewart RD, Kaplan RM, et al: Success rates of blind orotracheal intubation using a transillumination technique with a lighted stylet. *Ann Emerg Med* 1986;15(2):138–142.
6. Agro F, Hung OR, Cataldo R, et al: Lightwand intubation using the Trachlight: a brief review of current knowledge. *Can J Anaesth* 2001;48(6):592–599.
7. Davis L, Cook-Sather S, Schreiner, M: Lighted stylet tracheal intubation: a review. *Anesth Analag* 2000;90(3):745–756.
8. Yamamura H, Yamamoto T, Kamiyama M: Device for blind nasal intubation. *Anesthesiology* 1959;20(2):221.
9. Raymond RL: "Light wand" intubation. *Anaesthesia* 1979;34:677–678.
10. Ellis DG, Jakymec A, Kaplan RM, et al: Guided orotracheal intubation in the operating room using a lighted stylet: a comparison with direct laryngoscopic technique. *Anesthesiology* 1986;64:823–826.
11. Fox DJ, Castro T, Rastrelli AJ: Comparison of intubation techniques in the awake patient: the Flexi-lum surgical light (lightwand) versus blind nasal approach. *Anesthesiology* 1987;66:69–71.
12. Saha AK, Higgins M, Walker G, et al: Comparison of awake endotracheal intubation in patients with cervical spine disease: the lighted intubating stylet versus the fiberoptic bronchoscope. *Anesth Analg* 1998;87:477–479.
13. Verdile VP, Chiang J, Bedger R, et al: Nasotracheal intubation using a flexible lighted stylet. *Ann Emerg Med* 1990;19(5):506–510.
14. Holzman RS, Nargozian CD, Florence FB: Light-wand intubation in children with abnormal upper airways. *Anesthesiology* 1988;69(5):784–787.
15. Krucylak CP, Schreiner MS: Orotracheal intubation of an infant with hemifacial microsomia using a modified lighted stylet. *Anesthesiology* 1992;77: 826–827.
16. Berns SD, Patel RI, Chamberlain JM: Oral intubation using a lighted stylet vs direct laryngoscopy in older children with cervical immobilization. *Acad Emerg Med* 1996;3(1):34–39.
17. Weis FR, Hatton MN: Intubation by use of the light wand: experience in 253 patients. *J Oral Maxillofac Surg* 1989;47:577–580.
18. Stone DJ, Stirt JA, Kaplan MJ, et al: A complication of lightwand-guided nasotracheal intubation. *Anesthesiology* 1984;61:780–781.
19. Szigeti CL, Baeuerle JJ, Mongan PD: Arytenoid dislocation with lighted stylet intubation: case report and retrospective review. *Anesth Analg* 1994; 78:185–186.
20. Debo RF, Colonna D, Dewerd G, et al: Cricoarytenoid subluxation: complication of blind intubation with a lighted stylet. *Ear Nose Throat J* 1989; 68:517–520.
21. Vollmer TP, Stewart RD, Paris PM, et al: Use of a lighted stylet for guided orotracheal intubation in the prehospital setting. *Ann Emerg Med* 1985; 14(4):324–328.
22. Hung OR, Pytka S, Murphy MF, et al: Clinical trial of a new lightwand device for intubation in patients with difficult airways. *Anesthesiology* 1993; 79(3):A498.
23. Kanaide M, Fukusaki M, Tamura S, et al: Hemodynamic and catecholamine responses during tracheal intubation using a lightwand device (Trachlight) in elderly patients with hypertension. *J Anesth* 2003;17:161.
24. Hung OR, Pytka S, Murphy MD, et al: Comparative hemodynamic changes following laryngoscopic or lightwand intubation. *Anesthesiology* 1993;79(3):A497.
25. Turkstra TP, Craen RA, Pelz DM, Gelb AW: Cervical spine motion: a fluoroscopic comparison during intubation with lighted stylet, Glidescope, and Macintosh Laryngoscope. *Anesth Analg* 2005;101(3):910–915.

REFERENCES

1. Tanigawa K, Shigematsu A: Choice of airway devices for 12,020 cases of non-traumatic cardiac arrest in Japan. *Prehosp Emerg Care* 1998;2:96–100.
2. Wiese CHR, Semmel T, Muller JU, et al: The use of the laryngeal tube disposable (LT-D) by paramedics during out-of-hospital resuscitation—an observational study concerning ERC guidelines 2005. *Resuscitation* 2009;80:194–198.
3. Hung O, Law JA: Advances in airway management. *Can J Anesth* 2006;53: 628–631.
4. Cook TM, Hommers C: New airways for resuscitation? *Resuscitation* 2006; 69:371–387.
5. Bein B: Supraglottic airway devices. *Best Pract Res Clin Anaesth* 2005;19: 581–593.
6. Miller D: A proposed classification and scoring system for supraglottic sealing airways: a brief review. *Anesth Analg* 2004;99:1553–1559.
7. Jolliffe L, Jackson I: Airway management in the outpatient setting: new devices and techniques. *Curr Opin Anaesth* 2008;21:719–722.
8. Hooshangi H, Wong D: Brief review: the cobra perilaryngeal airway (Cobra PLA) and the streamlined liner of pharyngeal airway (SLIPA) supraglottic airways. *Can J Anesth* 2008;53:177–185.
9. Theiler LG, Kleine-Brueggeney M, Kaiser D, et al: Crossover comparison of the laryngeal mask supreme and the i-gel in simulated difficult airway scenario in anesthetized patients. *Anesthesiology* 2009;111(1):55–62.
10. Hagberg C, Bogomolny Y, Gilmore C, et al: An evaluation of the insertion and function of a new supraglottic airway device, the King LT, during spontaneous ventilation. *Anesth Analg* 2006;102:621–625.
11. Cook TM, McCormick, Asai T: Randomized comparison of the laryngeal tube and the classic laryngeal mask airway for anesthesia with controlled ventilation. *Br J Anaesth* 2003;91:373–378.
12. Cook TM. McKinstry C, Hardy R: Randomized crossover comparison of the ProSeal laryngeal mask airway with the laryngeal tube during anaesthesia with controlled ventilation. *Br J Anaesth* 2003;91:678–683.
13. van Zundert A, Brimacombe J, Kamphuis R, et al: The anatomic position of three extraglottic airway devices in patients with clear airways. *Anaesthesia* 2006;61:891–895.
14. Gaither JB, Matheson J, Eberhardt A, et al: Tongue engorgement associated with prolonged use of the King-LT laryngeal tube device. *Ann Emerg Med* 2010;55(4):367–369.
15. Figueredo E, Martinez M, Pintanel T: A comparison of the ProSeal laryngeal mask and the laryngeal tube in spontaneously breathing anesthetized patients. *Anesth Analg* 2003;96:600–605.
16. Simons R, Rea T, Becker L, et al: The incidence and significance of emesis associated with out-of-hospital cardiac arrest. *Resuscitation* 2007;74:427–431.
17. Nolan J, Soar J: Airway techniques and ventilation strategies. *Curr Opin Crit Care* 2008;14:279–286.
18. Vaida S, Gaitini D, Ben-David B, et al: A new supraglottic airway, the Elisha airway device: a preliminary study. *Anesth Analg* 2004;99:124–127.

REFERENCES

1. Brain AIJ: The laryngeal mask—a new concept in airway management. *Br J Anaesth* 1983;55:801–805.
2. Roman AM: Noninvasive airway management, in Tintinalli J, Stapczynski JS, Ma OJ, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 7th ed. New York: McGraw-Hill, 2011:183–190.
3. Weiler N, Eberle B, Heinrichs W: The laryngeal mask airway: routine, risk, or rescue? *Intensive Care Med* 1999;25:761–762.
4. Brain AIJ, Verghese C, Addy EV, et al: The intubating laryngeal mask. I: Development of a new device for intubation of the trachea. *Br J Anaesth* 1997;79:699–703.
5. Brain AIJ, Verghese C, Addy EV, et al: The intubating laryngeal mask. II: A preliminary clinical report of a new means of intubating the trachea. *Br J Anaesth* 1997;79:704–709.
6. Walls RM: Airway, in Marx JA, Hockberger RS, Walls RM, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 7th ed. Philadelphia: Mosby Elsevier, 2009:3–23.
7. Pennant JH, White PF: The laryngeal mask airway. Its uses in anesthesiology. *Anesthesiology* 1993;79:144–163.
8. Barata I: The laryngeal mask airway: prehospital and emergency department use. *Emerg Med Clin N Am* 2008;26(4):1069–1083.
9. Kapila A, Addy EV, Verghese C: The intubating laryngeal mask airway: an initial assessment of performance. *Br J Anaesth* 1997;79:710–713.
10. Brimacombe J: Analysis of 1500 laryngeal mask uses by one anesthetist in adults undergoing routine anaesthesia. *Anaesthesia* 1996;51:76–80.
11. Patel A, Bailey PM, Wakeling HG: The intubating laryngeal mask and distorted airway anatomy. *Br J Anaesth* 1999;82(5):809–811.
12. Nanson J: Avoiding movement at a laryngeal mask airway insertion. *Br J Anaesth* 1999;83(1):194–195.
13. Insertion of the reinforced LMA. Step by Step. 2000. http://www.saga.nl/lma/steps.html.
14. The Laryngeal Mask: 2000. http://gasbone.herston.uq.edu.au/teach/su602/docs/cl3laryg.html.
15. Dingley J, Asai MD: Insertion methods of the laryngeal mask airway. *Anaesthesia* 1996;51:596–599.
16. Cass L: Inserting the laryngeal mask. *Anaesth Intens Care* 1991;19(4):615.
17. Hwang JW, Park HP, Lim YJ, et al: Comparison of two insertion techniques of ProSeal laryngeal mask airway. *Anesthesiology* 2009;110:905–907.
18. Verghese C, Brimacombe JR: Survey of laryngeal mask airway usage in 11,910 patients: safety and efficacy for conventional and nonconventional usage. *Anesth Analg* 1996;82:129–133.
19. Ye L, Liu J, Wong DT, et al: Effects of tracheal tube orientation on the success of intubation through an intubating laryngeal mask airway: study in Mallampati class 3 or 4 patients. *Br J Anaesth* 2009;102:269–272.
20. Kanazi GE, El-Khatib M, Nasr VG: A comparison of a silicone wire-reinforced tube with the parker and polyvinyl chloride tubes for tracheal intubation through an intubating laryngeal mask airway in patients with normal airways undergoing general anesthesia. *Anesth Analg* 2008;107:994–997.

REFERENCES

1. Doerges V, Sauer C, Ocker H: Airway management during cardiopulmonary resuscitation: comparative study of bag-valve-mask, laryngeal mask airway and Combitube in a bench model. *Resuscitation* 1999;41(1):63–69.
2. Rumball CJ, MacDonald D: The PTL, Combitube, laryngeal mask, and oral airway: a randomized pre-hospital comparative study of ventilatory device effectiveness and cost-effectiveness in 470 cases of cardiorespiratory arrest. *Prehosp Emerg Care* 1997;1(1):1–10.
3. Levitan RM, Kush S, Hollander JE: Devices for difficult airway management in academic emergency departments: results of a national survey. *Ann Emerg Med* 1999;33(6):694–698.
4. Calkins MD, Robinson TD: Combat trauma airway management: endotracheal intubation versus laryngeal mask airway versus Combitube use by Navy SEAL and reconnaissance combat corpsmen. *J Trauma* 1999;46(5): 927–932.
5. Yardy N, Hancox D, Strang T: A comparison of two airway aids for emergency use by unskilled personnel. The Combitube and laryngeal mask. *Anaesthesia* 1999;54(2):181–183.
6. Thierbach AR, Piepho T, Maybauer MO: A new device for emergency airway management: the EasyTube. *Resuscitation* 2004;60(3):347–348.
7. Thierbach AR, Piepho T, Maybauer MO: The EasyTube for airway management in emergencies. *Prehosp Emerg Care* 2005;9(4):445–448.
8. Klauser R, Roggla G, Pidlich J: Massive upper airway bleeding after thrombolytic therapy: successful airway management with the combitube. *Ann Emerg Med* 1992;21(4):431–433.
9. Blostein PA, Koestner AJ, Hoak S: Failed rapid sequence intubation in trauma patients: esophageal tracheal combitube is a useful adjunct. *J Trauma* 1998;44(3):534–537.
10. Frass M, Frenzer R, Mayer G: Mechanical ventilation with the esophageal tracheal combitube (ETC) in the intensive care unit. *Arch Emerg Med* 1987;4(4):219–225.
11. Urtubia RM, Aguila CM, Cumsille MA: Combitube: a study for proper use. *Anesth Analg* 2000;90(4):958–962.
12. Mercer MH, Gabbott DA: Insertion of the combitube airway with the cervical spine immobilized in a rigid cervical collar. *Anaesthesia* 1998;53(10):971–974.
13. Oczenski W, Krenn H, Dahaba AA, et al: Complications following the use of the combitube, tracheal tube and laryngeal mask airway. *Anaesthesia* 1999;54(12):1161–1165.
14. Wafai Y, Salem MR, Baraka A, et al: Effectiveness of the self-inflating bulb for verification of proper placement of the esophageal tracheal combitube. *Anesth Analg* 1995;80:122–126.
15. Ulrich-Pur H, Hrska F, Krafft P, et al: Comparison of mucosal pressures induced by cuffs of different airway devices. *Anesthesiology* 2006; 104(5):933–938.
16. Portereiko JV, Perez MM, Hojman H, et al: Acute upper airway obstruction by an over-inflated combitube esophageal obturator balloon. *J Trauma* 2006;60(2):426–427.
17. McGlinch BP, Martin DP, Volcheck GW, et al: Tongue engorgement with prolonged use of the esophageal-tracheal combitube. *Ann Emerg Med* 2004;44(4):320–322.

REFERENCES

1. Imai M, Matsumura C, Hanaoka Y, et al: Comparison of cardiovascular responses to airway management: fiberoptic intubation using a new adapter, laryngeal mask insertion, or conventional laryngoscopic intubation. *J Clin Anesth* 1995;7:14–18.
2. Weiss YG, Deutschman CS: The role of fiberoptic bronchoscopy in airway management of the critically ill patient. *Crit Care Clin* 2000;16:445.
3. Ovassapian A: *Fiberoptic Endoscopy and the Difficult Airway*. Philadelphia: Lippincott-Raven, 1996:3–9.
4. Walls RM, Murphy MF. *Manual of Emergency Airway Management,* 3rd ed. Philadelphia: Lippincott Williams and Wilkins, 2008:96; 150–152.
5. Elizondo E, Navarro F, Perez-Romoa, et al: Endotracheal intubation with flexible fiberoptic bronchoscopy in patients with abnormal anatomic conditions of the head and neck. *Ear Nose Throat J* 2007;86:682.
6. Dabbagh A, Mobasseri N, Elyasi H, et al: A rapidly enlarging neck mass: the role of the sitting position in fiberoptic bronchoscopy for difficult intubation. *Anesth Analg* 2008;101:1627.
7. Walburn MB, Cornes J, Ryder IG. Fiberoptic intubation through a laryngeal mask airway facilitated by a guide wire. *Anesthesia* 2000;55:1027.
8. Ianchulev SA. Through-the-LMA fiberoptic intubation of the trachea in a patient with an unexpected difficult airway. *Anesth Analg* 2005;101:1882.
9. Ovassapian A, Randel GI: The role of the fiberscope in the critically ill patient. *Crit Care Clin* 1995;111:29.
10. Ovassapian A, Tuncbilek M, Weitzel EK, et al: Airway management in adult patients with deep neck infections: a case series and review of the literature. *Anesth Analg* 2005;100:585.
11. Nandi PR, Charlesworth CH, Taylor SJ, et al: Effect of general anesthesia on the pharynx. *Br J Anesth* 1991;66:157.
12. Ovaspassian A, Mesnick PS: Oxygen insufflation through the fiberscope to assist intubation is not recommended. *Anesthesiology* 1997;87:183.
13. Chapman, N: Gastric rupture and pneumoperitoneum caused by oxygen insufflation via a fiberoptic bronchoscope. *Anesth Analg* 2008;106:1592.
14. Adachi YU, Satomoto M, Higuchi H: Fiberoptic orotracheal intubation in the left semilateral position. *Anesth Analg* 2002;94:477.
15. Roberts J: Anatomy and patient positioning for fiberoptic laryngoscopy. *Anesthesiol Clin North Am* 1991;9:53.
16. Lallo A, Billard V, Bourgain JL: A comparison of propofol and remifentanil target-controlled infusions to facilitate fiberoptic nasotracheal intubation. *Anesth Analg* 2009;108(3):852–857.
17. Simmons ST, Schleich AR: Airway regional anesthesia for awake fiberoptic intubation. *Regional Anesth Pain Med* 2002;27:180.
18. Bowes WA, Johnson JO: Pneumomediastinum after planned retrograde fiberoptic intubation. *Anesth Analg* 1994;78:795.
19. Ellis FD, Seiler JG, Palmore MM: Methemoglobinemia: a complication after fiberoptic orotracheal intubation with benzocaine spray. *J Bone Joint Surg* 1995;77:937.
20. Xue FS, Liu HP, He N, et al: Spray-as-you-go airway topical anesthesia in patients with a difficult airway: a randomized, double blind comparison of 2% and 4% lidocaine. *Anesth Analg* 2009;108:536.
21. Mason RA: Learning fiberoptic intubation: fundamental problems. *Anaesthesia* 1992;47:729.
22. Johnson DM, From AM, Smith RB, et al: Endoscopic study of mechanisms of failure of endotracheal tube advancement into the trachea during awake fiberoptic orotracheal intubation. *Anesthesiology* 2005;102:910.
23. Kristensen MS. The Parker Flex-tip tube versus a standard tube for fiberoptic orotracheal intubation: a randomized double-blind study. *Anesthesiology* 2003;98:354.
24. Marsh NJ: Easier fiberoptic intubations. *Anesthesiology* 1992;76:860.
25. Cohn AI, Zornow MH: Awake endotracheal intubation in patients with cervical spine disease: a comparison of the Bullard laryngoscope and the fiberoptic bronchoscope. *Anesth Analg* 1995;81:1283.
26. Saha AK, Higgins M, Walker G, et al: Comparison of awake endotracheal intubation in patients with cervical spine disease: the lighted intubation stylet versus the fiberoptic bronchoscope. *Anesth Analg* 1998;87:477.
27. Van Elstraete AC, Mamie JC, Mehdaoui H: Nasotracheal intubation with immobilized cervical spine: a comparison of tracheal tube cuff inflation and fiberoptic bronchoscopy. *Anesth Analg* 1998;87:400.
28. Turkestra TP, Craen RA, Pelz DM, et al: Cervical spine motion: a fluoroscopic comparison during intubation with lighted stylet, Glidescope, and Macintosh laryngoscope. *Anesth Analg* 2005;101:910.
29. Michalek P, Hodgkinson P, Donaldson W: Fiberoptic Intubation through an I-Gel supraglottic airway in two patients with predicted difficult airway and intellectual disability. *Anesth Analg* 2008;106(5):1501.
30. Reynolds PI, O'Kelly SW: Fiberoptic intubation and the laryngeal mask airway. *Anesthesiology* 1993;179:1144.
31. Joo HS, Kapoor S, Rose DK, et al: The intubating laryngeal mask airway after induction of general anesthesia versus awake fiberoptic intubation in patients with difficult airways. *Anesth Analg* 2001;92:1342.
32. Heidegger T, Starzyk L, Villiger C, et al: Fiberoptic intubation and laryngeal morbidity: a randomized controlled trial. *Anesthesiology* 2007;107:585.
33. Chandra DB, Savoldelli GL, Joo HS, et al: Fiberoptic oral intubation: the effect of model fidelity on training for transfer to patient care. *Anesthesiology* 2008;109:1007.

REFERENCES

1. Roppolo LP, Vilke GM, Chan TC, et al: Nasotracheal intubation in the emergency department, revisited. *J Emerg Med* 1999;17(5):791–799.
2. McGill JW, Clinton JE: Tracheal intubation, in Roberts JR, Hedger JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:3–34.
3. Anderson DM: Airway management, in Howell J, Alfieri M, Jagoda A, et al (eds): *Emergency Medicine*. Philadelphia: Saunders, 1998:50–51.
4. Holdgaard HO, Pedersen J, Schurizek BA, et al: Complications and late sequelae following nasotracheal intubation. *Acta Anaesthiol Scand* 1993;37:475–480.
5. Seaman M, Ballinger P, Sturgill TD, et al: Mediastinitis following nasal intubation in the Emergency Department. *Am J Emerg Med* 1991;9:37–39.
6. Adamson DN, Theisen FC, Barret KC: Effect of mechanical dilation on nasotracheal intubation. *J Oral Maxillofac Surg* 1998;46(5):372–375.
7. Yong CK, Seung HL, Gye JN, et al: Thermosoftening treatment of the nasotracheal tube before intubation can reduce epistaxis and nasal damage. *Anesth Anal* 2000;91:698–701.
8. Sim WS, Chung IS, Chin JU, et al: Risk factors for epistaxis during nasotracheal intubation. *Anaesth Intensive Care* 2002;30:449–452.
9. Geraci RP: Acute epiglottitis—Management with prolonged nasotracheal intubation. *Pediatrics* 1968;41:143–145.
10. Kim JS, Park SY, Min SK, Kim JH, et al: Awake nasotracheal intubation using fiberoptic bronchoscope in a pediatric patient with Freeman–Sheldon syndrome. *Pediatr Anesth* 2004;15–9:790–792.
11. Smith JE, Reid AP: Identifying the more patent nostril before nasotracheal intubation. *Anaesthesia* 2001;56:248–271.
12. Korber TE, Henneman PL: Digital nasotracheal intubation. *J Emerg Med* 1989;7:275–277.

REFERENCES

1. Van Stralen D, Rogers M, Perkin R, et al: Retrograde intubation training using a mannequin. *Am J Emerg Med* 1995;13:50–52.
2. Butler FS, Cirillo AA: Retrograde tracheal intubation. *Anesth Analg* 1960;39: 333–338.
3. Waters DJ: Guided blind endotracheal intubation. *Anesthesia* 1963;18: 158–162.
4. Powell WF, Ozdil T: A translaryngeal guide for tracheal intubation. *Anesth Analg* 1967;46:231–233.
5. American Society of Anesthesiologists: Practice guidelines for management of the difficult airway. *Anesthesiology* 1993;78:597–602.
6. Barriot P, Riou B: Retrograde technique for tracheal intubation in trauma patients. *Crit Care Med* 1988;16:712–713.
7. Van Stralen D, Perkin RM: Retrograde intubation difficulty in an 18-year-old muscular dystrophy patient. *Am J Emerg Med* 1995;13:100–101.
8. Harvey S, Fishman R, Edwards S: Retrograde intubation through a laryngeal mask airway. *Anesthesiology* 1996;85:1503–1504.
9. Gotta AW, Sullivan CA: Anaesthesia of the upper airway using topical anaesthetic and superior laryngeal nerve block. *Br J Anaesth* 1981;53:1055–1058.
10. Stern Y, Spitzer T: Retrograde intubation of the trachea. *J Laryngol Otol* 1991;105:746–747.
11. Borland LM, Swan DM, Lett S: Difficult pediatric endotracheal intubation: a new approach to the retrograde technique. *Anesthesiology* 1981;55:577–578.
12. King HK, Wank LF, Khan AK, et al: Translaryngeal guided intubation for difficult intubation. *Crit Care Med* 1987;15:869–871.
13. Lau HP, Yip KM, Liu CC: Rapid airway access by modified retrograde intubation. *J Formos Med Assoc* 1996;95(4):347–349.
14. Hung OR, Al-Qatari M: Light-guided retrograde intubation. *Can J Anaesth* 1997;44(8):877–882.
15. Contrucci RB, Gottlieb JS: A complication of retrograde intubation. *Ear Nose Throat J* 1990;69:776–778.

REFERENCES

1. Benumof JL, Scheller MS: The importance of transtracheal jet ventilation in the management of the difficult airway. *Anesthesiology* 1989;71(5):769–778.
2. Carl ML, Rhee KJ, Schelegle ES, et al: Pulmonary mechanics of dogs during transtracheal jet ventilation. *Ann Emerg Med* 1994;24(6):1126–1135.
3. Jacobson S: Upper airway obstruction. *Emerg Med Clin* 1989;7(2):205–217.
4. Depierraz B, Ravussin P, Brossard E, et al: Percutaneous transtracheal jet ventilation for paediatric endoscopic laser treatment of laryngeal and subglottic lesions. *Can J Anaesth* 1994;41(12):1200–1207.
5. Jorden RC: Percutaneous transtracheal ventilation. *Emerg Med Clin* 1988;6(4):745–752.
6. Frame SB, Timberlake GA, Kerstein MD, et al: Transtracheal needle catheter ventilation in complete airway obstruction: an animal model. *Ann Emerg Med* 1989;18(2):127–133.
7. Mace SE: Cricothyrotomy and translaryngeal jet ventilation, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*. Philadelphia: Saunders, 1998:66–74.
8. Neff CC, Pfister RC, Sonnenberg EV: Percutaneous transtracheal ventilation: experimental and practical aspects. *J Trauma* 1983;23(2):84–90.
9. Yealy DM, Stewart RD, Kaplan RM: Myths and pitfalls in emergency translaryngeal ventilation: correcting misimpressions. *Ann Emerg Med* 1988;17(7):690–692.
10. Patel R: Percutaneous transtracheal jet ventilation: a safe, quick, and temporary way to provide oxygenation and ventilation when conventional methods are unsuccessful. *Chest* 1999;116(6):1689–1694.
11. Moore KL: *Clinically Oriented Anatomy*. Baltimore: Williams & Wilkins, 1992:816–817.
12. Tinker JH, Rogers MC, Covino BJ*: Principles and Practice of Anesthesiology*. St. Louis: Mosby-Year Book, 1993:226–231.
13. Klain M, Keszler H, Brader E: High frequency jet ventilation in CPR. *Crit Care Med* 1981;9(5):421–422.
14. Yealy DM, Plewa MC, Reed JJ, et al: Manual translaryngeal jet ventilation and the risk of aspiration in a canine model. *Ann Emerg Med* 1990;19:1238–1241.
15. Stothert JC, Stout MJ, Lewis LM, et al: High pressure percutaneous transtracheal ventilation: the use of large gauge intravenous-type catheters in the totally obstructed airway. *Am J Emerg Med* 1990;8(3):184–189.
16. Schumacher P, Stotz G, Schneider M, et al: Laryngospasm during transtracheal high frequency jet ventilation. *Anaesthesia* 1992;47:855–856.
17. Jawan B, Cheung HK, Chong ZK, et al: Aspiration and transtracheal jet ventilation with different pressures and depths of chest compression. *Crit Care Med* 1999;27(1):142–145.
18. Jawan B, Lee JH: Aspiration in transtracheal jet ventilation. *Acta Anaesthesiol Scand* 1996;40:684–686.
19. Carl ML, Rhee KJ, Schelegle ES, et al: Effects of graded upper-airway obstruction on pulmonary mechanics during transtracheal jet ventilation in dogs. *Ann Emerg Med* 1994;24(6):1137–1143.
20. Ward KR, Menegazzi JJ, Yealy D, et al: Translaryngeal jet ventilation and end-tidal PCO_2 monitoring during varying degrees of upper airway obstruction. *Ann Emerg Med* 1991;20(11):1193–1197.
21. Greenfield RH: Percutaneous transtracheal ventilation, in Henretig FM, King C, et al (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:239–250.
22. Dover K, Howdieshell TR, Colborn GL: The dimensions and vascular anatomy of the cricothyroid membrane: relevance to emergent surgical airway access. *Clin Anat* 1996;9(5):291–295.
23. Marr JK, Yamamoto LG: Gas flow rates through transtracheal ventilation catheters. *Am J Emerg Med* 2004;22(4):264–266.
24. Hooker EA, Danzl DF, O'Brien D, et al: Percutaneous transtracheal ventilation: resuscitation bags do not provide adequate ventilation. *Prehosp Disast Med* 2006;21(6):431–435.
25. Shaffer R, Hueter L, Preussler NP, et al: Percutaneous transtracheal emergency ventilation with a self made device in an animal model. *Pediatr Anesth* 2007;17(10):972–976.
26. Bould MD, Bearfield P: Techniques for emergency ventilation through a needle cricothyroidotomy. *Anaesthesia* 2008;63:535–539.
27. Scrase I, Woollard M: Needle vs surgical cricothyroidotomy: a short cut to effective ventilation. *Anaesthesia* 2006;61:962–974.

REFERENCES

1. Copass MK, Oreskovich MR, Bladergroen MR, et al: Prehospital cardiopulmonary resuscitation of the critically injured patient. *Am J Surg* 1984;148: 20–26.
2. Erlandson MJ, Clinton JE, Ruiz E, et al: Cricothyrotomy in the emergency department revisited. *J Emerg Med* 1989;7:115–118.
3. Ligier B, Buchman TG, Breslow MJ, et al: The role of anesthetic induction agents and neuromuscular blockade in the endotracheal intubation of trauma victims. *Surg Gynecol Obstet* 1991;173:477–481.
4. Salvino CK, Dries D, Gamelli R, et al: Emergency cricothyroidotomy in trauma victims. *J Trauma* 1993;34:503–505.
5. Hawkins ML, Shapiro MB, Cué JI, et al: Emergency cricothyrotomy: a reassessment. *Am Surg* 1995;61:52–55.
6. Boyd AD, Romita MC, Conlan AA, et al: A clinical evaluation of cricothyroidotomy. *Surg Gynecol Obstet* 1979;149:365–368.
7. Gleeson MJ, Pearson RC, Armistead S, et al: Voice changes following cricothyroidotomy. *J Laryngol Otol* 1984;98:1015–1019.
8. McGill J, Clinton JE, Ruiz E: Cricothyrotomy in the emergency department. *Ann Emerg Med* 1982;11:361–364.
9. Jacobson LE, Gomez GA, Sobieray RJ, et al: Surgical cricothyroidotomy in trauma patients: analysis of its use by paramedics in the field. *J Trauma* 1996;41:15–20.
10. Mulder DS, Marelli D: The 1991 Fraser Gurd lecture: evolution of airway control in the management of injured patients. *J Trauma* 1992;33:856–862.
11. Walls RM: Cricothyroidotomy. *Emerg Med Clin North Am* 1988;6:725–736.
12. American College of Surgeons: *Advanced Trauma Life Support*, 6th ed. Chicago: American College of Surgeons, 1997.
13. Cole RR, Aguilar EA: Cricothyroidotomy versus tracheotomy: an otolaryngologist's perspective. *Laryngoscope* 1988;98:131–135.
14. DeLaurier GA, Hawkins ML, Treat RC, et al: Acute airway management: role of cricothyroidotomy. *Am Surg* 1990;56:12–15.
15. Holst M, Hertegård S, Persson A: Vocal dysfunction following cricothyroidotomy: a prospective study. *Laryngoscope* 1990;100:749–755.
16. Kuriloff DB, Setzen M, Portnoy W, et al: Laryngotracheal injury following cricothyroidotomy. *Laryngoscope* 1989;99:125–130.
17. Oppenheimer RP: Airway…instantly. *J Am Med Assoc* 1974;230(1):76.
18. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2002:87–98.
19. Alonso WA, Pratt LL, Zollinger WK, et al: Complications of laryngotracheal disruption. *Laryngoscope* 1974;84:1276–1290.
20. Simon RR, Brenner BE: Emergency cricothyroidotomy in the patient with massive neck swelling: part 1. Anatomical aspects. *Crit Care Med* 1983;11(2):114–118.
21. Simon RR, Brenner BE, Rosen MA: Emergency cricothyroidotomy in the patient with massive neck swelling: part 2. Clinical aspects. *Crit Care Med* 1983;11(2):119–123.
22. Simon RR: Emergency tracheotomy in patients with massive neck swelling. *Emerg Med Clin North Am* 1989;7(1):95–101.
23. Eisenburger P, Laczika K, List M, et al: Comparison of conventional surgical versus Seldinger technique emergency cricothyroidotomy performed by inexperienced clinicians. *Anesthesiology* 2000;92(3):687–690.
24. Ala-Kokko TI, Kyllönen M, Nuutinen L: Management of upper airway obstruction using a Seldinger minitracheotomy kit. *Acta Anaesth Scand* 1996;40:385–388.
25. Walls RM: Cricothyroidotomy. *Emerg Med Clin North Am* 1988;6(4):725–736.
26. Hill C, Reardon R, Joing S, et al: Cricothyrotomy technique using gum elastic bougie is faster than standard technique: a study of emergency medicine residents and medical students in an animal lab. *Acad Emerg Med* 2010;17(6):666–669.
27. Gaufberg SV, Workman TP: New needle cricothyroidotomy setup. *Am J Emerg Med* 2004;22:37–39.
28. Schaumann N, Lorenz V, Schellongowski P, et al: Evaluation of Seldinger technique emergency cricothyroidotomy versus standard surgical cricothyroidotomy in 200 cadavers. *Anesthesiology* 2005;102:7–11.

REFERENCES

1. De Leyn P, Bedert L, Delcroix M, et al: Tracheotomy: clinical review and guidelines. *Eur J Cardiothroac Surg* 2007;32:412.
2. Goldenbery D, Bhati N: Management of the impaired airway in the adult, in Cummings CW, Flint PW, Haughey BH, et al (eds): *Otolaryngology: Head and Neck Surgery*, 4th ed. Philadelphia: Mosby, 2005:2443.
3. Moore KL: *Clinically Oriented Anatomy*. Baltimore: Williams & Wilkins, 1980:1103.
4. McMinn RMH, Hutchings RT: *Color Atlas of Human Anatomy*. Chicago: Year Book, 1977:33.
5. Morris IR: Functional anatomy of the upper airway. *Emerg Med Clin North Am* 1988;6(4):639.
6. Simon RR, Brenner BE: Emergency cricothyroidotomy in the patient with massive neck swelling: part 1. Anatomical aspects. *Crit Care Med* 1983;11(2):114.
7. Simon RR, Brenner BE, Rosen MA: Emergency cricothyroidotomy in the patient with massive neck swelling: part 2. Clinical aspects. *Crit Care Med* 1983;11(2):119.
8. Simon RR: Emergency tracheotomy in patients with massive neck swelling. *Emerg Med Clin North Am* 1989;7(1):95.
9. Granholm T, Farmer DL: The surgical airway. *Respir Care Clin N Am* 2001;7(1):13.
10. Mathisen DJ: Surgery of the trachea. *Curr Probl Surg* 1998;35(6):455.
11. Piotrowski JJ, Moore EE: Emergency department tracheostomy. *Emerg Med Clin North Am* 1988;6(4):737.
12. Weissler MC: Tracheotomy and intubation, in Bailey BJ (ed) *Head and Neck Surgery-Otolaryngology*. Philadelphia: Lippincott, 1993:711.
13. Wenig BL, Applebaum EL: Indications for and techniques of tracheotomy. *Clin Chest Med* 1991;12(3):545.
14. Lewis RJ: Tracheostomies: indications, timing, and complications. *Clin Chest Med* 1992;13(1):137.
15. Tayal VS: Tracheostomies. *Emerg Med Clin North Am* 1994;12(3):707.
16. Walls RM: Airway management. *Emerg Med Clin North Am* 1993;11(1):53
17. Hemenway WG: The management of severe obstruction of the upper air passages. *Surg Clin North Am* 1961;41(1):201.
18. Taicher S, Givol N, Peleg M, et al: Changing indications for tracheostomy in maxillofacial trauma. *J Oral Maxillofac Surg* 1996;54:292
19. Arjmand EM, Spector JG: Airway control and laryngotracheal stenosis, in Ballenger JJ, Snow JB (ed): *Otorhinolaryngology—Head and Neck Surgery*, 15th ed. Baltimore: Williams & Wilkins, 1996:466.
20. Timmis HH: Tracheostomy: an overview of implications, management and morbidity. *Adv Surg* 1973;7:199.
21. Chew JY, Cantrell RW: Tracheostomy: complications and their management. *Arch Otolaryngol Head Neck Surg* 1972;96:538.
22. Vender JS, Shapiro BA: Essentials of artificial airway management in critical care. *Acute Care* 1987;13:97.
23. Linscott MS, Horton WC: Management of upper airway obstruction. *Otolaryngol Clin North Am* 1979;12(2):351.
24. Bernard AC, Kenady DE: Conventional surgical tracheostomy as the preferred method of airway management. *J Oral Maxillofac Surg* 1999;57:310.
25. Griffen MM, Kearney PA: Percutaneous dilatational tracheostomy as the preferred method of airway management. *J Oral Maxillofac Surg* 1999;57:316.
26. Leinhardt OJ, Mughal M, Bowles B, et al: Appraisal of percutaneous tracheostomy. *Br J Surg* 1992;79:255.
27. Selecky PA: Tracheostomy: a review of present day indications, complications, and care. *Heart Lung* 1974;3(2):272.
28. Alonso WA, Pratt LL, Zollinger WK, et al: Complications of laryngotracheal disruption. *Laryngoscope* 1974;84(8):1276.
29. Butler RM, Moser FH: The padded dash syndrome: blunt trauma to the larynx and trachea. *Laryngoscope* 1968;78(7):1172.
30. McLaughlin J, Iverson KV: Emergency pediatric tracheostomy: a usable technique and model for instruction. *Ann Emerg Med* 1986;15(4):463.
31. Lynn HB, van Heerden JA: Tracheostomy in infants. *Surg Clin North Am* 1973;53(4):945.
32. Hamilton PH, Kang JJ: Emergency airway management. *Mt Sinai J Med* 1997;64(4&5):292.
33. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:32–89.
34. Rossbach MM, Johnson SB, Gomez MA, et al: Management of major tracheobronchial injuries: a 28-year experience. *Ann Thorac Surg* 1998;65(1):182.
35. Francis S, Gaspard DJ, Rogers N, Stain SC: Diagnosis and management of laryngotracheal trauma. *J Natl Med Assoc* 2002;94(1):21.
36. Reece GP, Shatney CH: Blunt injuries of the cervical trachea: review of 51 patients. *South Med J* 1988;81(12):1542.
37. Edwards WH, Morris JA, DeLozier JB, Adkins RB: Airway injuries. The first priority in trauma. *Am Surg* 1987;53(4):192.
38. Altman KW, Waltonen JD, Kern RC: Urgent surgical airway intervention: a 3 year county hospital experience. *Laryngoscope* 2005;115(12): 2101.
39. Weymuller EA: Acute airway management, in Cummings CC, Fredrickson JM, Harker LA, et al (eds): *Otolaryngology—Head and Neck Surgery*, 2nd ed. St Louis: Mosby, 1993:2382.
40. Sheldon GF, Fakhry SM, Messick WJ: Respiratory failure and ventilatory support, in Nyhus LM, Baker RJ, Fischer JE (eds): *Mastery of Surgery*, 3rd ed. Boston: Little, Brown & Co., 1997:99.
41. Moe KS, Schmid S, Stoeckli S, et al: Percutaneous tracheostomy: a comprehensive evaluation. *Ann Otol Rhinol Laryngol* 1999;108:384
42. Bobo ML, McKenna SJ: The current status of percutaneous dilatational tracheostomy: an alternative to open tracheostomy. *J Oral Maxillofac Surg* 1998;56:681
43. Powell DM, Price PD, Forrest LA: Review of percutaneous tracheostomy. *Laryngoscope* 1998;108:170.
44. Berrouschot J, Oeken J, Steiniger L, et al: Perioperative complications of percutaneous dilational tracheostomy. *Laryngoscope* 1997;107:1538.
45. Hill BB, Zweng TN, Maley RH, et al: Percutaneous dilational tracheostomy: report of 356 cases. *J Trauma* 1996;40(8):238.
46. Graham JS, Mulloy RH, Sutherland FR, et al: Percutaneous versus open tracheostomy: a retrospective cohort outcome study. *J Trauma* 1996;42(2):245.
47. Toursarkissian B, Zweng TN, Kearney PA, et al: Percutaneous dilational tracheostomy: report of 141 cases. *Ann Thorac Surg* 1994;57:862.
48. Ciaglia P, Graniero KD: Percutaneous dilational tracheostomy: results and long-term follow-up. *Chest* 1992;101(2):464.
49. Anderson HL, Bartlett RH: Elective tracheotomy for mechanical ventilation by the percutaneous technique. *Clin Chest Med* 1991;12(3):555.
50. Ciaglia P, Firsching R, Syniec C: Elective percutaneous dilational tracheostomy: a new simple bedside procedure; preliminary report. *Chest* 1985;87(6):715.
51. Toye FJ, Weinstein JD: Clinical experience with percutaneous tracheostomy and cricothyroidotomy in 100 patients. *J Trauma* 1986;26(11):1034.
52. Schachner A, Ovil Y, Sidi J, et al: Percutaneous tracheostomy—a new method. *Crit Care Med* 1989;17(10):1052.
53. Ault MJ, Ault B, Ng PK: Percutaneous dilatational tracheostomy for emergent airway access. *J Intensive Care Med* 2003;18(4):222.
54. Muammad JK, Patton DW, Evans RM, Major E: Percutaneous dilatational tracheostomy under ultrasound guidance. *Br J Oral Maxillofac Surg* 1999;37(4):309.
55. Kremer B, Botos-Kremer AI, Eckel HE, Schlondorff G: Indications, complications, and surgical techniques for pediatric tracheostomies—an update. *J Pediatric Surg* 2002;37(11):1156.
56. Kirchner JA: Tracheotomy and its problems. *Surg Clin North Am* 1980; 60(5):1093.

REFERENCES

1. Chew JY, Cantrell RW: Tracheostomy. Complications and their management. *Arch Otolaryngol* 1972;96(6):538–545.
2. Hackeling T, Triana R, Ma OJ, Shockley W: Emergency care of patients with tracheostomies: a 7-year review. *Am J Emerg Med* 1998;16(7):681–685.
3. Jackson, C: Tracheotomy. *Laryngoscope* 1909;19:285–290.
4. Quigley RL: Tracheostomy—an overview. Management and complications. *Br J Clin Pract* 1988;42(10):430–434.
5. Fowler S, Knapp-Spooner C, Donohue D: The ABC's of tracheostomy care. *J Pract Nurs* 1995;45(1):44–48.
6. Clarke L: A critical event in tracheostomy care. *Br J Nurs* 1995;4(12):676, 678–681.
7. Buglass E: Tracheostomy care: tracheal suctioning and humidification. *Br J Nurs* 1999;8(8):500–504.
8. Shim C, Fine N, Fernandez R, Williams MH Jr: Cardiac arrhythmias resulting from tracheal suctioning. *Ann Intern Med* 1969;71(6):1149–1153.
9. Tayal VS: Tracheostomies. *Emerg Med Clin North Am* 1994;12(3):707–727.
10. Mapp CS: Trach care: are you aware of all the dangers? (continuing education credit). *Nursing* 1988;18(7):34–43.
11. Young CS: A review of the adverse effects of airway suction. *Physiotherapy* 1984;70(3):104–106, 108.
12. Weissler MC, Everett Couch M: Tracheotomy and intubation, in Bailey BJ, Johnson JT, Newlands SD (eds): *Head and Neck Surgery—Otolaryngology,* 4th ed. Philadelphia: Lippincott, Williams & Wilkins, 2006:785–803.

REFERENCES

1. Pecora DV: A comparison of securing uncontaminated tracheal secretions for bacterial examination. *J Thorac Surg* 1959;37:653–654.
2. Kalinski RW, Parker RH, Brandt D, et al: Diagnostic usefulness and safety of transcutaneous aspiration. *N Engl J Med* 1967;276(11):604–608.
3. Hahn HH, Beaty HN: Transtracheal aspiration in the evaluation of patients with pneumonia. *Ann Intern Med* 1970;72:183–187.
4. Brooks I: Percutaneous transtracheal aspiration in the diagnosis and treatment of aspiration pneumonia in children. *J Pediatr* 1980;96(6):1000–1004.
5. Lieberman D, Lieberman D, Alroy G, et al: Transtracheal aspiration: reduction in complication rate by using a modified technique. *Isr J Med Sci* 1984;20:641–642.
6. Reis K, Levison M, Kaye D: Transtracheal aspiration in pulmonary infection. *Arch Intern Med* 1974;133:453–458.
7. Pratter MR, Irwin RS: Transtracheal aspiration: guidelines for safety. *Chest* 1979;76(11):518–520.
8. Spencer CD, Beaty HN: Complications of transtracheal aspiration. *N Engl J Med* 1972;286(6):304–305.
9. McCartney RD, McMurty RJ: Complications of transtracheal aspiration. *N Engl J Med* 1973;287:1094.
10. Schillaci RF, Iacavoni VE, Conte RS: Transtracheal aspiration complicated by fatal endotracheal hemorrhage. *N Engl J Med* 1976;295(9):488–490.
11. Bartlett JG: Diagnostic accuracy of transtracheal aspiration bacteriologic studies. *Am Rev Respir Dis* 1977;115:777–782.
12. Holt GR, Davis WE, Ailor EI, et al: Massive airway hemorrhage after transtracheal aspiration. *South Med J* 1978;71(3):325–327.
13. Schmerber J, Deltenre M: A new fatal complication of transtracheal aspiration. *Scand J Respir Dis* 1978;59:232–235.

REFERENCES

1. Mandavia D, Hoffner R, Mahaney K, et al: Bedside echocardiography by emergency physicians. *Ann Emerg Med* 2001;38:377–382.
2. Rozycki GS, Feliciano DV, Ochsner MG, et al: The role of ultrasound in patients with possible penetrating cardiac wounds: a prospective multicenter study. *J Trauma* 1999;46(4):543–551.
3. Tayal VS, Kline JA: Emergency echo to detect pericardial effusion in patients in PEA and near PEA states. *Resuscitation* 2003;59(3):315–318.
4. Blaivas M, Fox J: Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echo. *Acad Emerg Med* 2001;8:616–621.
5. Rose J, Bair A, Mandavia D, Kinser D: The UHP ultrasound protocol: a novel ultrasound approach to the empiric evaluation of the undifferentiated hypotensive patient. *Am J Emerg Med* 2001;19:299–302.
6. Jones AE, Tayal VS, Sullivan DM, Kline JA: Randomized, controlled trial of immediate versus delayed goal directed ultrasound to identify the cause of nontraumatic hypotension in emergency department patients. *Crit Care Med* 2004;32(8):1703–1708.
7. Moore KL, Agur AM: *Essential Clinical Anatomy*, 3rd ed. Baltimore, MD: Lippincott Williams & Wilkins, 2007:83–95.
8. Maisch B, Seferovic PM, Ristic AD, et al: Guidelines on the diagnosis and management of pericardial diseases executive summary; The Task force on the diagnosis and management of pericardial diseases of the European Society of Cardiology. *Eur Heart J* 2004;25(7):587–610.
9. Reddy PS, Curtiss EI, Uretsky BF: Spectrum of hemodynamic changes in cardiac tamponade. *Am J Cardiol* 1990;66(20):1487–1491.
10. American Heart Association: Guidelines for cardiopulmonary resuscitation and emergency cardiac care. Emergency Cardiac Care Committee and Subcommittees, American Heart Association. Part I. Introduction. *JAMA* 1992;268(16):2171–2183.
11. Hunt SA, Baker DW, Chin MH, et al: ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult: executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to revise the 1995 Guidelines for the Evaluation and Management of Heart Failure). *J Am Coll Cardiol* 2001; 38:2101–2113.
12. Rich MW: Heart failure disease management: a critical review. *J Card Fail* 1999;5:64–75.
13. Litwin SE, Grossman W: Diastolic dysfunction as a cause of heart failure. *J Am Coll Cardiol* 1993;22(4 suppl A):49A–55A.
14. Lyon M, Blaivas M, Brannam L: Sonographic measurement of the inferior vena cava as a marker of blood loss. *Am J Emerg Med* 2005;23:45–50.
15. Lipton B: Estimation of central venous pressure by ultrasound of the internal jugular vein. *Am J Emerg Med* 2000;18:432–434.
16. Kircher B, Himelman R, Schiller N: Noninvasive estimation of right atrial pressure from the inspiratory collapse of the IVC. *Am J Cardiol* 1990;66: 493–496.
17. American College of Emergency Physicians: ACEP Emergency Ultrasound Guidelines—2001. *Ann Emerg Med* 2001;38:470–481
18. Kim MK, Tomita T, Kim MJ, et al: Aerobic exercise training reduces epicardial fat in obese men. *J Appl Physiol* 2009;106:5–9
19. Plummer D, Brunnette D, Asinger R, Ruiz E: Emergency department echocardiography improves outcome in penetrating cardiac injury. *Ann Emerg Med* 1992;21:709–712.
20. Tsang TSM, Oh JK, Seward JB: Diagnosis and management of cardiac tamponade in the era of echocardiography. *Clin Card* 1999;22:446–452.
21. Carrillo EH, Schirmer TP, Sideman MJ, Wallace JM, Spain DA: Blunt hemopericardium detected by surgeon-performed sonography. *J Trauma* 2000; 48(5):971–974.
22. Izumi C, Iga K, Kijima T, Himura Y, Gen H, Konishi T: Limitations of electrocardiography in the diagnosis of acute myocardial infarction—comparison with two-dimensional echocardiography. *Int Med* 1995;34:1061–1063.
23. Leibowitz D: Role of echocardiography in the diagnosis and treatment of acute pulmonary thromboembolism. *J Am Soc Echocardiogr* 2001;14(9): 921–926.
24. Constantino TG, Bruno EC, Handly N, Dean AJ: Accuracy of emergency medicine ultrasound in the evaluation of abdominal aortic aneurysm. *J Emerg Med* 2005;29:455–460.
25. Wright J, Jarman R, Connolly J, et al: Echocardiography in the emergency department. *Emerg Med J* 2009; 26:82–86.
26. Beaulieu Y: Bedside echocardiography in the assessment of the critically ill. *Crit Care Med* 2007; 35(suppl):S235–S249.
27. Moore CL, Rose G, Taval V, et al: Determination of left ventricular function by emergency physician echo of hypotensive patients. *Acad Emerg Med* 2002;9(3):186–193.
28. Randazzo MR, Snoey, ER, Levitt MA, Binder K: Accuracy of emergency physician assessment of left ventricular ejection fraction and central venous pressure using echocardiography. *Acad Emerg Med* 2003;10(9):973–977.
29. van Royen N, Jaffe CC, Krumholz HM, et al: Comparison and reproducibility of visual echocardiographic and quantitative radionuclide left ventricular ejection fractions. *Am J Cardiol* 1996;77:843–850.
30. Burnside PR, Brown MD, Kline JA: Systematic review of emergency physician-performed ultrasonograohy for lower extremity deep venous thrombosis. *Acad Emerg Med* 2008;15(6):493–498.
31. Johnson ME, Furlong R, Schrank K. Diagnostic used of emergency department echocardiography in massive pulmonary embolism. *Ann Emerg Med* 1992;21(6):760–763
32. Ribiero VT, Lindmarker P, Juhlin-Dannfelt A, et al: Echocardiography Doppler in pulmonary embolism: right ventricular dysfunction as a predictor of mortality rate. *Am Heart J* 1997;134(3):479–487.
33. Konstantinides S, Geibel A, Heusel G, Heinrich F, Kasper W: Heparin plus Alteplase compared with heparin alone in patients with submassive pulmonary embolism. *N Engl J Med* 347:1143–1150.
34. Lipton B: Estimation of central venous pressure by ultrasound of the internal jugular vein. *Am J Emerg Med* 2000;18:432–434.
35. Ciccone TJ, Grossman SA: Cardiac ultrasound. *Emerg Med Clin North Am* 2004;22(3):621–640.
36. Tsang T, Enriquez-Sarano M, Freeman WK, et al: Consecutive 1127 therapeutic echocardiographically guided percardiocenteses: clinical profile, practice patterns, and outcomes spanning 21 years. *Mayo Clin Proc* 2002;77(5): 429–436.
37. Macedo W, Sturmann K, Kim LM, Kang L: Ultrasonographic guidance of transvenous pacemaker insertion in the emergency department: a report of three cases. *J Emerg Med* 1999;17:491–496.
38. Aguilera PA, Durham BA, riley DA: Emergency transvenous cardiac pacing placement using ultrasound guidance. *Ann Emerg Med* 2000;36(3):224–227.

REFERENCES

1. Sanchez-Diaz CJ, Gonzalez-Carmona VM, Ruesga Zamora E, et al: Electrical cardioversion in the emergency service: experience in 1000 cases. *Arch Inst Cardiol Mex* 1987;57(5):387–394.
2. Mancini GBJ, Goldberger AL: Cardioversion of atrial fibrillation: consideration of embolization, anticoagulation, prophylactic pacemaker, and long term success. *Am Heart J* 1982;104(3):617–621.
3. Lanzarotti CJ, Olshansky B: Thromboembolism in chronic atrial flutter: is the risk underestimated? *J Am Coll Cardiol* 1997;30(5):1506–1511.
4. Arnold AZ, Mick MJ, Mazurek RP, et al: Role of prophylactic anticoagulation for direct current cardioversion in patients with atrial fibrillation or atrial flutter. *J Am Coll Cardiol* 1997;19(4): 851–855.
5. Kleiger R, Lown B: Cardioversion and digitalis. II. Clinical studies. *Circulation* 1966;33:878–887.
6. Foltin G: Basic life support, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Illustrated Textbook of Pediatric Emergency and Critical Care Procedures.* St. Louis: Mosby, 1997:288–291.
7. Moulton C, Dreyer C, Dodds D, et al: Placement of electrodes for defibrillation—a review of the evidence. *Eur J Emerg Med* 2000;7(2):135–143.
8. Dalzell GW, Anderson J, Adgey AAJ: Factors determining success and energy requirements for cardioversion of atrial fibrillation. *Q J Med* 1990; 76(281):903–913.
9. Aberg H, Cullhed I: Direct current countershock complications. *Acta Med Scand* 1968;183:415–421.
10. Ross EM: Cardioversion causing ventricular fibrillation. *Arch Intern Med* 1964;114: 811–813.
11. Ebrahimi R, Rubin SA: Electrical cardioversion resulting in death from synchronization failure. *Am J Cardiol* 1994;74:100–102.
12. Cantor A, Stein B, Keynan A: "Intermittent" and transient ST-segment elevation following direct current cardioversion. *Int J Cardiol* 1988;20:403–405.
13. Kirchoff P, Eckardt L, Loh P, et al: Anterior–posterior versus anterior–lateral electrode positions for external cardioversion of atrial fibrillation: a randomized trial. *Lancet* 2002;360:1275–1279.

REFERENCES

1. Zoll PM: Resuscitation of the heart in ventricular standstill by external electric stimulation. *N Engl J Med* 1952;247:768–771.
2. Zoll PM, Linenthal AJ, Norman LR, et al: Treatment of unexpected cardiac arrest by external electric stimulation of the heart. *N Engl J Med* 1956; 254:541–546.
3. Hedges JR, Syverud SA, Dalsey WC: Developments in transcutaneous and transthoracic pacing during bradyasystolic arrest. *Ann Emerg Med* 1984;13:822–827.
4. American Heart Association: Standards and guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). *JAMA* 1980; 244:453–509.
5. International Liaison Committee on Resuscitation: 2005 International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Part 4: advanced life support. *Resuscitation* 2005;67:213–247.
6. Hedges JR, Syverud SA, Dalsey WC, et al: Prehospital trial of emergency transcutaneous cardiac pacing. *Circulation* 1987;76:1337–1343.
7. Cummins RO, Graves JR, Larsen MP, et al: Out-of-hospital transcutaneous pacing by emergency medical technicians in patients with asystolic cardiac arrest. *N Engl J Med* 1993;328:1377–1382.
8. Bocka JJ: External transcutaneous pacemakers. *Ann Emerg Med* 1989; 18:1280–1286.
9. Falk RH, Zoll PM, Zoll RH: Safety and efficacy of noninvasive cardiac pacing. A preliminary report. *N Engl J Med* 1983;309:1166–1168.
10. Zoll PM, Zoll RH, Falk RH, et al: External noninvasive temporary cardiac pacing: clinical trials. *Circulation* 1985;71:937–944.
11. Chapman PD, Stratbucker RA, Schlageter DP, et al: Efficacy and safety of transcutaneous low-impedance cardiac pacing in human volunteers using conventional polymeric defibrillation pads. *Ann Emerg Med* 1992;21: 1451–1453.
12. Altamura G, Bianconi L, Boccadamo R, Pistolese M: Treatment of ventricular and supraventricular tachyarrhythmias by transcutaneous cardiac pacing. *Pacing Clin Electrophysiol* 1989;12:331–338.
13. Altamura G, Bianconi L, Toscano S, et al: Transcutaneous cardiac pacing for termination of tachyarrhythmias. *Pacing Clin Electrophysiol* 1990; 13:2026–2030.
14. Grubb BP, Temesy-Armos P, Hahn H, et al: The use of external, noninvasive pacing for the termination of ventricular tachycardia in the emergency department setting. *Ann Emerg Med* 1992;21:174–176.
15. Grubb BP, Samoil D, Temesy-Armos P, et al: The use of external, noninvasive pacing for the termination of supraventricular tachycardia in the emergency department setting. *Ann Emerg Med* 1993;22:714–717.
16. Best R, Syverud S, Nowak RM: Trauma and hypothermia. *Am J Emerg Med* 1985;3:48–55.
17. Kolodzik PW, Mullin MJ, Krohmer JR, et al: The effects of antishock trouser inflation during hypothermic cardiovascular depression in the canine model. *Am J Emerg Med* 1988;6:584–590.
18. Danzl DF: Accidental hypothermia, in Rosen P, Barkin R (eds): *Emergency Medicine: Concepts and Clinical Practice*. St. Louis: Mosby, 1998:963–986.
19. Ho JD, Heegaard WG, Brunette DD: Successful transcutaneous pacing in 2 severely hypothermic patients. *Ann Emerg Med* 2007;49:678–681.
20. Dalsey WC, Syverud SA, Hedges JR: Emergency department use of transcutaneous pacing for cardiac arrests. *Crit Care Med* 1985;13:399–401.
21. Rein AJ, Cohen E, Weiss A, et al: Noninvasive external pacing in the newborn. *Pediatr Cardiol* 1999;20:290–292.
22. Pride HB, McKinley DF: Third-degree burns from the use of an external cardiac pacing device. *Crit Care Med* 1990;18:572–573.
23. Beland MJ, Hesslein PS, Finlay CD, et al: Noninvasive transcutaneous cardiac pacing in children. *Pacing Clin Electrophysiol* 1987;10:1262–1270.
24. Quan L, Graves JR, Kinder DR, et al: Transcutaneous cardiac pacing in the treatment of out-of-hospital pediatric cardiac arrests. *Ann Emerg Med* 1992;21:905–909.
25. Tam MM: Ultrasound for primary confirmation of mechanical capture in emergency transcutaneous pacing. *Emerg Med (Fremantle)* 2003;15: 192–194.
26. Madsen JK, Pedersen F, Grande P, Meibom J: Normal myocardial enzymes and normal echocardiographic findings during noninvasive transcutaneous pacing. *Pacing Clin Electrophysiol* 1988;11:1188–1193.
27. Syverud SA, Dalsey WC, Hedges JR, et al: Transcutaneous cardiac pacing: determination of myocardial injury in a canine model. *Ann Emerg Med* 1983;12:745–748.
28. Falk RH, Ngai STA, Kumanki DJ, et al: Cardiac activation during external cardiac pacing. *PACE Pacing Clin Electrophysiol* 1987;10:503–506.
29. Klein LS, Miles WM, Heger JJ, et al: Transcutaneous pacing: patient tolerance, strength–interval relations and feasibility for programmed electrical stimulation. *Am J Cardiol* 1988;62:1126–1129.
30. Kelly JS, Royster RL, Argent KC, et al: Efficacy of noninvasive transcutaneous cardiac pacing in patients undergoing cardiac surgery. *Anesthesia* 1989;70:747–751.
31. Ettin D, Cook T: Using ultrasound to determine external pacer capture. *J Emerg Med* 1999;17(6):1007–1009.
32. Holger JS, Lamon RP, Minnegan HJ, et al: Use of ultrasound to determine ventricular capture in transcutaneous pacing. *Am J Emerg Med* 2003; 21(3):227–229.

REFERENCES

1. Roberts JR, Greenberg MI, Crisanti JW, et al: Successful use of emergency transthoracic pacing in bradyasystolic cardiac arrest. *Ann Emerg Med* 1984; 13:277–283.
2. White JD: Transthoracic pacing in cardiac asystole. *Am J Emerg Med* 1983; 1:264–266.
3. Myerberg RJ, Conde CA, Sung RJ, et al: Clinical, electrophysiologic and hemodynamic profile of patient resuscitated from pre-hospital cardiac arrest. *Am J Med* 1980;68:568–576.
4. Walsh WH: A practical treatise on the diseases of the heart and great vessels. Philadelphia: Blanchard & Lea, 1962:155.
5. Hyman AS: Resuscitation of the stopped heart by intracardial therapy. *Arch Intern Med*: 1932;50:283–305.
6. Zoll PM: Resuscitation of the heart in ventricular standstill by external electric stimulation. *N Engl J Med* 1952;247:768–771.
7. Shafiroff BGP, Linder J: Effects of external electrical pacemaker stimuli on the human heart. *J Thorac Surg* 1957;33:544–550.
8. Thevenet A, Hodges PC, Lillehei CW: The use of myocardial electrode inserted percutaneously for control of complete A-V block by an artificial pacemaker. *Dis Chest* 1958;34:621–631.
9. Furman S, Robinson G: The use of an intracardiac pacemaker in the correction of total heart block. *Surgery Forum* 1958;9:245–252.
10. Zoll PM, Zoll RH, Belgard AH: External non-invasive stimulation of the heart: *Crit Care Med*: 1981;9:393–394.
11. Preston TA: The use of pacemaker for the treatment of acute arrhythmias. *Heart Lung* 1977;6(2):249–255.
12. Chan L, Reid C, Taylor B: Effect of three emergency pacing modalities on cardiac output in cardiac arrest due to ventricular asystole. *Resuscitation* 2002;52:117–119.
13. Roberts JR, Greenberg MI: Emergency transthoracic pacemaker. *Ann Emerg Med* 1981;10:600–612.
14. White JD, Brown CG: Immediate transthoracic pacing for cardiac asystole in an emergency department setting. *Am J Emerg Med* 1985;3:125–128.
15. Bellet S, Muller OF, DeLeon AC, et al: The use of an internal pacemaker in the treatment of cardiac arrest and slow heart rates. *Arch Intern Med* 1960; 105:361–371.
16. Cummins RO, Graves JR, Larsen MP, et al: Out-of-hospital transcutaneous pacing by emergency medical technicians in patients with asystolic cardiac arrest. *N Engl J Med* 1993;329(17):1277.
17. Tintinalli JE, White BC: Transthoracic pacing during CPR. *Ann Emerg Med* 1981;10:113–116.
18. Brown CG, Gurley HT, Hutchins GM, et al: Injuries associated with percutaneous placement of transthoracic pacemaker. *Ann Emerg Med* 1985; 14:223–228.
19. Le K, Goldschlager N: Temporary cardiac pacing in the intensive care unit. *J Intens Care Unit* 1996;11(2):57–78.
20. Raizes G, Wagner G, Hackel D: Instantaneous nonarrhythmic cardiac death in acute myocardial infarction. *Am J Cardiol* 1977;39:1–6.
21. Gottlieb R, Chung EK: Techniques of temporary pacing, in Chung EK (ed): *Artificial Cardiac Pacing—A Practical Approach.* Baltimore: Williams & Wilkins, 1978:150–160.
22. Daicel GR, Miscia VF: Shock, pacemakers and surgical therapy, in Eliot RS (ed): *Acute Cardiac Emergency.* Mount Kisco, NY: Futura, 1972:253.
23. Dreifus LS, Chaudry KR, Otawa S: Temporary and emergency cardiac pacing, in Naclerio E (ed): *Cardiac Pacing.* Philadelphia: Lea & Febiger, 1979:133–143.

REFERENCES

1. Vukmir RB: Emergency cardiac pacing. *Am J Emerg Med* 1993;11(2):166–176.
2. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Williams & Wilkins, 2002:492–497.
3. Ali F, Mohamad T, Elder M, et al: Left ventricular "temporary pacemaker wire": a viable option in emergency situation. *Am J Emerg Med* 2009;27: 374.e1–374.e2.
4. Dwivedi SK, Saran RK, Rathi AK, et al: Left ventricular pacing through coronary sinus tributaries: initial experience. *Indian Heart* 2001;53:71–73.
5. Chen H, Sola JE, Lillemoe KD, et al: *Manual of Common Bedside Surgical Procedures*. Baltimore: Williams & Wilkins, 1996:86–88.
6. Sodeck GH, Domanovits H, Meron G, et al: Compromising bradycardia: management in the emergency department. *Resuscitation* 2007;73(1):96–102.
7. Goldberger J, Kruse J, Ehlert FA, et al: Temporary transvenous pacemaker placement: what criteria constitute an adequate pacing site? *Am Heart J* 1993;126(2):488–493.
8. Laczika K, Thalhammer F, Locker G, et al: Safe and efficient emergency transvenous ventricular pacing via the right supraclavicular route. *Anesth Analg* 2000;90:784–789.
9. Aguilera PA, Durham BA, Riley DA: Emergency transvenous cardiac pacing placement using ultrasound guidance. *Ann Emerg Med* 2000;36(3): 224–227.
10. Krishna CS, Babu VR, Mohan KR, et al: Right ventricular perforation induced by trans venous pacing lead. *Asian Cardiovasc Thorac Ann* 2008;16: 183–184.
11. Trigano JA, Paganelli F, Ricard P, et al: Heart perforation following implantation of a cardiac pacemaker. *Presse Med* 1999;28(16):836–840.
12. Murphy JJ: Current practice and complications of temporary transvenous cardiac pacing. *Br Med J* 1996;312(7039):1134–1149.
13. Vanhercke D, Heytens W, Verloove H: Eight years of left ventricle pacing due to inadvertent malposition of a transvenous pacemaker lead in the left ventricle. *Eur J Echocardiogr* 2008;9(6):825–827.
14. Campo I, Garfield GJ, Escher DJW, et al: Complications of pacing by pervenous subclavian semifloating electrodes including extraluminal insertions. *Am J Cardiol* 1970;26:627–634.
15. Foote GA, Schabel SI, Hodges M: Pulmonary complications of the flow-directed, balloon-tipped catheter. *N Engl J Med* 1974;290:927–931.
16. Innasimuthu AL, Rao GK, Wong P: Persistent left-sided superior vena cava—a pacing challenge. *Acute Cardiac Care* 2007;9:252.

REFERENCES

1. Moses HW, Moulton KP, Miller BD, et al: *A Practical Guide to Cardiac Pacing*, 4th ed. Boston: Little, Brown, and Co., 2000.
2. Griffin JC, Schuenemeyer TD, Hess KR, et al: Pacemaker follow-up: its role in the detection and correction of pacemaker system malfunction. *PACE Pacing Clin Electrophysiol* 1986;9:387–391.
3. Hayes DL, Vlietstra RE: Pacemaker malfunction. *Ann Intern Med* 1993; 119(8):828–835.
4. Phibbs B, Marriott HJL: Complication of permanent transvenous pacing. *N Engl J Med* 1985;312(22):1428–1432.
5. Schuller H, Brandt J: The pacemaker syndrome: old and new causes. *Clin Cardiol* 1991;14:336–340.
6. Hayes DL, Zipes DP: Cardiac pacemakers and cardioverter-defibrillators, in Braunwald E, Zipes DP, Libby P (eds): *Heart Disease: A Textbook of Cardiovascular Medicine.* Philadelphia: Saunders, 2001:775– 802.
7. Gregoratos G, Cheitlin MD, Conill A, et al: ACC/AHA guidelines for implantation of cardiac pacemakers and antiarrhythmia devices: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Pacemaker Implantation). *J Am Coll Cardiol* 1998;31(5):1175–1209.
8. Epstein AE, DiMarco JP, Ellenbogen KA, et al: ACC/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 guideline update for implantation of cardiac pacemakers and antiarrhythmia devices) developed in collaboration with the American Association for Thoracic Surgery and Society of Thoracic Surgeons. *J Am Coll Cardiol* 2008; 51(21):e1–e62.
9. Scher D: Troubleshooting pacemakers and implantable cardioverterdefibrillators. *Curr Opin Cardiol* 2004;19(1):36–46.
10. McMullan J, Valento M, Attari M, et al: Care of the pacemaker/implantable cardioverter defibrillator patient in the ED. *Am J Emerg Med* 2007; 25(7):812–822.
11. Cardall TY, Brady WJ, Chan TC, et al: Permanent cardiac pacemakers: issues relevant to the emergency physician, part II. *J Emerg Med* 1999;17(4): 697–709.
12. Sobel RM, Donaldson PR, Dhruva N: Pacemaker-mediated tachycardia: management by pacemaker interrogation/reprogramming in the ED. *Am J Emerg Med* 2002;20(4):336–339.
13. Griffin J, Smithline H, Cook J: Runaway pacemaker: a case report and review. *J Emerg Med* 2000;19(2):177–181.
14. Cardall TY, Chan TC, Brady WJ, et al: Permanent cardiac pacemakers: issues relevant to the emergency physician, Part I. *J Emerg Med* 1999;17(3): 479–489.

REFERENCES

1. Curtis AB, Cannom DS, Bigger JT Jr, et al: Baseline characteristics of patients in the coronary artery bypass graft (CABG) Patch Trial 1. *Am Heart J* 1997; 134(5 Pt 1):787–798.
2. Goldenberg I, Moss AJ, McNitt S, et al: Time dependence of defibrillator benefit after coronary revascularization in the multicenter automatic defibrillator implantation trial (MADIT)-II. *J Am Coll Cardiol* 2006;47(9): 1811–1817.
3. Fisher JD, Buxton AE, Lee KL, et al: Designation and distribution of events in the multicenter unsustained tachycardia trial (MUSTT). *Am J Cardiol* 2007;100(1):76–83.
4. Hohnloser SH, Connolly SJ, Kuck KH, et al: The defibrillator in acute myocardial infarction trial (DINAMIT): study protocol. *Am Heart J* 2000; 140(5):735–739.
5. Strickberger SA, Hummel JD, Bartlett TG, et al: Amiodarone versus implantable cardioverter-defibrillator: randomized trial in patients with nonischemic dilated cardiomyopathy and asymptomatic nonsustained ventricular tachycardia—AMIOVIRT. *J Am Coll Cardiol* 2003;41(10):1707–1712.
6. Anand IS, Carson P, Galle E, et al: Cardiac resynchronization therapy reduces the risk of hospitalizations in patients with advanced heart failure: results from the comparison of medical therapy, pacing and defibrillation in heart failure (COMPANION) trial. *Circulation* 2009;119(7):969–977.
7. Gula LJ, Klein GJ, Hellkamp AS, et al: Ejection fraction assessment and survival: an analysis of the sudden cardiac death in heart failure trial (SCD-HeFT). *Am Heart J* 2008;156(6):1196–1200.
8. Mirowski M: The automatic implantable cardioverter-defibrillator: an overview. *J Am Coll Cardiol* 1985;6:461–466.
9. Mahomed Y: Surgical techniques for implantation of the implantable cardioverter defibrillator, in Zipes DP, Jalife J (eds): *Cardiac Electrophysiology: From Cell to Bedside*, 2nd ed. Philadelphia: Saunders, 1995:1412–1425.
10. Raviele A, Gasparini G (for the Italian Endotak Investigator Group): Italian multicenter clinical experience with endocardial defibrillation: acute and long-term results in 307 patients. *PACE Pacing Clin Electrophysiol* 1995;18(2): 599–608.
11. Shahian DM, Williamsom WA, Svensson LG, et al: Transvenous versus transthoracic cardioverter defibrillator implantation: a comparative analysis of morbidity, mortality and survival. *J Thorac Cardiovasc Surg* 1995;109: 1066–1074.
12. Nierbauer MJ, Wilkoff BL: Implantable cardioverter defibrillators: technical aspects, in Zipes DP, Jalife J (eds): *Cardiac Electrophysiology:* From Cell to Bedside, 3rd ed. Philadelphia: Saunders, 2000:949–957.
13. Ng E, Stafford PJ, Ng GA: Arrhythmia detection by patient and autoactivation in implantable loop recorders. *J Interv Card Electrophysiol* 2004; 10(2):147–152.
14. Siaplaouras S, Buob A, Neuberger HR, et al: Remote detection of incessant slow VT with an ICD capable of home monitoring. *Europace* 2006; 8(7):512–54.
15. Wathen MS, DeGroot PJ, Sweeney MO, et al: Prospective randomized multicenter trial of empirical antitachycardia pacing versus shocks for spontaneous rapid ventricular tachycardia in patients with implantable cardioverter-defibrillators: pacing fast ventricular tachycardia reduces shock therapies (PainFREE Rx II) trial results. *Circulation* 2004;110:2591–2596.
16. Wilbur SL, Marchlinski FE: Implantable cardioverter-defibrillator follow-up. *Cardiol Rev* 1999;7:176–190.
17. Nisam S, Fogoros RN: Troubleshooting of patients with implantable cardioverter-defibrillators, in Singer I (ed): *Interventional Electrophysiology.* Baltimore: Williams & Wilkins, 1997:793–823.
18. Stevenson WG, Chaitman BR, Ellenbogen KA, et al: Clinical assessment and management of patients with implanted cardioverter-defibrillators presenting to non-electrophysiologists. *Circulation* 2004;110:3866–3869.
19. Gradaus R, Bocker D, Dorszewski A, et al: Fractally coated defibrillation electrodes is an improvement in defibrillation threshold possible? *Europace* 2000;2:154–159.
20. Becker R, Ruf-Richter J, Senges-Becker JC, et al: Patient alert in implantable cardioverter-defibrillators: toy or tool? *J Am Coll Cardiol* 2004;44: 95–98.
21. Dorwarth U, Frey B, Dugas M, et al: Transvenous defibrillation leads: high incidence of failure during long-term follow-up. *J Cardiovasc Electrophysiol* 2003;14:38–43.
22. Vollmann D, Erdogan A, Himmrich E, et al: Patient alert to detect ICD lead failure: efficacy, limitations, and implications for future algorithms. *Europace* 2006;8(5):371–376.
23. Gunderson BD, Patel AS, Bounds CA, et al: An algorithm to predict implantable cardioverter-defibrillator lead failure. *J Am Coll Cardiol* 2004;44: 1898–1902.
24. Maisel WH, Moynahan M, Zuckerman BD, et al: Pacemaker and ICD generator malfunctions analysis of food and drug administration annual reports. *JAMA* 2006;295:1901–1906.
25. Kowey PR: The calamity of cardioversion of conscious patients. *Am J Cardiol* 1988;61:1106–1107.
26. Porres JM, Laviñeta E, Reviejo C, et al: Application of a clinical magnet over implantable cardioverter defibrillators: is it safe and useful? *Pacing Clin Electrophysiol* 2008;31(12):1641–1644.
27. Pinski SL, Trohman RG: Implantable cardioverter-defibrillators: implications for the nonelectrophysiologist. *Ann Intern Med* 1996;122:770–777.
28. Exner DV, Pinski SL, Wyse DG, et al: Electrical storm presages nonsudden death: the antiarrhythmics versus implantable defibrillators (AVID) trial. *Circulation* 2001;103:2066–2071.
29. Schron EB, Exner DV, Yao Q, et al: Quality of life in the antiarrhythmics versus implantable defibrillators trial: impact of therapy and influence of adverse symptoms and defibrillator shocks. *Circulation* 2002;105:589–594.
30. Grimm W, Flores BF, Marchlinski FE: Electrocardiographically documented unnecessary, spontaneous shocks in 241 patients with implantable cardioverter-defibrillators. *PACE Pacing Clin Electrophysiol* 1992;15:1667–1673.
31. Hook BG, Marchlinski FE: The value of ventricular electrogram recording in the diagnosis of arrhythmias precipitating electrical device therapy. *J Am Coll Cardiol* 1991;17:985–990.
32. Dorian P, Cass D: An overview of the management of electric storm. *Can J Cardiol* 1997;13:13A–17A.
33. Israel CW, Barold SS: Electrical storm in patients with an implanted defibrillator: a matter of definition. *Ann Noninvasive Electrocardiol* 2007;12(4):375–382.
34. Credner SC, Klingenheben T, Mauss O, et al: Electrical storm in patients with tranvenous implantable cardioverter defibrillators. *J Am Coll Cardiol* 1998; 32:1909–1915.
35. Chapman PD, Veseth-Rogers JL, Duquette SE: The implantable defibrillator and the emergency physician. *Ann Emerg Med* 1989;18:579–585.
36. White RD, Feldman RA: The automatic internal cardioverter defibrillator (AICD): description and guidelines for interaction during cardiac arrest. *Ann Emerg Med* 1989;18:586–588.
37. Pinski SL, Arnold AZ, Mick M, et al: Safety of external cardioversion/defibrillation in patients with internal defibrillation patches and no device. *Pacing Clin Electrophysiol* 1991;14:7–12.
38. Dimarco JP: Implantable cardioverter-defibrillators. *New Engl J Med* 2003; 349:1836–1847.
39. Baddour LM, Bettmann MA, Bolger AF, et al: Nonvalvular cardiovascular device-related infections. *Circulation* 2003;108:2015–2031.
40. Lai KK, Fontecchio SA: Infections associated with implantable cardioverter-defibrillators placed transvenously and via thoracotomies: epidemiology, infection control, and management. *Clin Infect Dis* 1998;27:265–269.
41. Smith PN, Vidaillet HJ, Hayes JJ: Infections with non-thoracotomy implantable cardioverter-defibrillators: can these be prevented? *PACE Pacing Clin Electrophysiol* 1998;21:42–55.
42. Gold MR, Peters RW, Johnson JW: Complications associated with pectoral implantation of cardioverter defibrillators. *PACE Pacing Clin Electrophysiol* 1997;20:208–211.
43. Karchmer AW: Infections of prosthetic valves and intravascular devices, in Mandell GL, Bennett JE, Dolin R (eds): *Principles and Practice of Infectious Diseases,* 5th ed. New York: Churchill Livingstone, 2000:903–917.
44. O'Nunain S, Perez I, Roelke M, et al: The treatment of patients with infected implantable cardioverter-defibrillator systems. *J Thorac Cardiovasc Surg* 1997;113:121–129.

45. Remmelts HHF, Meine M, Loh P, et al: Infection after ICD implantation: operating room versus cardiac catheterisation laboratory. *Neth Heart J* 2009; 17(3): 95–100.
46. Pinski SL, Trohman RG: Interference with cardiac pacing. *Cardiol Clin* 2000;18(1):219–239.
47. Binggeli C, Rickli H, Ammann P, et al: Induction ovens and electromagnetic interference: what is the risk for patients with implantable cardioverter defibrillators? *J Cardiovasc Electrophysiol* 2005;16(4):399–401.
48. Bardy GH, Smith WM, Hood MA, et al: An entirely subcutaneous implantable cardioverter-defibrillator. *N Engl J Med* 2010;363:36–44.
49. Juan EA, Pollack M: Phantom shocks in patients with an implantable cardioverter defibrillator. *J Emerg Med* 2010;38(1):22–24.

REFERENCES

1. Celsus AC: *De Medicina*, Vol II (Spencer WG, trans). Cambridge, MA: Harvard University Press; London: Heinemann, 1938.
2. De Vigo G: *The Most Excellent Workes of Chirurgery* (Traheron B, trans). London: E Whytchurch, 1550.
3. Riolanus J: *A Sure Guide: Or the Best and Nearest Way to Physick and Chyrurgery* (Culpepper N, trans). London: P Cole, 1657.
4. Jarcho S: Thomas Jowett on pericardiocentesis (1827). *Am J Cardiol* 1973; 31: 273–276.
5. Larrey El: New surgical procedure to open the pericardium in the case of fluid in the cavity. *Clin Chir* 1829;36:303–307.
6. Hill LL: A report of a case of successful suturing of the heart, and a table of thirty-seven other cases of suturing by different operators with various terminations, and the conclusions drawn. *Med Rec* 1902;62:846–848.
7. Bigger IA: Heart wounds: a report of seventeen patients operated upon in the Medical College of Virginia hospitals and a discussion of the treatment and prognosis. *J Thorac Cardiovasc Surg* 1939;8:239–253.
8. Blalock A, Ravitch MM: A consideration of the non-operative treatment of cardiac tamponade resulting from wound of the heart. *Surgery* 1943; 14:157–162.
9. Symbas PN: *Cardiothoracic Trauma.* Philadelphia: Saunders, 1989:16–55.
10. Chong HH, Plotnick GD: Pericardial effusion and tamponade: evaluation, imaging modalities, and management. *Comp Ther* 1995;21(7):378–385.
11. Thourani VH, Feliciano DV, Rozycki G, et al: Penetrating cardiac trauma at an urban trauma center: a 22 year perspective. *Am Surg* 1999;65(9):811–818.
12. Lee KS, Marwick T: Hemopericardium and cardiac tamponade associated with warfarin therapy. *Cleve Clin J Med* 1993;60(4):336–338.
13. Kwan T, Karve MM, Emerole O: Cardiac tamponade in patients infected with HIV. *Chest* 1993;104(4):1059–1062.
14. Ball JB, Morrison WL: Cardiac tamponade. *Postgrad Med J* 1997;73(857): 141–145.
15. Krikorian JG, Nancock EW: Pericardiocentesis. *Am J Med* 1978;65:808–814.
16. Wong B, Murphy J, Chang CJ, et al: The risk of pericardiocentesis. *Am J Cardiol* 1979;44:1110–1114.
17. Guberman BA, Fowler NO, Engel PJ, et al: Cardiac tamponade in medical patients. *Circulation* 1981;64:633–640.
18. Callahan JA, Sweward JB, Nishimura RA, et al: Two-dimensional echocardiography guided pericardiocentesis: experience in 117 consecutive cases. *Am J Cardiol* 1985;55:476–479.
19. Sauer PE, Murdock CE: Immediate surgery for cardiac and great vessel wounds. *Arch Surg* 1967;95(7):7–11.
20. John RM, Treasure T: How to aspirate the pericardium. *Br J Hosp Med* 1990; 43(3):221–223.
21. Reddy PS, Curtiss EI, Uretsky BF: Spectrum of hemodynamic changes in cardiac tamponade. *Am J Cardiol* 1990;66:1487–1491.
22. Plummer D, Brunette D, Asinger R, et al: Emergency department echocardiography improves outcome in penetrating cardiac injury. *Ann Emerg Med* 1992;21(6):709–712.
23. Jimenez E, Martin M, Krukencamp I, et al: Subxiphoid pericardotomy versus echocardiography: a prospective evaluation of the diagnosis of occult penetrating cardiac injury. *Surgery* 1990;108:676–680.
24. Rozycki GS, Feleciano DV, Schmidt JA, et al: The role of surgeon performed ultrasound in patients with possible cardiac wounds. *Ann Surg* 1996; 223:737–746.
25. Rozycki GS, Feliciano DV, Ochsner MG, et al: The role of ultrasound in patients with possible penetrating cardiac wounds: a prospective multicenter study. *J Trauma* 1999;46(4):543–552.
26. Rozycki GS, Ballard RB, Feliciano DV, et al: Surgeon-performed ultrasound for the assessment of truncal injuries: lessons learned from 1540 patients. *Ann Surg* 1998;228(4):557–567.
27. Mandavia DP, Hoffner RJ, Mahaney K, et al: Bedside echocardiography by emergency physicians. *Ann Emerg Med* 2001;38(4):377–382.
28. American College of Surgeons: *Advanced Trauma Life Support for Doctors*, 6th ed. Chicago: American College of Surgeons, 1997.
29. Titus AA, Schinco MA, Scannell G, et al: Demystifying traumatic pericardial tamponade: the effect of expeditious ultrasound. http://www.aast.org/99abstracts/99abs096.html, 1999
30. Kilpatrick ZM, Chapman CB: On pericardiocentesis. *Am J Cardiol* 1965; 16(5):722–728.
31. Callahan JA, Seward JB, Tajik AJ: Cardiac tamponade: pericardiocentesis directed by two-dimensional echocardiography. *Mayo Clin Proc* 1985; 60(5):344–347.
32. Fagan SM, Chan KL: Pericardiocentesis: blind no more! *Chest* 1999; 116(2):275–276.
33. Tsang TS, Enriquez-Sarano M, Freeman WK, et al: Consecutive 1127 therapeutic echocardiographically guided pericardiocenteses: clinical profile, practice patterns, and outcomes spanning 21 years. *Mayo Clin Proc* 2002; 77(5):429–436.
34. Shon DW, Shin GJ, Oh JK, et al: Role of transesophageal echocardiography in hemodynamically unstable patients. *Mayo Clin Proc* 1995;70:925–931.
35. Seferovic PM, Ristic AD, Imazio M, et al: Management strategies in pericardial emergencies. *Herz* 2006;31(9):891–900.
36. Wilson RF: Thoracic trauma, in Tintinalli JE, Krome RL, Ruiz E (eds): *Emergency Medicine: A Comprehensive Study Guide*, 4th ed. New York: McGraw-Hill, 1996:1156–1182.
37. Jouriles NJ: Pericardial and myocardial disease, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 4th ed. St Louis: Mosby, 1998:1716–1744.
38. Kirkland LL, Taylor RW: Pericardiocentesis. *Crit Care Clin* 1992;8(4): 699–712.
39. Tibbles CD, Porcaro W: Procedural applications of ultrasound. *Emerg Med Clin North Am* 2004;22:797–815.
40. Tsang TS, Freeman WK, Barnes ME, et al: Rescue echocardiographically guided pericardiocentesis for cardiac perforation complicating catheter-based procedures. The Mayo clinic experience. *J Am Coll Cardiol* 1998;32(5): 1345–1350.
41. Tsang SM, Freeman WK, Sinak LJ, et al: Echocardiographically guided pericardiocentesis: evolution and state-of-the-art technique. *Mayo Clin Proc* 1998;73:647–652.
42. Clarke DP, Cosgrove DO: Real-time ultrasound scanning in the planning and guidance of pericardiocentesis. *Clin Radiol* 1987;38:119–122.
43. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Philadelphia: Lippincott, Williams & Wilkins, 2002.
44. Salem K, Mulji A, Lonn E: Echocardiographically guided pericardiocentesis—the gold standard for the management of pericardial effusion and cardiac tamponade. *Can J Cardiol* 1999;15(11):1251–1255.
45. Armstrong G, Cardon L, Vilkomerson D, et al: Localization of needle tip with color Doppler during pericardiocentesis: in vitro validation and initial clinical application. *J Am Soc Echocardiogr* 2001;14:29–37.
46. Vayre F, Lardoux H, Pezzano M, et al: Subxiphoid pericardiocentesis guided by contrast two-dimensional echocardiography in cardiac tamponade: experience of 110 consecutive patients. *Eur J Echocardiography* 2000;1:66–71.
47. Kurimoto Y, Hase M, Nara S, et al: Blind subxiphoid pericardiotomy for cardiac tamponade because of acute hemopericardium. *J Trauma* 2006;61: 582–585.
48. Brown C, Gurley H, Hutchins G, et al: Injuries associated with percutaneous placement of transthoracic pacemakers. *Ann Emerg Med* 1985;14(3): 223–228.

REFERENCES

1. Davison R, Barresi V, Parker M, et al: Intracardiac injections during cardiopulmonary resuscitation. *JAMA* 1980;244:1110–1111.
2. Spivey WH, Lathers CM, Malone DR, et al: Comparison of intraosseous, central, and peripheral routes of sodium bicarbonate administration during CPR in pigs. *Ann Emerg Med* 1985;14(12):1135–1140.
3. Tarantino Q: *Pulp Fiction.* Los Angeles: Buena Vista Studios, 1994.
4. Ledwith CAW: Intracardiac injections, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Illustrated Textbook of Pediatric Emergency and Critical Care Procedures.* St Louis: Mosby, 1997:272–273.
5. Bjork VO, Cullhed I, Hallen A, et al: Sequelae of left ventricular puncture with angiography. *Circulation* 1961;24:204–212.
6. Sabin HI, Khunti K, Coghill SB, et al: Accuracy of intracardiac injections determined by a post-mortem study. *Lancet* 1983;2:1054–1055.
7. Jespersen HF, Granborg J, Hansen U, et al: Feasibility of intracardiac injection of drugs during cardiac arrest. *Eur Heart J* 1990;11(3):269–274.
8. Simon RR, Brenner BE: *Emergency Procedures and Techniques,* 4th ed. Baltimore: Lippincott, Williams, & Wilkins, 2001:171–172.

REFERENCES

1. American College of Surgeons: *Advanced Trauma Life Support Instructor Manual*, 6th ed. Chicago: American College of Surgeons, 1997:150.
2. Taylor RW, Civetta JM, Kirby RR: *Techniques and Procedures in Critical Care.* Philadelphia: Lippincott, 1990:306.
3. Steier M, Ching N, Roberts EB, et al: Pneumothorax complicating continuous ventilator support. *J Cardiovasc Surg* 1974;67(1):17–23.
4. Plewa MC, Ledrick D, Sferra JJ: Delayed tension pneumothorax complicating central venous catheterization and positive pressure ventilation. *Am J Emerg Med* 1995;13(5):532–535.
5. Bennett RA, Orton EC, Tucker A, et al: Cardiopulmonary changes in conscious dogs with induced progressive pneumothorax. *Am J Vet Res* 1989; 50(2):280–284.
6. Symbas PN: *Cardiothoracic Trauma.* Philadelphia: Saunders, 1989:314–317.
7. Rutherford RB, Hurt Jr JJ, Brickman RD, et al: The pathophysiology of progressive tension pneumothorax. *J Trauma* 1968;8:212–227.
8. Gustman P, Yerger L, Wanner A: Immediate cardiovascular effects of tension pneumothorax. *Am Rev Respir Dis* 1983;127(2):171–174.
9. Carvalho P, Hildebrandt J, Charan NB: Changes in bronchial and pulmonary arterial blood flow with progressive tension pneumothorax. *J Appl Phys* 1996;81(4):1664–1669.
10. Barton ED, Rhee P, Hutton KC, et al: The pathophysiology of tension pneumothorax in ventilated swine. *J Emerg Med* 1997;15(2):147–153.
11. Connolly JP: Hemodynamic measurements during a tension pneumothorax. *Crit Care Med* 1993;21(2):294–296.
12. Beards SC, Lipman J: Decreased cardiac index as an indicator of tension pneumothorax in the ventilated patient. *Anaesthesia* 1994;49(2):137–141.
13. Woodcock TE, Murray S, Ledingtham IM: Mixed venous oxygen saturation changes during tension pneumothorax and its treatment. *Anaesthesia* 1984;39(10):1004–1006.
14. Laishley RS, Aps C: Tension pneumothorax and pulse oximetry. *Br J Anaesth* 1991;66(2):250–252.
15. Walston A, Brewer D, Kitchens C, et al: The electrocardiographic manifestations of spontaneous left pneumothorax. *Ann Intern Med* 1974;80:375–379.
16. Botz G, Brock-Utne JG: Are electrocardiogram changes the first sign of impending perioperative pneumothorax? *Anaesthesia* 1992;47(12):1057–1059.
17. Kuritzky P, Goldfarb AL: Unusual electrocardiographic changes in spontaneous pneumothorax. *Chest* 1976;70(4):535–537.
18. Strizik B, Forman R: New ECG changes associated with a tension pneumothorax. *Chest* 1999;115(6):1742–1744.
19. Slay RD, Slay LE, Luehrs JG: Transient ST-elevation associated with tension pneumothorax. *J Am Coll Emerg Phys* 1979;8(1):16–18.
20. Feldman T, January CT: ECG changes in pneumothorax: a unique finding and proposed mechanism. *Chest* 1984;86(1):143–145.
21. Green G: *Chest Injuries*, 2nd ed. Bristol, England: Wright, 1984:48–52.
22. McEwin JI: Pleural disease, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine: Concepts and Clinical Practice,* 4th ed. St. Louis: Mosby, 1998:1511–1528.
23. Society of Critical Care Medicine: *Fundamentals of Critical Care Support: Provider Manual*, 2nd ed. Anaheim, CA: Society of Critical Care Medicine, 1998:253–255.
24. Carrero R, Wayne M: Chest trauma. *Emerg Med Clin North Am* 1989; 7(2):389–418.
25. Barton ED, Epperson M, Hoyt DB, et al: Prehospital needle aspiration and tube thoracostomy in trauma victims: a six-year experience with aeromedical crews. *J Emerg Med* 1995;13(2):155–163.
26. Maxwell WB: The hanging drop to locate the pleural space: a safer method for decompression of suspected tension pneumothorax? *J Trauma* 2010;69(4):970–971.
27. Fitzgerald M, Mackenzie CF, Marasco S, et al: Pleural decompression and drainage during trauma reception and resuscitation [review]. *Injury* 2008; 39:9–20.
28. Waydhas C, Sauerland S: Pre-hospital pleural decompression and chest tube placement after blunt trauma: a systematic review. *Resuscitation* 2007; 72:11–25.
29. Leigh-Smith S, Harris T: Tension pneumothorax-time for a re-think. *Emerg Med J* 2005;22:8–16.
30. Britten S, Palmer SH, Snow TM: Needle thoracentesis in tension pneumothorax: insufficient cannula length and potential failure. *Injury* 1996; 27(5):321–322.
31. Zengerink I, Brink PR, Laupland KB: Needle thoracostomy in the treatment of a tension pneumothorax in trauma patients: what size needle? *J Trauma* 2008;64:111–114.
32. Givens ML, Ayotte K, Manifold C: Needle thoracostomy: implications of computed tomography chest wall thickness. *Acad Emerg Med* 2004;11:211–213.
33. Marinaro JL, Kenny CV, Smith SR, et al: Needle thoracostomy in trauma patients: what catheter length is adequate? *Acad Emerg Med* 2003;10:495.
34. Harcke HT, Pearse LA, Levy AD, et al: Chest wall thickness in military personnel: implications for needle thoracentesis in tension pneumothorax. *Mil Med* 2007;172:1260–1263.
35. Ferrie EP, Collum N, McGovern S: The right place in the right space? Awareness of site for needle thoracentesis. *Emerg Med J* 2005;22:788–789.
36. Holcomb JB, McManus JG, Kerr ST, et al: Needle versus tube thoracostomy in a swine model of traumatic tension pneumothorax. *Prehosp Emerg Care* 2009;13:18–27.
37. Butler KL, Best IM, Weaver WL, et al: Pulmonary artery injury and cardiac tamponade after needle decompression of a suspected tension pneumothorax. *J Trauma* 2003;54:610–611.
38. Barton ED, Epperson M, Hoyt DB, et al: Prehospital needle aspiration and tube thoracostomy in trauma victims: a six-year experience with aeromedical crews. *J Emerg Med* 1995;13:155–163.
39. Wayne MA, McSwain NE: Clinical evaluation of a new device for the treatment of tension pneumothorax. *Ann Surg* 1980;191:760–762.
40. Carney M, Ravin CE: Intercostal artery laceration during thoracentesis. *Chest* 1979;75:520–522.

REFERENCES

1. Richardson JD, Spain DA: Injury to the lung and pleura, in Mattox KL, Feliciano DV, Moore EE (eds): *Trauma*, 4th ed. New York: McGraw-Hill, 2000: 523–544.
2. Symbas PN: *Cardiothoracic Trauma*. Philadelphia: Saunders, 1989.
3. Symbas PN: Chest drainage tubes. *Surg Clin North Am* 1989;69(1):41–46.
4. Mandal AK, Thadepalli H, Mandal AK, et al: Post-traumatic empyema thoracis: a 24-year experience at a major trauma center. *J Trauma* 1997; 43(5):764–771.
5. Kiev J, Kerstein MD: Role of three hour roentgenogram of the chest in penetrating and nonpenetrating injuries of the chest. *Surg Gynecol Obstet* 1992;175:249–253.
6. Plurad D, Green D, Demetriades D, Rhee P: The increasing use of chest computed tomography for trauma: is it being overutilized? *J Trauma* 2007;62 (3): 631–635.
7. Stafford R, Linn J, Washington L: Incidence and management of occult hemothoraces. *Am J Surg* 2006;192 (6):722–726.
8. Enderson BL, Abdalla R, Frame SB, et al: Tube thoracostomy for occult pneumothorax: a prospective randomized study of its use. *J Trauma* 1993; 35(5):726–729.
9. Moore FO, Goslar PW, Coimbra R, et al: Blunt traumatic occult pneumothorax: is observation safe?—results of a prospective, AAST multicenter study. *J Trauma* 2011;70(5):1019–1025.
10. Schmidt U, Stalp M, Gerich T, et al: Chest tube decompression of blunt chest injuries by physicians in the field: effectiveness and complications. *J Trauma* 1998;44(1):98–101.
11. Spanjersberg WR, Ringburg AN, Bergs EA, et al: Prehospital chest tube thoracostomy: effective treatment or additional trauma? *J Trauma* 2005;59(3):788–793.
12. Nichols RL, Smith JW, Musik AC, et al: Preventive antibiotic usage in traumatic thoracic injuries requiring tube thoracostomy. *Chest* 1994;106(5): 1493–1498.
13. Brunner RG, Vinsant GO, Alexander RH, et al: The role of antibiotic therapy in the prevention of empyema in patients with an isolated chest injury (ISS 9–10): a prospective study. *J Trauma* 1990;30(9):1148–1153.
14. Evans JT, Green JD, Carlin PE, et al: Meta-analysis of antibiotics in tube thoracostomy. *Am Surg* 1995;61(3):215–219.
15. Luchette FA, Barie PS, Oswanski MF, et al: Practice management guidelines for prophylactic antibiotic use in tube thoracostomy for traumatic hemopneumothorax: the EAST Practice Management Guidelines Work Group. Eastern Association for the Surgery of Trauma. *J Trauma* 2000;48 (4): 753–757.
16. Davis JW, Mackersie RC, Hoyt DB, et al: Randomized study of algorithms for discontinuing tube thoracostomy drainage. *J Am Coll Surg* 1994;179: 553–557.
17. Martino K, Merrit S, Boyakye K, et al: Prospective randomized trial of thoracostomy removal algorithms. *J Trauma* 1999;46(3):369–371.
18. Bell RL, Ovadia P, Abdullah F, et al: Chest tube removal: end-inspiration or end-expiration. *J Trauma* 2001;50:674–677.
19. Sethuraman KN, Duong D, Mehta S, et al: Complications of tube thoracostomy placement in the emergency department. *J Emerg Med* 2011;40(1):14–20.
20. Ward EW, Hughes TS: Sudden death following chest tube insertion: an unusual case of vagus nerve irritation. *J Trauma* 1994;36(2):258–259.
21. Limsukon A, Yick D, Kamangar N: Chylothorax: a rare complication of tube thoracostomy. *J Emerg Med* 2011;40(3):280–282.
22. Helling TS, Gyles NR, Eisenstein CL, et al: Complications following blunt and penetrating injuries in 216 victims of chest trauma requiring tube thoracostomy. *J Trauma* 1989;29(10):1367–1370.
23. Eddy AC, Luna GK, Copass M: Empyema thoracis in patients undergoing emergent closed tube thoracostomy for thoracic trauma. *Am J Surg* 1989; 157:494–497.
24. Adame N, Horwood BT, Caruso D, et al: A test to detect chest tube kinking. *Acad Emerg Med* 2006;13:114–116.
25. Salz TO, Wilson SR, Liebmann O, et al: An initial description of a sonographic sign that verifies intrathoracic chest tube placement. *Am J Emerg Med* 2010;28:626–630.
26. Hsu KF, Ou KW, Lee SC, et al: Re-expansion pulmonary edema after insertion of chest tube for pneumothorax. *J Trauma* 2011;70(3):761.
27. Seltzer JL, Larijani GE, Goldberg ME, et al: Intrapleural bupivacaine—a kinetic and dynamic evaluation. *Anesthesiology* 1987;67(5):798–800.
28. Knottenbelt JD, James MF, Bloomfield M: Intrapleural bupivacaine analgesia in chest trauma: a randomized double-blind controlled trial. *Injury* 1991;22(2):114–116.
29. Engdahl O, Boe J, Sandstedt S: Intrapleural bupivacaine analgesia during chest drainage treatment for pneumothorax. A randomized double-blind study. *Acta Anesth Scand* 1993;37(2):149–153.

REFERENCES

1. Ross DS: Thoracentesis, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:130–147.
2. Quigley RL: Thoracentesis and chest tube drainage. *Crit Care Clin* 1995; 11(1):111–126.
3. Light RW: *Pleural Diseases*, 3rd ed. Baltimore: William & Wilkins, 1995:7–17, 242–278, 311–327.
4. American College of Surgeons Committee on Trauma: *Advanced Trauma Life Support for Doctors,* 6th ed. Chicago: American College of Surgeons, 1997: 127–156.
5. Ruskin JA, Gurney JW, Thorsen MK, et al: Detection of pleural effusions on supine chest radiograph. *AJR Am J Roentgenol* 1987;148(4):681–683.
6. Roch A, Bojan M, Michelet P, et al: Usefulness of ultrasonography in predicting pleural effusions >500 mL in patients receiving mechanical ventilation. *Chest* 2005;127:224–232.
7. Health and Public Policy Committee, American College of Physicians: Diagnostic thoracentesis and pleural biopsy in pleural effusions. Position paper. *Ann Intern Med* 1987;103:799–802.
8. Beaulieu Y, Marik P: Bedside ultrasound in the ICU part 2. *Chest* 2005; 128:1766–1781.
9. Grogan DR, Irwin RC, Channick R, et al: Complications associated with thoracentesis: a prospective randomized study comparing three different methods. *Arch Intern Med* 1990;150:873–877.
10. Raptopoulos V, Davis L, Lee G, et al: Factors affecting the development of pneumothorax associated with thoracentesis. *AJR Am J Roentgenol* 1991; 156:917–920.
11. Barnes TW, Morgenthaler TI, Olson EJ, et al: Sonographically guided thoracentesis and rate of pneumothorax. *J Clin Ultrasound* 2005;33:442–446.
12. Tayal VS, Nicks BA, Norton HJ: Emergency ultrasound evaluation of symptomatic nontraumatic pleural effusions. *Am J Emerg Med* 2006;24:782–786.
13. Vignon P, Chastagner C, Berkane V, et al: Quantitative assessment of pleural effusion in critically ill patients by means of ultrasonography. *Crit Care Med* 2005;33:1757–1763.
14. Balik M, Plasil P, Waldauf P, et al: Ultrasound estimation of volume of pleural fluid in mechanically ventilated patients. *Intensive Care Med* 2006; 32:318–321.
15. Mayo P, Goltz H, Tafreshi M, et al: Safety of ultrasound-guided thoracentesis in patients receiving mechanical ventilation. *Chest* 2004;125:1059–1062.
16. Qureshi N, Momin ZA, Brandstetter RD: Thoracentesis in clinical practice. *Heart Lung* 1994;23(5):376–383.
17. Godwin JE, Sahn SA: Thoracentesis: a safe procedure in mechanically ventilated patients. *Ann Intern Med* 1990;115:800–802.
18. Rutherford RB, Hurt HH Jr, Brickman RB, et al: The pathophysiology of progressive, tension pneumothorax. *J Trauma* 1968;8(2):212–227.
19. Yu C, Yang P, Chang D, et al: Diagnostic and therapeutic use of chest sonography: value in critically ill patients. *AJR Am J Roentgenol* 1992;159: 695–701.
20. Singh K, Loo S, Bellomo R: Pleural drainage using central venous catheters. *Crit Care* 2003;7:R191–R194.
21. Fisher JC, Guarrera JV: Modified thoracentesis technique using a triple-lumen catheter. *Am J Surg* 2007;194:406–408.
22. Beckh S, Bölcskei PL, Lessnau KD: Real-time chest ultrasonography. A comprehensive review for the pulmonologist. *Chest* 2002;122:1759–1773.
23. Feller-Kopman D: Ultrasound-guided thoracentesis. *Chest* 2006;129: 1709–1714.
24. Mathis G: Thoraxsonography—part I: chest wall and pleura. *Ultrasound Med Biol* 1997;23(8):1131–1139.
25. Bouhemad B, Zhang M, Qin L, et al: Clinical review: bedside lung ultrasound in critical care practice. *Crit Care* 2007;11:205 (doi:10.1186/cc5668).
26. Porcel JM, Vives M: Etiology and pleural fluid characteristics of large and massive effusions. *Chest* 2003;124:978–983.
27. Light RW, Macgregor I, Luchinger PC, et al: Pleural effusions. The diagnostic separation of transudates and exudates. *Ann Intern Med* 1972;77(4): 507–513.
28. Burgess LJ, Marith FJ, Taljeard FJ: Comparative analysis of the biochemical parameters used to distinguish between pleural transudates and exudates. *Chest* 1995;107(6):1604–1609.
29. Villena V, Lopez-Encuentra A, Garcia-Lujan R, et al: Clinical implications of appearance of pleural fluid at thoracentesis. *Chest* 2004;125:156–159.
30. Villena V, Perez V, Pozo F, et al: Amylase levels in pleural effusions: a consecutive unselected series of 841 patients. *Chest* 2002;121:470–474.
31. Koh D, Burke S, Davies N, et al: Transthoracic US of the chest: clinical uses and applications. *Radiographics* 2002;22;e1.
32. Yang P, Luh K, Chang D, et al: Value of sonography in determining the nature of pleural effusion: analysis of 320 cases. *AJR Am J Roentgenol* 1992; 159:29–33.
33. Petersen WG, Zimmerman R: Limited utility of chest radiograph after thoracentesis. *Chest* 2000;117:1038–1042.
34. Doyle JJ, Hnatiuk OW, Torrington KG, et al: Necessity of routine chest roentgenography after thoracentesis. *Ann Intern Med* 1996;124:816–820.
35. Ponn RB, Silverman HJ, Federico JA: Outpatient chest tube management. *Ann Thorac Surg* 1997;64:1437–1440.
36. Swineburne AJ, Bixby K, Fedullo AJ, et al: Pneumothorax after thoracentesis. *Arch Intern Med* 1991;151:2095
37. Jones P, Moyers P, Rogers J, et al: Ultrasound-guided thoracentesis: is it a safer method. *Chest* 2003;123:418–423.
38. Diacon AH, Brutsche MH, Soler M: Accuracy of pleural puncture sites: a prospective comparison of clinical examination with ultrasound. *Chest* 2003; 123:436–441.
39. Feller-Kopman D: Therapeutic thoracentesis: the role of ultrasound and pleural manometry. *Curr Opin Pulm Med* 2007;13:312–318.
40. Gordon CE, Feller-Kopman D, Balk EM, et al: Pneumothorax following thoracentesis: a systemic review and meta-analysis. *Arch Int Med* 2010; 170(4):332–339.
41. Duncan DR, Morgenthaler TI, Ryu JH, et al: Reducing iatrogenic risk in thoracentesis: establishing best practice via experiential training in a zero-risk environment. *Chest* 2009;135:1315–1320.
42. Gervais D, Petersein A, Lee M, et al: US-guided thoracentesis: requirement for post-procedure chest radiography in patients who receive mechanical ventilation versus patients who breathe spontaneously. *Radiology* 1997; 204:503–506.
43. Alemen C, Alegre J, Armadans L, et al: The value of chest roentgenography in the diagnosis of pneumothorax after thoracentesis. *Am J Med* 1999; 107:340–343.
44. Seneff MW, Corwin W, Gold LH, et al: Complications associated with thoracentesis. *Chest* 1986;90(1):97–100.
45. Bartter T, Mayo PD, Pratter MR, et al: Lower risk and higher yield for thoracentesis when performed by experienced operators. *Chest* 1993; 103(6):1873–1876.
46. Stradling P, Poole G: Conservative management of spontaneous pneumothorax. *Thorax* 1966;21:145–149.
47. Holt HG, Brewer N, Barbur E: Evaluation of patient-related and procedure-related factors contributing to pneumothorax following thoracentesis. *Chest* 1999;116:134–138.
48. Josephson T, Nordenskjold CA, Larsson J, et al: Amount drained at ultrasound-guided thoracentesis and risk of pneumothorax. *Acta Radiol* 2009; 50:42–47.
49. Carney M: Intercostal artery laceration during thoracentesis: increased risk in elderly patients. *Chest* 1979;75(4):520–522.
50. Light RW: Tension pnuemothorax. *Intens Care Med* 1994;20:468–469.
51. Connally JP: Hemodynamic measurements during a tension pneumothorax. *Crit Care Med* 1993;21(2):294–296.
52. Brann BS, Mayfield SR, Goldstein M, et al: Cardiovascular effects of hypoxia/hypercarbia, and tension pneumothorax in newborn piglets. *Crit Care Med* 1994;22(9):1453–1460.
53. Zhang M, Liu Z, Yang J, et al: Rapid detection of pneumothorax by ultrasonography in patients with multiple trauma. *Crit Care* 2006;10:R112 (doi:10.1186/cc5004).
54. Rowan K, Kirkpatrick A, Liu D, et al: Traumatic pneumothorax detection with thoracic US: correlation with chest radiography and CT-initial experience. *Radiology* 2002;225:210–214.
55. Devanand A, Koh MS, Ong TH, et al: Simple aspiration versus chest-tube insertion in the management of primary spontaneous pneumothorax: a systematic review. *Resp Med* 2004;98:579–590.

56. Zehtabchi S, Rios CL: Management of emergency department patients with primary spontaneous pneumothorax: needle aspiration or tube thoracostomy? *Ann Emerg Med* 2008;51:91–100.
57. Wakai A, O'Sullivan RG, McCabe G: Simple aspiration versus intercostal tube drainage for primary spontaneous pneumothorax in adults. *Cochrane Database Syst Rev* 2007;1:CD004479 (doi:10.1002/14651858.CD004479.pub2).
58. Chan SSW, Lam PKW: Simple aspiration as initial treatment for primary spontaneous pneumothorax: results of 91 consecutive cases. *J Emerg Med* 2005;28(2):133–138.
59. Chan SSW: The role of simple aspiration in the management of primary spontaneous pneumothorax. *J Emerg Med* 2008;34(2):131–138.
60. Gaudio M, Hafner JW: Simple aspiration compared to chest tube insertion in the management of primary spontaneous pneumothorax. *Ann Emerg Med* 2009;54:458–460.
61. Gammie JS, Banks MC, Fuhrman CR, et al: The pigtail catheter for pleural drainage: a less invasive alternative to tube thoracostomy. *JSLS* 1999;3:57–61.
62. Liu CM, Hang LW, Chen WK, et al: Pigtail tube drainage in the treatment of spontaneous pneumothorax. *Am J Emerg Med* 2003;21:241–244.
63. Tsai Wk, Chen W, Lee JC, et al: Pigtail catheters vs large-bore chest tubes for management of secondary spontaneous pneumothoraces in adults. *Am J Emerg Med* 2006;24:795–800.
64. Lin YC, Tu CY, Liang SJ, et al: Pigtail catheter for the management of pneumothorax in mechanically ventilated patients. *Am J Emerg Med* 2010;28: 466–471.
65. Dull KE, Fleisher GR: Pigtail catheters versus large-bore chest tubes for pneumothoraces in children treated in the emergency department. *Pediatr Emerg Care* 2002;18(4):265-267.
66. Rivera L, O'Reilly EB, Sise MJ, et al: Small catheter tube thoracostomy: effective in managing chest trauma in stable patients. *J Trauma* 2009:66:393–399.
67. Talbot-Stern J, Richardson H, Tomlanovich MC, et al: Catheter aspiration for simple pneumothorax. *J Emerg Med* 1986;4:437–442.
68. Valles P, Sullivan M, Richardson H, et al: Sequential treatment for simple pneumothorax. *Ann Emerg Med* 1988;17(9):936–942.
69. Kuan WS, Lather KS, Mahadevan M: Primary spontaneous pneumothorax—the role of the emergency observation unit. *Am J Emerg Med* 2011;29: 293–298.
70. Hassani B, Foote J, Borgundvaag B: Outpatient management of primary spontaneous pneumothorax in the emergency department of a community hospital using a small-bore catheter and a Heimlich valve. *Acad Emerg Med* 2009;16:513–518.
71. Heidecker J, Huggins JT, Sahn SA, et al: Pathophysiology of pneumothorax following ultrasound-guided thoracentesis. *Chest* 2006;130:1173–1184.
72. Feller-Kopman D, Berkowitz D, Boiselle P, et al: Large-volume thoracentesis and the risk of reexpansion pulmonary edema. *Ann Thorac Surg* 2007; 84:1656–1662.
73. Beng ST, Mahadevan M: An uncommon life-threatening complication after chest tube drainage of pneumothorax in the ED. *Am J Emerg Med* 2004;22:615–619.
74. Echevarria C, Twomey D, Dunning J, et al: Does re-expansion pulmonary oedema exist? *Interactive Cardiovasc Thorac Surg* 2008;7:485–490.

REFERENCES

1. Keen G: *Chest Injuries*, 2nd ed. Bristol, England: Wright, 1984:124–132.
2. Blaisdell FW, Trunkey DD (eds): *Trauma Management: Vol III. Cervicothoracic Trauma*. New York: Thieme, 1986:129–151.
3. Symbas PN: *Cardiothoracic Trauma*. Philadelphia: Saunders, 1989:364–366.
4. Eckstein M, Henderson SO: Thoracic trauma, in Marx J, Hockberger R, Walls R, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St. Louis: Mosby, 2009;387–413.
5. American College of Surgeons: *Advanced Trauma Life Support Instructor Manual*, 8th ed. Chicago: American College of Surgeons, 2002.
6. Shardey G: Management of traumatic pneumothorax. *Aust Fam Physician* 1984;13(4):296–299.
7. Feliciano DV, Mattox KL (eds): *Trauma*, 3rd ed. Stamford, CT: Appleton & Lange, 1996:397–398.
8. Mattox KL, Allen MK: Emergency department treatment of chest injuries. *Emerg Med Clin North Am* 1984;2(4):783–797.
9. Mattox KL: Prehospital care of the patient with an injured chest. *Surg Clin North Am* 1989;69(1):21–29.
10. Carrero R, Wayne M: Chest trauma. *Emerg Med Clin North Am* 1989; 7(2):389–418.
11. Pate JW: Chest wall injuries. *Surg Clin North Am* 1989;69(1):59–70.
12. Coleman JJ III: Complex thoracic wounds: muscle and musculocutaneous anatomy in closure. *South Med J* 1985;78(2):125–129.
13. Arnold PG, Pairolero PC: Chondrosarcoma on the manubrium: resection and reconstruction with the pectoralis major muscle. *Mayo Clin Proc* 1978; 53(1):54–57.
14. Brown RG, Fleming WH, Jurkiewicz MJ: An island flap of the pectoralis major muscle. *Br J Plast Surg* 1977;30(2):161–165.
15. Arnold PG, Pairolero PC: Use of pectoralis major muscle flaps to repair defects of anterior chest wall. *Plast Reconstr Surg* 1979: 63(2):205–213.
16. Chaikhouni A, Dyas CL Jr, Robinson JH, et al: Latissimus dorsi free myocutaneous flap. *J Trauma* 1981;21(5):398–402.
17. Parkash S, Palepu J: Rectus abdominus myocutaneous flap—clinical experience with ipsilateral and contralateral flaps. *Br J Surg* 1983;70(2):68–70.
18. Jurkiewicz MJ, Arnold PG: The omentum: an account of its use in the reconstruction of the chest wall. *Ann Surg* 1977;185(5):548–554.
19. Boyd AD, Shaw WW, McCarthy JG, et al: Immediate reconstruction of full-thickness chest wall defects. *Ann Thorac Surg* 1981;32(4):337–346.
20. Eschapasse H, Gaillard J, Henry F, et al: Repair of large chest wall defects: experience with 23 patients. *Ann Thorac Surg* 1981;32(4):329–336.
21. Hubbard SG, Todd EP, Carter W, et al: Repair of chest wall defects with prosthetic material. *Ann Thorac Surg* 1979;27(5):440–444.
22. Romero LH, Nagamia HF, Lefemine AA, et al: Massive impalement wound of the chest: a case report. *J Thorac Cardiovasc Surg* 1978;75(6):832–835.
23. Barton ED, Epperson M, Hoyt DB, et al: Prehospital needle aspiration and tube thoracostomy in trauma victims: a six-year experience with aeromedical crews. *J Emerg Med* 1994;13(2):155–163.

REFERENCES

1. Millham FH, Grindlinger GA: Survival determinants in patients undergoing emergency room thoracotomy for penetrating chest injury. *J Trauma* 1993; 34:332–336.
2. Thompson DA, Rowlands BJ, Walker WE, et al: Urgent thoracotomy for pulmonary or tracheobronchial injury. *J Trauma* 1988;28(3):276–280.
3. Ledgerwood AM, Kazmers M, Lucas CE: The role of thoracic aortic occlusion for massive hemoperitoneum. *J Trauma* 1976;16(8):610–615.
4. Beall AC, Diethrich EB, Crawford HW, et al: Surgical management of penetrating cardiac injuries. *Am J Surg* 1966;112:686–692.
5. Velmahos GC, Degiannis E, Souter I, et al: Outcome of a strict policy on emergency department thoracotomies. *Arch Surg* 1995;130:774–777.
6. Kavolius J, Golocovsky M, Champion HR: Predictors of outcome in patients who have sustained trauma and who undergo emergency thoracotomy. *Arch Surg* 1993;128:1158–1162.
7. Powell DW, Moore EE, Cothren CC, et al: Is emergency department resuscitative thoracotomy futile care for the critically injured patient requiring prehospital cardiopulmonary resuscitation? *J Am Coll Surg* 2004;199(2): 211–215.
8. Feliciano DV, Burch JM, Spjut-Patrinely V, et al: Abdominal gunshot wounds: an urban trauma center's experience with 300 consecutive patients. *Ann Surg* 1988;208(3):362–370.
9. Mazzorana V, Smith RS, Morabito DJ, et al: Limited utility of emergency department thoracotomy. *Am Surg* 1994;60:516–521.
10. Baker CC, Thomas AN, Trunkey DD: The role of emergency room thoracotomy in trauma. *J Trauma* 1980;20:848–855.
11. Lorenz HP, Steinmetz B, Liebeman J, et al: Emergency thoracotomy: survival correlates with physiologic status. *J Trauma* 1992;32:780–787.
12. Schwab CW, Adcock OT, Max MH: Emergency department thoracotomy (EDT): a 26 month experience using an "agonal" protocol. *Am Surg* 1986; 52:20–29.
13. American College of Surgeons-Committee on Trauma (Working Group, Ad Hoc Subcommittee on Outcomes): Practice management guidelines for emergency department thoracotomy. *J Am Coll Surg* 2001;193(3):303–309.
14. Rhee PM, Acosta J, Bridgeman A, et al: Survival after emergency department thoracotomy: review of published data from the past 25 years. *J Am Coll Surg* 2000;190:288–298.
15. Branney SW, Moore EE, Feldhaus KM, et al: Critical analysis of two decades of experience with post injury emergency department thoracotomy in a regional trauma center. *J Trauma* 1998;45(1): 87–95.
16. Hall BL, Buchman TG: A visual, timeline-based display of evidence for emergency thoracotomy. *J Trauma* 2005;59(3):773–777.
17. Seamon MJ, Pathak AS, Bradley KM, et al: Emergency department thoracotomy: still useful after abdominal exsanguination? *J Trauma* 2008;64(1):1–8.
18. Moore EE, Knudson MM, Burlew CC, et al: Defining the limits of resuscitative emergency department thoracotomy: a contemporary western trauma association perspective. *J Trauma* 2011;70(2):334–339.
19. Ladd AP, Gomez GA, Jacobson LE, et al: Emergency room thoracotomy: updated guidelines for a level I trauma center. *Am Surgeon* 2002;68(5): 421–424.
20. Grove CA, Lemmon G, Anderson G, et al: Emergency thoracotomy: appropriate use in the resuscitation of trauma patients. *Am Surgeon* 2002; 68(4):313–317.
21. Sikka R, Millham FH, Feldman JA: Analysis of occupational exposures associated with emergency department thoracotomy. *J Trauma* 2004;56(4): 867–872.

REFERENCES

1. Del Guercio LRM, Feins NR, Cohn JD, et al: Comparison of blood flow during external and internal cardiac massage in man. *Circulation* 1965; 319(suppl 1):171–179.
2. Sanders AB, Ogle M, Ewy GA: Coronary perfusion pressure during cardiopulmonary resuscitation. *Am J Emerg Med* 1985;3:11–14.
3. Boczar ME, Howard MA, Rivers EP, et al: A technique revisited: hemodynamic comparison of closed and open chest cardiac massage during human CPR. *Crit Care Med* 1995;23(3):498–503.
4. Alifimoff JK, Safar P, Bircher N, et al: Cerebral recovery after prolonged closed chest, MAST augmented, and open chest CPR. *Anesthesiology* 1980; 53(suppl):S147.
5. Barnet WM: Comparison of open-chest cardiac massage techniques in dogs. *Ann Emerg Med* 1986;15(4):408–411.
6. Koerner CE, King BR: Emergency thoracotomy, in King C, Henretig FM, King BR, et al (eds): *Textbook of Pediatric Emergency Procedures*, 2nd ed. Baltimore: Lippincott, Williams & Wilkins, 2008:396–408.
7. Keiko T, Yanagawa Y, Isoda S: A successful treatment of cardiac tamponade due to an aortic dissection using open-chest massage. *Am J Emerg Med* 2012;30(4):634.e1–634e2.
8. Karhunen JP, Jokinen JJ, Raivio PM, et al: Long-term survival and quality of life after cardiac resuscitation following coronary artery bypass grafting. *Eur J Cardiothorac Surg* 2011;40(1):249–254.
9. Twomey D, Das M, Subramanian H, et al: Is internal massage superior to external massage for patients suffering a cardiac arrest after cardiac surgery? *Interact Cardiovasc Thorac Surg* 2008;7(1):151–156.
10. Benson DM, O'Neil B, Kakish E, et al: Open-chest CPR improves survival and neurologic outcome following cardiac arrest. *Resuscitation* 2005; 64(2):209–217.
11. Yanagawa Y, Morita K, Sakamoto T, et al: A satisfactory recovery after emergency direct cardiac massage in type A acute aortic dissection with cardiac arrest. *Am J Emerg Med* 2006;24(3):356–357.

REFERENCES

1. Buckman RF Jr, Buckman PD, Badellino MM: Heart, in Cayten CG, Ivatury RR (eds): *The Textbook of Penetrating Trauma.* Baltimore: Williams & Wilkins, 1996:499–511.
2. Asensio JA, Garcia-Nunez LM, Petrone P: Trauma to the heart, in Feliciano DV, Mattox KL, Moore EE (eds): *Trauma*, 6th ed. New York: McGraw-Hill, 2007:569–589.
3. Symbas PN: *Cardiothoracic Trauma.* Philadelphia: Saunders, 1989:16–55.
4. Chong HH, Plotnick GD: Pericardial effusion and tamponade: evaluation, imaging modalities, and management. *Comp Ther* 1995;21(7):378–385.
5. Thourani VH, Feliciana DV, Rozycki G, et al: Penetrating cardiac trauma at an urban trauma center: a 22 year perspective. *Am Surg* 1999;65(9):811–818.

REFERENCES

1. Mattox KL, Wall Jr MJ, LeMaire SA: Thoracic great vessel injury, in Feliciano DV, Mattox KL, Moore EE (eds): *Trauma*, 6th ed. New York: McGraw-Hill, 2008:589–606.
2. Mattox KL, Feliciano DV, Burch J, et al: Five thousand seven hundred sixty cardiovascular injuries in 4459 patients: epidemiologic evolution 1958–1987. *Ann Surg* 1989;209(6):698–707.
3. Van Natta TL, Smith BR, Bricker SD, et al: Hilar control in penetrating chest trauma: a simplified approach to an underutilized maneuver. *J Trauma* 2009; 66(6):1564–1569.

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REFERENCES

1. Michel JB, Bardou A, Tedgui A, et al: Effect of descending thoracic aorta clamping and unclamping on phasic coronary blood flow. *J Surg Res* 1984; 36:17–24.
2. Oyama M, McNamara JJ, Suehiro GT, et al: The effects of thoracic aortic cross-clamping and declamping on visceral organ blood flow. *Ann Surg* 1983; 197:459–463.
3. Grotz MRW, Deitch EA, Ding J, et al: Intestinal cytokine response after gut ischemia—role of gut barrier failure. *Ann Surg* 1999;229(4):478–486.
4. Deitz EA: Multiple organ failure—pathophysiology and potential future therapy. *Ann Surg* 1992;216(2):117–134.
5. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott, Williams, & Wilkins, 2001:162–163.
6. Safi HJ, Miller CC: Spinal cord protection in descending thoracic and thoracoabdominal aortic repair. *Ann Thorac Surg* 1999;67:1937–1939.

REFERENCES

1. Williams PL, Warwick R: *Gray's Anatomy*, 36th ed. Philadelphia: Saunders, 1980:629–765.
2. Vaksmann G, Rey C, Breveire G-M, et al: Nitroglycerine ointment as aid to venous cannulation in children. *J Pediatr* 1987;111(1):89–91.
3. Bledsoe BE: *Atlas of Paramedic Skills*. Engelwood Cliffs, NJ: Prentice-Hall, 1987:124–142.
4. Arrow International: *Arrow Single-Lumen Central Venous Catheterization*, Product manual. Reading, PA: Arrow International, 1995.
5. Maki DG, Stolz SM, Wheeler S, et al: Prevention of central venous catheter-related bloodstream infection by use of an antiseptic-impregnated catheter: a randomized, controlled trial. *Ann Intern Med* 1997;127:257–266.
6. Oda T, Hamasaki J, Kanda N, et al: Anaphylactic shock induced by an antiseptic-coated central venous catheter. *Anesthesiology* 1997;87:1242–1244.
7. Hambrick EL, Georges GC: Peripheral intravenous access, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:322–333.
8. Bhende MS: Venipuncture and peripheral venous access, in Henretig FM, King C: *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:797–810.
9. Orenstein R: The benefits and limitations of needle protectors and needleless intravenous systems. *J Intraven Nurs* 1999;22(3):122–128.
10. Deseret Medical: *Intracath: Directions for Use*. Sandy, UT: Deseret Medical, 1987.
11. Seldinger SI: Catheter replacement of the needle in percutaneous arteriography: a new technique. *Acta Radiol* 1953;39:368–376.
12. Dailey RH: Use of wire-guided (Seldinger-type) catheters in the emergency department. *Ann Emerg Med* 1983;12(8):489–492.
13. Mahler SA, Wang H, Lester C, et al: Ultrasound-guided peripheral intravenous access in the emergency department using a modified Seldinger technique. *J Emerg Med* 2010;39(3):325–329.
14. Black KJL, Pusic MV, Harmidy D, et al: Pediatric intravenous insertion in the emergency department: bevel up or bevel down? *Pediatr Emerg Care* 2005;21(11):707–711.
15. Mbamalu D, Banerjee A: Methods of obtaining peripheral venous access in difficult situations. *Postgrad Med J* 1999;75:459–462.
16. Millam DA: Tips for improving your venipuncture techniques. *Nursing* 1987;17:46–49.
17. Campbell J: Making sense of the technique of venipuncture. *Nurs Times* 1995;91:29–31.
18. Simons P, Coleridge-Smith P, Lees WR, et al: Venous pumps of the hand. Their clinical importance. *J Hand Surg (Br)* 1996;21:595–599.
19. Torok T, Bari F, Kardos A, et al: Isometric handgrip exercise-induced muscarinic vasodilation in the human skin microvasculature. *Acta Physiol Hung* 1997;85:193–198.
20. Hallett JP: Tourniquet safety: testing for inaccurate gauges and a better method of exsanguination. *J Bone Joint Surg* 1983;65B:227.
21. Hedges JR, Weinshenker E, Dirksing R: Evaluation of venous distention device: potential aid for intravenous cannulation. *Ann Emerg Med* 1986;15:540–543.
22. Amsterdam JT, Hedges JR, Weinshenker E, et al: Evaluation of venous distension device: phase II: cannulation of nonemergent patients. *Am J Emerg Med* 1988;6:224–227.
23. Lohmann M, Moller P, Brynitz S, et al: The effect of nitroglycerine ointment in dilating veins. A possible aid in establishing drip infusions. *Ugeskr Laeger* 1985;147:1695–1696.
24. Roberge RJ, Kelly M, Evans TC, et al: Facilitated intravenous access through local application of nitroglycerine ointment. *Ann Emerg Med* 1987;16:546–549.
25. Maynard EC, Oh WL: Topical nitroglycerine ointment as an aid to insertion of peripheral venous catheters in neonates. *J Pediatr* 1989;114:474–476.
26. Perry AM, Caviness AC, Hsu DC: Efficacy of a near-infrared light device in pediatric venous cannulation: a randomized controlled trial. *Pediatr Emerg Care* 2009;25(10):709.
27. Perry AM, Caviness AC, Hsu DC: Efficacy of a near-infrared light device in pediatric venous cannulation: a randomized controlled trial. *Pediatr Emerg Care* 2011;27(1):5–10.
28. Chapman LL, Sullivan B, Pacheco AL, et al: VeinViewer-assisted intravenous catheter placement in a pediatric emergency department. *Acad Emerg Med* 2011;18:966–971.
29. Zeltzer L, Regalso M, Nichter LS, et al: Iontophoresis versus subcutaneous injection: a comparison of two methods of local anesthesia delivery in children. *Pain* 1991;44:73–78.
30. Mitragotri S, Kost J: Low-frequency sonophoresis: a review. *Adv Drug Deliv Rev* 2004;27:589–601.
31. Singer AJ, Shallat J, Vallentine S, et al: Cutaneus tape stripping to enhance topical drug absorption. A randomized controlled trial. *Acad Emerg Med* 1998;5:1051–1056.
32. Singer AJ, Weeks R, Regev R: Laser-assisted anesthesia reduces the pain of venous cannulation in children and adults: a randomized controlled trial. *Acad Emerg Med* 2006;13:623–628.
33. Harstein BH, Barry JD: Mitigation of pain during intravenous catheter placement using topical skin coolant in the emergency department. *Emerg Med J* 2008;25(5):257–261.
34. Farion KJ, Splinter KL, Newhook K, et al: The effect of vasocoolant spray on pain due to intravenous cannulation in children. *CMAJ* 2008;179:31–36.
35. Hijazi R, Taylor D, Richardson J: Effect of topical alkane vapocoolant spray on pain with intravenous cannulation in patients in emergency departments: randomized double blind placebo controlled trial. *BMJ* 2009;338:b215.
36. Singer AJ, Taira BR, Chisena EN, et al: Warm lidocaine/tetracaine patches versus placebo before pediatric intravenous cannulation: a randomized controlled trial. *Ann Emerg Med* 2008;52:41–47.
37. Singer AJ, Regev R, Weeks R: Laser-assisted anesthesia prior to intravenous cannulation in volunteers: a randomized, controlled trial. *Acad Emerg Med* 2005;12:804–807.
38. Zempsky WT, Bean-Lijewski J, Kauffman RE, et al: Needle-free powder lidocaine delivery system provides rapid effective analgesia for venipuncture or cannulation pain in children: randomized, double-blind comparison of venipuncture and venous cannulation pain after fast-onset needle-free powder lidocaine or placebo treatment trial. *Pediatrics* 2008;121:979–987.
39. Auerbach M, Tunik M, Mojica M: A randomized, double-blind controlled study of jet lidocaine compared to jet placebo for pain relief in children undergoing needle insertion in the emergency department. *Acad Emerg Med* 2009;16:388–393.
40. Spanos S, Booth R, Koenig H, et al: Jet injection of 1% buffered lidocaine versus topical Ela-Max for anesthesia before peripheral intravenous catheterization in children. *Pediatr Emerg Care* 2008;24:511–515.

REFERENCES

1. Bledsoe BE: *Atlas of Paramedic Skills*. Englewood Cliffs, NJ: Prentice-Hall, 1987:124–142.
2. Roseman JM: Deep, percutaneous antecubital venipuncture: an alternative to surgical cutdown. *Am J Surg* 1983;146(2):285.
3. Keyes LE, Frazee BW, Snoey ER, et al: Ultrasound-guided brachial and basilic vein cannulation in emergency department patients with difficult intravenous access. *Ann Emerg Med* 1999;34(6):711–714.
4. Williams PL, Warwick R: *Gray's Anatomy*, 36th ed. Philadelphia: Saunders, 1980:629–765.
5. Elliott TS, Faroqui MH, Armstrong RF, et al: Guidelines for good practice in central venous catheterization. *J Hosp Infect* 1994;28:163–176.
6. Blitt CD, Wright WA, Petty WC, et al: Central venous catheterization via the external jugular vein—a technique employing the J-wire. *JAMA* 1974;229(7):817–818.
7. Cunningham FJ Jr, Engle WA, Rescorla FJ: Pediatric vascular access and blood sampling techniques, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:281–290.
8. Bhende MS: Venipuncture and peripheral venous access, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:797–810.
9. Keyes LE, Bradley WF, Snoey ER, et al: Ultrasound guided brachial and basilic vein cannulation in emergency department patients. *Ann Emerg Med* 1999;34(6):711–714.
10. Abboud PA, Kendall JL: Ultrasound guidance for vascular access. *Emerg Med Clin North Am* 2004;22(3):49–773.
11. Pirotte T: Ultrasound-guided vascular access in adults and children: beyond the internal jugular vein puncture. *Acta Anesthesiol Belg* 2008;59(3):157–166.
12. Bregenzer T, Conen D, Sakmann P, et al: Is routine replacement of peripheral intravenous catheters necessary? *Arch Intern Med* 1998;158:151–156.
13. Homer LD, Holmes KR: Risks associated with 72- and 96-hour peripheral intravenous catheter dwell times. *J Intraven Nurs* 1998;21(5):301–305.
14. Tripathi S, Kaushik V, Singh V: Peripheral IVs: factors affecting complications and patency—a randomized controlled trial. *J Infus Nurs* 2008;31(3): 182–188.
15. Maki DG, Ringer M: Evaluation of dressing regimens for prevention of infection with peripheral intravenous catheters. *JAMA* 1987;258(17):2396–2403.
16. Hoffmann KK, Weber DJ, Samsa GP, et al: Transparent polyurethane film as an intravenous catheter dressing—a meta-analysis of the infection risks. *JAMA* 1992;267(15):2072–2076.
17. Epperson EL: Efficacy of 0.9% sodium chloride injection with and without heparin for maintaining indwelling intermittent injection sites. *Clin Pharmacol* 1984;3:626–629.
18. Kramer DA, Staten-McCormick M, Freeman SB: Percutaneous brachial vein catheterization: an alternate site for IV access. *Ann Emerg Med* 1983;12(4):247.
19. Kagel EM, Rayan GM: Intravenous catheter complications in the hand and forearm. *J Trauma* 2004;56:123–127.
20. Keyes LE, Frazee BW, Snoey ER, et al: Ultrasound-guided brachial and basilic vein cannulation in emergency department patients with difficult intravenous access. *Ann Emerg Med* 1999;34(6):711–714.
21. Kramer DA, Staten-McCormick MD, Freeman SB: Percutaneous brachial catheterization: an alternative site for IV access. *Ann Emerg Med* 1983;12:247.

REFERENCES

1. Hind D, Calvert N, McWilliams R, et al: Ultrasonic locating devices for central venous cannulation: meta-analysis. *BMJ* 2003;327(7411):361.
2. Leung J, Duffy M, Finckh A: Real-time ultrasonographically-guided internal jugular vein catheterization in the emergency department increases success rates and reduces complications: a randomized, prospective study. *Ann Emerg Med* 2006;48(5):540–547.
3. Miller AH, Roth BA, Mills TJ, et al: Ultrasound guidance versus the landmark technique for the placement of central venous catheters in the emergency department. *Acad Emerg Med* 2002;9(8):800–805.
4. Milling TJ, Rose J, Briggs WM, et al: Randomized, controlled clinical trial of point-of-care limited ultrasonography assistance of central venous cannulation: the Third Sonography Outcomes Assessment Program (SOAP-3) Trial. *Crit Care Med* 2005;33(8):1764–1769.
5. Randolph AG, Cook DJ, Gonzales CA, et al: Ultrasound guidance for placement of central venous catheters: a meta-analysis of the literature. *Crit Care Med* 1996;24(12):2053–2058.
6. Lee HS, Quinn T, Boyle RM: Safety of thrombolytic treatment in patients with central venous cannulation. *Br Heart J* 1995;73:359–362.
7. Lin BS, Kong CW, Tarng DC, et al: Anatomical variation of the internal jugular vein and its impact on temporary haemodialysis vascular access: an ultrasonographic survey in uraemic patients. *Nephrol Dial Transplant* 1998; 13(1):134–138.
8. Denys BG, Uretsky BF: Anatomical variations of internal jugular vein location: impact on central venous access. *Crit Care Med* 1991;19(12):1516–1519.
9. Lieberman JA, Williams KA, Rosenberg AL: Optimal head rotation for internal jugular vein cannulation when relying on external landmarks. *Anesth Analg* 2004;99(4):982–988.
10. Riopelle JM, Ruiz DP, Hunt JP, et al: Circumferential adjustment of ultrasound probe position to determine the optimal approach to the internal jugular vein: a noninvasive geometric study in adults. *Anesth Analg* 2005; 100(2):512–519.
11. Sulek CA, Gravenstein N, Blackshear RH, et al: Head rotation during internal jugular vein cannulation and the risk of carotid artery puncture. *Anesth Analg* 1996;82(1):125–128.
12. Turba UC, Uflacker R, Hannegan C, et al: Anatomic relationship of the internal jugular vein and the common carotid artery applied to percutaneous transjugular procedures. *Cardiovasc Intervent Radiol* 2005;28(3):303–306.
13. Mey U, Glasmacher A, Hahn C, et al: Evaluation of an ultrasound-guided technique for central venous access via the internal jugular vein in 493 patients. *Support Care Cancer* 2003;11(3):148–155.
14. Yeow KM, Kaufman JA, Rieumont MJ, et al: Axillary vein puncture over the second rib. *Am J Roentgenol* 1998;170(4):924–926.
15. Rominger CJ: The normal axillary venogram. *Am J Roentgenol Radium Ther Nucl Med* 1958;80(2):217–224.
16. Galloway S, Bodenham A: Ultrasound imaging of the axillary vein—anatomical basis for central venous access. *Br J Anaesth* 2003;90(5):589–595.
17. Pervez A, Abreo K: Techniques and tips for quick and safe temporary catheter placement. *Semin Dial* 2007;20(6):621–625.
18. Joynt GM, Kew J, Gomersall CD, et al: Deep venous thrombosis caused by femoral venous catheters in critically ill adult patients. *Chest* 2000;117(1):178–183.
19. Huisman MV, Büller HR, ten Cate JW, et al: Unexpected high prevalence of silent pulmonary embolism in patients with deep venous thrombosis. *Chest* 1989;95(3):498–502.
20. Williams JF, Seneff MG, Friedman BC, et al: Use of femoral venous catheters in critically ill adults: prospective study. *Crit Care Med* 1991;19(4):550–553.
21. Hughes P, Scott C, Bodenham A: Ultrasonography of the femoral vessels in the groin: implications for vascular access. *Anaesthesia* 2000;55(12): 1198–1202.
22. Warkentine FH, Clyde Pierce M, et al: The anatomic relationship of femoral vein to femoral artery in euvolemic pediatric patients by ultrasonography: implications for pediatric femoral central venous access. *Acad Emerg Med* 2008;15(5):426–430.
23. Getzen LC, Pollak EW. Short-term femoral vein catheterization. A safe alternative venous access? *Am J Surg* 1979;138(6):875–878.
24. McGee DC, Gould MK: Preventing complications of central venous catheterization. *N Engl J Med* 2003;348(12):1123–1133.
25. Parienti J, Thirion M, Mégarbane B, et al: Femoral vs jugular venous catheterization and risk of nosocomial events in adults requiring acute renal replacement therapy: a randomized controlled trial. *JAMA* 2008;299(20): 2413–2422.
26. Rahman O, Willis L: Vascular procedures in the critically ill obese patient. *Crit Care Clin* 2010;26:647–660.
27. Oguzkurt L, Tercan F, Kara G, et al: US-guided placement of temporary internal jugular vein catheters: immediate technical success and complications in normal and high-risk patients. *Eur J Radiol* 2005;55(1):125–129.
28. Eissa NT, Kvetan V: Guide wire as a cause of complete heart block in patients with preexisting left bundle branch block. *Anesthesiology* 1990;73: 772–774.
29. Gil RT, Kruse JA, Thill-Baharozian MC, et al: Triple- vs. single-lumen central venous catheters. *Arch Intern Med* 1989;149:1139–1143.
30. Farkas J-C, Liu N, Bleriot J-P, et al: Single- versus triple-lumen central catheter-related sepsis: a prospective randomized study in a critically ill population. *Am J Med* 1992;93:277–282.
31. Miller JJ, Venus B, Mathru M: Comparison of the sterility of long-term central venous catheterization using single lumen, triple lumen, and pulmonary artery catheters. *Crit Care Med* 1984;12(8):634–637.
32. Wang R, Snoey ER, Clements RC, et al: Effect of head rotation on vascular anatomy of the neck: an ultrasound study. *J Emerg Med* 2006;31(3):283–286.
33. Jesseph JM, Conces DJ, Augustyn GT: Patient positioning for subclavian vein catheterization. *Arch Churg* 1987;122:1207–1209.
34. Stone MB, Price DD, Anderson BS: Ultrasonographic investigation of the effect of reverse Trendelenburg on the cross-sectional area of the femoral vein. *J Emerg Med* 2006;30(2):211–213.
35. Werner SL, Jones RA, Emerman CL: Effect of hip abduction and external rotation on femoral vein exposure for possible cannulation. *J Emerg Med* 2008;35(1):73–75.
36. Elliott TS, Faroqui MH, Armstrong RF, et al: Guidelines for good practice in central venous catheterization. *J Hosp Infect* 1994;28:163–176.
37. Seldinger SI: Catheter replacement of the needle in percutaneous arteriography: a new technique. *Acta Radiol* 1953;39:368–376.
38. Dailey RH: Use of wire-guided (Seldinger-type) catheters in the emergency department. *Ann Emerg Med* 1983;12(8):489–492.
39. Sterner S, Plummer DW, Clinton J, et al: A comparison of the supraclavicular approach and the infra-clavicular approach for subclavian vein catheterization. *Ann Emerg Med* 1986;15(4):421–423.
40. Dronen S, Thompson B, Nowak R, et al: Subclavian vein catheterization during cardiopulmonary resuscitation. *JAMA* 1982;247(3):3227–3230.
41. Nevarre DR, Domingo OH: Supraclavicular approach to subclavian catheterization: review of the literature and results of 178 attempts by the same operator. *J Trauma* 1997;42(2):305–309.
42. Yoffa D: Supraclavicular subclavian venepuncture and catheterization. *Lancet* 1965;2:614–617.
43. Conroy JM, Rajagopalan PR, Baker JD, et al: A modification of the supraclavicular approach to the central circulation. *South Med J* 1990;83(10): 1178–1181.
44. MacDonnell JE, Perez H, Pitts SR: Supraclavicular subclavian vein catheterization: modified landmarks for needle insertion. *Ann Emerg Med* 1992; 21(4):421–424.
45. Fry B: Intermittent heparin flushing protocols. *J Intraven Nurs* 1992;15(3): 160–163.
46. Finck C, Smith S, Jackson R, et al: Percutaneous subclavian central venous catheterization in children younger than one year of age. *Am Surg* 2002; 68(4):401–404.
47. Blaivas M, Lyon M, Duggal S: A prospective comparison of supine chest radiography and bedside ultrasound for the diagnosis of traumatic pneumothorax. *Acad Emerg Med* 2005;12(9):844–849.
48. Soldati G, Testa A, Sher S, et al: Occult traumatic pneumothorax: diagnostic accuracy of lung ultrasonography in the emergency department. *Chest* 2008;133(1):204–211.
49. Carr M, Jagannath A: Hemopericardium resulting from attempted internal jugular vein catheterization: a case report and review of complications of central venous cannulation. *Cardiovasc Intervent Radiol* 1986;9:214–218.
50. Collier PE, Ryan JJ, Daimond DL: Cardiac tamponade from central venous catheters: case report and review of the English literature. *Angiology* 1984;35: 595–600.

51. Bauer S, Tauferner D, Carlson D: Improving straight needle safety: an alternative method. *J Emerg Med* 2011;41(1):e19–e20.
52. Nelson BP: Making straight suture needles a little safer: a technique to keep fingers from harms way. *J Emerg Med* 2008;34(2):195–197.
53. Curelaru I, Linder L-E, Gustavsson B: Displacement of catheters inserted through internal jugular veins with neck flexion and extension. *Intens Care Med* 1980;6:179–183.
54. Bristow A, Batjer H, Chow V, et al: Air embolism via a pulmonary artery catheter introducer. *Anesthesiology* 1985;63:340–341.
55. Stenzel JP, Green TP, Fuhrman BP: Percutaneous femoral venous catheterizations: a prospective study of complications. *J Pediatr* 1989;114(3):411–415.
56. Meredith JW, Young JS, O'Neil EA, et al: Femoral catheters and deep venous thrombosis: a prospective evaluation with venous duplex sonography. *J Trauma* 1993;35(2):187–191.
57. LeMaster CH, Schuur JD, Pandya D, et al: Infection and natural history of emergency department-placed central venous catheters. *Ann Emerg Med* 2010; 56:492–497.
58. Phifer TJ, McIntyre B, Conrad SA: The residual central venous catheter track—an occult source of lethal air embolism: case report. *J Trauma* 1991;31(11):1558–1560.
59. Moon CH, Blehar D, Shear MA, et al: Incidence of posterior vessel wall puncture during ultrasound-guided vessel cannulation in a simulated model. *Acad Emerg Med* 2010;17:1138–1141.
60. Chiles K, Nagdev A: Accidental carotid artery cannulation detected by bedside ultrasound. *West J Emerg Med* 2011;12(1):100–101.
61. Adachi YU, Sato S: Four cases of inadvertent arterial cannulation despite ultrasound guidance. *Am J Emerg Med* 2010;28:533.
62. Phy MP, Neilson RW Jr: Guidewire complication with central line placement. *Hosp Phys* 2004;41–43, 50.
63. Richet H, Hubert B, Nitemberg G, et al: Prospective multicenter study of vascular–catheter-related complications and risk factors for positive central-catheter cultures in intensive care unit patients. *J Clin Microbiol* 1990;28: 2520–2525.
64. Sznajder JI, Zveibil FR, Bitterman H, et al: Central vein catheterization: failure and complication rates by three percutaneous approaches. *Arch Intern Med* 1986;146:259–261.
65. Arnold IR, Brack MJ, Verma PK, et al: Infected right atrial thrombi: a complication of central venous cannulation. *Int J Cardiol* 1994;43:101–104.
66. Eisenhauer ED, Derveloy RJ, Hastings PR: Prospective evaluation of central venous pressure (CVP) catheters in a large city-county hospital. *Ann Surg* 1982; 196:560–564.
67. Karakitsos D, Labropoulos N, De Groot E, et al: Real-time ultrasound-guided catheterisation of the internal jugular vein: a prospective comparison with the landmark technique in critical care patients. *Crit Care* 2006;10(6):R162.
68. Bansal R, Agarwal SK, Tiwari SC, et al: A prospective randomized study to compare ultrasound-guided with nonultrasound-guided double lumen internal jugular catheter insertion as a temporary hemodialysis access. *Ren Fail* 2005; 27(5):561–564.
69. Troianos CA, Jobes DR, Ellison N: Ultrasound-guided cannulation of the internal jugular vein. A prospective, randomized study. *Anesth Analg* 1991; 72(6):823–826.
70. Denys BG, Uretsky BF, Reddy PS: Ultrasound-assisted cannulation of the internal jugular vein. A prospective comparison to the external landmark-guided technique. *Circulation* 1993;87(5):1557–1562.
71. Verghese ST, McGill WA, Patel RI, et al: Ultrasound-guided internal jugular venous cannulation in infants: a prospective comparison with the traditional palpation method. *Anesthesiology* 1999;91(1):71–77.
72. Farrell J, Gellens M: Ultrasound-guided cannulation versus the landmark-guided technique for acute haemodialysis access. *Nephrol Dial Transplant* 1997;12(6):1234–1237.
73. Ramdial P, Singh B, Moodley J, et al: Brachial plexopathy after subclavian vein catheterization. *J Trauma* 2003;54:786–787.
74. Walker MM, Sanders RC: Pneumothorax following supraclavicular subclavian venepuncture. *Anaesthesia* 1969;24(3):453–460; Cook Inc.: *Cook Double Lumen Central Venous Catheter Instructions*. Cook Critical Care. Bloomington, IN: Cook Inc., 1995.
75. Hilty WM, Hudson PA, Levitt MA, et al: Real-time ultrasound-guided femoral vein catheterization during cardiopulmonary resuscitation. *Ann Emerg Med* 1997;29(3):331–336;discussion 337.

REFERENCES

1. Steele R, Irvin CB: Central line mechanical complication rate in emergency medicine patients. *Acad Emerg Med* 2001;8(2):204–207.
2. Merrer J, De Jonghe B, Golliot F, et al: Complications of femoral and subclavian venous catheterization in critically ill patients: a randomized controlled trial. *JAMA* 2001;286(6):700–707.
3. McGee DC, Gould MK: Preventing complications of central venous catheterization. *N Engl J Med* 2003;348(12):1123–1133.
4. Sznajder JI, Zveibil FR, Bitterman H, et al: Central vein catheterization. Failure and complication rates by three percutaneous approaches. *Arch Intern Med* 1986;146(2):259–261.
5. Mansfield PF, Hohn DC, Fornage BD, et al: Complications and failures of subclavian-vein catheterization. *N Engl J Med* 1994;331(26):1735–1738.
6. Agency for Healthcare Research and Quality: Making health care safer: a critical analysis of patient safety practices [summary]. *Evid Rep Technol Assess* 2001;(43):i–x, 1–668.
7. National Institute for Clinical Excellence: Guidance on the use of ultrasound locating devices for placing central venous catheters. Technology Appraisal Guidance 2002;No. 49, www.Nice.org.uk.
8. Randolph AG, Cook DJ, Gonzales CA, et al: Ultrasound guidance for placement of central venous catheters: a meta-analysis of the literature. *Crit Care Med* 1996;24:2053–2058.
9. Milling TJ Jr, Rose J, Briggs WM, et al: Randomized, controlled clinical trial of point-of-care limited ultrasonography assistance of central venous cannulation: the Third Sonography Outcomes Assessment Program (SOAP-3) Trial. *Crit Care Med* 2005;33:1764–1769.
10. Hind D, Calvert N, McWilliams R, et al: Ultrasonic locating devices for central venous cannulation: meta-analysis. *BMJ* 2003;327:361.
11. Hilty WM, Hudson PA, Levitt MA, et al: Real-time ultrasound-guided femoral vein catheterization during cardiopulmonary resuscitation. *Ann Emerg Med* 1997;29:331–336.
12. Keyes LE, Frazee BW, Snoey ER, et al: Ultrasound-guided brachial and basilic vein cannulation in emergency department patients with difficult intravenous access. *Ann Emerg Med* 1999;34(6):711–714.
13. Costantino TG, Parikh AK, Satz WA, et al: Ultrasonography-guided peripheral intravenous access versus traditional approaches in patients with difficult intravenous access. *Ann Emerg Med* 2005;46(5):456–461.
14. Blaivas M, Lyon M: The effect of ultrasound guidance on the perceived difficulty of emergency nurse-obtained peripheral IV access. *J Emerg Med* 2006; 31(4):407–410.
15. Brannam L, Blaivas M, Lyon M, et al: Emergency nurses' utilization of ultrasound guidance for placement of peripheral intravenous lines in difficult-access patients. *Acad Emerg Med* 2004;11(12):1361–1363.
16. Chinnock B, Thornton S, Hendey GW: Predictors of success in nurse-performed ultrasound-guided cannulation. *J Emerg Med* 2007;33(4):401–405.
17. Blaivas M: Ultrasound guided peripheral IV insertion in the ED. *AJN* 2005; 105(10):54–57.
18. Werner SL, Jones RA, Emerman CL: Effect of hip abduction and external rotation on femoral vein exposure for possible cannulation. *J Emerg Med* 2008; 35(1):73–75.

REFERENCES

1. Howell JM: Accessing indwelling lines, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998: 385–393.
2. Fuchs SM: Accessing indwelling central lines, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 1997:811–820.
3. Haire WD, Herbst SL: Use of altepase (t-PA) for the management of thrombotic catheter dysfunction: guidelines from a consensus conference of the National Association of Vascular Access Networks (NAVAN). *Nutr Clin Pract* 2000;15(6):265–275.
4. Taylor JP, Talor JE: Vascular access devices: uses and aftercare. *J Emerg Nurs* 1987;13(3):160–167.
5. Bagnall-Reeb H. Diagnosis of central venous access occlusion: implications for nurse clinicians. *J Intraven Nurs* 1988;21, S115–121.
6. Rockoff MA, Gang DL, Vacanti JP: Fatal pulmonary embolism following removal of a central venous catheter. *J Pediatr Surg* 1984;19(3):307–309.
7. Dyer BJ, Weiman MG, Ludwig S: Central venous catheters in the emergency department: access, utilization, and problem solving. *Pediatr Emerg Care* 1995;11(2):112–117.
8. Rodenhuis S, van't Hek LGFM, Vlasveld LT, et al: Central venous catheter associated thrombosis of major veins: thrombolytic treatment with recombinant tissue plasminogen activator. *Thorax* 1993;48:558–559.
9. Suarez CR, Ow EP, Lambert GH, et al: Urokinase therapy for a central venous catheter thrombus. *Am J Hematol* 1989;31:269–272.
10. Bagnall HA, Gomperts E, Atkinson JB, et al: Continuous infusion of low dose urokinase in the treatment of central venous catheter thrombosis in infants and children. *Pediatrics* 1989;83:963–966.
11. Haire WD, Liebermann RP, Lund GB, et al: Obstructed central venous catheters: restoring function with a 12-hour infusion of low-dose urokinase. *Cancer* 1990;66:2279–2285.
12. Reddy GK: Clinical utility of novel agents in the treatment of central venous catheter occlusion. *Supportive Cancer Ther* 2006;3(3):135–139.
13. Anderson AJ, Krasnow SH, Boyer MW, et al: Hickman catheter clots: a common occurrence despite daily heparin flushing. *Cancer Treat Rep* 1987; 71(6):651–653.
14. Waggen GL, Bliss DZ: Development of evidence-based protocols for the evaluation and management of dysfunctional vascular access devices in interventional radiology. *J Vasc Nurs* 2003:XXI(2):50–62.
15. Hilleman DE, Dunlay RW, Packard KA: Retaplase for dysfunctional hemodialysis catheter clearance. *Pharmacotherapy* 2003;23(2):137–141.
16. Dietcher SR, Fesen MR, Kiproff PM, et al: Safety and efficacy of alteplase for restoring function in occluded central venous catheters: results of the cardiovascular thrombolytic to open occluded lines trial. *J Clin Oncol* 2002; 20:317–324.
17. Timoney JP, Malkin MG, Leone DM, et al: Safe and cost effective use of alteplase for the clearance of occluded central venous access devices. *J Clin Oncol* 2002;20:1918–1922.

REFERENCES

1. Krywko DM, Sozener CB: Indwelling vascular devices: emergency access and management, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine,* 5th ed. Philadelphia: Saunders, 2010:418–430.
2. Fuchs SM: Accessing indwelling central lines, in King C, Henretig FM, King B, et al (eds): *Textbook of Pediatric Emergency Procedures*, 2nd ed. Baltimore: Lippincott, Williams & Wilkins, 2008:738–747.
3. Schanzer H, Kaplan S, Bosch J, et al: Double-lumen, silicone rubber, indwelling venous catheters. *Arch Surg* 1986;121:229–232.
4. Bothe A, Piccione W, Ambrosino JJ, et al: Implantable central venous access system. *Am J Surg* 1984;147:565–569.
5. Broviac JW, Cole JJ, Scribner BH: A silicone rubber catheter for prolonged parenteral alimentation. *Surg Gynecol Obstet* 1973;136:602–606.
6. Hickman RO, Buckner CD, Clift RA, et al: A modified right atrial catheter for access to the venous system in marrow transplant recipients. *Surg Gynecol Obstet* 1979;148:871–875.
7. Kuo YS, Schwartz B, Santiago J, et al: How often should a port-a-cath be flushed. *Cancer Invest* 2005;25:582–585.
8. Tenney JH, Moody MR, Newman KA, et al: Adherent microorganisms on lumenal surfaces of long-term intravenous catheters. *Arch Intern Med* 1986;146:1949–1954.
9. Rockoff MA, Gang DL, Vacanti JP: Fatal pulmonary embolism following removal of a central venous catheter. *J Pediatr Surg* 1984;19(3):307–309.
10. Taylor JP, Talor JE: Vascular access devices: uses and aftercare. *J Emerg Nurs* 1987;13(3):160–167.
11. Marcoux C, Fisher S, Wong D: Central venous access devices in children. *Pediatr Nurs* 1990;16(2):123–133.
12. Greene FL, Moore W, Strickland G, et al: Comparison of a totally implantable access device for chemotherapy (Port-A-Cath) and long-term percutaneous catheterization (Broviac). *South Med J* 1988;81(5):580–583.

REFERENCES

1. Swan HJC, Ganz W, Forrester JS, et al: Catheterization of the heart in man with use of a flow-directed balloon-tipped catheter. *N Engl J Med* 1970;283:447–451.
2. Ganz W, Donoso R, Marcus HS, et al: A new technique for measuring cardiac output by thermodilution in man. *Am J Cardiol* 1971;27:392–396.
3. Forrester JS, Diamond G, McHugh TJ, Swan HJC: Filling pressures in the right and left sides of the heart in acute myocardial infarction. *N Engl J Med* 1971;285:190–192.
4. Forrester JS, Diamond G, Chatterjee K, Swan HJC: Medical therapy of acute myocardial infarction by application of hemodynamic subsets. *N Engl J Med* 1976;295:1356–1362, 1404–1412.
5. Mathay MA, Chatterjee K: Bedside catheterization of the pulmonary artery: risk compared with benefit. *Ann Intern Med* 1988;109:826–834.
6. Shah KB, Rao TL, Laughlin S, El-Etr AA: A review of pulmonary artery catheterization in 6,245 patients. *Anesthesiology* 1984;61:271–275.
7. Boyd KD, Thomas SJ, Gold J, et al: A prospective study of complications of pulmonary artery catheterization in 500 consecutive patients. *Chest* 1983; 83:245–249.
8. Sharkey SW: Beyond the wedge: clinical physiology and the Swan-Ganz catheter. *Am J Med* 1987;83:111–121.
9. Forrester JS, Diamond GA, Swan HJC: Correlative classification of clinical and hemodynamic function after acute myocardial infarction. *Am J Cardiol* 1977;39:137–145.
10. Bayliss J, Norell M, Ryan A, et al: Bedside haemodynamic monitoring: experience in a general hospital. *Br Med J* 1983;287:187–190.
11. Connors AFJ, McCaffree DR, Gray BA: Evaluation of right-heart catheterization in patients without acute myocardial infarction. *N Engl J Med* 1983; 308:263–267.
12. Eisenberg PR, Jaffe AS, Schuster DP: Clinical evaluation compared to pulmonary artery catheterization in the hemodynamic assessment of critically ill patients. *Crit Care Med* 1984;12:549–553.
13. Fein AM, Goldberg SK, Wahlenstein MD, et al: Is pulmonary artery catheterization necessary for the diagnosis of pulmonary edema? *Am Rev Respir Dis* 1984;129:1006–1009.
14. Gore JM, Goldberg RJ, Spodick DH, et al: A community-wide assessment of the use of pulmonary artery catheters in patients with acute myocardial infarction. *Chest* 1987;92:721–727.
15. Zion MM, Balkin J, Rosemann D, et al: Use of pulmonary artery catheters in patients with acute myocardial infarction. *Chest* 1990;98:1331–1335.
16. Connors AF, Speroff T, Dawson NV, et al: The effectiveness of right heart catheterization in the initial care of critically ill patients. *JAMA* 1996;276: 889–897.
17. Mimoz O, Rauss A, Rekik N, et al: Pulmonary artery catheterization in critically ill patients: a prospective analysis of outcome changes associated with catheter-prompted changes in therapy. *Crit Care Med* 1994;22:573–579.
18. American College of Cardiology Consensus Document: Present use of right heart catheterization in patients with cardiac disease. *J Am Coll Cardiol* 1998;32:840–864.
19. Iberti TJ, Fischer EP, Leibowitz AB, et al: A multi-center study of physicians' knowledge of the pulmonary artery catheter. *JAMA* 1990;264:2928–2932.
20. Komadina KH, Shenk DA, LaVeau P, et al: Interobserver variability in the interpretation of pulmonary artery catheter pressure tracings. *Chest* 1991;100:1647–1654.
21. Richard C, Warszawski J, Anguel N, et al: Early use of pulmonary artery catheter and outcomes in patients with shock and acute respiratory distress syndrome. *JAMA* 2003;290(20):2713–2720.
22. Sandham JD, Hull DR, Brant RF, et al: A randomized, controlled trial of the use of pulmonary-artery catheters in high-risk surgical patients. *NEJM* 2003;348(1):5–14.
23. Harvey S, Young D, Brampton W, et al: Pulmonary artery catheters for adult patients in intensive care. *Cochrane Database Syst Rev* 2006;3: CD003408.
24. Rhodes A, Cusack RJ, Newman PJ, et al: A randomized, controlled trial of the pulmonary artery catheter in critically ill patients. *Intensive Care Med* 2002;28:256–264.
25. Wiener RS, Welch HG: Trends in the use of pulmonary artery catheter in the United States, 1993–2004. *JAMA* 2007;298(4):423–429.
26. The ESCAPE Investigators and ESCAPE study coordinators: Evaluation study of congestive heart failure and pulmonary artery catheterization effectiveness, The ESCAPE trial. *JAMA* 2005;294(13):1625–1633.
27. Harvey S, Harrison DA, Singer M, et al: Assessment of the clinical effectiveness of pulmonary artery catheters in management of patients in intensive care (PAC-Man): a randomized controlled trial. *Lancet* 2005;366:472–477.
28. The National Heart, Lung, and Blood Institute Acute Respiratory Distress Syndrome (ARDS) Clinical Trials Network: Pulmonary-artery versus central venous catheter to guide treatment of acute lung injury. *NEJM* 2006;354(21):2213–2224.

REFERENCES

1. Keeley JL: Intravenous injections and infusions. *Am J Surg* 1940;50:485–490.
2. American College of Surgeons: Advanced trauma life support for doctors: student course manual, 7th ed. Chicago, IL: American College of Surgeons, 1997.
3. Mark D. Westfall MD, Price KR, Lambert M, et al: Intravenous access in the critically Ill trauma patient: a multicentered, prospective, randomized trial of saphenous cutdown and percutaneous femoral access. *Ann Emerg Med* 1994;23(3):541–545.
4. Knopp R: Venous cutdowns in the emergency department. *JACEP* 1978; 7(12):439–443.
5. Simon RR, Hoffman JR, Smith M: Modified new approaches for rapid intravenous access. *Ann Emerg Med* 1987;16(1):44–48.
6. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:405–412.
7. Snell RS: *Clinical Anatomy for Medical Students*, 4th ed. Boston: Little, Brown, 1992.
8. Dronen SC, Lanter P: Venous cutdown, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998: 341–351.
9. Shockley LW, Butzier DJ: A modified wire-guided technique for venous cutdown access. *Ann Emerg Med* 1990;19(4):393–395.
10. Taghezadeh R, Gilbert P: Long saphenous vein cutdown revisited. *Burns* 2006;32(2):267–268.
11. Klofas E: A quicker saphenous vein cutdown and a better way to teach it. *J Trauma* 1997;43(6):985–987.
12. Rhee KJ, Derlet RW, Beal SL: Rapid venous access using saphenous vein cutdown at the ankle. *Am J Emerg Med* 1988;7(3):263–266.
13. Moran JM, Atwood RP, Rowe MI: A clinical and bacteriological study of infections associated with venous cutdowns. *N Engl J Med* 1965;272(11): 545–560.
14. Bogen JE: Local complications in 67 patients with indwelling venous catheters. *Surg Gynecol Obstet* 1960;110:112–114.
15. Collins RN, Braun PA, Zinner SH, et al: Risk of complications with polyethylene intravenous catheters. *N Engl J Med* 1968;279(7):340–343.
16. Nowak RM: Venous cutdowns in the emergency room. *JACEP* 1979;8(6):245.

REFERENCES

1. Ralston SH, Tacker WA, Showen L, et al: Endotracheal versus intravenous epinephrine during EMD with dogs. *Ann Emerg Med* 1985;14(11):1044–1048.
2. Orlowski JP, Gallagher JM, Porembka DT: Endotracheal epinephrine is unreliable. *Resuscitation* 1990;19:103–113.
3. Rossetti VA, Thompson BM, Miller J, et al: Intraosseous infusion: an alternative route of pediatric intravascular access. *Ann Emerg Med* 1985; 14(9):885–888.
4. Bohn D: Intraosseous vascular access: from the archives of to the ABC. *Crit Care Med* 1999;27(6):1053–1054.
5. Brunette DD, Fisher R: Intravascular access in pediatric cardiac arrest. *Am J Emerg Med* 1988;6(6):577–579.
6. Orlowski JP: Emergency alternatives to intravenous access: intraosseous, intratracheal, sublingual, and other-site drug administration. *Pediatr Clin North Am* 1994;41(6):1183–1199.
7. Fuchs S, LaCovey D, Paris P: A prehospital model of intraosseous infusion. *Ann Emerg Med* 1991;20(4):371–374.
8. Anderson TE, Arthur K, Kleinman M, et al: Intraosseous infusion: success of a standardized regional training program for prehospital ACLS providers. *Ann Emerg Med* 1994;23(1):52–55.
9. Ellemunter H, Simma B, Trawoger R, et al: Intraosseous lines in preterm and full term neonates. *Arch Dis Child Fetal Neonatal Ed* 1999;80(1):F74–F75.
10. Waisman M, Waisman D: Bone marrow infusion in adults. *J Trauma* 1997;42(2):288–293.
11. Langley DM, Moran M: Intraosseous needle: they're not just for kids anymore. *J Emerg Nurs* 2008;34(4):318–319.
12. Schwartz D, Amir L, Dicter R, et al: The use of a powered device for intraosseous drug and fluid administration in a national EMS: a 4-year experience. *J Trauma* 2008;64:650–655.
13. Williams PL, Warwick R: *Gray's Anatomy,* 35th ed. Philadelphia: Saunders, 1973.
14. Ong MEH, Chan YH, Oh JJ, et al: An observational, prospective study comparing tibial and humeral intraosseous access using the EZ-IO. *Am J Emerg Med* 2009;27:8–15.
15. Hodge D, Delgado-Paredes C, Gleisher G: Intraosseous infusion flow rates in hypovolemic "pediatric" dogs. *Ann Emerg Med* 1987;16(3):305–307.
16. Schoffstall JM, Spivey WH, Davidheiser S, et al: Intraosseous crystalloid and blood infusion in a swine model. *J Trauma* 1989;29(3):384–387.
17. Spivey WH, Lathers CM, Malone DR, et al: Comparison of intraosseous, central, and peripheral routes of sodium bicarbonate administration during CPR in pigs. *Ann Emerg Med* 1985;14(12):1135–1140.
18. Getschman SJ, Dietrich AM, Franklin WH, et al: Intraosseous adenosine: as effective as peripheral or central venous administration? *Arch Pediatr Adolesc Med* 1994;148:616–619.
19. Sawyer RW, Bodai BI, Blaisdell FW, et al: The current status of intraosseous infusion. *J Am Coll Surg* 1994;179:353–360.
20. Tobias JD, Nichols DG: Intraosseous succinylcholine for orotracheal intubation. *Pediatr Emerg Care* 1990;6(2):108–109.
21. Iserson KV: Intraosseous infusion in adults. *J Emerg Med* 1989;7:587–571.
22. Orlowski JP, Porembka DT, Gallagher JM, et al: The bone marrow as a source of laboratory studies. *Ann Emerg Med* 1989;18(12):1348–1351.
23. Johnson L, Kissoon N, Fiallos M, et al: Use of intraosseous blood to assess blood chemistries and hemoglobin during cardiopulmonary resuscitation with drug infusions. *Crit Care Med* 1999;27(6):1147–1152.
24. Fiser DH: Intraosseous infusion. *N Engl J Med* 1990;322(22):1579–1581.
25. Buck ML, Wiggins BS, Sesler JM: Intraosseous drug administration in children and adults during cardiopulmonary resuscitation. *Ann Pharmacother* 2007;41:1679–1686.
26. Simmons CM, Johnson NE, Perkin RM, et al: Intraosseous extravasation complication reports. *Ann Emerg Med* 1994;23(2):363–366.
27. Calkins MD, Fitzgerald G, Bentley TB, et al: Intraosseous infusion devices: a comparison for potential use in special operations. *J Trauma* 2000; 48(6):1068–1073.
28. Spivey WH: Intraosseous infusions. *J Pediatr* 1987;111(5):639–643.
29. Mofenson HC, Tascone A, Caraccio TR: Guidelines for intraosseous infusions. *J Emerg Med* 1988;6:143–146.
30. Strausbaugh SD, Manley LK, Hickey RW, et al: Circumferential pressure as a rapid method to assess intraosseous needle placement. *Pediatr Emerg Care* 1995;11(5):274–276.
31. Garcia CT, Cohen DM: Intraosseous needle: use of the miniature C-arm imaging device to confirm placement. *Pediatr Emerg Care* 1996;12(2):94–97.
32. LaSpada J, Kissoon N, Melker R, et al: Extravasation rates and complications of intraosseous needles during gravity and pressure infusion. *Crit Care Med* 1995;23(12):2023–2028.
33. La Fleche FR, Slepin MJ, Vargas J, et al: Iatrogenic bilateral tibial fractures after intraosseous infusion attempts in a 3-month-old infant. *Ann Emerg Med* 1989;18(10):1099–1101.
34. Katz DS, Wojtowyez AR: Tibial fracture: a complication of intraosseous infusion. *Am J Emerg Med* 1994;12(2):258–259.
35. Rimar S, Westry JA, Rodriquez RL: Compartment syndrome in an infant following an emergency intraosseous infusion. *Clin Pediatr* 1988;27(5):259–260.
36. Barron BJ, Tran HD, Lamki LM: Scintographic findings of osteomyelitis after intraosseous infusion in a child. *Clin Nucl Med* 1994;19(4):307–308.
37. Dedrick DK, Mase C, Ranger W, et al: The effects of intraosseous infusion on the growth plate in a nestling rabbit model. *Ann Emerg Med* 1992;21(5):494–497.
38. Brickman KR, Rega P, Koltz M, et al: Analysis of growth plate abnormalities following intraosseous infusion through the proximal tibial epiphysis in pigs. *Ann Emerg Med* 1998;17(2):121–123.
39. Fiallos M, Kissoon N, Abdelmoneim T, et al: Fat embolism with the use of intraosseous infusion during cardiopulmonary resuscitation. *Am J Med Sci* 1997;314(2):73–79.
40. Plewa MC, King RW, Fenn-Buderer ND, et al: Hematologic safety of intraosseous blood transfusion in a swine model of pediatric hemorrhagic hypovolemia. *Acad Emerg Med* 1995;2(9):799–809.
41. Fiallos M, Kissoon N, Abdelmoneim T, et al: Fat embolism with the use of intraosseous infusion during cardiopulmonary resuscitation. *Am J Med Sci* 1997;314(2):73–79.
42. Brickman KR, Rega P, Schoolfield L, et al: Investigation of bone developmental and histopathologic changes from intraosseous infusion. *Ann Emerg Med* 1996;28(4):430–435.
43. Ruiz-Hornillos PJ, Martinez-Camara F, Elizondo M, et al: Systemic fibrinolysis through intraosseous vascular access in ST-segment elevation myocardial infarction. *Ann Emerg Med* 2011;57(6):572–574.
44. Knuth TE, Paxton JH, Myers D: Intraosseous injection of iodinated computed tomography contrast agent in an adult blunt trauma patient. *Ann Emerg Med* 2011;57(4):382–386.
45. Stone MB, Teismann NA, Wang R: Ultrasonographic confirmation of intraosseous needle placement in an adult unembalmed cadaver model. *Ann Emerg Med* 2007;49(4):515–519.

REFERENCES

1. Diamond LK: Erythroblastosis fetalis or hemolytic disease of the newborn. *Proc R Soc Med* 1947;40:546–550.
2. Lipton JD, Schafermeyer RW: Umbilical vessel catheterization, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:515–523.
3. Wilkinson A, Calvert S: Procedures in neonatal intensive care, in Robertson, NRC (ed): *Textbook of Neonatology*, 2nd ed. Edinburgh: Churchill Livingstone, 1992:1175–1176.
4. Feick HJ, Donn SM: Vascular access and blood sampling, in Donn SM, Faix RG (eds): *Neonatal Emergencies*. New York: Futura, 1991:38–44.
5. McAneney C: Umbilical vessel catheterization, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Illustrated Textbook of Pediatric Emergency and Critical Care Procedures*. St. Louis: Mosby, 1997:503–505.
6. Christopher NC, Cantor RM: Venous and arterial access, in Barkin RM (ed): *Pediatric Emergency Medicine: Concepts and Clinical Practice*, 2nd ed. St. Louis: Mosby, 1997:153–154.
7. Ruddy RM: Illustrated techniques of pediatric emergency procedures, in Fleisher GR, Ludwig S (eds): *Textbook of Pediatric Emergency Medicine*, 3rd ed. Baltimore: Williams & Wilkins, 1993:1581–1585.
8. Nash P: Umbilical catheters, placement and complication management. *J Infus Nurs* 2006;29:346–352.
9. Peuster M, Fink C, Schoof S, Van Schnakenburg C, Hausdorf G: Anterograde balloon valvuloplasty for the treatment of neonatal critical valvar aortic stenosis. *Cathet Cardiovasc Intervent* 2002;56:516–520.
10. Anderson J, Leonard D, Braner DA, Lai S, Tegtmeyer K: Umbilical vascular catheterization. *N Engl J Med* 2009;359:e18.
11. Shilkofski N. Procedures. In: Robertson J, Shilkofski N, eds. *The Harriet Lane Handbook*. 17th ed. St. Louis: Mosby; 2005:73-104.
12. Rubin BK, McRobert E, O'Neil MB: An alternative technique to determine umbilical arterial catheter length. *Clin Pediatr* 1986;25:407–408.
13. Valls SA: Umbilical artery catheterization: a simplified method to predict catheter localization. *An Esp Pediatr* 1975;8:621–625.
14. Barrington KJ: Umbilical artery catheters in the newborn: effects of position of the catheter tip. *Cochrane Database Syst Rev* 1999;(1):CD00505.
15. Tsui BC, Richards GJ, Van Aerde J: Umbilical vein catheterization under electrocardiogram guidance. *Paediatr Anaesth* 2005;15:297–300.
16. George L, Waldman JD, Cohen ML, et al: Umbilical vascular catheters: localization by two-dimensional echocadio/aortography. *Pediatr Cardiol* 1982;2:237–243.
17. Garg AK, Houston AB, Laing JM, MacKenzie JR: Positioning of umbilical arterial catheters with ultrasound. *Arch Dis Child* 1983;58:1017–1018.
18. Greenberg M, Movahed H, Peterson B, Bejar R: Placement of umbilical venous catheters with use of bedside real-time ultrasonography. *J Pediatr* 1995;126:633–635.
19. Ades A, Sable C, Cummings S, Cross R, Markle B, Martin G: Echocardiographic evaluation of umbilical venous catheter placement. *J Perinatol* 2003;23: 24–28.
20. Dunn P: Localisation of the umbilical catheter by post-mortem measurement. *Arch Dis Child* 1966;41:69–75.
21. Shulka H, Ferrara A: Rapid estimation of insertional length of umbilical catheter in newborns. *Am J Dis Child* 1986;140:786–788.
22. Wright IM, Owers MM, Wagner MM: The umbilical arterial catheter: a formula for improved positioning in the very low birth weight infant. *Pediatr Crit Care Med* 2008;9(5):498–501.
23. Vernooij CM: Necrosis of the left buttock as a complication of umbilical catheterization in neonatal resuscitation. *Arch Dis Child Fetal Neonatal Ed* 2007;92:F48.
24. Ancora G, Soffritti S, Faldella G: Diffuse and severe ischemic injury of the extremities: a complication of umbilical vein catheterization. *Am J Perinatol* 2006;23:341–344.
25. Burke-Strickland M: Technique for placing umbilical catheters. *Minn Med* 1972;55(11):1021–1024.
26. Venkataraman PS, Babcock DS, Tsang RC, Ballard JL: Hepatic injury: a possible complication of dopamine infusion through an inappropriately placed umbilical vein catheter. *Am J Perinatol* 1984;1:351–354.
27. Ramachandran P, Cohen RS, Kim EH: Multiple-lumen umbilical venous catheters. *J Pediatr* 1992;121:499.
28. Gray JE, Ringer SE: Common neonatal procedures, in Cloherty JP, Stark AR (eds). *Manual of Neonatal Care*, 4th ed. Philadelphia, PA: Lippincott and Williams & Wilkins, 1998.
29. Hermansen MC, Hermansen MG: Intravascular catheter complications in the neonatal intensive care unit. *Clin Perinatol* 2005;32:141–156.
30. Ruff RL, Shaw CM, Beckwith JB, Iozzo RV: Cerebral infarction complicating umbilical vein catheterization. *Ann Neurol* 2004;6(1):85.
31. Kitterman JA: Fatal air embolism through an umbilical venous catheter. *Eur J Pediatr* 1979;131:71–73.
32. Weber AL, DeLuca S, Shannon DC: Normal and abnormal position of the umbilical artery and venous catheter on the roentgenogram and review of complications. *Am J Roentgenol* 1974;120(2):361–367.
33. Pérez-Martínez A, Bento-Bravo L, Martínez-Bermejo MA, Conde-Cortés J, Lezáun R, Egüés J: Fracture and intracardiac migration of a neonate venous catheter-extraction via umbilical pathway. *Pediatr Radiol* 2002;32(3):211.
34. Walsh JG, O'Sullivan MJ, Ryan CA: Perforation of the inferior cava as a cause of neonatal free intra-abdominal air. *Arch Pediatr Adolesc Med* 2001; 155:523–524.
35. Ihm K, Bosk A, Szavay P, Schafer J, Hofbeck M: Sepsis and lung abscess following malposition of an umbilical vein catheter in a neonate. *Klin Padiatr* 2009;221:76–77.
36. Yiğiter M, Arda IS, Hiçönmez: Hepatic laceration because of the umbilical vein catheter: case report and literature review. *J Pediatr Surg* 2008;(43):e39–e41.
37. Traen M, Schepens E, Laroche S, Van Overmeire B: Cardiac tamponade and pericardial effusion due to venous umbilical catheterization. *Acta Paediatr* 2005;94:626–628.
38. Lam HS, Li AM, Chu WC, Yeung CK, Fok TF, Ng PC: Malpositioned umbilical venous catheter causing liver abscess in a preterm infant. *Biol Neonate* 2005;88:54–56.
39. Sethi SK, Dewan P, Faridi MM, Aggarwal A, Upreti L: Liver abscess, portal vein thrombosis and cavernoma formation following umbilical vein catherisation in two neonates. *Trop Gastroenterol* 2007;28:79–80.
40. Costa S, De Carolis MP, Savarese I, Manzoni C, Lacerenza S, Romagnoli C: An unusual complication of umbilical catheterization. *Eur J Pediatr* 2008; 167:1467–1469.
41. Shareena I, Khu YS, Cheah FC: Intraperitoneal extravasation of total parental nutrition infusate from an umbilical venous catheter. *Singapore Med J* 2008; 49(92):e35.
42. Paster SB, Middleton P: Roentgenographic evaluation of umbilical artery and vein catheters. *JAMA* 1975;231(7):34–39.
43. Green JS, Lamont AC: Pulmonary complications of umbilical venous catheters. *Pediatr Radiol* 1996;26(3):239.
44. Korver AM, Walther FJ, Van der Molen AJ, de Beaufort AJ. Serious complications of umbilical venous catheterization. *Ned Tijdschr Geneeskd* 2007; 151(40):2219–2223.
45. Mattei P: Urachal remnant perforation during umbilical vein catheterization in a newborn. *J Pediatr Surg* 2007;42:722–724.
46. Pratap A, Tiwari A, Agrawal CS, et al: Gastric outlet obstruction: an unusual complication of umbilical vein catheterization. *J Pediatr Gastroenterol Nutr* 2006;43(1):113–115.
47. Cohen M, Sprig A, Roberts I, Bustani P: Subcapsular haematoma and multifocal necrosis as fatal liver complication following umbilical vein catheterization in a premature baby. *Eur J Pediatr Surg* 2006;16(91):55–57.
48. Sinha A, Fernandes CJ, Kim JJ, Fenrich AL Jr, Enciso J: Atrial flutter following placement of an umbilical venous catheter. *Am J Perinatol* 2005;22(5): 275–277.
49. Beluffi G, Vivarelli M, Mongini ME, Chiara A: Hepatic calcification following umbilical vein catheterization in a premature baby. *Eur Radiol* 2004; 14:1320–1321.
50. Symchych PS, Krauss AN, Winchester P: Endocarditis following intracardiac placement of umbilical venous catheters in neonates. *J Pediatr* 1977;90: 287–289.
51. Mohan MS, Patole SK: Neonatal ascites and hyponatremia following umbilical venous catheterization. *J Paediatr Child Health* 2002;38(6):612–614.
52. Sayan A, Demircan M, Erikçi VS, Celik A, Arikan A: Neonatal bladder rupture: an unusual complication of umbilical catheterization. *Eur J Pediatr Surg* 1996;6(6):378–379.
53. Thomas DF, Mont GD, Ransley PG: Bladder calcification after umbilical catheterization. *British Med J* 1982;284:405–406.

54. Lauridsen UB, Enk B, Gammeltoft A: Oesophageal varices as a late complication to neonatal umbilical vein catheterization. *Acta Peadiatr Scand* 1978;67(5):633–636.
55. Kumar RK, Coulthard MG: Renal infarction due to umbilical artery catheters. *Indian Pediatr* 1998;35(1):63–65.
56. Nagel JW, Sims JS, Aplin CE II, Westmark ER: Refractory hypoglycemia associated with a malpositioned umbilical artery catheter. *Pediatrics* 1979;64(93):315–317.
57. Haldeman S, Fowler GW, Ashwal S, Schneider S: Acute flaccid neonatal paraplegia: a case report 1983;33(1):93–95.
58. Green C, Yohannan MD: Umbilical arterial and venous catheters: placement, use and complications. *Neonatal Netw* 1998;17(6):23–28.
59. Chang LY, Horng YC, Chou YH, et al: Umbilical venous line related pericardial effusion in a premature neonate: report of a case. *J Formosa Med Assoc* 1995;94(6):355–357.
60. Carey BE, Zeilinger TC: Hypoglycemia due to high positioning of umbilical artery catheters. *J Perinatol* 1989;9(4):407–410.
61. Omene JA, Odita JC, Diakparomre MA: The risks of umbilical vessel catheterization in a neonatal intensive care unit. *Afr J Med Sci* 1979;8(3–4):115–123.
62. Diamond DA, Ford C: Neonatal bladder rupture: a complication of umbilical artery catheterization. *J Urol* 1989;142(6):1543–1544.
63. Mogbo KI, Wang DC: Biliary venous fistula from umbilical catheter placement. *Pediatr Radiol* 1997;27(4):333–335.
64. Gasparis AP, Santana D, Blewett C, Bohannon WT, Silva MB Jr: Endoluminal retrieval of a dislodged umbilical vein catheter: a case report. *Vasc Endovascular Surg* 2004;38:583–586.
65. Pérez-Martínez A, Vázquez-Garcia MS, Goñi-Orayen C, et al: True knot in an umbilical venous catheter. *J Pediatr* 1999;134(1):113.

REFERENCES

1. Lodato RF: Arterial pressure monitoring, in Tobin MJ (ed): *Principles and Practice of Intensive Care Monitoring*. New York: McGraw-Hill, 1998:733–747.
2. Schlichtig RI: Arterial catheterization: complications, in Tobin MJ (ed): *Principles and Practice of Intensive Care Monitoring*. New York: McGraw-Hill, 1998:751–756.
3. Pillow K, Herrick IA: Pulse oximetry compared with Doppler ultrasound for assessment of collateral blood flow to the hand. *Anaesthesia* 1991;46:338–390.
4. Slogoff S, Keats A, Arlund C: On the safety of radial artery cannulation. *Anesthesiology* 1983;59(1):42–47.
5. AARC Clinical Practice Guidelines: Sampling for arterial blood gas analysis. *Respir Care* 1992;37(8):913–917.
6. National Committee for Clinical Laboratory Standards: *Procedures for the Collection of Diagnostic Blood Specimens by Skin Puncture*, 3rd ed. Pennsylvania: NCCLS, 1992.
7. Gravenstein N, Good ML, Banner TE: Assessment of cardiopulmonary function, in Vobryys ZKZ, Ysupt TE, Zkitny TT (eds): *Critical Care*, 3rd ed. Philadelphia: Lippincott-Raven, 1997:867–898.
8. Rodriguez RM, Light R: Capnography in the ICU; when and how to monitor carbon dioxide levels invasively. *J Crit Illness* 1998;13(6):372–378.
9. Brandenburg MA, Dire DJ: Comparison of arterial and venous blood gas values in the initial emergency department evaluation of patients with diabetic ketoacidosis. *Ann Emerg Med* 1998;31:459–465.
10. Markowitz DH, Irwin RS: Evaluating acid–base disorders: is venous blood gas testing sufficient? *J Crit Illness* 1999;14(7):403–406.
11. Touger M, Gallagher EJ, Tyrel J: Relationship between venous and arterial carboxyhemoglobin levels in patients with suspected carbon monoxide poisoning. *Ann Emerg Med* 1995;25(4):481–483.
12. Aaron SD, Vandemheen KL, Naftel SA, et al: Topical tetracaine prior to arterial puncture: a randomized, placebo-controlled clinical trial. *Respir Med* 2003;97(11):1195–1199.
13. Lightowler JV, Elliott MW: Local anaesthetic infiltration prior to arterial puncture for blood gas analysis: a survey of current practice and a randomised double blind placebo controlled trial. *J R Coll Physicians Lond* 1997; 31(6):645–646.
14. Gerber DR, Zeifman CW, Khouli HI, et al: Comparison of wire-guided and nonwire-guided radial artery catheters. *Chest* 1996;109(3):761–764.
15. Ohara Y, Nakayama S, Furukawa H, et al: Use of a wire-guided cannula for radial arterial cannulation. *J Anesth* 2007;21(1):83–85.
16. Mangar D, Thrush DN, Connell GR, et al: Direct or modified Seldinger wire-directed technique for arterial catheter insertion. *Anesth Analg* 1993;76(4):714–717.
17. Beards SC, Doedens L, Jackson A, et al: A comparison of arterial lines and insertion techniques in critically ill patients. *Anaesthesia* 1994;49:968–973.
18. Jones RM, Hill AB, Nahrwold ML, et al: The effect of method of radial artery cannulation on postcannulation blood flow and thrombus formation. *Anesthesiology* 1981;55(1):76–78.
19. Shiver S, Blaivas M, Lyon M: A prospective comparison of ultrasound-guided and blindly placed radial artery catheters. *Acad Emerg Med* 2006;13(12): 1275–1279.
20. Levin PD, Sheinin O, Gozal Y: Use of ultrasound guidance in the insertion of radial artery catheters. *Crit Care Med* 2003;31(2):481–484.
21. Sladen A: Complications of invasive hemodynamic monitoring in the intensive care unit. *Curr Probl Surg* 1988;25:69–145.
22. Johnson FE, Sumner DS, Strandeness DE Jr: Extremity necrosis caused by indwelling arterial catheters. *Am J Surg* 1976;131(3):375–379.
23. Frezza EE, Mezghebe H: Indications and complications of arterial catheter use in surgical or medical intensive care units: analysis of 4932 patients. *Am Surg* 1998;64(2):127–131.
24. Clarke SL: Arterial lines: an analysis of good practice. *J Child Health Care* 1999;3(1):23–27.
25. Downs JB, Rackstein AD, Klein EF: Hazards of radial-artery catheterization. *Anesthesiology* 1973;38(3):283–286.
26. Clark VL, Krues JA: Arterial catheterization. *Crit Care Clin* 1992;8(4):687–697.
27. Fuhrman TM, Reilley TE, Pippin WD: Comparison of digital blood pressure, plethysmography, and the modified Allen's test as means of evaluating the collateral circulation to the hand. *Anaesthesia* 1992;47:959–961.
28. Spittell JA Jr, Juergens JL, Fairbairn JF II: Radial artery puncture and the Allen test. *Ann Intern Med* 1987;106(5):771–772.
29. Bedford RF, Wollman H: Complications of percutaneous radial-artery cannulation: an objective prospective study in man. *Anesthesiology* 1973;38(3):228–236.
30. Barker WJ: Arterial puncture and cannulation, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:308–322.
31. Thomas F, Burke JP, Parker J, et al: The risk of infection related to radial vs femoral sites for arterial catheterization. *Crit Care Med* 1983;11(10): 807–812.
32. Band JD, Maki DG: Infections caused by arterial catheters used for hemodynamic monitoring. *Am J Med* 1979;67(5):735–741.
33. Norwood SH, Cormier B, McMahon NG, et al: Prospective study of catheter-related infection during prolonged arterial catheterization. *Crit Care Med* 1988; 16(9):836–839.
34. Okeson GC, Wulbrecht PH: The safety of brachial artery puncture for arterial blood sampling. *Chest* 1998;114(3):748–751.
35. Nevasier RJ, Adams JP, May GI: Complications of arterial puncture in anticoagulated patients. *J Bone Joint Surg Am* 1976;35:1118–1123.
36. Chen HE, Foster CL: Arterial and venous access, in Chen SE, Sola JE, Lillemoe KD (eds): *Manual of Common Bedside Surgical Procedures*. Baltimore: Williams & Wilkins, 1996:30–76.
37. Goodwin NM, Schreiber MT: Effects of anticoagulants on acid–base and blood gas estimations. *Crit Care Med* 1979;7:473–476.
38. Barone JE, Madlinger RV: Should an Allen test be performed before radial artery cannulation? *J Trauma* 2006;61:468–470.
39. Slogoff S, Keats AS, Arlund C: On the safety of radial artery cannulation. *Anesthesiology* 1983;59:42–47.
40. Del Cotillo M, Grane N, Llavore M, et al: Heparinized solution vs. saline solution in the maintenance of arterial catheters: a double blind randomized clinical trial. *Intensive Care Med* 2008;34:339–343.

REFERENCES

1. McGaig LF, Stussman BJ: National Hospital Ambulatory Medical Care Survey: 1996 emergency department summary. *Adv Data* 1997;293:1–20. Rockville, MD: National Center for Health Statistics, 1997; DHSS publication no. (PHS) 98–250.
2. Clemente CD: *Anatomy: A Regional Atlas of the Human Body*. Philadelphia: Lea & Febiger, 1975 (Figure 537).
3. Freij RM, Mullett ST: Inadvertent intracranial insertion of a nasogastric tube in a non-trauma patient. *J Accid Emerg Med* 1997;14(1):45–47.
4. McConnell EA: Inserting a nasogastric tube. *Nursing* 1997;27(1):72.
5. Singer AJ, Konia N: Comparison of topical anesthetics and vasoconstrictors vs. lubricants prior to nasogastric intubation: a randomized, controlled trial. *Acad Emerg Med* 1999;6(3):184–190.
6. Ahmed A, Aggarwal M, Watson E: Esophageal perforation: a complication of nasogastric tube placement. *Am J Emerg Med* 1998;16(1):64–66.
7. Ozer S, Benumof JL: Oro- and nasogastric tube passage in intubated patients: fiberoptic description of where they go at the laryngeal level and how to make them enter the esophagus. *Anesthesiology* 1999;91(1):137–143.
8. Metheny N, Wehrle MA, Wiersma L, et al: Testing feeding tube placement. Auscultation vs. pH method. *Am J Nurs* 1998;98(5):37–42.
9. Gharib AM, Stern EJ, Sherbin VL, et al: Nasogastric and feeding tubes. The importance of proper placement. *Postgrad Med* 1996;99(5):165–176.
10. Thomas BW, Falcone RE: Confirmation of nasogastric tube placement by colorimetric indicator detection of carbon dioxide: a preliminary report. *J Am Coll Nutr* 1998;17(2):195–197.
11. Holman JS, Shwed JA. Influence of sucrafalate on the detection of occult blood in simulated gastric fluid by two screening tests. *Clin Pharmacol Ther* 1992;11:625.
12. Goff JS. Gastroesophageal varices: pathogenesis and therapy of acute bleeding. *Gastroenterol Clin North Am* 1993;22:779.
13. Ritter DM, Rettke SR, Hughes RW, et al: Placement of gastric tubes and esophageal stethoscopes in patients with documented esophageal varicies. *Anesth Analg* 1988;67:283.
14. Spektor M, Kaplan J, Kelley J, et al: Nebulized or sprayed lidocaine as anesthesia for nasogastric intubations. *Acad Emerg Med* 2000;7:406.
15. Witting MD: "You wanna do what?!" Modern indications for nasogastric intubation. *J Emerg Med* 2007;33(1):61–64.
16. Wolfe TR, Fosnocht DE, Linscott MS: Atomized lidocaine as topical anesthesia for nasogastric tube placement: a randomized, double-blind, placebo-controlled trial. *Ann Emerg Med* 2000;35:421–425.
17. Babl FE, Goldfinch C, Mandrawa C, et al: Does nebulized lidocaine reduce the pain and distress of nasogastric tube insertion in young children? A randomized, double-blind, placebo-controlled trial. *Pediatrics* 2009;123: 1548–1555.
18. Rosenthal A, Dente CJ, Norman MA, et al: The naso-subclavian tube. *J Trauma* 2006;61(2):473–474.
19. Burns BJ, Newey A, Numa A: Beware the starboard nasogastric tube. *Peds Emerg Care* 2008;24(5):307–309.
20. Juhl GA, Conners GP: Emergency physician's practices and attitudes regarding procedural anaesthesia for nasogastric tube insertion. *Emerg Med J* 2005; 22:243–245.
21. Cincinnati Children's Hospital Medical Center: *Best Evidence Statement (BESt). Confirmation of Nasogastric Tube Placement in Pediatric Patients*. National Guideline Clearinghouse. Cincinnati (OH): Cincinnati Children's Hospital Medical Center, 2009:1–11.

REFERENCES

1. Cooney DO: *Activated Charcoal in Medicinal Applications*. New York: Marcel Decker, 1995.
2. Fountain JS, Beasley DM: Activated charcoal supersedes ipecac as gastric decontaminant. *N Z Med J* 1998;111(1076):402–404.
3. Levy G: Gastrointestinal clearance of drugs with activated charcoal. *N Engl J Med* 1982;307:676–678.
4. Chyka PA: Multiple-dose activated charcoal and enhancement of systemic drug clearance: summary of studies in animals and human volunteers. *J Toxicol Clin Toxicol* 1995;33(5):399–405.
5. Bradberry SM, Vale JA: Multiple-dose activated charcoal: a review of relevant clinical studies. *J Toxicol Clin Toxicol* 1995;33(5):407–416.
6. Pond SM, Lewis-Driver DJ, Williams GM, et al: Gastric emptying in acute overdose: a prospective randomized controlled trial. *Med J Aust* 1995;163: 345–349.
7. Kulig K, Bar-Or D, Cantril SV, et al: Management of acutely poisoned patients without gastric emptying. *Ann Emerg Med* 1985;14:562–567.
8. Merigian KS, Woodard M, Hedges JR, et al: Prospective evaluation of gastric emptying in the self-poisoned patient. *Am J Emerg Med* 1990;8:479–483.
9. Tenenbein M, Cohen S, Sitar DS: Efficacy of ipecac-induced emesis, orogastric lavage and activated charcoal for acute drug overdose. *Ann Emerg Med* 1987;16:838–841.
10. Manoguerra AS: Gastrointestinal decontamination after poisoning. Where is the science? *Crit Care Clin* 1997;13(4):709–725.
11. Chyka PA, Seger D, Krenzelok EP, et al (for the American Academy of Clinical Toxicology; European Association of Poisons Centres and Clinical Toxicologists): Position statement: single-dose activated charcoal. *J Toxicol Clin Toxicol* 2005;43(2):61–87.
12. Mauro LS, Nawarskas JJ, Mauro VF: Misadventures with activated charcoal and recommendations for safe use. *Ann Pharmacother* 1994;28(7–8):915–924.
13. Olson K: *Activated Charcoal: Poisoning & Drug Overdose*, 5th ed. New York: McGraw Hill, 2004:432–433.
14. Kulig K: General management principles, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 4th ed. St Louis: Mosby, 1998:1244–1250.
15. Seger D: Single-dose activated charcoal-backup and reassess. *J Toxicol Clin Toxicol* 2004;42(1):101–110.
16. Roy TM, Ossorio MA, Cipolla LM, et al: Pulmonary complications after tricyclic antidepressant overdose. *Chest* 1989;96;852–856.
17. Bond GR: The role of activated charcoal and gastric emptying in gastrointestinal decontamination: a state-of-the-art review. *Ann Emerg Med* 2002; 39(3):273–286.
18. Eddleston M, Juszczak E, Buckley NA, et al: Multiple-dose activated charcoal in acute self-poisoning: a randomized controlled trial. *Lancet* 2008; 371:579–587.
19. Eyer P, Eyer F: Is this the epitaph for multiple-dose activated charcoal? *Lancet* 2008;371:538–539.

REFERENCES

1. Perrone J, Hoffman RS, Goldfrank LR: Special considerations in gastrointestinal decontamination. *Emerg Med Clin North Am* 1994;12(2):285–299.
2. Larkin GL, Claassen C: Trends in emergency department use of gastric lavage for poisoning events in the United States, 1993–2003. *J Toxicol Clin Toxicol* 2007;45:164–168.
3. Kulig K: Position statement: gastric lavage. American Academy of Clinical Toxicology; European Association of Poisons Centres and Clinical Toxicologists. *J Toxicol Clin Toxicol* 2004;42:933–943.
4. Saetta JP, March S, Gaunt ME, et al: Gastric emptying procedures in the self-poisoned patient: are we forcing gastric content beyond the pylorus? *J R Soc Med* 1991;84(5):274–276.
5. Scalzo AJ, Tominack RL, Thompson MW: Malposition of pediatric gastric lavage tubes demonstrated radiographically. *J Emerg Med* 1992;10(5): 581–586.
6. Klasner A, Scalzo A: Pediatric lavage and gastric decompression tubes: a new formula evaluated. *J Toxicol Clin Toxicol* 1999;37(5):660.
7. Christophersen A-B J, Hoegberg LCG: Techniques used to prevent gastrointestinal absorption, in Floenbaum NE, Goldfrank LR, Hoffman R, et al (eds): *Goldfrank's Toxicologic Emergencies,* 8th ed. New York, NY: McGraw-Hill, 2006:109–123.
8. Burke M: Gastric lavage and emesis in the treatment of ingested poisons: a review and a clinical study of lavage in ten adults. *Resuscitation* 1972;1(2):91–105.
9. Adnet F, Borron SW, Finot MA, et al: Relation of body position at the time of discovery with suspected aspiration pneumonia in poisoned comatose patients. *Crit Care Med* 1999;27(4):745–748.
10. Drakulovic MB, Torres A, Bauer TT, et al: Supine body position as a risk factor for nosocomial pneumonia in mechanically ventilated patients: a randomised trial. *Lancet* 1999;354(9193):1851–1858.
11. Orozco-Levi M, Torres A, Ferrer M, et al: Semirecumbent position protects from pulmonary aspiration but not completely from gastroesophageal reflux in mechanically ventilated patients. *Am J Respir Crit Care Med* 1995; 152(4 Pt 1):1387–1390.
12. Torres A, Serra-Batlles J, Ros E, et al: Pulmonary aspiration of gastric contents in patients receiving mechanical ventilation: the effect of body position. *Ann Intern Med* 1992;116(7):540–543.
13. Holstege CP, Baer AB: Gastric lavage in the poisoned patient, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2009:824–840.
14. Mariani PJ, Pook N: Gastrointestinal tract perforation with charcoal peritoneum complicating orogastric intubation and lavage. *Ann Emerg Med* 1993; 22(3):606–609.
15. Kimura Y, Kamada Y, Kimura S: Efficacy of abdominal computed tomography and nasogastric tube in acute poisoning patients. *Am J Emerg Med* 2008; 26:738.e3–738.e5.
16. Kimura Y, Kamada Y, Kimura S: A patient with numerous tablets remaining in the stomach even 5 hours after ingestion. *Am J Emerg Med* 2008;26: 118.e1–118.e2.

REFERENCES

1. Position paper: whole bowel irrigation. *J Toxicol Clin Toxicol* 2004;42:843–854.
2. Ly BT, Schneir AB, Clark RF: Effect of whole bowel irrigation on the pharmacokinetics of an acetaminophen formulation and progression of radiopaque markers through the gastrointestinal tract. *Ann Emerg Med* 2004; 43(2):189–195.
3. Everson GW, Bertaccini EJ, O'Leary J: Use of whole bowel irrigation in an infant following iron overdose. *Am J Emerg Med* 1991;9:366–369.
4. Smith SW, Ling LJ, Halstenson CE: Whole bowel irrigation as a treatment for acute lithium overdose. *Ann Emerg Med* 1991;20(5):536–539.
5. Burkhart KK, Kulig KW, Rumack B: Whole bowel irrigation as treatment for zinc sulfate overdose. *Ann Emerg Med* 1990;19(10):1167–1170.
6. Lee DC, Roberts JR, Kelly JJ, et al: Whole bowel irrigation as an adjunct in the treatment of radiopaque arsenic. *Am J Emerg Med* 1995;13:244–245.
7. Roberge RJ, Martin TG: Whole bowel irrigation in an acute oral lead intoxication. *Am J Emerg Med* 1992;10(6):577–583.
8. Buckley N, Dawson AH, Howarth D, et al: Slow-release verapamil poisoning. Use of polyethylene glycol whole-bowel lavage and high-dose calcium. *Med J Aust* 1993;158(3):202–204.
9. Farmer JW, Chan SB: Whole bowel irrigation for body packers. *J Clin Gastroenterol* 2003;37:147–150.
10. Bryant SM, Weiselberg R, Metz J, et al: Treating body stuffers with whole bowel irrigation: should we flush the procedure? *Clin Toxicol* 2008;46:621.
11. Givens ML, Gabrysch J: Cardiotoxicity associated with accidental bupropion ingestion in a child. *Pediatr Emerg Care* 2007;23:234–237.
12. Cumpston K, Aks S, Sigg T, et al: Whole bowel irrigation and the hemodynamically unstable calcium channel blocker overdose: primum non nocere. *J Emerg Med* 2010;38(2):171–174.
13. Carlson DW, DiGuilio GA, Gewitz MH, et al: Naso-gastric tube placement, in Fleisher GR, Ludwig S, Henretig FM, et al (eds): *Textbook of Pediatric Emergency Medicine*, 3rd ed. Philadelphia: Williams & Wilkins, 1993:1633.
14. Tenenbein M: Whole bowel irrigation, in Henretig FM, King C, Joffe MD, et al (eds): *Textbook of Pediatric Emergency Procedures*. Philadelphia: Williams & Wilkins, 1997:1309–1312.
15. Adnet F, Borron SW, Finot MA, et al: Relation of body position at the time of discovery with suspected aspiration pneumonia in poisoned comatose patients. *Crit Care Med* 1999;27(4):745–748.
16. Drakulovic MB, Torres A, Bauer TT, et al: Supine body position as a risk factor for nosocomial pneumonia in mechanically ventilated patients: a randomised trial. *Lancet* 1999;27;354(9193):1851–1858.
17. Orozco-Levi M, Torres A, Ferrer M, et al: Semirecumbent position protects from pulmonary aspiration but not completely from gastroesophageal reflux in mechanically ventilated patients. *Am J Respir Crit Care Med* 1995; 152(4 Pt 1):1387–1390.
18. Torres A, Serra-Batlles J, Ros E, et al: Pulmonary aspiration of gastric contents in patients receiving mechanical ventilation: the effect of body position. *Ann Intern Med* 1992;116(7):540–543.

REFERENCES

1. Webb WA, Taylor MB: Foreign bodies of the upper gastrointestinal tract, in Taylor MB, Gollan JL, Steer ML, et al (eds): *Gastrointestinal Emergencies,* 2nd ed. Baltimore: Lippincott Williams & Wilkins, 1997:3–18.
2. Schwartz GF, Polsky HS: Ingested foreign bodies of the gastrointestinal tract. *Am Surg* 1976;42:236–238.
3. American Society for Gastrointestinal Endoscopy: Guideline for the management of ingested foreign bodies. *Gastrointest Endosc* 1995;42(6):622–625.
4. Barros JL, Caballero A Jr, Rueda JC, et al: Foreign body ingestion: management of 167 cases. *World J Surg* 1991;15(6):783–788.
5. Gelfand DW: Complications of gastrointestinal radiographic procedures: 1. Complications of routine fluoroscopic procedures. *Gastrointest Radiol* 1980; 5:293–315.
6. Desai TK, Stecevic V, Chang CH, et al: Association of eosinophilic inflammation with esophageal food impaction in adults. *Gastrointest Endosc* 2005; 61:795–801.
7. Gamba JL, Heaston DK, Korobkin M: CT diagnosis of an esophageal foreign body. *Am J Radiol* 1983;140:289–290.
8. Vizcarrondo FJ, Brady PG, Nord HJ: Foreign bodies in the upper gastrointestinal tract. *Gastrointest Endosc* 1983;29(3):208–210.
9. Webb WA: Management of foreign bodies of the upper gastrointestinal tract. *Gastroenterology* 1988;94(1):204–216.
10. Haugen RK: The café coronary: sudden death in restaurants. *JAMA* 1963; 186(2):142–143.
11. Spitz L: Management of ingested foreign bodies in childhood. *Br Med J* 1971; 4:469–472.
12. Cockerill FR III, Wilson WR, Van Scoy RE: Travelling toothpicks. *Mayo Clin Proc* 1983;58:613–616.
13. Rosch W, Classen M: Fiber endoscopic foreign body removal from the upper gastrointestinal tract. *Endoscopy* 1972;4:193–197.
14. Guindi MM, Troster MM, Walley VM: Three cases of an usual foreign body in small bowel. *Gastrointest Radiol* 1987;12:240–242.
15. Brady P: Esophageal foreign bodies. *Gastroenterol Clin North Am* 1991; 20(4):691–701.
16. Yoshida C, Peura D: Foreign bodies in the esophagus, in Castell D, Richter JE (eds): *The Esophagus.* Boston: Little, Brown, 1995:379–394.
17. Rogers BGH, Kot C, Meiri S, et al: An overtube for the flexible fiberoptic esophagogastroduodenoscope. *Gastrointest Endosc* 1982;28(4):256–257.
18. Saeed ZA, Michaletz PA, Feiner SD, et al: A new endoscopic method for managing food impaction in the esophagus. *Endoscopy* 1990;22:226–228.
19. Pouagare M, Brady PG: New techniques for the endoscopic removal of foreign bodies, in Barkin JS, O'Phelan CA (eds): *Advanced Therapeutic Endoscopy*, 2nd ed. New York: Raven Press, 1994:165–174.
20. Pezzi J, Shiau YF: A method for removing meat impactions from the esophagus. *Gastrointest Endosc* 1994;40(5):634–636.
21. Mamel JJ, Weiss D, Pouagare M, et al: Endoscopic suction removal of food boluses from the upper gastrointestinal tract using Stiegmann-Goff friction-fit adaptor: an improved method for removal of food impactions. *Gastrointest Endosc* 1995;41(6):593–596.
22. Ramirez FC: Endoscopic removal of esophageal meat impaction. *Gastrointest Endosc* 1995;41(6):617.
23. Neustater B, Barkin JS: Extraction of an esophageal food impaction with a Roth retrieval net. *Gastrointest Endosc* 1996;43(1):66–67.
24. Faigel DO, Stotland BR, Kochman ML, et al: Device choice and experience level in endoscopic foreign object retrieval: an in vivo study. *Gastrointest Endosc* 1997;45(6):490–492.
25. Klein I: Resourceful management of esophageal food impaction. *Gastrointest Endosc* 1990;36:80.
26. Berggreen PJ, Harrison E, Sanowski RA, et al: Techniques and complications of esophageal foreign body extraction in children and adults. *Gastrointest Endosc* 1993;39(5):626–630.
27. Grossi L, Ciccaglione A, Marzio L. Effects of the 5-HT1 agonist sumatriptan on oesophageal motor pattern in patients with ineffective oesophageal motility. *Neurogastroenterol Motil* 2003;15(1):9–14.
28. Schwartz JT, Graham DY: Toothpick perforation of the intestines. *Ann Surg* 1977;185(1):64–66.
29. Budnick LD: Toothpick-related injuries in the United States, 1979 through 1982. *JAMA* 1984;252(6):796–797.
30. Guber MD, Suarez CA, Greve J: Toothpick perforation of the intestine diagnosed by a small bowel series. *Am J Gastroenterol* 1996;91(4):789–791.
31. Jackson C, Jackson CL: *Disease of the Air and Food Passages of Foreign Body Origin.* Philadelphia: Saunders, 1937.
32. Koch H: Operative endoscopy. *Gastrointest Endosc* 1977;24(2):65–68.
33. Macon N: Overtubes and foreign bodies. *Can J Gastroenterol* 1990;4:599–602.
34. Bertoni G, Pacchione D, Gonigliaro R, et al: Endoscopic protector hood for safe removal of sharp-pointed gastroesophageal foreign bodies. *Surg Endosc* 1992;6:255–258.
35. Tuen HH, Lai ECS, Fan ST: Endoscopic retrieval of ingested broken glass in the esophagus and stomach by end-hood and suction technique. *Gastrointest Endosc* 1989;35(4):357–358.
36. Macmanus JE: Perforation of the intestine by ingested foreign bodies. Report of two cases and review of the literature. *Am J Surg* 1941;53(3):393–400.
37. Maleki M, Evans WE: Foreign body perforation of the intestinal tract. *Arch Surg* 1970;101:475–477.
38. Sheikh A: Button battery ingestion in children. *Pediatr Emerg Care* 1993; 9(4):224–229.
39. Yardeni D, Yardeni H, Coran AG, Golladay ES. Severe esophageal damage due to button battery ingestion:can it be prevented? *Pediatr Surg Int* 2004;20: 496–501.
40. Blatnik BS, Toohill RJ, Lehman RH: Fatal complications from an alkaline battery foreign body in the esophagus. *Ann Otol Rhinol Laryngol* 1977;86: 611–615.
41. Litovitz T, Schmitz BF: Ingestion of cylindrical and button batteries: an analysis of 2,382 cases. *Pediatrics* 1992;89(4):747–757.
42. Bonadio WA, Jona JZ, Glicklich M, et al: Esophageal bougienage technique for coin ingestion in children. *J Pediatr Surg* 1988;23:917–918.
43. Jona JZ, Glicklich M, Cohen RD: The contraindications for blind esophageal bougienage for coin ingestion in children. *J Pediatr Surg* 1988;23:328–330.
44. Kelley JE, Leech MH, Carr MG: A safe and cost-effective protocol for the management of esophageal coins in children. *J Pediatr Surg* 1993;28:898–900.
45. Waltzman ML, Baskin M, Wipij D, et al: A randomized clinical trial in the management of esophageal coins in children. *Pediatrics* 2005;116:614–619.
46. Gauderer MW, DeCou JM, Abrams RS, et al: The 'penny pincher': a new technique for fast and safe removal of esophageal coins. *J Pediatr Surg* 2000;35(2):276–278.
47. Conners,GP. Esophageal coin ingestion: going low tech (editorial). *Ann Emerg Med* 2008;51:373–374.
48. Ginsberg GG: Management of ingested foreign objects and food bolus impactions. *Gastrointest Endosc* 1994;41(1):33–38.
49. Ciriza C, Garcia L, Suarez P, et al: What predictive parameters best indicate the need for emergent gastrointestinal endoscopy after foreign body ingestion? *J Clin Gastroenterol* 2000;31(1):23–28.
50. Mortensen A, Hansen NF: Fatal aortoesophageal fistula caused by button battery ingestion in a 1-year-old child. *Am J Emerg Med* 2010;28:984.e5–984.e6.
51. Litovitz T, Whitaker N, Clark L, et al: Emerging battery-ingestion hazard: clinical implications. *Pediatrics* 2010;125:1168–1177.
52. Sharma A, Chauhan N, Alexander A, et al: The risks and the identification of ingested button batteries in the esophagus. A child safety issue. *Pediatr Emerg Care* 2009;25(3):196–199.
53. Slamon NB, Hertzog JH, Penfil SH, et al: An unusual case of button battery-induced traumatic tracheoesophageal fistula. *Pediatr Emerg Care* 2008;24(5):313–316.
54. National Capital Poison Center: NBIH button battery ingestion triage and treatment guidelines. http://www.poison.org/battery/guideline.asp2010.
55. Arms JL, Mackenberg-Mohn MD, Bowen MV, et al: Safety and efficacy of a protocol using bougienage or endoscopy for the management of coins acutely lodged in the esophagus: a large case series. *Ann Emerg Med* 2008; 51(4):367–372.

REFERENCES

1. Pagliaro L: Portal hypertension in cirrhosis: natural history, in Bosch J, Groszmann RJ (eds): *Portal Hypertension, Pathophysiology and Treatment*. Oxford, England: Blackwell, 1994:190.
2. North Italian Endoscopic Club for the Study and Treatment of Esophageal Varices: Prediction of the first variceal hemorrhage in patients with cirrhosis of the liver and esophageal varices: a prospective multicenter study. *N Engl J Med* 1988;319(15):983–989.
3. Goff JS: Gastroesophageal varices: pathogenesis and therapy of acute bleeding. *Gastroenterol Clin North Am* 1993;22(4):779–800.
4. Navarro VJ, Garcia-Tsao G: Variceal hemorrhage. *Crit Care Clin* 1995; 11(2):391–414.
5. Graham DY, Smith JL: The course of patients after variceal hemorrhage. *Gastroenterology* 1981;80(4):800–809.
6. Smith JL, Graham DY: Variceal hemorrhage: a critical evaluation of survival analysis. *Gastroenterology* 1982;82(5 Pt 1):968–973.
7. Groszmann RJ: Reassessing portal venous pressure measurements. *Gastroenterology* 1984;86(6):1611–1614.
8. Angelico M, Carli L, Piat C, et al: Isosorbide-5-mononitrate versus propranolol in the prevention of the first bleeding in cirrhosis. *Gastroenterology* 1993;104(5):1460–1465.
9. Ferguson D, Tripathi D, Hayes PC. Review article: the management of acute variceal bleeding. *Aliment Pharmacol Ther* 2003;18: 253–262.
10. Kashiwagi H, Shikano S, Yamamoto O, et al: Technique for positioning the Sengstaken–Blakemore tube as comfortably as possible. *Surg Gynecol Obstet* 1991;172:63.
11. Isacs KL, Levinson SL: Insertion of the Minnesota tube, in Drossman DA (ed): *Manual of Gastroenterology Procedures*, 3rd ed. New York: Raven Press, 1993:27–35.
12. Pasquale MD, Cerra FB: Sengstaken–Blakemore tube placement: use of balloon tamponade to control bleeding varices. *Crit Care Clin* 1992;8(4):743–753.
13. Edlich RF, Landé AJ, Goodale RL, et al: Prevention of aspiration pneumonia by continuous esophageal aspiration during esophagogastric tamponade and gastric cooling. *Surgery* 1968;64(2):405–408.
14. Boyce MHW: Modification of the Sengstaken–Blakemore balloon tube. *N Engl J Med* 1962;267(4):195–196.
15. Mitchell K, Silk DBA, Williams R: Prospective comparison of two Sengstaken tubes in the management of patients with variceal hemorrhage. *Gut* 1980; 21:570–573.
16. Lin TC, Bilir BM, Powis ME: Endoscopic placement of Sengstaken–Blakemore tube. *J Clin Gastroenterol* 2000;31(1):29–32.
17. Pitcher JL: Safety and effectiveness of the modified Sengstaken–Blakemore tube: a prospective study. *Gastroenterology* 1976;61(3):291–298.
18. Panes J, Teres J, Bosch J, et al: Efficacy of balloon tamponade in treatment of bleeding gastric and esophageal varices: results in 151 consecutive episodes. *Dig Dis Sci* 1988;33(4):454–459.
19. Goff JS, Thompson JS, Pratt CF, et al: Jejunal rupture caused by a Sengstaken–Blakemore tube. *Gastroenterology* 1982;82(3):573–575.
20. Chojkier M, Conn HO: Esophageal tamponade in the treatment of bleeding varices. A decadal progress report. *Dig Dis Sci* 1980;25(4):267–272.
21. Hunt PS, Korman MG, Hansky J, et al: An 8-year prospective experience with balloon tamponade in emergency control of bleeding esophageal varices. *Dig Dis Sci* 1982;27(5):413–416.
22. Haddock G, Garden OJ, McKee RF, et al: Esophageal tamponade in the management of acute variceal hemorrhage. *Dig Dis Sci* 1989;34(6):913–918.
23. Teres J, Planas R, Panes J, et al: Vasopressin/nitroglycerin infusion vs esophageal tamponade in the treatment of acute variceal bleeding: a randomized controlled trial. *Hepatology* 1990;11(6):964–968.
24. Correia JP, Alves MM, Alexandrino P, et al: Controlled trial of vasopressin and balloon tamponade in bleeding esophageal varices. *Hepatology* 1984;4(5):885–888.
25. Lo GH, Lai KH, Ng WW, et al: Injection sclerotherapy preceded by esophageal tamponade versus immediate sclerotherapy in arresting active variceal bleeding: a prospective randomized trial. *Gastrointest Endosc* 1992;38(4):421–424.
26. Pinto-Correia J, Alves MM, Alexandrino P, et al: Controlled trial of vasopressin and balloon tamponade in acute hemorrhage from esophagogastric varices: a prospective controlled randomized trial. *Hepatology* 1984;4(5):580–583.
27. Agarwal R, Aggarwal AN, Gupta D: Endobronchial malposition of Sengstaken–Blakemore tube. *J Emerg Med* 2008;34(1):93–94.

REFERENCES

1. Cunha F: Gastrostomy, its inception and evolution. *Am J Surg* 1946;72(4): 610–634.
2. Gauderer MWL, Stellato TA: Gastrostomies: evolution, techniques, indications, and complications. *Curr Probl Surg* 1986;23:661–719.
3. Engel S: Gastrostomy. *Surg Clin North Am* 1969;49(6):1289–1295.
4. Stamm M: Gastrostomy by a new method. *Med News* 1894;65:324–326.
5. Janeway HH: Eine neue gastrostomie methode. *Muench Med Wochnschr* 1913;60:1705–1707.
6. O'Keefe KP: Complications of percutaneous feeding tubes. *Emerg Med Clin North Am* 1994;12(3):815–826.
7. Gauderer MWL, Ponsky JL, Izant RJ: Gastrostomy without laparotomy: a percutaneous endoscopic technique. *J Pediatr Surg* 1980;15(6):872–875.
8. Graneto JW: Gastrostomy tube replacement, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 1997:915–920.
9. Ponsky JL: Percutaneous endoscopic stomas. *Surg Clin North Am* 1989; 69(6):1227–1236.
10. Russell TR, Brotman M, Norris F: Percutaneous gastrostomy: a new simplified and cost-effective technique. *Am J Surg* 1984;148:132–137.
11. Samuels L: Feeding tubes: removal, replacement, and unclogging, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 2nd ed. Philadelphia: Saunders, 1991:662–674.
12. Kadakia SC, Cassaday M, Shaffer RT: Prospective evaluation of Foley catheter as a replacement gastrostomy tube. *Am J Gastroenterol* 1992;87(11): 1594–1597.
13. Kadakia SC, Cassaday M, Shaffer RT: Comparison of Foley catheter as a replacement gastrostomy tube with commercial replacement gastrostomy tube: a prospective randomized trial. *Gastrointest Endosc* 1994;40(2):188–193.
14. Beck AR, Allen JE: An improved gastrostomy dressing. *Arch Surg* 1967; 94:904–906.
15. Brummer B, Cheng EH: Simple external retention device for Foley replacement gastrostomy tubes. *J Clin Gastroenterol* 1995;20(4):337–338.
16. Simon T, Fink AS: Current management of endoscopic feeding tube dysfunction. *Surg Endosc* 1999;13:403–405.
17. Persaud M: Unclogging percutaneous endoscopic gastrostomy tubes. *Gastrointest Endosc* 1990;36(6):640.
18. Dobrota JS: Deflating replacement gastroscopy tubes. *Gastrointest Endosc* 1994;40(6):778.
19. Rogers JJ: Failure to deflate the balloon of replacement gastroscopy tubes. *Gastrointest Endosc* 1994;40(5):649.
20. Waldstreicher S: Replacement of gastrostomy tube. *Am J Gastroenterol* 1999; 92(4):728.
21. Kadakia SC, Parker A, Angueira C, et al: Failure to deflate the balloon of replacement gastrostomy tubes. *Gastrointest Endosc* 1993;39(4):576–578.
22. Korula J, Harma C: A simple and inexpensive method of removal or replacement of gastrostomy tubes. *JAMA* 1991;265(11):1426–1428.
23. Yaseen M, Steele MI, Grunow JE: Nonendoscopic removal of percutaneous endoscopic gastrostomy tubes: morbidity and mortality in children. *Gastrointest Endosc* 1996;44(3):235–238.
24. Marshall JB, Bodnarchuk G, Barthel JS: Early accidental dislodgement of PEG tubes. *J Clin Gastroenterol* 1994;18(3):210–212.
25. Galat SA, Gerig KD, Porter JA, et al: Management of premature removal of the percutaneous gastrostomy. *Am Surg* 1990;56(11):733–736.
26. Benson M, Slater G: Technique for the replacement of a feeding gastrostomy tube. *Am J Surg* 1979;138(5):732.
27. Esker AH, Hall CH: Replacement of the damaged percutaneous endoscopic gastrostomy feeding tube in the immature tract. *Gastrointest Endosc* 1990;36(4):389–391.
28. Fox VL, Abel SD, Malas S, et al: Complications following percutaneous endoscopic gastrostomy and subsequent catheter replacement in children and young adults. *Gastrointest Endosc* 1997;45(1):64–71.
29. Jacobson G, Brokish PA, Wrenn K: Percutaneous feeding tube replacement in the ED—are confirmatory X-rays necessary? *Am J Emerg Med* 2009;27: 519–524.
30. Chong VH: Issues on percutaneous feeding tube replacement. *Am J Emerg Med* 2010;28(1):108.
31. Saavedra H, Losek JD, Shanley L, et al: Gastrostomy tube-related complaints in the pediatric emergency department. *Pediatr Emerg Care* 2009; 25(11):728–732.

REFERENCES

1. Rocco VK, Ware AJ: Cirrhotic ascites: pathophysiology, diagnosis and management. *Ann Intern Med* 1986;105(4):573–585.
2. Cattau E Jr, Benjamin SB, Knuff TE, et al: The accuracy of the physical examination in the diagnosis of suspected ascites. *JAMA* 1982;247(8):1164–1166.
3. Nazeer SR, Dewbre H, Miller AH. Ultrasound assisted paracentesis performed by emergency physicians versus the traditional technique: a prospective randomized study. *Am J Emerg Med* 2005;23:363–367.
4. Saloman H: Die diagnostische punction des bausches. *Berl Klin Wochenschr* 1906;43:45.
5. Runyon B: Paracentesis of ascitic fluid: a safe procedure. *Arch Intern Med* 1986;146:2259–2261.
6. Pinto PC, American J, Reynolds TB: Large-volume paracentesis in the nonedematous patient with tense ascites: its effect on intravascular volume. *Hepatology* 1988;8(2):207–210.
7. Wong CL, Holroyd-Leduc J, Thorpe K, Straus SE. Does this patient have bacterial peritonitis or portal hypertension? How so I perform a paracentesis and analyze the results? *JAMA* 2008;299(10):1166–1178.
8. Pinzello G, Simonetti RG, Craxi A, et al: Spontaneous bacterial peritonitis: a prospective investigation in predominately nonalcoholic cirrhotic patients. *Hepatology* 1983;3(4):545–549.
9. Moore KP, Aithal GP. Guidelines on the management of ascites in cirrhosis. *Gut* 2006;55(Suppl VI):vi1–vi12.
10. Runyon BA: Care of patients with ascites. *N Engl J Med* 1994;330(5):337–341.
11. Lin CH, Shih FY, Ma MHM, Chiang WC, Yang CW, Ko PCI. Should bleeding tendency deter abdominal paracentesis? *Dig Liver Dis* 2005;37:946–951.
12. Graban CM, Crago SF, Hoff LK, et al: Performance standards for therapeutic abdominal paracentesis. *Hepatology* 2004;40:484–488.
13. Sakai H, Sheer TA, Mendler MH, Runyon BK. Choosing the location for non-image guided abdominal paracentesis. *Liver Int* 2005;25(4):984–986.
14. Shaheen NJ, Grimm IS. Comparison of the Caldwell needle/cannula with angiocath needle in large volume paracentesis. *Am J Gastroenterol* 1996; 91(9):1731–1733.
15. Runyon BA, Canawati HN, Arkriviadis EA: Optimization of ascitic fluid culture technique. *Gastroenterology* 1988;95(5):1351–1355.
16. Runyon BA: Management of adult patients with ascites caused by cirrhosis. *Hepatology* 1998;27(1):264–272.
17. Arnold C, Klaus H, Blum HE, et al: Acute hemoperitoneum after large-volume paracentesis. *Gastroenterology* 1997;113(3):978–982.
18. Lam EY, McLafferty RB, Taylor LM, et al: Inferior epigastric artery pseudoaneurysm: a complication of paracentesis. *J Vasc Surg* 1998;28(3):566–569.
19. Vila MC, Sola R, Molina L, et al: Hemodynamic changes in patients developing effective hypovolemia after total paracentesis. *J Hepatol* 1998;28:639–645.
20. Gines A, Fernandez-Esparrach G, Monescillo A, et al: Randomized trial comparing albumin, dextran-70, and polygeline as plasma expanders in cirrhotic patients with ascites treated by total paracentesis. *Gastroenterology* 1996; 111(4):1002–1010.
21. Runyon BA, Montano AA, Akriviadis EA, et al: The serum-ascites albumin gradient is superior to the exudate-transudate concept in the differential diagnosis of ascites. *Ann Intern Med* 1992;117(3):215–220.
22. Nazeer SR, Dewbre H, Miller AH: Ultrasound-assisted paracentesis performed by emergency physicians vs. the traditional technique: a prospective, randomized study. *Am J Emerg Med* 2005;23:363–367.
23. Wilkerson RG, Sinert R: The use of paracentesis in the assessment of the patient with ascites. *Ann Emerg Med* 2009;54(3):465–468.

REFERENCES

1. Root HD, Hauser CW, McKinley CR, et al: Diagnostic peritoneal lavage. *Surgery* 1965;57(5):633–637.
2. Danto LA, Thomas CW, Gorenbein S, et al: Penetrating torso injuries: the role of paracentesis and lavage. *Am Surg* 1977;43:164–170.
3. Ceraldi CM, Waxman K: Computerized tomography as an indicator of isolated mesenteric injury. A comparison with peritoneal lavage. *Am Surg* 1990;56:806–810.
4. Meyer DM, Thal ER, Weigelt JA: Evaluation of computed tomography and diagnostic peritoneal lavage in blunt abdominal trauma. *J Trauma* 1989;29: 1168–1170.
5. Salomon H: Die diagnostische punktion des bauches. *Berl Klin Wochensch* 1906;45:45–46.
6. Krausz MM, Abbou B, Hershko DD, et al: Laparoscopic diagnostic peritoneal lavage (L-DPL): a method for evaluation of penetrating abdominal stab wounds. *World J Emerg Surg* 2006;1:3.
7. Fischer RP, Beverlin BC, Engrav LH, et al: Diagnostic peritoneal lavage: fourteen years and 2,586 patients later. *Am J Surg* 1978;136:701–704.
8. Lazarus HM, Nelson JA: A technique for peritoneal lavage without risk or complication. *Surg Gynecol Obstet* 1979;149:889–892.
9. Olsen WR, Redman HC, Hildreth DH: Quantitative peritoneal lavage in blunt abdominal trauma. *Arch Surg* 1972;104:536–543.
10. Root HD, Keizer PJ, Perry JF: Peritoneal trauma, experimental and clinical studies. *Surgery* 1967;62(4):679–685.
11. Alyono D, Morrow CE, Perry JF: Reappraisal of diagnostic peritoneal lavage criteria for operation in penetrating and blunt trauma. *Surgery* 1982; 92(4):751–757.
12. Mendez C, Gubler KD, Maier RV: Diagnostic accuracy of peritoneal lavage in patients with pelvic fractures. *Arch Surg* 1994;129:477–482.
13. Henneman PL, Marx JA, Moore EE, et al: Diagnostic peritoneal lavage: accuracy in predicting necessary laparotomy following blunt and penetrating trauma. *J Trauma* 1990;30(11):1345–1355.
14. Nagy KK, Fildes JJ, Sloan EP, et al: Aspiration of free blood from the peritoneal cavity does not mandate immediate laparotomy. *Am Surg* 1995; 61(9):790–795.
15. Thompson JS, Moore EE: Peritoneal lavage in the evaluation of penetrating abdominal trauma. *Surg Gynecol Obstet* 1981;153:861–863.
16. Ochsner MG, Herr D, Drucker W, et al: A modified Seldinger technique for peritoneal lavage in trauma patients who are obese. *Surg Gynecol Obstet* 1991;173:158–160.
17. Merlotti GJ, Marcet E, Sheaff CM, et al: Use of peritoneal lavage to evaluate abdominal penetration. *J Trauma* 1985;25(3):228–231.
18. American College of Surgeons: Abdominal trauma, in *Advanced Life Support Program for Doctors*, 8th ed. Chicago, IL: American College of Surgeons, 2008:111–129.
19. Schultz DJ, Weigelt JA: Diagnostic peritoneal lavage, in VanHeerden JA, Farley DR (eds): *Operative Techniques in General Surgery*, Vol. 5. Philadelphia, PA: WB Saunders, 2003:139–144.
20. Cue JI, Miller FB, Cryer HM, Malangoni MA, Richardson JD: A prospective, randomized comparison between open and closed peritoneal lavage techniques. *J Trauma* 1990;30(7):880–883.
21. Wilson WR, Schwarcz TH, Pilcher DB: A prospective randomized trial of the Lazarus-Nelson vs. the standard peritoneal dialysis catheter for peritoneal lavage in blunt abdominal trauma. *J Trauma* 1987;27(10):1177–1180.
22. Lopez-Viego MA, Mickel TJ, Weigelt JA: Open versus closed diagnostic peritoneal lavage in the evaluation of abdominal trauma. *Am J Surg* 1990;160:594–597.
23. Cue JI, Miller FB, Cryer HM, et al: A prospective, randomized comparison between open and closed peritoneal lavage techniques. *J Trauma* 1990;30(7):880–883.
24. Velmahos GC, Demetriades D, Stewart M, et al: Open versus closed diagnostic peritoneal lavage: a comparison on safety, rapidity, efficacy. *J R Coll Surg Edinb* 1998;43:235–238.
25. Soyka JM, Martin M, Sloan EP, et al: Diagnostic peritoneal lavage: is an isolated WBC count ≥ 500/mm^3 predictive of intra-abdominal injury requiring celiotomy in blunt trauma patients? *J Trauma* 1990;30(7):874–879.
26. Sweeney JR, Albrink MH, Bischof E, et al: Diagnostic peritoneal lavage: volume of lavage effluent needed for accurate determination of a negative lavage. *Injury* 1994;25(10):659–661.
27. American College of Surgeons: *Advanced Trauma Life Support*, 6th ed. Chicago, IL: American College of Surgeons, 1997.
28. Bellows DR, Salomone JP, Nakamura SK, et al: What's black and white and red (read) all over? The bedside interpretation of diagnostic peritoneal lavage fluid. *Am Surg* 1998;64(2):112–118.
29. Naggy KK, Roberts RR, Joseph KT, et al: Experience with over 2500 diagnostic peritoneal lavages. *Injury* 2000;31:479–482.
30. Lowe RJ, Saletta JD, Read DR, et al: Should laparotomy be mandatory of selective gunshot wounds of the abdomen? *J Trauma* 1977;17(10):903–907.
31. Nagy KK, Krosner SM, Joseph KT, et al: A method of determining peritoneal penetration in gunshot wounds to the abdomen. *J Trauma* 1997;43(2): 242–246.
32. Merlotti GJ, Dillon BC, Lange DA, et al: Peritoneal lavage in penetrating thoracoabdominal trauma. *J Trauma* 1988;28(1):17–23.
33. Boyle EM, Maier RV, Salazar JD, et al: Diagnosis of injuries after stab wounds to the back and flank. *J Trauma* 1997;42(2):260–265.
34. Kelemen JJ, Martin RR, Obney JA, et al: Evaluation of diagnostic peritoneal lavage in stable patients with gunshot wounds to the abdomen. *Arch Surg* 1997;132:909–913.
35. Moore GP, Alden AW, Rodman GH: Is closed diagnostic peritoneal lavage contraindicated in patients with previous abdominal surgery? *Acad Emerg Med* 1997;4(4):287–290.
36. Feliciano DV, Bitondo CG, Steed G, et al: Five hundred open taps or lavages in patients with abdominal stab wounds. *Am J Surg* 1984;148:772–777.
37. Fang JF, Chen RJ, Lin BC: Cell count ratio: new criterion of diagnostic peritoneal lavage for detection of hollow organ perforation. *J Trauma* 1998;45(3):540–544.
38. Falcone RE, Thomas B, Hrutkay L: Safety and efficacy of diagnostic peritoneal lavage performed by supervised surgical and emergency medicine residents. *Eur J Emerg Med* 1997;4(3):150–155.
39. Whitehouse JS, Weigelt, JA: Diagnostic peritoneal lavage: a review of indications, technique, and interpretation. *Scand J Trauma Resusc Emerg Med* 2009;17:13.
40. Klein Y, Haider H, McKenney MG, et al: Diagnostic peritoneal lavage through an abdominal stab wound. *Am J Emerg Med* 2003;21:559–560.
41. Cha JY, Kashuk JL, Sarin EL, et al: Diagnostic peritoneal lavage remains a valuable adjunct to modern imaging techniques. *J Trauma* 2009;67(2):330–336.

REFERENCES

1. Hancock BD: Anal fissures and fistulas. *BMJ* 1992;304:904.
2. Matt JG: Proctologic problems in infants and children: an analysis of 308 cases. *Dis Colon Rectum* 1960;3:511.
3. Behrman RE: *Nelson Textbook of Pediatrics*, 16th ed. Philadelphia, PA: Saunders Elsevier, 1999.
4. Lund JN, Scholefield JH: Etiology and treatment of anal fissures. *Br J Surg* 1996;83:1335.
5. Petros JG, Rimm EB, Robillard RJ: Clinical presentation of chronic anal fissures. *Am Surg* 1993;59:666–668.
6. Goligher J: *Surgery of the Anus, Rectum, and Colon*. London: Bailliere Tindall, 1984.
7. Hananel N, Gordon PH: Re-examination of clinical manifestations and response to therapy of fissure-in-ano. *Dis Colon Rectum* 1997;40(2):229–233.
8. Penninckx R, Lestar B, Kerremans R: The internal anal sphincter: mechanisms of control and its role in maintaining anal continence. *Baillieres Clin Gastroenterol* 1992;6(1):193–214.
9. Lund JN, Binch C, McGrath J, et al: Topographical distribution of blood supply to the anal canal. *Br J Surg* 1999;86(4):496–498.
10. Schouten WR, Briel JW, Auwerda JJ: Relationship between anal pressure and anodermal blood flow. The vascular pathogenesis of anal fissures. *Dis Colon Rectum* 1994;37:664–669.
11. Klosterhalfen B, Vogel P, Rixen H, et al: Topography of the inferior rectal artery: a possible cause of chronic primary anal fissure. *Dis Colon Rectum* 1989;32:43–52.
12. Schouten WR, Briel JW, Auwerda JJ, et al: Relationship between anal pressure and anodermal blood flow. The vascular pathogenesis of anal fissures Computer-generated profiles of the anal canal in patients with anal fissures. *Dis Colon Rectum* 1994;37(7):664–669.
13. Keck JO, Staniunas RJ, Coller JA, et al: Computer-generated profiles of the anal canal in patients with anal fissure. *Dis Colon Rectum* 1995;38(1):72–79.
14. Fleshner PR, Schoetz DJ Jr, Roberts PL, et al: Anal fissure in Crohn's disease: a plea for aggressive management. *Dis Colon Rectum* 1995;38(11):1137–1143.
15. Dodi G, Bogoni F, Infatino A, et al: Hot or cold in anal pain? A study of the changes in internal sphincter pressure profiles. *Dis Colon Rectum* 1986;29:248.
16. Jensen SL. Treatment of first episodes of acute anal fissure: prospective randomized study of lidocaine ointment versus hydrocortisone ointment or warm sitz baths plus bran. *Br Med J* 1986;292:1167.
17. Lund JN, Scholefield JH: A randomised, prospective, double-blind, placebo-controlled trial of glyceryl trinitrate ointment in treatment of anal fissure. *Lancet* 1997;349(9044):11–14.
18. Lund JN, Scholefield JH: A randomized, prospective, double-blind, placebo-controlled trial of glyceryl trinitrate ointment in treatment of anal fissure. *Lancet* 1997;349:11.
19. Bacher H, Mischinger HJ, Cerwenka H, et al: Local nitroglycerin for treatment of anal fissures: an alternative to lateral sphincterotomy? *Dis Colon Rectum* 1997;l40:840.
20. Altomare DF, Rinaldi M, Milito G, et al: Glyceryl trinitrate for chronic anal fissure—healing or headache? Results of a multicenter, randomized, placebo-controlled, double-blind trial. *Dis Colon Rectum* 2000;43:174.
21. Hyman NH, Cataldo PA: Nitroglycerine ointment for anal fissures: effective treatment or just a headache? *Dis Colon Rectum* 1999;42(3):383–385.
22. Carapeti EA, Kamm MA, McDonald PJ, et al: Randomised controlled trial shows that glyceryl trinitrate heals anal fissures, higher doses are not more effective, and there is a high recurrence rate. *Gut* 1999;44(5):727–730.
23. Cook TA, Humphreys MM, McMortensen NJ: Oral nifedipine reduces resting anal pressure and heals chronic anal fissure. *Br J Surg* 1999;86:1269.
24. Brisinda G, Maria J: Oral nifedipine reduces resting anal pressure and heals chronic anal fissure (letter). *Br J Surg* 2000;87:250.
25. Ezri T, Susmallian S: Topical nifedipine vs. topical glyceryl trinitrate for treatment of chronic anal fissure. *Dis Colon Rectum* 2003;46:805.
26. Jonasm M, Neal KR, Abercrombie JF, et al: A randomized trial of oral vs. topical diltiazem for chronic anal fissures. *Dis Colon Rectum* 2001;44:1074.
27. Carapeti EA, Kamm MA, Phillips RK: Topical diltiazem and bethanechol decrease anal sphincter pressure and heal anal fissures without side effects. *Dis Colon Rectum* 2000;43:1359.
28. Knight JS, Birks M, Farouk R: Topical diltiazem ointment in the treatment of chronic anal fissure. *Br J Surg* 2000;88:553.
29. Jonas M, Speaker W, Scholefield JH: Diltiazem heals glyceryl trinitrate-resistant chronic anal fissures: a prospective study. *Dis Colon Rectum* 2002; 45:1091.
30. Antropoli C, Perrotti P, Rubino M, et al: Nifedipine for local use in conservative treatment of anal fissures: preliminary results of a multicenter study. *Dis Colon Rectum* 1999;42(8):1011–1015.
31. Jost WH: One hundred cases of anal fissure treated with Botulinum toxin: early and long-term results. *Dis Colon Rectum* 1997;40:1029.
32. Maria G, Cassetta E, Gui D, et al: A comparison of botulinum toxin and saline for the treatment of chronic anal fissure. *N Engl J Med* 1998;338(4):217–220.
33. Nelson RL: Meta-analysis of operative techniques for fissure-in-ano. *Dis Colon Rectum* 1999;42(11):1424–1428.
34. Littlejohn DR, Newstead GL: Tailored lateral sphincterotomy for anal fissure. *Dis Colon Rectum* 1997;40(12):1439–1442.
35. Nyam DC, Pemberton JH: Long-term results of lateral internal sphincterotomy for chronic anal fissure with particular reference to incidence of fecal incontinence. *Dis Colon Rectum* 1999;42(10):1306–1310.
36. Sanei B, Mahmoodieh M, Masoudpour H: Comparison of topical glyceryl trinitrate with diltiazem ointment for treatment of chromic anal fissure. A randomized clinical trial. *Ann Ital Chir* 2009;80(5):379–383.
37. Golfam F, Golfam P, Khalaj A, et al: The effect of topical nifedipine in treatment of chronic anal fissure. *Acta Med Iran* 2010;48(5):295–299.

REFERENCES

1. Gordon PH, Nivatvongs S: *Principles and Practice of Surgery for the Colon, Rectum and Anus*. St. Louis: Quality Medical Publishing, 1992:192–193.
2. Greenspon J, Williams SB, Young HA, Orkin BA: Thrombosed external hemorrhoids: outcome after conservative or surgical management. *Dis Colon Rectum* 2004;47:1493–1498.
3. Corman ML: *Colon and Rectal Surgery*, 3rd ed. Philadelphia: Lippincott, 1993:78–79.
4. Buls JG, Goldberg SMM: Modern management of hemorrhoids. *Surg Clin North Am* 1978;58:469–478.
5. Ganchrow MI, Mazier WP, Friend WG, et al: Hemorrhoidectomy revisited—a computer analysis of 2038 cases. *Dis Colon Rectum* 1971;14:128–133.
6. Walker WA, Rothenberger DA, Goldberg SM: Morbidity of internal sphincterotomy for anal fissure and stenosis. *Dis Colon Rectum* 1985;28:832–835.
7. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott, Williams & Wilkins, 2002:27–30.

REFERENCES

1. Heine JA, Wong WD: Rectal prolapse, in Mazier WP (ed): *Surgery of the Colon, Rectum, and Anus.* Philadelphia: Saunders, 1995:515–537.
2. Siafakas C, Vottler TP, Andersen JM: Rectal prolapse in pediatrics. *Clin Pediatr* 1999;38(2):63–72.
3. Andrews NJ, Jones DJ: Rectal prolapse and associated conditions. *BMJ* 1992; 305:243–246.
4. Yamada T, Alpers DH, Laine L, et al: *Textbook of Gastroenterology*, 4th ed. Vol. 2. Philadelphia: Lippincott Williams & Wilkins, 2003.
5. Keighley M, Williams NS (eds): *Surgery of the Anus, Rectum, and Colon*, 3rd ed. Vol 1. London: Saunders, 2008:675–715.
6. Stern RC, Inzant R J Jr, Boat IF, et al: Treatment and prognosis of rectal prolapse in cystic fibrosis. *Gastroenterology* 1982;82(4):707–710.
7. Kleinman R, Goulet O-J, Mieli-Vergani G, et al: *Walker's Pediatric Gastrointestinal Disease: Physiology, Diagnosis, Management*, 5th ed. Hamilton, Ontario, Canada: BC Decker Inc., 2008.
8. Alessandrini EA: Reduction of rectal prolapse, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Pediatric Emergency and Critical Care Procedures.* St. Louis: Mosby, 1997:375–376.
9. Schwartz G: Reducing a rectal prolapse, in King C, Hentrig F, King BK, et al (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 2007:859–862.
10. Hovey MA, Metcalf AM: Incarcerated rectal prolapse—rupture and ileal evisceration after failed reduction: report of a case. *Dis Colon Rectum* 1997; 40(10):1254–1257.
11. Chen CW, Hsiao CW, Wu CC, et al: Rectal prolapse as initial clinical manifestation of colon cancer. *Z Gastroenterol* 2008;46(4):348–350.
12. Demirel AH, Ongoren AU, Kapan M, et al: Sugar application in reduction of incarcerated prolapsed rectum. *Indian J Gastroenterol* 2007;26(4):196–197.

REFERENCES

1. Corman ML: *Colon and Rectal Surgery*, 3rd ed. Philadelphia: Lippincott, 1993:5–6.
2. Gordon PH, Nivatvongs S: *Principles and Practice of Surgery for the Colon, Rectum and Anus*. St. Louis: Quality Medical Publishing, 1992:11–12.
3. Hyman NH: Anorectal disease: how to relieve pain and improve other symptoms. *Geriatrics* 1997;52(4):75–76, 85–88, 91.
4. Rompalo AM: Diagnosis and treatment of sexually acquired proctitis and proctocolitis: an update. *Clin Infect Dis* 1999;28(Suppl 1):84–90.
5. Segal WN, Greenberg PD, Rockey DC, et al: The out-patient evaluation of hematochezia. *Am J Gastroenterol* 1998;93(2):179–182.
6. Pearl RK: *Gastrointestinal Endoscopy for Surgeons*. Boston: Little, Brown, 1984:165–179.

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REFERENCES

1. Pearl RK: *Gastrointestinal Endoscopy for Surgeons.* Boston: Little, Brown, 1984.

REFERENCES

1. Kingsley AN, Abcarian H: Colorectal foreign bodies: management update. *Dis Colon Rectum* 1985;28(12):941–944.
2. Busch DB, Starling JR: Rectal foreign bodies: case reports and a comprehensive review of the world's literature. *Surgery* 1986;100(3):512–519.
3. Sohn N, Weinstein M: Office removal of foreign bodies in the rectum. *Surg Gynecol Obstet* 1978;146(2):209–210.
4. Schecter WP, Albo RJ: Removal of rectal foreign bodies, in Nyhus LM, Baker RJ, Fischer JE (eds): *Mastery of Surgery*, 3rd ed. Boston: Little, Brown, 1997:1555–1559.
5. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 34th ed. Philadelphia: Lippincott, Williams & Wilkins, 2002:34.
6. Diwan V: Removal of 100-watt electric bulb from rectum. *Ann Emerg Med* 1982;11(11):643–644.
7. Garber H, Rubin R, Eisenstat T: Removal of a glass foreign body from the rectum. *Dis Colon Rectum* 1981;24(4):323.
8. Mackinnon RP: Removing rectal foreign bodies: is the ventouse gender specific? *Med J Aust* 1998;169:670–671.
9. Kantarian JC, Riether RD, Sheets JA, et al: Endoscopic retrieval of foreign bodies from the rectum. *Dis Colon Rectum* 1987;30(11):902–904.
10. Siroospour D, Dragstedt L: A large foreign body removed intact through the anus: report of a case. *Dis Colon Rectum* 1975;18(7):616–619.
11. Steven K, Lykke J, Hansen T: A simple suction device for removing foreign bodies in the rectum. *Br J Surg* 1979;66(6):418.
12. Hughes J, Marice H, Gathwright J: Method of removing a hollow object from the rectum. *Dis Colon Rectum* 1976;19(1):44–45.
13. Azman B, Erkus B, Guvenc BH: Balloon extraction of a retained rectal foreign body under fluoroscopy, case report and review. *Pediatr Emerg Care* 2009;25(5):345–347.

REFERENCES

1. Pfenniger JL: Injections of joints and soft tissue: part I. General guidelines. *Am Fam Physician* 1991;44(4):1196–1202.
2. Scott WA: Injection techniques and use in the treatment of sport injuries. *Sports Med* 1996;22(6):406–416.
3. Holt MA, Keene JS, Graf BK: Treatment of osteitis pubis in athletes. *Am J Sports Med* 1995;23(5):601–695.
4. Campbell RB, Cannistra LM, Fadale PD, et al: The effects of local corticosteroid injection on the healing of rat medial collateral ligaments. *Trans Orthop Res Soc* 1991;16:112.
5. Wiggins ME, Fadale PD, Barrach H, et al: Healing characteristics of a type I collagenous structure treated with corticosteroids. *Am J Sports Med* 1994;22(2):279–288.
6. Backhaus M: Ultrasound and structural changes in inflammatory arthritis: synovitis and tenosynovitis. *Ann N Y Acad Sci* 2009;2254:139–151.
7. Smith DL, McAfee JH, Lucas LM, et al: Treatment of nonseptic olecranon bursitis: a controlled, blinded prospective trial. *Arch Intern Med* 1989;149:2527–2530.
8. Anderson B, Kaye S: Treatment of flexor tenosynovitis of the hand ("trigger finger") with corticosteroids: a prospective study of the response to local injection. *Arch Intern Med* 1991;151:153–156.
9. Hollander JL: Injection therapy, in Riggs GK, Gall E (eds): *Rheumatic Diseases Rehabilitation and Management*. Stoneham, MA: Butterworth, 1984: 199–203.
10. Costantino TL, Roemer B, Leber EH: Septic arthritis and bursitis: emergency ultrasound can facilitate diagnosis. *J Emerg Med* 2007;32(3):295–297.
11. Freeman K, Dewitz A, Baker WE: Ultrasound-guided hip arthrocentesis in the ED. *Am J Emerg Med* 2007;25(1):80–86.
12. Zuckerman JD, Meislin RJ, Rothberg M: Injection for joint and soft tissue disorders: when and how to use them. *Geriatrics* 1990;45(4):45–55.
13. Bain LS, Baleh HW, Wetherly JMR, et al: Intraarticular triamcinolone hexacetonide: double-blind comparison with methylprednisolone. *Br J Clin Pract* 1972;26:559–561.
14. Simon RR, Koenigsknecht SJ: *Emergency Orthopedics: The Extremities*, 4th ed. New York: McGraw-Hill, 2001.
15. Shrier I, Matheson GO, Kohl HW: Achilles tendonitis: are corticosteroid injections useful or harmful? *Clin J Sports Med* 1996;6(4):245–250.
16. Haslock I, MacFarlane D, Speed C: Intra-articular and soft tissue injections: a survey of current practice. *Br J Rheumatol* 1995;34:449–452.
17. Owen DS: Aspiration and injection of joints and soft tissues, in Ruddy S, Harris ED, Sledge CB, et al (eds): *Kelley's Textbook of Rheumatology*, 6th ed. Philadelphia: Saunders, 2001:583–604.
18. Kleinman M, Gross AE: Achilles tendon rupture following steroid injection. Report of three cases. *J Bone Joint Surg Am* 1983;65(9):1345–1347.
19. Smith AG, Kosygan K, Newman RJ: Common extensor tendon rupture following corticosteroid injection for lateral tendinosis of the elbow. *Br J Sports Med* 1999;33(6):423–424.
20. Karpman RR, McComb JE, Volz RG: Tendon rupture following local steroid injection: report of four cases. *Postgrad Med* 1980;68(1):169–174.
21. Lambert MI, Gibson ASC, Noakes TD: Rupture of the triceps tendon associated with steroid injection (letter). *Am J Sports Med* 1995;23(6):778.

REFERENCES

1. Matsen FA III: Compartment syndrome: a unified concept. *Clin Orthop* 1975;113:8–14.
2. Whitesides TE, Heckman MH: Acute compartment syndrome: update on diagnosis and treatment. *J Am Acad Orthop Surg* 1996;4(4):209–218.
3. Volkman R: Die ischaemuschen Muskellahmungen und Kontrakturen. *Zentrabl Chirurg* 1881;8:801.
4. Christensen KS, Klaerke M: Volkman's ischemic contracture due to limb compression in drug-induced coma. *Injury* 1985;16:543–545.
5. Heim M, Martinowitz U, Horoszowski H: The short foot syndrome—an unfortunate consequence of neglected raised intracompartment pressure in a severe hemophiliac child. A case report. *Angiology* 1986;37:128–131.
6. Kunkel JM: Thigh and leg compartment syndrome in the absence of lower extremity trauma following mast application. *Am J Emerg Med* 1987;5: 118–120.
7. Gelberman RH, Garfin SR, Hergenroeder PT, et al: Compartment syndrome of the forearm. Diagnosis and treatment. *Clin Orthop* 1981;161:252–261.
8. Lee BY, Brancato RF, Park IH, et al: Management of compartment syndrome. Diagnosis and surgical considerations. *Am J Surg* 1984;148:383–388.
9. Browner BD, Jupiter JB, Levine AM, et al: *Skeletal Trauma.* Philadelphia: Harcourt Brace, 1992: 285–309.
10. Rorabeck CH, Clarke KM: The pathophysiology of the anterior tibia compartment syndrome: an experimental investigation. *J Trauma* 1978;18:299–306.
11. Whitesides TE, Harada H, Morimoto K: Compartment syndromes and role of fasciotomy: its parameters and techniques. *Instr Course Lect* 1977; 26:179–196.
12. Matara MJ, Whitesides TE, Seiler JG, et al: Determination of the compartment pressure threshold of muscle ischemia in a canine model. *J Trauma* 1994;37:50–58.
13. Seiler JG III, Womack S, De L'Aune WR, et al: Intracompartmental pressure measurements in the normal forearm. *J Orthop Trauma* 1993;7:414–416.
14. Geiderman JM: Orthopedics injuries: management principles, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine Concepts and Clinical Practice,* 4th ed. St. Louis: Mosby, 1998:611–613.
15. Mubarak SJ, Owen CA, Hargens AR, et al: Acute compartment syndrome: diagnosis and treatment with the aid of the wick catheter. *J Bone Joint Surg Am* 1978;60(8):1091–1095.
16. Matsen FA III, Winquist RA, Krugmire RB: Diagnosis and management of compartmental syndromes. *J Bone Joint Surg* 1980;62(A):286–291.
17. Heckman MM, Whitesides TE, Grewe SR, et al: Compartment pressure in association with closed tibial fractures. *J Bone Joint Surg Am* 1994; 76(9):1285–1292.
18. Heppenstall RB, Scott R, Sapega A, et al: A comparative study of the tolerance of skeletal muscle to ischemia: tourniquet application compared with acute compartment syndrome. *J Bone Joint Surg Am* 1986;68:820–828.
19. Hollinshead WH, Rosse C: *Textbook of Anatomy*, 4th ed. Philadelphia: Harper & Row, 1985:231–260.
20. Netter FH, Colacino S: *Atlas of Human Anatomy.* Summit, NJ: Ciba-Geigy, 1990.
21. Hollinshead WH, Rosse C: *Textbook of Anatomy*, 4th ed. Philadelphia: Harper & Row, 1985:413–434.
22. Whitesides TE, Hanet TC, Hirada H, et al: A simple method for tissue pressure determination. *Arch Surg* 1975;110:1311.
23. Stryker Instruments: *STRYKER Intra-compartmental Pressure Monitor System: Instructional Manual.* Kalamazoo, MI: Stryker Instruments.
24. Heckman MM, Whitesides TE, Grewe SR, et al: Compartment pressure in association with closed tibial fractures. *J Bone Joint Surg Am* 1994; 76(9):1285–1292.
25. Edwards PD, Miles KA, Owens SJ, et al: A new noninvasive test for the detection of compartment syndromes. *Nucl Med Commun* 1999;20(3):215–218.
26. Willy C, Gerngross H, Sterk J: Measurement of intracompartmental pressure with use of a new electronic transducer-tipped catheter system. *J Bone Joint Surg Am* 1999;81(2):158–168.
27. Singh S, Trikha SP, Lewis J: Acute compartment syndrome. *Curr Orthop* 2004;18:468–476.
28. van den Brand JGH, Nelson T, Verleisdonk EJ, et al: The diagnostic value of intracompartmental pressure measurement, magnetic resonance imaging, and near-infrared spectroscopy in chronic exertional compartment syndrome. *Am J Sport Med* 2005;33:699–704.
29. Giannotti G, Cohn SM, Brown M, et al: Utility of near-infrared spectroscopy in the diagnosis of lower extremity compartment syndrome. *J Trauma* 2000;48:396–401.
30. Wilson SC, Vrahas MS, Berson L, et al: A simple method to measure compartment pressures using an intravenous catheter. *Orthopedics* 1997;20: 403–406.
31. Uliasz A, Ishida JT, Fleming JK, et al: Comparing the methods of measuring compartment pressures in acute compartment syndrome. *Am J Emerg Med* 2003;21:143–145.
32. Booty AR, Wongworawat MD: Accuracy in the measurement of compartment pressures: a comparison of three commonly used devices. *J Bone Joint Surg Am* 2005;87:2415–2422.
33. Prayson MJ, Chen JL, Hampers D, et al: Baseline compartment pressure measurements in isolated lower extremity fractures without clinical compartment syndrome. *J Trauma* 2006;60:1037–1040.
34. Shuler FD, Dietz MJ: Physician's ability to manually detect isolated elevations in leg intracompartmental pressure. *J Bone Joint Surg Am* 2010;92: 361–367.
35. Shadgan B, Menom M, O'Brien PJ, et al: Diagnostic techniques in acute compartment syndrome of the leg. *J Orthop Trauma* 2008;22(8):581–587.

REFERENCES

1. Meyer RS, Mubarak SJ: Compartment Syndromes, in Chapman MW (ed): *Chapman's Orthopaedic Surgery*, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2001:393–416.
2. Ojike NI, Roberts CS, Giannoudis PV: Compartment syndrome of the thigh: a systematic review. *Injury* 2010;41:133–136.
3. Gourgiotis S, Villias C, Germanos S, et al: Acute limb compartment syndrome: a review. *J Surg Educ* 2007;64(3):178–186.
4. Perron AD, Bowe CT: Acute compartment syndrome, in Wolfson AB, Hendey GW, Ling LJ, et al (eds): *Harwood-Nuss' Clinical Practice of Emergency Medicine*, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2010:317–329.
5. Whitesides TE, Heckman MM: Acute compartment syndrome: an update on diagnosis and treatment. *J Am Acad Orthop Surg* 1996;4:209–218.
6. Dente CJ, Feliciano DV, Rozycki GS, et al: A review of upper extremity fasciotomies in a level I trauma center. *Am Surg* 2004;70(12):1088–1093.
7. Jobe MT: Compartment syndrome's and Volkmann ischemic contracture, in Canale ST, Beaty JH (eds): *Canale & Beaty: Campbell's Operative Orthopaedics*, 11th ed. Philadelphia: Mosby Elsevier, 2009:4259–4271.
8. Azar FM: Traumatic disorders, in Canale ST, Beaty JH (eds): *Canale & Beaty: Campbell's Operative Orthopaedics*, 11th ed. Philadelphia: Mosby Elsevier, 2009:2737–2743.
9. McQeen MM: Acute compartment syndrome, in Bucholz RW, Heckman JD, Court-Brown CM (eds): *Rockwood & Green's Fractures in Adults*, 6th ed. Philadelphia: Lippincott Williams & Wilkins, 2006:425–444.
10. Botte MJ: Compartment syndromes and ischemic contracture, in Berger RA Weiss AC (eds): *Hand Surgery*. Philadelphia: Lippincott Williams & Wilkins, 2004:1555–1573.
11. Ronel DN, Mtui E, Nolan WB: Forearm compartment syndrome: anatomical analysis of surgical approaches to the deep space. *Plast Reconstr Surg* 2004;114(3):697–705.
12. Whitesides TE, Heckman MM: Acute compartment syndrome: updates on diagnosis and treatment. *J Am Acad Orthop Surg* 1996;4:209–213.
13. Matsen FA, Winquist RA, Krugmire RB: Diagnosis and management of compartmental syndromes. *J Bone Joint Surg Am* 1980;62(2):286–291.
14. Netscher D, Fiore N: Hand surgery, in Townsend CM Jr, Beauchamp RD, Evers BM (eds): *Townsend: Sabiston Textbook of Surgery*, 18th ed. Philadelphia: Saunders Elsevier, 2008:2154–2199.
15. Tarlow SD, Achterman CA, Hayhurst J, et al: Acute compartment syndrome in the thigh complicating fracture of the femur. A report of three cases. *J Bone Joint Surg Am* 1986;68:1439–1443.
16. Browner BD, DeAngelis JP: Emergency care of musculoskeletal injuries, in Townsend CM Jr, Beauchamp RD, Evers BM (eds): *Townsend: Sabiston Textbook of Surgery*, 18th ed. Philadelphia: Saunders Elsevier, 2008:521–558.
17. Shadgan B, Menon M, O'Brien PJ, et al: Diagnostic techniques in acute compartment syndrome of the Leg. *J Orthop Trauma* 2008;22(8):581–587.
18. Mubarak SJ, Owen CA: Double-incision fasciotomy of the leg for decompression in compartment syndromes. *J Bone Joint Surg Am* 1977;59(2):184–187.
19. American Academy of Orthopaedic Surgeons: Managing risk: compartment syndromes of the foot. http://www.aaos.org/news/bulletin/janfeb07/clinical1.asp, Rosemont, IL 2011.
20. Wheeless' Textbook of Orthopaedics: Compartment Syndrome of the Foot. http://wheelessonline.com/ortho/compartment_syndrome_of_the_foot, North Carolina, 2011.
21. Matsen FA III, Winquist RA, Krugmire RB: Diagnosis and management of compartmental syndromes. *J Bone Joint Surg* 1980;62(A):286–291.

REFERENCES

1. Newport ML: Extensor tendon injuries in the hand. *J Am Acad Orthop Surg* 1997;5(2):59–66.
2. Newport ML, Blair WF, Steyers CM Jr: Long-term results of extensor tendon repair. *J Hand Surg (Am)* 1990;15:961–966.
3. Klutz JE, Bennet DL: *Methods and Concepts in Hand Surgery:* Tendon Injuries. London: Butterworths, 1986.
4. McFarlane RM, Hampole MK: The treatment of extensor tendon injuries of the hand. *Can J Surg* 1973;16:366–375.
5. Newport ML, Pollack GR, Williams CD: Biomechanical characteristics of suture techniques in extensor zone IV. *J Hand Surg* 1995;20A:650–656.
6. Netter FH, Colacino S: *Atlas of Human Anatomy. Summit, NJ:* Ciba-Geigy, 1990.
7. Hollinshead WH, Rosse C: *Textbook of Anatomy*, 4th ed. Philadelphia: Harper & Row, 1985.
8. Kleinert HE, Verdan C: Report of the committee on tendon injures. *J Hand Surg* 1983;8:794–798.
9. Green DP, Hotchkiss RN, Pederson WC: *Green's Operative Hand Surgery*, 4th ed. Philadelphia: Churchill Livingstone, 1999.
10. Newport ML, Williams CD: Biomechanical characteristics of extensor tendon suture techniques. *J Hand Surg (Am)* 1992;17:1117–1123.
11. Evans RB, Thompson DE: An analysis of factors that support early active short arc motion of the repaired central slip. *J Hand Ther* 1992;5:187–202.
12. Feehan LM, Beauchene JG: Early tensile properties of healing chicken flexor tendons: early controlled passive motion versus postoperative immobilization. *J Hand Surg (Am)* 1990;15:63–68.
13. Hung LK, Chan A, Chang J, et al: Early controlled active mobilization with dynamic splintage for treatment of extensor tendon injuries. *J Hand Surg (Am)* 1991;16:1145–1150.

REFERENCES

1. Council on Rheumatologic Care, American College of Rheumatology: *Safety Guidelines for Performing Arthrocentesis*, 1999. http://www.rheumatology.org/Position/safetyguide.html.
2. Hazleman BL: Principles of joint aspiration and steroid injection, in Doherty M, Hazleman BL, Hutton CW, et al (eds): *Rheumatology Examination and Injection Techniques*. London: Saunders, 1992:121–123.
3. Pfenninger JL: Injections of joints and soft tissue: part I. General guidelines. *Am Fam Physician* 1991;44(4):1196–1202.
4. Hasselbacher P: Arthrocentesis, synovial fluid analysis, and synovial biopsy, in Schumaker HR Jr, Klippel JH, Koopman WJ (eds): *Primer on Rheumatic Diseases,* 10th ed. Atlanta: Arthritis Foundation, 1993:67–72.
5. Schumacher HR Jr: Arthrocentesis of the knee. *Hosp Med* 1997;33(7):60–64.
6. Benjamin GC: Arthrocentesis, in Roberts JR, Hedges HR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998: 919–932.
7. Schaffter TC: Joint and soft tissue arthrocentesis. *Primary Care* 1993;20: 757–770.
8. Holdsworth BJ, Clement DA, Rothwell PNR: Fractures of the radial head—the benefit of aspiration: a prospective controlled trial. *Injury* 1987;18(1):44–47.
9. Zuckerman JD, Meislin RJ, Rothberg M: Injections for joint and soft tissue disorders: when and how to use them. *Geriatrics* 1990;45(4):45–55.
10. Hedges JR: Pearls for the teaching of procedural skills at the bedside. *Acad Emerg Med* 1994;1(4):401–404.
11. Samuelson CO Jr, Cannon GW, Ward JR: Arthrocentesis. *J Fam Pract* 1985; 20(2):179–184.
12. Pfenninger JL: Injections of joints and soft tissue: part II. Guidelines for specific joints. *Am Fam Physician* 1991;44(4):1690–1701.
13. Quigley TB: Aspiration of the elbow joint in the treatment of fractures of the head of the radius. *N Engl J Med* 1949;240:915.
14. Roberts WN, Hayes CW, Breitbach SA, Owens DS Jr: Dry taps and what to do about them: a pictorial essay on failed arthrocenteses of the knee. *Am J Med* 1996;100:461–464.
15. Gottlieb NL: Hypodermic needle separation during arthrocentesis. *Arthritis Rheum* 1981;24:1593–1594.
16. Gottlieb NL, Riskin WG: Complication of local corticosteroid injections. *JAMA* 1980;243:1547–1548.
17. McCarty DJ: Treatment of rheumatoid joint inflammation with triamcinolone hexacetonide. *Arthritis Rheum* 1992;15:157–173.
18. Gray RG, Gottlieb NL: Intra-articular corticosteroids, an updated assessment. *Clin Orthop* 1983;177:235–263.
19. McCarty DJ: Synovial fluid, in Koopman WJ: *Arthritis and Allied Conditions*. Baltimore: Williams & Wilkins, 1997:81–102.
20. Gatter RA, Schumacher HR: *A Practical Handbook of Joint Fluid Analysis*. Philadelphia: Lea & Febiger, 1991:1–35.
21. Kolba KS: The approach to the acute joint and synovial fluid examination. *Primary Care* 1984; 11: 211–218.
22. Doherty M: Examination of synovial fluid, in Doherty M, Hazleman BL, Hutton CW, et al (eds): *Rheumatology Examination and Injection Techniques*. London: Saunders, 1992:124–127.
23. Shmerling RH, Delbanco TL, Tosteson ANA, et al: Synovial fluid tests. What should be ordered? *JAMA* 1990;264:1009–1014.
24. Shmerling RH: Synovial fluid analysis. A critical reappraisal. *Rheum Dis Clin North Am* 1994;20:503–512.
25. Barland P, Gibofsky A, Lipstein E: Crystal-induced arthritis: an overview. *Am J Med* 1996;100(2A):46S–52S.
26. Angulo JM, Espinoza LR: Gonococcal arthritis. *Comprehens Ther* 1999;25: 155–162.
27. Sack K: Monarthritis: differential diagnosis. *Am J Med* 1997;102(1A):30S–34S.
28. Gruber B, Miller BS, Onnen J, et al: Antibacterial properties of synovial fluid in the knee. *J Knee Surg* 2008;21(3):180–185.
29. Kerolus G, Clayburne G, Schumacher HR Jr: Is it mandatory to examine synovial fluids promptly after arthrocentesis? *Arthritis Rheum* 1991;34(1): 118–120.
30. Abdullah S, Young-Min SA, Hudson SJ, et al: Gross synovial fluid analysis in the differential diagnosis of joint effusion. *J Clin Path* 2007;60;1144–1147.
31. Roberts N, Hayes C, Breitbach SA, et al: Dry taps and what to do about them: a pictorial essay of failed arthrocentesis on the knee. *Am J Med* 1996;100:461–464.
32. Aceves-Avila M, Delgadillo-Ruano MA, Ramos-Remus C, et al: The first descriptions of therapeutic arthrocentesis: a historical note. *Rheum* 2003;42: L180–183.
33. Cosby K, Kendall, J: *Practical Guide to Emergency Ultrasound*. Philadelphia: Lippincott Williams & Wilkins, 2006.
34. Zazam M: The role of ultrasound in differentiating septic arthritis from transient synovitis of the hip in children. *J Pediatr Orthoped* 2006;B15:418–422.
35. Arnold S, Elias D: Changing patterns of acute hematogenous osteomyelitis and septic arthritis. *J Pediatr Orthoped* 2006;26:703–708.
36. Li S, Cassidy C, Chang C, et al: Diagnostic utility of laboratory tests in septic arthritis. *Emerg Med J* 2007;24:75–77.
37. Dubost J: Septic arthritis with no organism: a dilemma. *Joint Bone Spine* 2006;73:341–343.
38. McGillicuddy D, Shah K: How sensitive is the synovial fluid WBC count in diagnosing septic arthritis? *Am J Emerg Med* 2007;25:749–752.
39. Weitoft T: Importance of synovial fluid aspiration when injecting intra-articular corticosteroids. *Ann Rheum Disease* 2000;59:233–235.
40. Al-Belasy F, Dolwick M: Arthrocentesis for the treatment of TMJ closed lock: a review article. *Int J Oral Max Surg* 2007;36:773–782.
41. Dhaif G, Ali T: TMJ arthrocentesis for acute closed lock: retrospective analysis of forty consecutive cases. *Saudi Dent J* 2001;13:123–127.
42. Freeman K, Dewitz A, Baker W: Ultrasound guided hip arthrocentesis in the ED. *Am J Emerg Med* 2007;25:80–86.
43. Wiler J, Costantino TG, Filippone L, et al: Comparison of ultrasound-guided and standard landmark techniques for knee arthrocentesis. *J Emerg Med* 2010;39:76–82.
44. Louis LJ: Musculoskeletal ultrasound intervention: principles and advances. *Radiol Clin North Am* 2008;46:515.
45. Grassi W, Farina A, Filippucci E, et al: Sonographically guided procedures in rheumatology. *Semin Arthritis Rheum* 2001;30:347.
46. Roy S, Dewitz A, Paul I: Ultrasound-assisted ankle arthrocentesis. *Am J Emerg Med* 1999;17:300.
47. Smith SW: Emergency physician-performed ultrasonography-guided hip arthrocentesis. *Acad Emerg Med* 1999;6:84.
48. Costantino TG, Roemer B, Leber EH: Septic arthritis and bursitis: emergency ultrasound can facilitate diagnosis. *J Emerg Med* 2007;32:295.
49. Freeman K, Dewitz A, Baker WE: Ultrasound-guided hip arthrocentesis in the ED. *Am J Emerg Med* 2007;25:80.
50. Wiler JL, Costantino TG, Filippone L, et al: Comparison of ultrasound-guided and standard landmark techniques for knee arthrocentesis. *J Emerg Med* 2008 [Epub ahead of print].
51. Tsung JW, Blaivas M: Emergency department diagnosis of pediatric hip effusion and guided arthrocentesis using point-of-care ultrasound. *J Emerg Med* 2008;35:393.
52. Cavalier R, Herman MJ, Pizzutillo PD, et al: Ultrasound-guided aspiration of the hip in children: a new technique. *Clin Orthop Relat Res* 2003;415:244.

REFERENCES

1. Johnson PC, Sheppeck R: The dark side of methylene blue. *Plast Reconstr Surg* 1989;83(6):1076–1077.
2. Perry PM, Meinhard E: Necrotic subcutaneous abscesses following injections of methylene blue. *Br J Clin Prac* 1974;28(8):289–291.
3. Stradling B, Aranha G, Gabram S: Adverse skin lesions after methylene blue injections for sentinel lymph node localization. *Am J Surg* 2002; 184(4):350–352.
4. Zakaria S, Hoskin TL, Degnim AC: Safety and technical success of methylene blue dye for lymphatic mapping in breast cancer. *Am J Surg* 2008; 196(2):228–233.
5. Pfenninger JL: Injections of joints and soft tissue: part I. General guidelines. *Am Fam Physician* 1991;44(4):1196–1202.
6. Esenyel C, Demirhan M, Esenyel M, et al: Comparison of four different intra-articular injection sites in the knee: a cadaver study. *Knee Surg Sports Traumatol Arthrosc* 2007;15(5):573–577.
7. Jackson DW, Evans NA, Thomas BM: Accuracy of needle placement into the intra-articular space of the knee. *J Bone Joint Surg Am* 2002;84A(9): 1522–1527.
8. Pichler W, Grechenig W, Grechenig S, et al: Frequency of successful intra-articular puncture of finger joints: influence of puncture position and physician experience. *Rheumatology (Oxford)* 2008;47(10):1503–1505.

REFERENCES

1. Simon RR, Sherman SC, Koenigsknecht SJ: *Emergency Orthopedics: The Extremities*, 5th ed. New York: McGraw-Hill, 2006.
2. Green NE, Allen BL: Vascular injuries associated with dislocation of the knee. *J Bone Joint Surg Am* 1977;59(2):236–239.
3. Beecroft M, Sherman SC: Posterior displacement of a proximal epiphyseal clavicle fracture. *J Emerg Med* 2007;33(3):245–248.
4. Sabharwal S, Tredwell SJ, Beauchamp RD, et al: Management of pulseless pink hand in pediatric supracondylar fractures of humerus. *J Pediatr Orthop* 1997;17(3):303–310.
5. Minkowitz B, Busch MT: Supracondylar humerus fractures. Current trends and controversies. *Orthop Clin North Am* 1994;25(4):581–594.
6. Hougaard K, Thomsen PB: Traumatic posterior dislocation of the hip—prognostic factors influencing the incidence of avascular necrosis of the femoral head. *Arch Orthop Trauma Surg* 1986;106(1):32–35.
7. Do TT, Strub WM, Foad SL, Mehlman CT, Crawford AH: Reduction versus remodeling in pediatric distal forearm fractures: a preliminary cost analysis. *J Pediatr Orthop B* 2003;12(2):109–115.
8. Al Ansari K, Howard A, Seeto B, Yoo S, Zaki S, Boutis K: Minimally angulated pediatric wrist fractures: is immobilization without manipulation enough? *CJEM* 2007;9(1):9–15.
9. Noonan KJ, Price CT: Forearm and distal radius fractures in children. *J Am Acad Orthop Surg* 1998;6(3):146–156.
10. Zimmermann R, Gschwentner M, Pechlaner S, Gabl M: Remodeling capacity and functional outcome of palmarly versus dorsally displaced pediatric radius fractures in the distal one-third. *Arch Orthop Trauma Surg* 2004;124(1):42–48.
11. Statius Muller MG, Poolman RW, van Hoogstraten MJ, Steller EP: Immediate mobilization gives good results in boxer's fractures with volar angulation up to 70 degrees: a prospective randomized trial comparing immediate mobilization with cast immobilization. *Arch Orthop Trauma Surg* 2003;123(10):534–537.
12. Ford DJ, Ali MS, Steel WM: Fractures of the fifth metacarpal neck: is reduction or immobilisation necessary? *J Hand Surg Br* 1989;14(2):165–167.
13. Breddam M, Hansen TB: Subcapital fractures of the fourth and fifth metacarpals treated without splinting and reposition. *Scand J Plast Reconstr Surg Hand Surg* 1995;29(3):269–270.
14. Theeuwen GA, Lemmens JA, van Niekerk JL: Conservative treatment of boxer's fracture: a retrospective analysis. *Injury* 1991;22(5):394–396.
15. Kuokkanen HO, Mulari-Keranen SK, Niskanen RO, Haapala JK, Korkala OL: Treatment of subcapital fractures of the fifth metacarpal bone: a prospective randomised comparison between functional treatment and reposition and splinting. *Scand J Plast Reconstr Surg Hand Surg* 1999;33(3):315–317.
16. Rockwood CA, Green DP, Heckman JD, Bucholz RW: Rockwood and Green's fractures in adults, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2001.
17. Hill JM, McGuire MH, Crosby LA: Closed treatment of displaced middle-third fractures of the clavicle gives poor results. *J Bone Joint Surg Br* 1997;79(4):537–539.
18. Sherman SC, Schaider J: Shoulder dislocation and reduction. www.uptodate.com, accessed Jan 2012.
19. Connolly JF, Mendes M, Browner BD: Principles of closed management of common fractures, in Browner BD, Jupiter JB, Levine AM, Trafton PG (eds): *Skeletal Trauma*. Philadelphia: WB Saunders, 1992:221–222.
20. Lee SG, Jupiter JB: Phalangeal and metacarpal fractures of the hand. *Hand Clin* 2000;16(3):323–32, vii.
21. Milch H: Treatment of dislocation of the shoulder. *Surgery* 1938;3:732–740.
22. Leidelmeyer R: Reduced! A shoulder, subtly and painlessly. *Emerg Med* 1977;9:233–234.
23. Mirick MJ, Clinton JE, Ruiz E: External rotation method of shoulder dislocation reduction. *J ACEP* 1979;8(12):528–531.
24. Sagarin MJ: Best of both (BOB) maneuver for rapid reduction of anterior shoulder dislocation. *J Emerg Med* 2005;29(3):313–316.

REFERENCES

1. Rowe CR: Shoulder girdle injuries, in Cave EF, Burke JF, Boyd RJ (eds): *Trauma Management*. Chicago: Year Book, 1974:399–453.
2. Nettles JL, Linscheid RL: Sternoclavicular dislocations. *J Trauma* 1968;8(2): 158–164.
3. Rockwood CA Jr, Wirth MA: Injuries to the sternoclavicular joint, in Rockwood CA Jr, Green DP, Bucholtz RW, et al (eds): *Rockwood and Green's Fractures in Adults*, 4th ed. Philadelphia: Lippincott-Raven, 1996:1415–1471.
4. Buckerfield CT, Castle ME: Acute retrosternal dislocation of the clavicle. *J Bone Joint Surg* 1984;66A(3):379–385.
5. Omer GE Jr: Osteotomy of the clavicle in surgical reduction of anterior sternoclavicular dislocation. *J Trauma* 1967;7(4):584–590.
6. Savastano AA: Traumatic sternoclavicular dislocation. *Int Surg* 1978;63(1): 10–13.
7. Mehta JC, Sachdev A, Collins JJ: Retrosternal dislocation of the clavicle. *Injury* 1973;5:79–83.
8. Heinig CF: Retrosternal dislocation of the clavicle: early recognition, X-ray diagnosis, and management. *J Bone Joint Surg* 1968;50A:830.
9. Cope R: Dislocations of the sternoclavicular joint. *Skel Radiol* 1993;22: 233–238.
10. Selesnick FH, Jablon M, Frank C, et al: Retrosternal dislocation of the clavicle. *J Bone Joint Surg* 1984;66A(2):287–291.
11. Gazak S, Davidson SJ: Posterior sternoclavicular dislocations: two case reports. *J Trauma* 1984;24(1):80–82.
12. Benson LS, Donaldson JS, Carroll NC: Use of ultrasound in management of posterior sternoclavicular dislocation. *J Ultrasound Med* 1991;10:115–118.
13. Elting JJ: Retrosternal dislocation of the clavicle. *Arch Surg* 1972;104:35–37.
14. Rockwood CA Jr, Odor JM: Spontaneous atraumatic anterior subluxation of the sternoclavicular joint. *J Bone Joint Surg* 1989;71A(9):1280–1288.
15. Gray H: *Anatomy of the Human Body*, 30th ed. Philadelphia: Lea & Febiger, 1985:366–368.
16. Lucas DB: Biomechanics of the shoulder joint. *Arch Surg* 1973;107:425–432.
17. Owings-Webb PA, Meyers-Suchey J: Epiphyseal union of the anterior iliac crest and medial clavicle in a modern multiracial sample of American males and females. *Am J Phys Anthropol* 1985;68:457–466.
18. Winter J, Sterner S, Maurer D, et al: Retrosternal epiphyseal disruption of medial clavicle: case and review in children. *J Emerg Med* 1989;7:9–13.
19. Zaslav KR, Ray S, Neer CS: Conservative management of a displaced medial clavicular physeal injury in an adolescent athlete. *Am J Sports Med* 1989; 17(6):833–836.
20. Leighton D, Oudjhane K, Mohammed HB: The sternoclavicular joint in trauma: retrosternal dislocation versus epiphyseal fracture. *Pediatr Radiol* 1989;20:126–127.
21. Brooks AL, Henning GD: Injury to the proximal clavicular epiphysis. *J Bone Joint Surg* 1972;54A:1347–1348.
22. Lewonowski K, Bassett GS: Complete posterior epiphyseal separation. *Clin Orthop* 1992;281:84–88.
23. Denham RH Jr, Dingley AF Jr: Epiphyseal separation of the medial end of the clavicle. *J Bone Joint Surg* 1967;49A(6):1179–1183.
24. Worrell J, Fernandez GN: Retrosternal dislocation of the clavicle: an important injury easily missed. *Arch Emerg Med* 1986;3:133–135.
25. Worman LW, Leagus C: Intrathoracic injury following retrosternal dislocation of the clavicle. *J Trauma* 1967;7(3):416–422.
26. Kennedy JC: Retrosternal dislocation of the clavicle. *J Bone Joint Surg* 1949; 31B(1):74–75.
27. Leighton RK, Buhr AJ, Sinclair AM: Posterior sternoclavicular dislocations. *Can J Surg* 1986;29(2):104–106.
28. Stankler L: Posterior dislocation of the clavicle. *Br J Surg* 1962;50:164–168.
29. Derkson EJ, Eykelhoff JA, Schenk KE, et al: Retrosternal dislocation of the clavicle. *Acta Orthop Belg* 1992;58(3):297–300.
30. Jougon JB, Lepront DJ, Dromer CEH: Posterior dislocation of the sternoclavicular joint leading to mediastinal compression. *Ann Thorac Surg* 1996;61:711–713.
31. Gardner MAH, Bidstrup BP: Intrathoracic great vessel injury resulting from blunt chest trauma associated with posterior dislocation of the sternoclavicular joint. *Aust N Z J Surg* 1983;53:427–430.
32. Nettles JL, Linscheid RL: Sternoclavicular dislocations (discussion). *J Trauma* 1968;8(2):158–164.
33. Hobbs DW: Sternoclavicular joint: a new axial radiographic view. *Radiology* 1968;90:801.
34. Pollock RC, Bankes MJK, Emery RJH: Diagnosis of retrosternal dislocations of the clavicle with ultrasound. *Injury* 1996;27(9):670–671.
35. Wirth MA, Rockwood CA Jr: Chronic conditions of the acromioclavicular and sternoclavicular joints, in Chapman MW (ed): *Operative Orthopedics*, 2nd ed. Philadelphia: Lippincott, 1993:1683–1693.
36. Gangahar DM, Flogaites T: Retrosternal dislocation of the clavicle producing thoracic outlet syndrome. *J Trauma* 1978;18(5):369–372.
37. Rayan GM: Compression brachial plexopathy caused by chronic posterior dislocation of the sternoclavicular joint. *J Okla State Med Assoc* 1994;87:7–9.
38. Butterworth RD, Kirk AA: Fracture dislocation sternoclavicular joint—case report. *Va Med Month* 1952;79:98–100.
39. Stein AH: Retrosternal dislocation of the clavicle. *J Bone Joint Surg* 1957; 39A(3):656–660.
40. Wasylenko MJ, Busse EF: Posterior dislocation of the clavicle causing fatal tracheoesophageal fistula. *Can J Surg* 1981;24(6):626–627.
41. Sadr B, Swann M: Spontaneous dislocation of the sternoclavicular joint. *Acta Orthop Scand* 1979;50:269–274.
42. Wettstein M, Borens O, Garofalo R, et al: Anterior subluxation after reduction of a posterior traumatic sternoclavicular dislocation: a case report and a review of the literature. *Knee Surg Sports Traumatol Arthrosc* 2004;12: 453–456.

REFERENCES

1. Price DD, Wilson SR: *Shoulder Dislocations*. 1999:1–11. http://www.E-medicine.com.
2. Simon R, Koenisknecht S: *Emergency Orthopedics: The Extremities*, 3rd ed. Stamford, CT: Appleton & Lange, 1996:388–400.
3. McNamara R: Management of common dislocations, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:818–830.
4. Daya M: Shoulder, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 4th ed. St. Louis: Mosby, 1998: 726–732.
5. Moore K: *Clinically Oriented Anatomy*, 3rd ed. Baltimore: Williams & Wilkins, 1992:611–615.
6. Blake R, Hoffman J: Emergency department evaluation and treatment of the shoulder and humerus. *Emerg Med Clin North Am* 1999;17(4):859–870.
7. Bruno RG, Carter W: Shoulder dislocation, in Rosen P, Barkin RM, Hayden SR, et al (eds): *The 5 Minute Emergency Medicine Consult*. Philadelphia: Lippincott, Williams & Wilkins, 1999:1032–1033.
8. Beeson M: Complications of shoulder dislocations. *Am J Emerg Med* 1999; 17(3):288–295.
9. Neviaser JS: Posterior dislocations of the shoulder, diagnosis and treatment. *Surg Clin North Am* 1963;43(6):1623–1630.
10. Brady WJ, Knuth CJ, Pirrallo RG: Bilateral inferior glenohumeral dislocation: luxatio erecta, an unusual presentation of a rare disorder. *J Emerg Med* 1995;13(1):37–42.
11. Rockwood CA Jr, Wirth MA: Subluxations and dislocations about the glenohumeral joint, in Rockwood CA Jr, Green DP, Bucholz RW, et al (eds): *Rockwood and Green's Fractures in Adults*, 4th ed. Philadelphia: Lippincott-Raven, 1996:1193–1340.
12. Ferkel RD, Hedley AK, Eckardt JJ: Anterior fracture-dislocations of the shoulder: pitfalls in treatment. *J Trauma* 1984;24(4):363–383.
13. Harvey RA, Trabulsy ME, Roe L: Are postreduction anteroposterior and scapular Y views useful in anterior shoulder dislocations? *Am J Emerg Med* 1992;19(2):149–151.
14. Hendey G, Kinlaw K: Clinically significant abnormalities in postreduction radiographs after anterior shoulder dislocation. *Ann Emerg Med* 1996; 28(4):299–402.
15. Elberger S, Brody G: Bilateral posterior shoulder dislocations. *Am J Emerg Med* 1995;13(3):331–332.
16. Matthews DE, Roberts T: Intraarticular lidocaine versus intravenous analgesic for reduction of acute anterior shoulder dislocations. *Am J Sports Med* 1995;23(1):54–59.
17. Kolb JC, Krupnick J: Shoulder reduction without anesthesia. *Ann Emerg Med* 1996;28(5):581–582.
18. Parvin RW: Closed reduction of common shoulder and elbow dislocations without anesthesia. *AMA Arch Surg* 1957;75:972–975.
19. Garnavos C: Technical note: modifications and improvement of the Milch technique for the reduction of anterior dislocation of the shoulder without premedication. *J Trauma* 1992;32(6):801–803.
20. Wen DY: Current concepts in the treatment of anterior shoulder dislocation. *Am J Emerg Med* 1999;17(4):401–407.
21. Liedelmeyer R: Reduced! A shoulder, subtly and painlessly. *Emerg Med* 1977;9:233–234.
22. Mirick MJ, Clinton JE, Ruiz E: External rotation method of shoulder dislocation reduction. *JACEP* 1979;8(12):528–531.
23. Plummer D, Clinton J: The external rotation method for reduction of acute anterior shoulder dislocation. *Emerg Med Clin North Am* 1989;7(1):165–175.
24. Danzl DF, Vicario SJ, Gleis GL, et al: Closed reduction of anterior subcoracoid shoulder dislocation, evaluation of an external rotation method. *Orthop Rev* 1986;15(5):311–315.
25. Stimson LA: An easy method of reducing dislocations of the shoulder and hip. *Med Rec* 1900;57(9):356–357.
26. Riebel GD, McCabe JB: Anterior shoulder dislocation: a review of reduction techniques. *Am J Emerg Med* 1991;9(2):180–188.
27. Lippert FG: A modification of the gravity method of reducing anterior shoulder dislocations. *Clin Orthop Rel Res* 1982;165:259–260.
28. Rollinson PD: Reduction of shoulder dislocations by the hanging method. *S Afr Med J* 1988;73:106–107.
29. Doyle WL, Ragar T: Use of the scapular manipulation method to reduce an anterior shoulder dislocation in the supine position. *Ann Emerg Med* 1996;27(1):92–94.
30. Anderson D, Zvirbulis R, Ciullo J: Scapular manipulation for reduction of anterior shoulder dislocations. *Clin Orthop Rel Res* 1982;164:181–183.
31. Kothari RU, Dronen SC: The scapular manipulation technique for the reduction of acute anterior shoulder dislocations. *J Emerg Med* 1990;8:625–628.
32. Kothari RU, Dronen SC: Prospective evaluation of the scapular manipulation technique in reducing anterior shoulder dislocations. *Ann Emerg Med* 1992;21(11):1349–1352.
33. McNamara RM: Reduction of anterior shoulder dislocations by scapular manipulation. *Ann Emerg Med* 1993;22(7):1140–1144.
34. Westin CD, Gill EA, Noyes ME, et al: Anterior shoulder dislocation: a simple and rapid method for reduction. *Am J Sports Med* 1995;23(3): 369–371.
35. Milch H: The treatment of recent dislocations and fracture-dislocations of the shoulder. *J Bone Joint Surg* 1949;31A(1):173–180.
36. Milch H: Treatment of dislocation of the shoulder. *Surgery* 1938;3:732–740.
37. Milch H: Pulsion-traction in the reduction of dislocations or fracture dislocations of the humerus. *Bull Hosp Joint Dis* 1963;24:147–152.
38. Lacey T II, Crawford HB: Reduction of anterior dislocations of the shoulder by means of the Milch abduction technique. *J Bone Joint Surg* 1952;34A(1): 108–109.
39. Russell JA, Holmes EM III, Keller DJ, et al: Reduction of acute anterior shoulder dislocations using the Milch technique: a study of ski injuries. *J Trauma* 1981;21(9):802–804.
40. Janecki CJ, Shahcheragh GH: The forward elevation maneuver for reduction of anterior dislocations of the shoulder. *Clin Orthop Rel Res* 1982;164: 177–180.
41. Hippocrates: Injuries of the shoulder, dislocations (Tsemanis VS, trans). *Clin Orthop Rel Res* 1989;246:4–7.
42. Hussein MK: Kocher's method is 3000 years old. *J Bone Joint Surg* 1968; 50B(3):669–671.
43. Thakur AJ, Narayan R: Painless reduction of shoulder dislocation by Kocher's method. *J Bone Joint Surg* 1990;72(3):524.
44. Poulsen SR: Reduction of acute shoulder dislocations using the Eskimo technique: a study of 23 consecutive cases. *J Trauma* 1988;2B(9):1382–1383.
45. Parisien VM: Shoulder dislocation, an easier method of reduction. *J Maine Med Assoc* 1979;70(3):102.
46. White ADN: Dislocated shoulder—a simple method of reduction. *Med J Aust* 1976;2:726–727.
47. Noordeen MHH, Bacarese-Hamilton IH, Belham GJ, et al: Anterior dislocation of the shoulder: a simple method of reduction. *Injury* 1992;23(7): 479–480.
48. Zahiri CA, Zahiri H, Tehrany F: Anterior shoulder dislocation reduction technique revisited. *Orthopedics* 1997;20:515–521.
49. Shackelford HL: Hydraulic stretcher reduction technique for anterior dislocation of the shoulder. *W Va Med J* 1982;78(1):9.
50. Davids JR, Talbott RD: Luxatio erecta humeri: a case report. *Clin Orthop Rel Res* 1990;252:144–149.
51. Pirrallo RG, Bridges TP: Luxatio erecta: a missed diagnosis. *Am J Emerg Med* 1990;8(4):315–317.
52. Saxena K, Stravas J: Inferior glenohumeral dislocation. *Ann Emerg Med* 1983;12(11):718–720.
53. Pick RY: Treatment of dislocated shoulder. *Clin Orthop Rel Res* 1977;123: 76–77.
54. Relovszky K: Prognosis of primary dislocation of the shoulder. *Acta Orthop Scand* 1969;40:216–224.
55. Kirker JR: Dislocation of the shoulder complicated by rupture of the axillary vessels: a case report. *J Bone Joint Surg* 1952;34B(1):72–73.
56. Curley SA, Osler T, Demarest GB: Traumatic disruption of the subclavian artery and brachial plexus in a patient with Ehlers–Danlos syndrome. *Ann Emerg Med* 1988;17(8):850–852.
57. DeLaat EAT, Visser CPJ, Coene LNJEM, et al: Nerve lesions in primary shoulder dislocations and humeral neck fractures: a prospective clinical and EMG study. *J Bone Joint Surg* 1994;76B(3):381–383.
58. Toolanen G, Hildingsson C, Hedlund T, et al: Early complications after anterior dislocation of the shoulder in patients over 40 years: an ultrasonographic and electromyographic study. *Acta Orthop Scand* 1993;64(5):549–552.

59. Travlos J, Goldberg I, Boome RS: Brachial plexus lesions associated with dislocated shoulders. *J Bone Joint Surg* 1990;72B(1):68–71.
60. Hoelen MA, Burgers AMJ, Rozing PM: Prognosis of primary anterior shoulder dislocation in young adults. *Arch Orthop Trauma Surg* 1990;110:51–54.
61. Shuster M, Abu-Laban RB, Boyd J: Prereduction radiographs in clinically evident anterior shoulder dislocation. *Am J Emerg Med* 1999;17(7): 653–658.
62. Shuster M, Abu-Alban RB, Boyd J, et al: Prospective evaluation of a guideline for the selective elimination of pre-reduction radiographs in clinically obvious anterior shoulder dislocation. *CJEM* 2002;4(4):257–262.
63. Hendey G, Chally M, Stewart V: Selective radiography in 100 patients with suspected shoulder dislocation. *J Emerg Med* 2006;31(1):23–28.
64. Kahn JH, Mehta SD: The role of post-reduction radiographs after shoulder dislocation. *J Emerg Med* 2007;33:169–173.
65. Shuster M, Abu-Alban RB, Boyd J: The role of radiographs in anterior shoulder dislocation. *J Emerg Med* 2009;36(2):190.
66. Emond M, Le Sage N, Lavoie A, et al: Refinement of the Quebec decision rule for radiography in shoulder dislocation. *CJEM* 2009;11(1):36–43.
67. Kahn JH: Reply to "The role of post-reduction radiographs after shoulder dislocation". *J Emerg Med* 2009;36(2):190–191.
68. Hendey GW, Kinlaw K: Clinically significant abnormalities in postreduction radiographs after anterior shoulder dislocation. *Ann Emerg Med* 1996;28(4):399–402.
69. Musmeci E, Gaspari D, Sandri A, et al: Bilateral luxatio erecta humeri associated with a unilateral brachial plexus and bilateral rotator cuff injuries: a case report. *J Othop Trauma* 2008;22(7):498–500.
70. Miller SL, Cleeman E, Auerbach J, et al: Comparison of intra-articular lidocaine and intravenous sedation for reduction of shoulder dislocations: a randomized, prospective study. *J Bone Joint Surg Am* 2002;84(12):2135–2139.
71. Kuhn JE: Treating the initial anterior shoulder dislocation—an evidence-based medicine approach. *Sports Med Arthrosc* 2006;14(4):192–198.
72. Moharari R, Khademhosseini P, Espandar R, et al: Intra-articular lidocaine versus intravenous meperidine/diazepam in anterior shoulder dislocation: a randomised clinical trial. *Emerg Med J* 2008;25:262–264.
73. Fitch RW, Kuhn JE: Intraarticular lidocaine versus intravenous procedural sedation with narcotics and benzodiazepines for reduction of the dislocated shoulder: a systematic review. *Acad Emerg Med* 2008;15(8):703–708.
74. Descamps MJ, Gwilym S, Weldon D, et al: Prospective audit of emergency department transit times associated with entonox analgesia for reduction of the acute, traumatic dislocated shoulder. *Accid Emerg Nurs* 2007;15:223–227.
75. Blaivas M, Lyon M: Ultrasound-guided interscalene block for shoulder dislocation reduction in the ED. *Am J Emerg Med* 2006;24(3):293–296.
76. Underhill TJ, Wan A, Morrice M: Interscalene brachial plexus blocks in the management of shoulder dislocations. *Arch Emerg Med* 1989;6(3):199–204.
77. Howell SM, Serafini ME. Ultrasound-guided interscalene block: more than meets the eye. *Am J Emerg Med* 2008;26(5):627–628.
78. Graf D. Ultrasound-guided interscalene block for shoulder dislocation reduction in the ED. *Am J Emerg Med* 2008;26(9):1061.
79. Christiansen TG, Nielsen R: Reduction of shoulder dislocations under interscalene brachial blockade. *Arch Orthop Trauma Surg* 1988;107(3):176–177.
80. Smith SL: An investigation comparing the Oxford Chair Technique with the traditional methods of glenohumeral dislocation reduction currently implemented. *Int Emerg Nurs* 2009;17(1):38–46.
81. Miljesic S, Kelly AM: Reduction of anterior dislocation of the shoulder: the Spaso technique. *Emerg Med* 1998;10:173–175.
82. Salvi AE: Considerations regarding the Spaso technique for dislocations of shoulder. *Am J Emerg Med* 2007;25(5):590.
83. Yuen M, Yap P, Chan Y, et al: An easy method to reduce anterior shoulder dislocation: the Spaso technique. *Emerg Med J* 2001;18(5):370–372.
84. Fernández-Valencia JA, Cuñe J, Casulleres JM, et al: The Spaso technique: a prospective study of 34 dislocations. *Am J Emerg Med* 2009;27(4):466–469.
85. Ugras AA, Mahirogullari M, Kural C: Reduction of anterior shoulder dislocations by Spaso technique: clinical results. *J Emerg Med* 2008;34(4): 383–387.
86. Oza MN: Direct humeral head manipulation (Oza maneuver) for anterior shoulder dislocations. *Ann Emerg Med* 2004;44(3):282.
87. Sagarin MJ: Best of both (BOB) maneuver for rapid reduction of anterior shoulder dislocation. *J Emerg Med* 2005;29(3):313–316.
88. Dyck DD Jr, Porter NW, Dunbar BD: Legg reduction maneuver for patients with anterior shoulder dislocation. *J Am Osteopath Assoc* 2008; 108(10):571–573.
89. Cunningham N: A new drug free technique for reducing anterior shoulder dislocations. *Emerg Med* 2003;15:521–524.
90. Cunningham N: Techniques for reduction of anteroinferior shoulder dislocation. *Emerg Med Australasia* 2005;17:463–471.
91. Ceroni D, Sadri H, Leuenberger A: Anteroinferior shoulder dislocation: an auto-reduction method without analgesia. *J Orthop Trauma* 1997;11(6): 399–404.
92. Boss A, Holzach P, Matter P: A new self-repositioning technique for fresh, anterior-lower shoulder dislocation. *Helv Chir Acta* 1993;60(1–2):263–265.
93. Aronen JG, Chronister RD: Anterior shoulder dislocations: easing reduction by using linear traction techniques. *Phys Sports Med* 1995;23:65–69.
94. Sayegh FE, Kenanidis EI, Papavasiliou KA, et al: Reduction of acute anterior dislocations: a prospective randomized study comparing a new technique with the Hippocratic and Kocher methods. *J Bone Joint Surg Am* 2009; 91(12):2775–2782.
95. O'Connor DR, Schwarze D, Fragomen AT, et al: Painless reduction of acute anterior shoulder dislocations without anesthesia. *Orthopedics* 2006; 29(6):528–532.
96. Dudkiewicz I, Arzi H, Salai M, et al: Patients education of a self-reduction technique for anterior glenohumeral dislocation of shoulder. *J Trauma* 2010;68(3):620–623.
97. Baykal B, Sener S, Turkan H. Scapular manipulation technique for reduction of traumatic anterior shoulder dislocations: experiences of an academic emergency department. *Emerg Med J* 2005;22(5):336–338.
98. Marinelli M, de Palma L: The external rotation method for reduction of acute anterior shoulder dislocations. *J Orthop Traumatol* 2009;10(1):17–20.
99. Cicak N: Posterior dislocation of the shoulder. *J Bone Joint Surg Br* 2004; 86B:324–332.
100. Mohseni MM: Images in emergency medicine. *Ann Emerg Med* 2008; 52(3):203, 231.
101. Mallon WJ, Bassett FH, Goldner RD: Luxatio erecta: the inferior glenohumeral dislocation. *J Ortho Trauma* 1990;4(1):19–24.
102. Yanturali S, Aksay E, Holliman CJ, et al: Luxatio erecta: clinical presentation and management in the emergency department. *J Emerg Med* 2005; 29(1):85–89.
103. Nho SJ, Dodson CC, Bardzik KF, et al: The two-step maneuver for closed reduction of inferior glenohumeral dislocation (luxatio erecta to anterior dislocation to reduction). *J Ortho Trauma* 2006;20(5):354–357.
104. Halberg MJ, Sweeney TW, Owens WB: Bedside ultrasound for verification of shoulder reduction. *Am J Emerg Med* 2009;27(1):134.e5–e6.
105. Yuen CK, Mok KL, Kan PG, et al: Bedside ultrasound for verification of shoulder reduction with the lateral and anterior approaches. *Am J Emerg Med* 2009;27(4):503–504.
106. McNeil NJ: Postreduction management of first-time traumatic anterior shoulder dislocations. *Ann Emerg Med* 2009;53(6): 811–813.
107. Itoi E, Hatakeyama Y, Sato T, et al: Immobilization in external rotation after shoulder dislocation reduces the risk of recurrence. A randomized controlled trial. *J Bone Joint Surg Am* 2007;89(10):2124–2131.
108. Smith TO: Immobilisation following traumatic anterior glenohumeral joint dislocation: a literature review. *Injury* 2006;37: 228–237.
109. Kuhn JE. Treating the initial anterior shoulder dislocation—an evidence-based medicine approach. *Sports Med Arthrosc* 2006;14(4):192–198.
110. Allie B, Kilroy DA, Riding G, et al: Rupture of axillary artery and neuropraxis as complications of recurrent traumatic shoulder dislocation: case report. *Eur J Emerg Med* 2005;12(3):121–123.
111. Kelly SP, Hinsche AF, Hossain JFM: Axillary artery transection following anterior shoulder dislocation: classical presentation and current concepts. *Injury* 2004;35:1128–1132.
112. Popescu D, Fernández-Valencia JA, Combalía A: Axillary arterial thrombosis secondary to anterior shoulder dislocation. *Acta Orthop Belg* 2006; 72(5):637–640.
113. Garcia R, Ponsky T, Brody F, et al: Bilateral luxatio erecta complicated by venous thrombosis. *J Trauma* 2006;60(5):1132–1134.
114. Willis AA, Verma NN, Thronton SJ, et al: Upper-extremity deep-vein thrombosis after anterior shoulder dislocation and closed reduction. *J Bone Joint Surg Am* 2005;87:2086–2090.
115. Dhar D: Anterior dislocation of shoulder with brachial plexus injury. *J Coll Physicians Surg Pak* 2007;17(2):110–111.
116. Yip KM, Hung LK, Maffulli N, et al: Brachial plexus injury in association with fracture-dislocation of the shoulder. *Bull Hosp Jt Dis* 1996;5(2): 92–94.

117. Shears E, Sunderamoorthy D, Ali SA: Brachial plexus injury after anterior shoulder dislocation: a case report. *Acta Orthop Belg* 2005;71(4):489–490.
118. Ameh V, Crane S: Nerve injury following shoulder dislocation: the emergency physician's perspective. *Eur J Emerg Med* 2005;13(4):233–235.
119. Chalidis B, Sachinis N, Dimitriou C, et al: Has the management of shoulder dislocation changed over time? *Int Orthop* 2007;31(3):385–389.
120. Handoll HHG, Hanchard NCA, Goodchild LM, et al: Conservative management following closed reduction of traumatic anterior dislocation of the shoulder (review). *Cochrane Database of Syst Rev* 2009;3:1–24.
121. Connolly S, Ritchie D, Sinopidis C, et al: Irreducible anterior dislocation of the shoulder due to soft tissue interposition of subscapularis tendon. *Skeletal Radiol* 2008;37(1):63–65.
122. Mimura T, Mori K, Matsusue Y, et al: Closed reduction for traumatic posterior dislocation of the shoulder using the 'lever principle': two case reports and a review of the literature. *J Orthop Surg* 2006;14(3):336–339.

REFERENCES

1. Royle SG: Posterior dislocation of the elbow. *Clin Orthop* 1991;269:201–204.
2. Hildebrand KA, Patterson SD, King GJ: Acute elbow dislocations: simple and complex. *Orthop Clin North Am* 1999;30(1):63–79.
3. Perry MO, Thal ER, Shires GT: Management of arterial injuries. *Ann Surg* 1971;173(3):403–408.
4. Bruce C, Laing P, Dorgan J, et al: Unreduced dislocation of the elbow: case report and review of the literature. *J Trauma* 1993;35(6):962–965.
5. Quan L, Marcuse EK: The epidemiology and treatment of radial head subluxation. *Am J Dis Child* 1985;139(12):1194.
6. Geiderman JM, Torbati SS: Humerus and elbow, in Mark J, Hockberger R, Walls R, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 7th ed. Philadelphia: Mosby-Elsevier, 2009:561–563.
7. Kennedy J, Blaisdell F: *Extremity Trauma*. New York: Thieme, 1992:146–148.
8. Simon RR, Sherman S, Koenigsknecht SJ: *Emergency Orthopedics—The Extremities*, 5th ed. New York: McGraw-Hill, 2006:255–258.
9. Schunk JE: Radial head subluxation: epidemiology and treatment of 87 episodes. *Ann Emerg Med* 1990;19(9):1019.
10. Schippinger G, Seibert FJ, Steinbock J, et al: Management of simple elbow dislocations. Does the period of immobilization affect the eventual results? *Langenbecks Arch Surg* 1999;384(3):294–297.
11. Platz A, Heinzalmann M, Ertel W, et al: Posterior elbow dislocation with associated vascular injury after blunt trauma. *J Trauma* 1999;46(5):948–950.
12. Carter SJ, Germann CA, Dacus AA, et al: Orthopedic pitfalls in the ED: neurovascular injury associated with posterior elbow dislocations. *Am J Emerg Med* 2010;28:960–965.
13. Endean ED, Veldenz HC, Schwarcz TH, et al: Recognition of arterial injury in elbow dislocation. *J Vasc Surg* 1992;16(3):402–406.
14. Galbraith KA, McCullough CJ: Acute nerve injury as a complication of closed fractures or dislocation of the elbow. *Injury* 1979;11(2):159–164.
15. Cohen MS, Hastngs H: Acute elbow dislocation: evaluation and management. *J Am Acad Orthop Surg* 1998;6(1):15–23.

REFERENCES

1. Schunk JE: Radial head subluxation: epidemiology and treatment of 87 episodes. *Ann Emerg Med* 1990;19(9):1019–1023.
2. Quan L, Marcuse EK: The epidemiology and treatment of radial head subluxation. *Am J Dis Child* 1985;139:1194–1197.
3. McDonald J, Whitelaw C, Goldsmith LJ: Radial head subluxation: comparing two methods of reduction. *Acad Emerg Med* 1999;6(7):715–718.
4. Ufberg JW, McNamara RM: Management of common dislocations, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2009:889–891.
5. Macias CG, Bothner J, Wiebe R: A comparison of supination/flexion to hyperpronation in reduction of radial head subluxations. *Pediatrics* 1998; 102(1):133.
6. Teach SJ, Schutzman SA: Prospective study of recurrent radial head subluxation. *Arch Pediatr Adolesc Med* 1996;150(2):164–166.
7. Jongschaap HC, Youngson GG, Beattie TF: The epidemiology of radial head subluxation ("pulled elbow") in the Aberdeen city area. *Health Bull (Edinb)* 1990;48(2):58–61.
8. Gotrell CB: Radiologic findings in radial head subluxation. *Am J Dis Child* 1986;140(9):856.
9. McDonald J, Whitelaw C, Goldsmith LJ: Radial head subluxation: comparing two methods of reduction. *Acad Emerg Med* 1999;6(7):715–718.
10. Green DA, Linares MYR, Garcia Pena BM, et al: Randomized comparison of pain perception during radial head subluxation reduction using supination-flexion or forced pronation. *Ped Emerg Care* 2006;22(4):235–238.
11. Bek D, Yildiz C, Kose O, et al: Pronation versus supination maneuvers for the reduction of 'pulled elbow': a randomized clinical trial. *Eur J Emerg Med* 2009;16(3):135–138.

REFERENCES

1. Overton DT, Uehara DT: Evaluation of the injured hand. *Emerg Med Clin North Am* 1993;11:585.
2. Hossfeld GE, Uehara DT: Acute joint injuries of the hand. *Emerg Med Clin North Am* 1993;11:781.
3. Altman RS, Harris GD, Knuth CJ: Initial management of hand injuries in the emergency patient. *Am J Emerg Med* 1987;5:400.
4. Chung K, Spilson S: The frequency and epidemiology of hand and forearm fractures in the United States. *J Hand Surg* 2001;26A:1044–1053.
5. Atroshi I, Rosenberg H: Epidemiology of amputations and severe injuries of the hand. *Hand Clin* 2001;17:343–350.
6. Zemel NP: Metacarpophalangeal joint injuries in fingers. *Hand Clin* 1992; 8(4):745–754.
7. Posner MA, Retaillaud JL: Metacarpophalangeal joint injuries of the thumb. *Hand Clin* 1992;8(4):713–732.
8. Bindra R: Dislocations and fracture dislocations of the metacarpophalangeal and proximal interphalangeal joints, in Ring D, Cohen M (eds): *Fractures of the Hand and Wrist*. London: Informa Health Care, 2007:42.
9. Belliappa PP, Scheker LR: Functional anatomy of the hand. *Emerg Med Clin North Am* 1993;11:557.
10. Kaplan EB: Dorsal dislocation of the metacarpophalangeal joint of the index finger. *J Bone Joint Surg* 1957;39A:1081.
11. Lam WJ, Fitzgerald AM, Hooper G: Volar matacarpophalangeal joint dislocation. *J Accid Emerg Med* 2000;17:226–228.
12. LP KC, Wong LY, Yu SJ: Dorsal dislocation of the metacarpophalangeal joint of the thumb: a case report. *J Ortho Surg* 2008;16:124–126.
13. Majunder S, Peck F, Watson JS, Lees VC: Lessons learned from the management of complex intra-articular fractures at the base of the middle phalanges of fingers. *J Hand Surg* 2003;28:559–565.
14. Moneim MS: Volar dislocation of the metacarpophalangeal joint. Pathologic anatomy and report of two cases. *Clin Orthop* 1983;176:186–189.
15. Stiles BM, Drake DB, Gear AJ, Watkins FH, Edlich RF: Metacarpophalangeal joint dislocations: indications for open surgical reduction. *J Emerg Med* 1997; 15(5):669–671.
16. Green DP, Butler TE: Fractures and dislocations of the hand, in Rockwood CA, Green DP, Bucholz RW, et al (eds): *Rockwood and Green's Fractures in Adults*, Vol 1. Philadelphia: Lippincott-Raven, 1996:607.
17. Ufberg J, McNamara R: Management of common dislocations, in Roberts J, Hedges J (eds): *Clinical Procedures in Emergency Medicine*, 4th ed. St. Louis: Saunders, 2004.
18. Clark DP, Scott RN, Anderson IWR: Hand problems in an accident and emergency department. *J Hand Surg* 1985;10:297.
19. Norris RL: Local anesthetics. *Emerg Med Clin North Am* 1992;10(4):707–718.
20. Mikus M, Stiles B: MCP Dislocations, in Bracker M (ed): *The 5-Minute Sports Medicine Consult*. Philadelphia: Lippincott Williams & Wilkins, 2001:224.
21. Bowers WH, Hurst LC: Gamekeeper's thumb. Evaluation by arthroscopy and stress roentgenography. *J Bone Joint Surg Am* 1977;59:519–524.

REFERENCES

1. Frieberg A, Pollard BA, Macdonald MR, et al: Management of proximal interphalangeal joint injuries. *J Trauma* 1999;46(3):523–528.
2. Mastey RD, Weiss AP, Akelman E: Primary care of hand and wrist athletic injuries. *Clin Sports Med* 1997;16(4):705–724.
3. Hossfeld GE, Uehara DT: Acute joint injuries of the hand. *Emerg Med Clin North Am* 1993;11(3):781–795.
4. Bailie DS, Benson LS, Marymont JV: Proximal inter-phalangeal joint injuries of the hand: part 1. Anatomy and diagnosis. *Am J Orthop* 1996;25(7):474–477.
5. Kiefhaber TR, Stern PJ: Fracture dislocations of the proximal interphalangeal joint. *J Hand Surg Am* 1998;23(3):368–380.
6. Benson LS, Bailie DS: Proximal interphalangeal joint injuries of the hand: part 2. Treatment and complications. *Am J Orthop* 1996;25(8):527–530.
7. Green DP, Butler TE: Fractures and dislocations in the hand, in Rockwood CA, Green DP, Bucholz RW, et al (eds): *Rockwood and Green's Fractures in Adults*, 2nd ed. Philadelphia: Lippincott, 1996:607–744.
8. Ufberg JW, McNamara RM: Management of common dislocations, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2009:894–896.
9. Deshmukh NV, Sonanis SV, Stothard J: Irreducible volar dislocations of the proximal interphalangeal joint. *Emerg Med J* 2005;22:221–224.
10. Hoffman DF, Schaffer TC: Management of common finger injuries. *Am Fam Physician* 1991;43(5):1594–1607.
11. Stiles BM, Drake DB, Gear AJ, et al: Metacarpophalangeal joint dislocation: indications for open surgical reduction. *J Emerg Med* 1997;15(5):669–671.
12. Nakae H, Endo S, Hoshi S: Two cases of closed dislocation of the interphalangeal joint of the thumb. *Arch Orthop Trauma Surg* 1996;115(3–4):236–237.
13. Abouzahr MK, Poblete JV: Irreducible dorsal dislocation of the distal interphalangeal joint: case report and literature review. *J Trauma* 1997;42(4):743–745.
14. Mall NA, Carlisle JC, Matava MJ, et al: Upper extremity injuries in the National Football League: part 1: hand and digit injuries. *Am J Sports Med* 2008;36:1938–1944.

REFERENCES

1. Allis OH: *The Hip*. Philadelphia: Dorman, 1893:14–16.
2. Bergman NJ: Reduction of posterior dislocation of the hip. *Tropic Doc* 1994; 24:134–135.
3. Brav EA: Traumatic dislocation of the hip. *J Bone Joint Surg* 1962;44A: 1115–1134.
4. Epstein HC: Posterior fracture-dislocation of the hip. *J Bone Joint Surg* 1974; 56A:1103–1127.
5. Howard CB: A gentle method of reducing traumatic dislocation of the hip. *Injury Br J Accid Surg* 1992;23:481–482.
6. Lefkowitz M: A new method for reduction of traumatic dislocations. *Orthop Rev* 1993;2:253–256.
7. Skoff HD: Posterior hip dislocation: a new technique for reduction. *Orthop Rev* 1986;15:405–409.
8. Nordt WE: Maneuvers for reducing dislocated hips. A new technique and a literature review. *Clin Orthop Rel Res* 1999;360:260–264.
9. Stefanich RJ: Closed reduction of posterior hip dislocation: the Rochester method. *Am J Orthop* 1999;28:64–65.
10. Walden PD, Hamer JR: Whistler technique used to reduce traumatic dislocation of the hip in the emergency department setting. *J Emerg Med* 1999; 17(3):441–444.
11. Vosburgh CL, Vosburgh JB: Closed reduction for total hip arthroplasty reduction. The Tulsa technique. *J Arthrop* 1995;10(5):693–696.
12. Dahners LE, Hundley JD: Reduction of posterior hip dislocations in the lateral position using traction-countertraction: safer for the surgeon? *J Orthop Trauma* 1999;13(5):373–374.
13. Hogan TH: Hip and femur, in Hart RG, Rittenberry TJ, Uehara DT (eds): *Handbook of Orthopaedic Emergencies*. Philadelphia: Lippincott-Raven, 1999:309–315.
14. Miner JR, Martel ML, Meyer M, et al: Procedural sedation of critically ill patients in the emergency department. *Acad Emerg Med* 2005;12(2):124–128.
15. Cornwall R, Radomisli TE: Nerve injury in traumatic dislocation of the hip. *Clin Orthop Relat Res* 2000;377:84–91.

REFERENCES

1. Hawkins RJ, Bell RH, Anisette G: Acute patellar dislocations: the natural history. *Am J Sports Med* 1986;14(2):117–120.
2. Burks RT, Desio SM, Bachus KN, et al: Biomechanical evaluation of lateral patellar dislocations. *Am J Knee Surg* 1998;11(1):24–31.
3. Harries M, Williams C, Stanish W: *Oxford Textbook of Sports Medicine*, 2nd ed. Oxford, England: Oxford Medical Publications, 1998:407–414.
4. Dimentberg RA: Intra-articular dislocation of the patella: case report and literature review. *Clin J Sport Med* 1997;7(2):126–128.
5. Apostolaki E, Cassar-Pullicino VN, Tyrrell PNM, et al: MRI appearances of infrapatellar fat pad in occult traumatic patellar dislocation. *Clin Radiol* 1999; 54(11):743–747.
6. Maenpaa H, Lehto MUK: Patellar dislocation. The long-term results of nonoperative management in 100 patients. *Am J Spots Med* 1997;25(2):213–217.
7. Holmes SW Jr, Clancy WG: Clinical classification of patellofemoral pain and dysfunction. *J Orthop Sports Phys Ther* 1998;28(5):299–306.
8. Malonga GA: Patellar injury and dislocation. *eMedicine*, Sept 2008.
9. Davenport M: Joint reduction, patella dislocation: *eMedicine*, Aug 2008.

REFERENCES

1. Beaty JH: Fractures and dislocations of the knee: knee injuries, knee dislocations, in Rockwood CA, Wilkins KE, King RE (eds): *Fractures in Children*, 3rd ed. Philadelphia: Lippincott, 1991:1254–1255.
2. Manaster BJ, Andrews CL: Fractures and dislocations of the knee and proximal tibia and fibula. *Semin Roentgenol* 1994;29(2):113–133.
3. Schenck RC Jr: The dislocated knee. *Instr Course Lect* 1994;43:127–136.
4. Schenck RC Jr, Stannard JP, Wascher DC: Dislocations and fracture-dislocations of the knee, in Bucholz RW, Heckman JD, et al (eds): *Rockwood and Green's Fractures in Adults*, 6th ed. Philadelphia: Lippincott, Williams & Wilkins, 2005:2032–2078.
5. Ogden JA: Knee, in Ogden JA (ed): *Skeletal Injury in the Child,* 3rd ed. New York: Springer Verlag, 2000:929–989.
6. Merrill KD: Knee dislocations with vascular injuries. *Orthop Clin North Am* 1994;25(4):707–713.
7. Gustilo RB, Cabatan DM: Traumatic dislocation of the knee, in Gustilo RB, Kyle RF, Templeman DC (eds): *Fractures and Dislocations.* St. Louis: Mosby, 1993:885–895.
8. Roberts DM: Emergency department evaluation and treatment of knee and leg injuries *Emerg Med Clin North Am* 2000;18:67–84.
9. Diabach JA: Acute dislocations, in Canale TS, Beaty JH (eds): *Campbell's Operative Orthopaedics*, 11th ed. Philadelphia: Elsevier, 2008:3578–3581.
10. Wood MB: Peroneal nerve repair. Surgical results. *Clin Orthop Relat Res* 1991;(267):206–210.
11. Hill JA, Rana NA: Complications of posterolateral dislocation of the knee: case report and literature review. *Clin Orthop Relat Res* 1981;(154):212–215.
12. Jones RE, Smith EC, Bone GE: Vascular and orthopedic complications of knee dislocation. *Surg Gynecol Obstet* 1979;149(4):554–548.
13. Hollis JD, Daley BJ: 10-year review of knee dislocations: is arteriography always necessary? *J Trauma* 2005;59(3):672–676.
14. Mills WJ, Barei DP, McNair P: The value of the ankle-brachial index for diagnosing arterial injury after knee dislocation: a prospective study. *J Trauma* 2004;56(6):1261–1265.

REFERENCES

1. Geissler WB, Tsao AK, Hughes JL: Fractures and injuries of the ankle, in Rockwood CA, Green DP, Bucholz RW, et al (eds): *Rockwood and Green's Fractures in Adults,* 4th ed. Philadelphia: Lippincott-Raven, 1996:2250–2251.
2. Colville MR, Coville JM, Manoli A: Posteromedial dislocation of the ankle without fracture. *J Bone Joint Surg* 1987;69A(5):706–711.
3. Segal D, Wasilewski S: Total dislocation of the talus. *J Bone Joint Surg* 1980; 62A(8):1370–1372.
4. Wilson AB, Toriello EA: Lateral rotatory dislocation of the ankle without fracture. *J Orthop Trauma* 1991;5(1):93–95.
5. Wroble RR, Nepola JV, Marvitz TA: Ankle dislocation without fracture. *Foot Ankle* 1988;9(2):64–74.
6. Toohey JS, Worsing RA: A long-term follow-up study of tibiotalar dislocations without associated fractures. *Clin Orthop Rel Res* 1989;239:207–210.
7. Connolly JF: *Fractures and Dislocations: Closed Management.* Philadelphia: Saunders, 1995:898–901.
8. Conwell HE, Alldredge RH: Complete compound dislocation of the ankle joint without fracture with primary healing. *JAMA* 1937;108(24):2035–2036.
9. Moehring HD, Tan RT, Marder RA, et al: Ankle dislocation. *J Orthop Trauma* 1994;8(2):167–172.
10. Watson JAS, Hollingdale JP: Early management of displaced ankle fractures. *Injury* 1992;23(2):87–88.
11. White BJ, Walsh M, Egol KA, et al: Intra-articular block compared with conscious sedation for closed reduction of ankle fracture-dislocations. *J Bone Joint Surg Am* 2008;90:731–744.

REFERENCES

1. McKee MD: Clavicle fractures, in Bucholz RW, Heckman JD, Court-Brown CM, et al (eds): *Rockwood and Green's Fractures in Adults*, 7th ed. New York: Lippincott, Williams & Wilkins, 2009:1106–1143.
2. Sarwath JF, King EC, Janicki JA: Proximal humerus, scapula, and clavicle, in Beaty JH, Kasser JR (eds): *Rockwood & Wilkin's Fractures in Children*, 7th ed. New York: Lippincott, Williams, & Wilkins, 2009: 620–684.
3. Daya M, Nakamura Y: Shoulder, in Marx JA, Hockberger RA, Walls RM, et al (eds): *Rosen's Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St. Louis: Elsevier Mosby, 2009:570–573.
4. Allman FL: Fractures and ligamentous injuries of the clavicle and its articulation. *J Bone Joint Surg Am* 1967;49A:774–784.
5. Woolfrey KGM, Woolfrey MR, Eisenhauer MA: Wrist and forearm, in Marx JA, Hockberger RA, Walls RM, et al (eds)*: Rosen's Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St. Louis: Elsevier Mosby, 2009:534–536.
6. Ruch DS, McQueen DM: Distal radius and ulna fractures, in Bucholz RW, Heckman JD, Court-Brown CM, et al (eds): *Rockwood and Green's Fractures in Adults*, 7th ed. New York: Lippincott, Williams, & Wilkins 2009:829–880.
7. Robinson CM: Proximal humerus fractures, in Bucholz RW, Heckman JD, Court-Brown CM, et al (eds): *Rockwood and Green's Fractures in Adults*, 7th ed. New York: Lippincott, Williams & Wilkins, 2009:1039–1105.
8. Geiderman JM, Torbati SS: Humerus and elbow, in Marx JA, Hockberger RA, Walls RM, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St. Louis: Elsevier Mosby, 2009:552–556.
9. King D: Elbow fractures and dislocations, in Bucholz RW, Heckman JD, Court-Brown CM, et al (eds): *Rockwood and Green's Fractures in Adults*, 7th ed. New York: Lippincott, Williams & Wilkins, 2009:905–944.
10. Shaggs DL, Flynn JM: Supracondylar fractures of the distal humerus, in Beaty JH, Kasser JR (eds): *Rockwood & Wilkin's Fractures in Children*, 7th ed. New York: Lippincott, Williams & Wilkins, 2009:487–532.
11. Sharr JR, Mohammed KD: Optimizing the radiographic technique in clavicular fractures. *J Shoulder Elbow Surg* 2003;12:170–172.
12. Hanby CK, Pasque CB, Sullivan JA: Medial clavicle physis fracture with posterior displacement and vascular compromise: the value of three-dimensional computed tomography and duplex ultrasound. *Orthopedics* 2003;26:81–84.
13. Khan LA, Bradnock TJ, Scott C, Robinson CM: Fractures of the clavicle. *J Bone Joint Surg Am* 2009;91:447–460.
14. Chen L, Kim Y, Moore CL: Diagnosis and guided reduction of forearm fractures in children using bedside ultrasound. *Pediatr Emerg Care* 2007; 23:528–531.
15. Omid R, Choi PD, Skaggs DL. Supracondylar humeral fractures in children. *J Bone Joint Surg Am* 2008;90:1121–1132.
16. Battaglia TC, Armstrong DG, Schwend RM. Factors affecting forearm compartment pressures in children with supracondylar fractures of the humerus. *J Pediatr Orthop* 2002;22:431–439.
17. Gartland JJ. Management of supracondylar fractures of the humerus in children. *Surg Gynecol Obstet* 1959;109:145–154.
18. Chalidis B, Sachinis N, Samoladas E, et al: Acute management of clavicle fractures. A long term functional outcome study. *Acta Orthop Belg* 2008; 74(3):303–307.
19. Zlowodzki M, Zelle BA, Cole PA, et al: Treatment of acute midshaft clavicle fractures: systematic review of 2144 fractures on behalf of the evidence-based orthopedic trauma working group. *J Orthop trauma* 2005;19(7):504–507.
20. Unkefer N, Joing S, Reardon R: Colles fracture reduction using ultrasound. *Acad Emerg Med* 2006;13(9):966–967.

REFERENCES

1. Stewart JDM, Hallett JP: *Traction and Orthopaedic Appliances*. Edinburgh: Churchill Livingstone, 1983:195–210.
2. Alexander RH, Proctor HJ: *Advanced Trauma Life Support for Doctors Manual*, 8th ed. Chicago: American College of Surgeons, 2008.
3. Charnley J: *The Closed Treatment of Common Fractures*, 4th ed. Cambridge, UK: Greenwich Medical Media, 2004.
4. Browner BD, Jupiter JB, Levine AM, et al: *Skeletal Trauma: Basic Science, Management, and Reconstruction*, 4th ed. Philadelphia: WB Saunders, 2008.
5. Department of the Army: *Orthopedic Specialist, Department of the Army and Air Force Technical Manual*. Washington, DC: U.S. Government Printing Office, 1967:103–149.
6. Lewis RC: *Handbook of Traction, Casting and Splinting Techniques*. Philadelphia: Lippincott, Williams & Wilkins, 1977.
7. Court-Brown CM: Principles of nonoperative fracture treatment, in Bucholz RW, Court-Brown CM, Heckman JD, et al (eds): *Rockwood & Green's Fractures in Adults*, 7th ed. Philadelphia: Lippincott, Williams & Wilkins, 2009: 124–161.
8. Gustilo RB, Anderson JT: Prevention of infection in the treatment of 1025 open fractures of long bones: retrospective and prospective analyses. *J Bone Joint Surg Am* 1976;58(4):453–458.
9. James JIP: The assessment and management of the injured hand. *Hand* 1970;2(2):97–105.
10. Schneider FR: *Handbook for the Orthopaedic Assistant*. St. Louis: Mosby, 1976: 95–125.
11. Bingold AC: On splitting plasters. A useful analogy. *J Bone Joint Surg Br* 1979;61(3):294–295.
12. Garfin SR, Mubarak SJ, Evans KL, et al: Quantification of intracompartmental pressure and volume under plaster casts. *J Bone Joint Surg Am* 1981; 63(4):449–453.
13. Bone LB, Johnson KD, Weigelt J, et al: Early versus delayed stabilization of femoral fractures: a prospective randomized study. *J Bone Joint Surg Am* 1989; 71(3):336–340.
14. Simon RR, Sherman SC: *Emergency Orthopedics: The Extremities*, 6th ed. New York: McGraw-Hill, 2010.
15. BSN Medical: *Ortho-Glass Splinting Course Manual*, 6th ed. BSN Medical Inc., 2006.

REFERENCES

1. Ehrlich HP: The physiology of wound healing. A summary of normal and abnormal wound healing processes. *Adv Wound Care* 1998;11(7):326–328.
2. Moy LS: Management of acute wounds. *Dermatol Clin* 1993;11(4):759–766.
3. Pollack SV: Wound healing: a review. III. Nutritional factors affecting wound healing. *J Enterostom Ther* 1982;9(2):28–33.
4. Pollack SV: Wound healing: a review. IV. Systemic medications affecting wound healing. *J Dermatol Surg Oncol* 1982;8(8):667–672.
5. Robson MC: Disturbances of wound healing. *Ann Emerg Med* 1988;17(12): 1274–1278.
6. Berk WA, Welch RD, Bock BF: Controversial issues in clinical management of the simple wound. *Ann Emerg Med* 1992;21(1):72–80.
7. Cruse PJ, Foord R: A five-year prospective study of 23,649 surgical wounds. *Arch Surg* 1973;107(2):206–210.
8. Cardany CR, Rodeheaver G, Thacker J, et al: The crush injury: a high risk wound. *J Am Coll Emerg Physicians* 1976;5(12):965–970.
9. Berk WA, Osbourne DD, Taylor DD: Evaluation of the 'golden period' for wound repair: 204 cases from a third world emergency department. *Ann Emerg Med* 1988;17(5):496–500.
10. Condie JD FD: Experimental wound infections: contamination versus surgical technique. *Surgery* 1961;50:367–371.
11. De Holl D, Rodeheaver G, Edgerton MT, et al: Potentiation of infection by suture closure of dead space. *Am J Surg* 1974;127(6):716–720.
12. Mehta PH, Dunn KA, Bradfield JF, et al: Contaminated wounds: infection rates with subcutaneous sutures. *Ann Emerg Med* 1996;27(1):43–48.
13. Lammers RL: Soft tissue foreign bodies. *Ann Emerg Med* 1988;17(12): 1336–1347.
14. Schlager D: Ultrasound detection of foreign bodies and procedure guidance. *Emerg Med Clin North Am* 1997;15(4):895–912.
15. Tandberg D: Glass in the hand and foot: will an X-ray film show it? *JAMA* 1982;248(15):1872–1874.
16. Courter BJ: Radiographic screening for glass foreign bodies—what does a "negative" foreign body series really mean? *Ann Emerg Med* 1990;19(9): 997–1000.
17. Alexander JW, Fischer JE, Boyajian M, et al: The influence of hair-removal methods on wound infections. *Arch Surg* 1983;118(3):347–352.
18. Singer AJ, Hollander JE, Subramanian S, et al: Pressure dynamics of various irrigation techniques commonly used in the emergency department. *Ann Emerg Med* 1994;24(1):36–40.
19. Pigman EC, Karch DB, Scott JL: Splatter during jet irrigation cleansing of a wound model: a comparison of three inexpensive devices. *Ann Emerg Med* 1993;22(10):1563–1567.
20. Haury B, Rodeheaver G, Vensko J, et al: Debridement: an essential component of traumatic wound care. *Am J Surg* 1978;135(2):238–242.
21. Palmon SC, Lloyd AT, Kirsch JR: The effect of needle gauge and lidocaine pH on pain during intradermal injection. *Anesth Analg* 1998;86(2):379–381.
22. Scarfone RJ, Jasani M, Gracely EJ: Pain of local anesthetics: rate of administration and buffering. *Ann Emerg Med* 1998;31(1):36–40.
23. Christoph RA, Buchanan L, Begalla K, et al: Pain reduction in local anesthetic administration through pH buffering. *Ann Emerg Med* 1988;17(2):117–120.
24. Bartfield JM, Homer PJ, Ford DT, et al: Buffered lidocaine as a local anesthetic: an investigation of shelf life. *Ann Emerg Med* 1992;21(1):16–19.
25. Bartfield JM, Ford DT, Homer PJ: Buffered versus plain lidocaine for digital nerve blocks. *Ann Emerg Med* 1993;22(2):216–219.
26. Bartfield JM, Gennis P, Barbera J, et al: Buffered versus plain lidocaine as a local anesthetic for simple laceration repair. *Ann Emerg Med* 1990;19(12):1387–1389.
27. Schilling CG, Bank DE, Borchert BA, et al: Tetracaine, epinephrine (adrenalin), and cocaine (TAC) versus lidocaine, epinephrine, and tetracaine (LET) for anesthesia of lacerations in children. *Ann Emerg Med* 1995;25(2):203–208.
28. Zempsky WT, Karasic RB: EMLA versus TAC for topical anesthesia of extremity wounds in children. *Ann Emerg Med* 1997;30(2):163–166.
29. Varghese MC, Balin AK, Carter DM, et al: Local environment of chronic wounds under synthetic dressings. *Arch Dermatol* 1986;122(1):52–57.
30. Dire DJ: *Emergency Medicine*, 2nd ed. Philadelphia: Lippincott-Raven, 1998.
31. Eron LJ: Targeting lurking pathogens in acute traumatic and chronic wounds. *J Emerg Med* 1999;17(1):189–195.
32. Quinn JV, Drzewiecki A, Li MM, et al: A randomized, controlled trial comparing a tissue adhesive with suturing in the repair of pediatric facial lacerations. *Ann Emerg Med* 1993;22(7):1130–1135.
33. Orlinsky M, Goldberg RM, Chan L, et al: Cost analysis of stapling versus suturing for skin closure. *Am J Emerg Med* 1995;13(1):77–81.
34. Dire DJ, Coppola M, Dwyer DA, et al: Prospective evaluation of topical antibiotics for preventing infection in uncomplicated soft tissue wounds repaired in the ED. *Acad Emerg Med* 1995;2:4–10.
35. Nakamura Y, Daya M. Use of appropriate antimicrobials in wound management. *Emerg Med Clin N Am* 2007;25:159–176.
36. DeBoard RH, Rondeau DF, Kang CS, et al: Principles of basic wound evaluation and management in the emergency department. *Emerg Med Clin N Am* 2007;25:23–39.
37. Walters TJ, Wenke JC, Kauvar DS, et al: An observational study to determine the effectiveness of self-applied tourniquets in human volunteers. *J Prehosp Care* 2005;9(4):416–422.
38. Wedmore I, McManus J, Pusateri A, et al: The chitosan-based hemostatic dressing: experience in current combat operations, a retrospective review. *J Trauma* 2006;60(3):655–658.
39. Pusateri AE, Modrow HE, Harris RA, et al: Advanced hemostatic dressing development program: animal model selection criteria and results of a study of nine hemostatic dressings in a model of severe large venous hemorrhage and hepatic injury in swine. *J Trauma* 2003;55:518–526.
40. Singer AJ, Hollander JE, Subrananian S, et al: Pressure dynamics of various irrigation techniques commonly used in the emergency department. *Ann Emerg Med* 1994;24:36–40.
41. Owens TB, Bosse M, Hudson M, et al: Does bacteremia occur during high pressure lavage of contaminated wounds? *Clin Orthop* 1998;1(347):117–121.
42. Longmire AW, Broom LA, Burch J. Wound infection following high pressure syringe and needle irrigation. *Am J Emerg Med* 1987;5(2):179–181.
43. Moscati R, Mayrose MS, Fincher L, et al: Comparison of normal saline with tap water for wound irrigation. *Am J Emerg Med* 1998;16:379–381.
44. Riyat MS, Quinton DN. Tap water as a wound cleansing agent in accident and emergency. *J Accid Emerg Med* 1997;14:165–166.
45. Bansal BC, Wiebe RA, Perkins SD, et al: Tap water for irrigation of lacerations. *Am J Emerg Med* 2002;20(5):469–472.
46. Moscati RM, Mayrose J, Reardon RF, et al: A multicenter comparison of tap water versus sterile saline for wound irrigation. *Acad Emerg Med* 2007; 14(5):404–410.
47. Valente JH, Forti RJ, Freundlich LF, et al: Wound irrigation in children: saline solution or tap water? *Ann Emerg Med* 2003;41(5):609–616.
48. Cooper ML, Laer JA, Hansbrough JF. The cytotoxic effects of commonly used antimicrobial agents on human fibroblasts and keratinocytes. *J Trauma* 1991;31:775–784.
49. Perelman VS, Francis GJ, Rutledge T, et al: Sterile versus nonsterile gloves for repair of uncomplicated lacerations in the emergency department: a randomized controlled trial. *Ann Emerg Med* 2004;43(3):362–370.
50. Worral GJ: Repairing skin lacerations: does sterile technique matter? *Can Fam Physician* 1987;33:1185–1187.
51. Zinner NL: How safe are your gloves? *AORN J* 1994;4:876–882.
52. Burke FLT, Wilson NHF: Non-sterile glove use: a review. *Am J Dent* 1989;2: 255–261.
53. Burke FJT: Use on non-sterile gloves in clinical practice. *J Dent* 1990;18:79–89.
54. Fiehn NE, Westergaard J: Physical and microbiological quality of five different examination and surgical gloves before and after use in dental practice. *Zentralbl Hyg Umweltmed* 1993;195:27–36.
55. Edwards J: Check for mould on non-sterile examination gloves. *New Z Dent J* 1994;399:20.

REFERENCES

1. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott Williams & Wilkins, 2001.
2. Ethicon: *Wound Closure Manual.* Somerville, NJ: Ethicon, Inc., 1999.
3. Sherris DA, Kern EG: *Basic Surgical Skills.* Rochester: Mayo Clinic Scientific Press, 1999.
4. Roberts JR, Hedges JR: *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2009.
5. Trott A: *Wounds and Laceration: Emergency Care and Closure.* St. Louis: Mosby 2005.
6. Hollander JE, Singer AJ: Laceration management. *Ann Emerg Med* 1999:34: 356–367.
7. Al-Abdullah T, Plint AC, Fergusson D: Absorbable versus nonabsorbable sutures in the management of traumatic lacerations and surgical wounds: a meta-analysis. *Pediatr Emerg Care* 2007;23(5):339–344.
8. Karounis H, Gouin S, Eisman H, et al: A randomized, controlled trial comparing long-term cosmetic outcomes of traumatic pediatric lacerations repaired with absorbable plain gut versus nonabsorbable nylon sutures. *Acad Emerg Med* 2004;11(7):730–735.
9. Holger JS, Wandersee SC, Hale DB: Cosmetic outcomes of facial lacerations repaired with tissue-adhesive, absorbable, and nonabsorbable sutures. *Am J Emerg Med* 2004;22(4):254–257.
10. Luck RP, Flood R, Eyal D, et al: Cosmetic outcomes of absorbable versus non-absorbable sutures in pediatric facial lacerations. *Pediatr Emerg Care* 2008; 24(3):137–142.
11. Hock MO, Ooi SB, Saw SM, et al: A randomized controlled trial comparing the hair apposition technique with tissue glue to standard suturing in scalp lacerations (HAT study). *Ann Emerg Med* 2002;40(1):19–26.
12. Ong ME, Coyle D, Lim SH, et al: Cost-effectiveness of hair apposition technique compared with standard suturing in scalp lacerations. *Ann Emerg Med* 2005;46(3):237–242.
13. Officer C: Scalp lacerations in children. *Aust Fam Physician* 1981;10:970.
14. Davies MJ: Scalp wounds: an alternative to suture. *Injury* 1988;19:375–376.
15. Ong ME, Chan YH, Teo J, et al: Hair apposition technique for scalp laceration repair: a randomized controlled trial comparing physicians and nurses (HAT 2 study). *Am J Emerg Med* 2008;26(4):433–438.

REFERENCES

1. Singer AJ, Quinn JV, Hollander JE: The cyanoacrylate topical skin adhesives. *Am J Emerg Med* 2008;26(4):490–496.
2. Applebaum JS, Zalut T, Applebaum D: The use of tissue adhesion for traumatic laceration repair in the emergency department. *Ann Emerg Med* 1993;22:1190–1192.
3. Cascarini L, Kumar A: Case of the month: Honey I glued the kids: tissue adhesives are not the same as "superglue". *Emerg Med J* 2007;24(3):228–229.
4. Zempsky WT, Parrotti D, Grem C, et al: Randomized controlled comparison of cosmetic outcomes of simple facial lacerations closed with Steri Strip Skin Closures or Dermabond tissue adhesive. *Pediatr Emerg Care* 2004; 20(8):519–524.
5. Bresnahan KA, Howell JM, Wizorek J: Comparison of tensile strength of cyanoacrylate tissue adhesive closure of lacerations versus suture closure. *Ann Emerg Med* 1995;26(5):575–578.
6. Noordzij JP, Foresman PA, Rodeheaver GT, et al: Tissue adhesive wound repair revisited. *J Emerg Med* 1994;12(5):645–649.
7. Osmond MH, Klassen TP, Quinn JV: Economic comparison of a tissue adhesive and suturing in the repair of pediatric facial lacerations. *J Pediatr* 1995; 126(6):892–895.
8. Mertz PM, Davis SC, Cazzaniga AL, et al: Barrier and antibacterial properties of 2-octyl cyanoacrylate-derived wound treatment films. *J Cutan Med Surg* 2003;7(1):1–6.
9. Rouvelas H, Saffra N, Rosen M: Inadvertent tarsorrhaphy secondary to Dermabond. *Pediatr Emerg Care* 2000;16:346.
10. Carleo C, Singer AJ: Effect of frequent soaking on the rate of tissue adhesive sloughing: a randomized study. *Can J Emerg Med* 2005;7:391–395.
11. Afarian H, Lin M: Look out! Tissue adhesives near the eye. *ACEP News* 2008;27(4):34.
12. Hock MO, Ooi SB, Saw SM, et al: A randomized controlled trial comparing the hair apposition technique with tissue glue to standard suturing in scalp lacerations (HAT study). *Ann Emerg Med* 2002;40(1):19–26.
13. Ong ME, Coyle D, Lim SH, et al: Cost-effectiveness of hair apposition technique compared with standard suturing in scalp lacerations. *Ann Emerg Med* 2005;46(3):237–242.
14. Officer C: Scalp lacerations in children. *Aust Fam Phys* 1981;10:970.
15. Davies MJ: Scalp wounds: an alternative to suture. *Injury* 1988;19:375–376.
16. Ong ME, Chan YH, Teo J, et al: Hair apposition technique for scalp laceration repair: a randomized controlled trial comparing physicians and nurses (HAT 2 study). *Am J Emerg Med* 2008;26(4):433–438.
17. Hollander JE, Singer AJ. Laceration management. *Ann Emerg Med* 1999; 34(3):356–367.
18. Man SY, Wong EML, Ng YC, et al: Cost-consequence analysis comparing 2-octyl cyanoacrylate tissue adhesive and suture for closure of simple lacerations: a randomized controlled trial. *Ann Emerg Med* 2009;53(2):189–197.
19. Blondeel PNV, Murpht JW, Debrosse D, et al: Closure of long surgical incisions with a new formulation of 2-octylcyanoacrylate tissue adhesive versus commercially available methods. *Am J Surg* 2004;188(3):307–313.
20. Quinn JV: Clinical approaches to the use of cyanoacrylate tissue adhesives, in Quinn JV (ed): *Tissue Adhesives in Clinical Medicine*, 2nd ed. Hamilton, Ontario: B.D. Decker, 2005:27–76.
21. Swan MC, Descamps MJ, Broadhurst A: Scar tattooing following the use of tissue adhesive. *Plast Reconstr Surg* 2006;117(3):1054–1055.
22. Karaduman S, Yuruktumen A, Guryay SM, et al: Modified hair apposition technique as the primary closure method for scalp lacerations. *Am J Emerg Med* 2009;27:1050–1055.
23. Taira BR, Singer AJ, Rooney J, et al: An in-vivo study of the wound-bursting strengths of octyl-cyanoacrylate, butyl-cyanoacrylate, and surgical tape in rats. *J Emerg Med* 2010;38(4):546–551.
24. Holger JS, Wandersee SC, Hale DB: Cosmetic outcomes of facial lacerations repaired with tissue-adhesive, absorbable, and nonabsorbable sutures. *Am J Emerg Med* 2004;22(4):254–257.

REFERENCES

1. Farrior RT: Management of lacerations and scars. *Laryngoscope* 1977;87(6): 917–933.
2. Rudolph R, Schneider G: Scar revision, in Georgiade GS, Riefkohl R, Levin SL (eds): *Georgiade Plastic, Maxillofacial, and Reconstructive Surgery*, 3rd ed. Baltimore: Williams & Wilkins, 1997:115–121.
3. McGregor AD, McGregor IA: *Fundamental Techniques of Plastic Surgery and Their Surgical Application.* London: Churchill Livingstone, 2000.
4. McCarthy JG: Introduction to plastic surgery, in McCarthy JG, May JW, Littler W (eds): *Plastic Surgery*, 3rd ed. Philadelphia: Saunders, 1990:1–68.
5. Place MJ, Herber SC, Hardesty RA: Principles and techniques in plastic surgery, in Thorne CHM, Bartlett SP, Beasley RN, et al (eds): *Grabb and Smith's Plastic Surgery*, 6th ed. Philadelphia: Lippincott Williams & Wilkins, 2006:3–14.
6. Ulusoy MG, Akan IM, Sensoz O, et al: Bilateral extended V-Y advancement flap. *Ann Plast Surg* 2001;46(1):5–8.

REFERENCES

1. Neuman MI, Eriksson E: Facial Trauma, in Fleisher GR, Ludwig S (eds): *Textbook of Pediatric Emergency Medicine*, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2006:1475–1485.
2. Lammers RL: Principles of wound management, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 2nd ed. Philadelphia: Saunders, 1991:547.
3. Trott AT: *Wounds and Lacerations*, 2nd ed. St. Louis: Mosby-Year Book, 1997:183.
4. Duschoff IM: About face. *Emerg Med* 1974;11:25–77.
5. Trott AT: *Wounds and Lacerations*, 2nd ed. St. Louis: Mosby-Year Book, 1997:183–186.
6. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:338.
7. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:286–362.
8. Baker S, Hurwitz JJ: Management of orbital and ocular adnexal trauma. *Ophthalmol Clin North Am* 1999;12(3):451–452.
9. Lemke BN, Della Rocca RC: *Surgery of the Eyelids and Orbit—An Anatomic Approach.* Stamford, CT: Appleton & Lange, 1990:108.
10. Peak DE, Chisholm CD, Knoop KJ: Ophthalmic trauma, in Knoop KJ, Stack LB, Storrow AB (eds): *Atlas of Emergency Medicine*, 2nd ed. New York: McGraw-Hill Professional, 2002:97–116.
11. Rocca RD, Weiner W, Maher E: Lid laceration and avulsions, in Roy FH, Media PA (eds): *Master Techniques in Ophthalmic Surgery.* Baltimore: Williams & Wilkins, 1995:422–428.
12. Augsburger J, Asbury T: Ocular & orbital trauma, in Riordan-Eva P, Whitcher JP (eds): *Vaughan & Asbury's General Ophthalmology*, 17th ed. New York: McGraw-Hill Professional, 2008.
13. Rocca RD, Weiner W, Maher E: Lid laceration and avulsions, in Roy FH, Media PA (eds): *Master Techniques in Ophthalmic Surgery.* Baltimore: Williams & Wilkins, 1995:422–428.
14. Coates W: Lacerations to the face and scalp, in Tintinalli JE, Krone RL, Ruiz E (eds): *Emergency Medicine—A Comprehensive Study Guide*, 5th ed. New York: McGraw Hill, 2000:303–309.
15. Lemke BN, Della Rocca RC: *Surgery of the Eyelids and Orbit—An Anatomic Approach.* Stamford, CT: Appleton & Lange, 1990:212.
16. Smith BC, Cherubini TD: Transmarginal lacerations—suturing techniques, in Smith BC (ed): *Oculoplastic Surgery: A Compendium of Principles and Techniques.* St. Louis: Mosby, 1970:9–10.
17. Reeh MJ: *Practical Ophthalmic Plastic and Reconstructive Surgery.* London: Henry Kimpton, 1976:44–45.
18. Beyer-Machule CK: Operations on the eyelids, the lacrimal apparatus, and the orbit, in Naumann HH, Helms J, Herberhold C, et al (eds): *Head and Neck Surgery*, 2nd ed. New York: Thieme, 1998:169–181.
19. Lemke BN, Della Rocca RC: *Surgery of the Eyelids and Orbit—An Anatomic Approach.* Stamford, DT: Appleton & Lange, 1990:211–212.
20. Baker S, Hurwitz JJ: Management of orbital and ocular adnexal trauma. *Ophthalmol Clin North Am* 1999;12(3):451–452.
21. Marrone AC: Eyelid and canalicular trauma, in Roy FH (ed): *Master Techniques in Ophthalmic Surgery.* Baltimore: Williams & Wilkins, 1995: 83–96.
22. Sztajnkrycer MD, Trott AT: Wounds and soft tissue injuries, in Knoop KJ, Stack LB, Storrow (eds) AB: *Atlas of Emergency Medicine*, 2nd ed. New York: McGraw-Hill Professional, 2002:577–608.
23. Liston SL, Cortez EA, McNabney WK: External ear injuries. *J Am Coll Emerg Physicians* 1978;7(6):233–236.
24. Pierce, MC: External ear procedures, in Henretig F, King, C, Joffe M, et al (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Lippincott Williams & Wilkins, 1997:653.
25. Hanke BK: Wound management, in Schwartz GR, Hanke BK, Mayer TA, et al (eds): *Principles and Practice of Emergency Medicine*, 4th ed. Baltimore: Lippincott Williams & Wilkins, 1999.
26. Spira M, Gerow FJ, Hardy SB: Windshield injuries of the face. *J Trauma* 1968;8(4):513–526.
27. Steele MT, Sainsbury CR, Robinson WA, et al: Prophylactic penicillin for intraoral wounds. *Ann Emerg Med* 1989;18(8):847–852.
28. Fleisher, GR, Ludwig S: *Textbook of Pediatric Emergency Medicine*, 5th ed. Baltimore: Lippincott Williams & Wilkins, 2006.
29. Turner ED, Jauch EC: Mouth, in Knoop KJ, Stack LB, Storrow AB (eds): *Atlas of Emergency Medicine*, 2nd ed. New York: McGraw-Hill Professional, 2002:151–186.
30. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:90.
31. Trott AT: *Wounds and Lacerations*, 2nd ed. St. Louis: Mosby-Year Book, 1997:203.
32. Quinn PD, Loiselle J: Management of soft tissue injuries of the mouth, in Henretig FM, King C, Joffe MD, et al (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1996:741–749.
33. Lammers RL: Principles of wound management, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 2nd ed. Philadelphia: Saunders, 1991:549.
34. Turner ED, Jauch EC: Mouth, in Knoop KJ, Stack LB, Storrow AB (eds): *Atlas of Emergency Medicine*, 2nd ed. New York: McGraw-Hill Professional, 2002:151–186.
35. Benko, K: Emergency dental procedures, in Roberts J, Hedges J, Chanmugam A (eds): *Clinical Procedures in Emergency Medicine*, 4th ed. Philadelphia: Saunders, 2004.
36. Seropian R, Reynolds BM: Wound infections after preoperative depilatory versus razor preparation. *Am J Surg* 1971;121(3):251–254.
37. Best TM, Kirkendall DT, Almekinders LC et al: Basic science and injury of muscle, tendon, and ligaments, in *DeLee and Drez's Orthopaedic Sports Medicine*, 2nd ed. Philadelphia: Saunders, 2003.
38. Trott AT: *Wounds and Lacerations*, 2nd ed. St. Louis: Mosby-Year Book, 1997:174–176.
39. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:332–333.
40. Grabb WC: Introduction to the clinical aspects of flap repair, in Grabb WC, Myers MB (eds): *Skin Flaps.* Boston: Little, Brown, 1975.
41. Trott AT: *Wounds and Lacerations*, 2nd ed. St. Louis: Mosby-Year Book, 1997:171–172.
42. Gallahue FE, Carter WA, Injuries to the arm, hand, fingertip, and nail, in Tintinalli JE, Kelen GD, Stapczynski JS, Ma OJ, Cline DM (eds): *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill Professional, 2004.
43. Hart RG: Hand trauma, in Stone CK, Humphries RL (eds): *Current Diagnosis & Treatment: Emergency Medicine*, 6th ed. New York: McGraw-Hill Professional, 2007:440–464.
44. Louis DS: Open treatment, in Neviaser RJ (ed): *Controversies in Hand Surgery.* New York: Churchill Livingstone, 1990:21–26.
45. Söderberg T, Nyström A, Hallmans G, et al: Treatment of fingertip amputations with bone exposure. *Scand J Plast Reconstr Surg* 1983;17:147–152.
46. Holm A, Zachariae L: Fingertip lesions. An evaluation of conservative treatment versus free skin grafting. *Acta Orthop Scand* 1974;45:382–392.
47. Bossley CJ: Conservative treatment of digit amputations. *NZ Med J* 1975; 82:379–380.
48. Lamon P: Open treatment of fingertip amputations. *Ann Emerg Med* 1983; 12(6):358–360.
49. Illingworth CM: Trapped fingers and amputated finger-tips in children. *J Pediatr Surg* 1974;9(6):853–858.
50. Louis DS, Palmer AK, Burney RE: Open treatment of digital tip injuries. *JAMA* 1980;244(7):697–698.
51. Louis DS, Jebson PJ, Graham TJ: Amputations, in Green DP, Hotchkiss RN, Pederson WC, et al (eds): *Green's Operative Hand Surgery,* 4th ed. New York: Churchill Livingstone, 1999:48–89.
52. Goldner RD, Urbaniak JR: Replantation, in Green DP, Hotchkiss RN, Pederson WC, et al (eds): *Green's Operative Hand Surgery*, 4th ed. New York: Churchill Livingstone, 1999:1139–1157.
53. Shaw Wilgas EF: Replantation, in Neviaser RJ (ed): *Controversies in Hand Surgery.* New York: Churchill Livingstone, 1990:3–7.
54. Foucher G, Norris RW: Distal and very distal digital replantations. *Br J Plast Surg* 1992;45:199–203.
55. Douglas BS: Conservative management of guillotine amputation of the finger in children. *Aust Paediatr J* 1972;8:86–89.
56. Bojsen-Moller J, Pers M, Schmidt A: Finger-tip injuries: late results. *Acta Chir Scand* 1961;122:177–183.

57. Schwab RA, Powers RD, Puncture wounds and mammalian bites, in Tintinalli JE, Kelen GD, Stapczynski JS, Ma OJ, Cline DM (eds): *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill Professional, 2004.
58. Talan DA, Citron DM, Abrahamian FM, et al: Bacteriologic analysis of infected dog and cat bites. *N Engl J Med* 1999;340:85–92.
59. Smith PF: Treating mammalian bite wounds. *J Clin Pharm Ther* 2000; 25(2):85–99.
60. Guy RJ, Zook EG: Successful treatment of acute head and neck dog bite wounds without antibiotics. *Ann Plast Surg* 1986;17(1):45–48.
61. Sabiston: *Textbook of Surgery*, 15th ed. Philadelphia: Saunders, 1997:289–290.
62. Zubowicz VN, Gravier M: Management of early human bites of the hand: a prospective randomized study. *Plast Reconstr Surg* 1991;88(1):111–114.
63. Fleisher GR: The management of bite wounds. *N Engl J Med* 1999; 340(2):138–140.
64. Dire DJ: Management of animal bites. *Acad Emerg Med* 1994;1(2):178–179.
65. Dire DJ: Cat bite wounds: risk factors for infection. *Ann Emerg Med* 1991;20(9):973–979.
66. Goldstein EJC: Bite wounds and infection. *Clin Infect Dis* 1992;14:633–640.
67. Hampton OP: The indications for debridement of gunshot (bullet) wounds of the extremities in civilian practice. *J Trauma* 1961;1:368.
68. Tejani F, Aufses AH: A new technique for skin closure. *Surg Gynecol Obstet* 1976;142(3):406–407.
69. Fritz DA: Wound care, in Stone CK, Humphries RL: *Current Diagnosis & Treatment: Emergency Medicine*, 6th ed. New York: McGraw-Hill Professional, 2007:465–486.
70. McGee, D: Local and topical anesthesia, in Roberts J, Hedges J, Chanmugam A (eds): *Clinical Procedures in Emergency Medicine*, 4th ed. Philadelphia: Saunders, 2004.
71. Demling RH, Buerstatte WR, Perea A: Management of hot tar burns. *J Trauma* 1980;20(3):242.
72. Fox JW, Golden GT, Rodeheaver G, et al: Nonoperative management of fingertip pulp amputation by occlusive dressings. *Am J Surg* 1977;133: 255–256.
73. Chow SP, Ho E: Open treatment of fingertip injuries in adults. *J Hand Surg* 1982;7(5):470–476.
74. Talan DA: New concepts in antimicrobial therapy for emergency department infections. *Ann Emerg Med* 1999;34(4):503–516.

REFERENCES

1. Anderson MA, Newmeyer WL III, Kilgore ES: Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;144(1):63–67.
2. Zimmereli W, Zak O, Vosbeck K: Experimental hematogenous infection of subcutaneously implanted foreign bodies. *Scand J Infect Dis* 1985;17:303–310.
3. Lammers RL: Soft tissue foreign bodies. *Ann Emerg Med* 1988;17(12): 1336–1347.
4. Merrell JC, Russell RC, Zook EG: Nonsuppurative tenosynovitis secondary to foreign body migration. *J Hand Surg* 1983;8(3):340–341.
5. Jablon M, Rabin SI: Late flexor pollicis longus tendon rupture due to retained glass fragments. *J Hand Surg* 1988;13A(5):713–715.
6. Avner JR, Baker MD: Lacerations involving glass: the role of routine roentgenograms. *Am J Dis Child* 1992;146(1):600–602.
7. Lamers RL: Soft tissue foreign bodies, in Tintinalli JE, Kelen GD, Stapczynski JS (eds): *Emergency Medicine: A Comprehensive Study Guide*, 5th ed. New York: McGraw-Hill, 1999:323–330.
8. Lammers RL, Magill T: Detection and management of foreign bodies in soft tissue. *Emerg Med Clin North Am* 1992;10(4):767–781.
9. Cracchiolo A III: Wooden foreign bodies in the foot. *Am J Surg* 1980; 140:585–587.
10. Gilad J, Borer A, Weksler N, et al: Fatal necrotizing fasciitis caused by a toothpick injury. *Scand J Infect Dis* 1998;30(2):189–190.
11. Haury BB, Rodeheaver GT, Pettry D, et al: Inhibition of nonspecific defenses by soil infection potentiating factors. *Surg Gynecol Obstet* 1977;144:19–24.
12. Edlich RF, Rodheaver GT, Morgan RF, et al: Principles of emergency wound management. *Ann Emerg Med* 17(12):55–73.
13. Farrell SE, Vandevander P, Schoffstall JM, et al: Blood lead levels in emergency department patients with retained lead bullets and shrapnel. *Acad Emerg Med* 1999;6(3):208–212.
14. Russell RC, Williamson DA, Sullivan JW, et al: Detection of foreign bodies in the hand. *J Hand Surg* 1991;16A(1):2–11.
15. Marquis GP: Radiolucent foreign bodies in the hand: case report. *J Trauma* 1989;29(3):403–404.
16. Colin JF, Elliot P, Ellis H: The effect of uraemia on wound healing: an experimental study. *Br J Surg* 1979;66:793–797.
17. American College of Emergency Physicians: Clinical policy for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 1998; 31:663–677.
18. Edlich RF, Kenney JG, Morgan RF, et al: Antimicrobial treatment of minor soft tissue lacerations: a critical review. *Emerg Med Clin North Am* 1986; 4(3):561–580.
19. Charney DB, Manzi JA, Turlik M, et al: Non-metallic foreign bodies in the foot: radiography versus xeroradiography. *J Foot Surg* 1986;25(1):44–49.
20. Chisholm CD, Wood CO, Chua G, et al: Radiographic detection of gravel in soft tissue. *Ann Emerg Med* 1997;29(6):725–730.
21. Roobottom CA, Weston MJ: The detection of foreign bodies in soft tissue—comparison of conventional and digital radiography. *Clin Radiol* 1994; 49:330–332.
22. Ellis G: Are aluminum foreign bodies detectable radiographically? *Am J Emerg Med* 1993;11:12–13.
23. Tandberg D: Glass in the hand and foot. Will an X-ray film show it? *JAMA* 1982;248(15):1872–1874.
24. Courter BJ: Radiographic screening for glass foreign bodies: what does a "negative" foreign body series really mean? *Ann Emerg Med* 1990;19(9): 997–1000.
25. DeLacey G, Evans R, Sandin B: Penetrating injuries: how easy is it to see glass and plastic on radiographs? *Br J Radiol* 1985;58(685):27–30.
26. Mucci B, Stenhouse G: Soft tissue radiography for wooden foreign bodies—a worthwhile exercise? *Injury* 1985;16(6):402–404.
27. Rusnak RA: Removal of foreign bodies from the skin, in Schwartz G, Cayten CG, Mangelsen MA, et al (eds): *Principles and Practice of Emergency Medicine*, 3rd ed. Philadelphia: Lea & Febiger, 1992:1890–1897.
28. Peterson JJ, Bancroft LW, Kransdorf MJ: Wooden foreign bodies: imaging appearance. *Am J Roentgenol* 2002;178(3):557–562.
29. Turkcuer I, Atilla R, Topacoglu H, et al: Do we really need plain and soft-tissue radiographies to detect radiolucent foreign bodies in the ED? *Am J Emerg Med* 24(7):763–768.
30. Ginsburg MJ, Ellis GL, Flom LL: Detection of soft-tissue foreign bodies by plain radiography, xerography, computed tomography an ultrasonography. *Ann Emerg Med* 1990;19(6):701–703.
31. Turner J, Wilde CH, Hughes KC, et al: Ultrasound-guided retrieval of small foreign objects in subcutaneous tissue. *Ann Emerg Med* 1997;29(6): 731–734.
32. Fornage BD, Schernberg FL: Sonographic diagnosis of foreign bodies of the distal extremities. *Am J Roentgenol* 1986;147:567–569.
33. De Flaviis L, Scaglione P, Del Bo P, et al: Detection of foreign bodies in soft tissue: experimental comparison of ultrasonography and xeroradiography. *J Trauma* 1988;28(3):400–404.
34. Gilbert FJ, Campbell RSD, Bayliss AP: The role of ultrasound in the detection of non-radiopaque foreign bodies. *Clin Radiol* 1990;41:109–112.
35. Graham DD Jr: Ultrasound in the emergency department: detection of wooden foreign bodies in the soft tissues. *J Emerg Med* 2002;22:75–79.
36. Levine MR, Gorman SM, Young CF, et al: Clinical characteristics and management of wound foreign bodies in the ED. *Am J Emerg Med* 2008; 26(8):918–922.
37. Friedman DI, Forti RJ, Wall SP, et al: The utility of bedside ultrasound and patient perception in detecting soft tissue foreign bodies in children. *Pediatr Emerg Care* 2005;21:487–492.
38. Orlinsky M, Knittel P, Feit T, et al: The comparative accuracy of radiolucent foreign body detection using ultrasonography. *Am J Emerg Med* 2000; 18:401.
39. Crawford R, Matheson AB: Clinical value of ultra-sonography in the detection and removal of radiolucent foreign bodies. *Injury* 1989;20:341–343.
40. Gibbs TS: The use of sonography in the identification, localization, and removal of soft tissue foreign bodies. *J Diag Med Sono* 2006;21:5–21.
41. Dewitz A, Frazee BW: Soft tissue, in Ma OJ, Mateer JR, Blaivas M (eds): *Emergency Ultrasound*. New York. McGraw-Hill, 2007:393–448.
42. Dean AJ, Gronczewski CA, Costantino TG: Technique for emergency medicine bedside ultrasound identification of a radiolucent foreign body. *J Emerg Med* 2004;24(3):303–308.
43. Boyse TD, Fessell DP, Jacobson JA, et al: US of soft-tissue foreign bodies and associated complication with surgical correlation. *Radiographics* 2001;21: 1251–1256.
44. Horton LK, Jacobson JA, Powell A, et al: Sonography and radiography of soft-tissue foreign bodies. *Am J Roentgenol* 2001;176:1155–1159.
45. Davae KC, Sofka CM, DiCarlo E, et al: Value of power Doppler imaging and hypoechoic halo in the sonographic detection of foreign bodies. *J Ultrasound Med* 2003;22:1309–1313.
46. Pena BMG: Ultrasonographic foreign body localization and removal, in King C, Henretig FM King BR (eds): *Textbook of Pediatric Emergency Procedures*. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2008: 1246–1254.
47. Halaas GW: Management of foreign bodies in the skin. *Am Fam Physician* 2007;76:683–688.
48. Storrow AB, Manthey DE: Ultrasound retrieval of foreign bodies. *Ann Emerg Med* 1997;29(6):779–780.
49. Schlager D, Sanders AB, Wiggins D, et al: Ultra-sound for the detection of foreign bodies. *Ann Emerg Med* 1991;20:189–191.
50. Manthey DE, Storrow AB, Milbourn JM, et al: Ultra-sound versus radiography in the detection of soft-tissue foreign bodies. *Ann Emerg Med* 1996; 28(1):7–9.
51. Hill R, Conron R, Greissinger P, et al: Ultrasound for the detection of foreign bodies in human tissue. *Ann Emerg Med* 1997;29(3):353–356.
52. American College of Emergency Physicians: Clinical policy for the initial approach to patients presenting with penetrating extremity trauma. *Ann Emerg Med* 1999;33:612.
53. Bodne D, Quinn SF, Cochran CF: Imaging foreign glass and wooden bodies of the extremities with CT and MR. *J Comput Assist Tomogr* 1988;12(4): 608–611.
54. Bauer AR, Yutani D: Computed tomographic localization of wooden foreign bodies in children's extremities. *Arch Surg* 1983;118:1084–1086.
55. Kuhns LR, Borlaza GS, Seigel RS, et al: An in vitro comparison of computed tomography, xeroradiography, and radiology in the detection of soft-tissue foreign bodies. *Radiology* 1979;132:218–219.

56. Rhoades CE, Soye I, Levine E, et al: Detection of a wooden foreign body in the hand using computed tomography—case report. *J Hand Surg* 1982;7(3): 306–307.
57. Haaga JR, Stewart BH, Alfidi RJ: Foreign body localization and removal utilizing computerized axial tomography. *Urology* 1978;11(3):306–307.
58. Nelson EW, DeHart MM, Christensen AW, et al: Magnetic resonance imaging characteristics of a lead pencil foreign body in the hand. *J Hand Surg* 1996;21A(1):100–103.
59. Lewis TT, Case A, Troughton A, et al: Metallic foreign body localization with magnetic resonance imaging. *Radiogr Today* 1991;57(644):16–17.
60. Blankenship RB, Baker T: Imaging modalities in wounds and superficial skin infections. *Emerg Med Clin North Am* 2007;25(1):223–234.
61. Lindsey D, Lindsey WE: Cactus spine injuries. *Am J Emerg Med* 1988;6(4): 362–369.
62. Smoot EC, Robson MC: Acute management of foreign injuries of the hand. *Ann Emerg Med* 1983;12(7):434–437.
63. Simon B, Hern HG Jr: Wound management principles, in Rosen P, Barkin RM, Braen RC, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 5th ed. St. Louis: Mosby-Year Book, 2001:737–752.
64. Rees CE: The removal of foreign bodies: a modified incision. *JAMA* 113: 35–36.
65. Eichenfield LF, Funk A, Fallon-Friedlander S, et al: A clinical study to evaluate the efficacy of ELA-Max (4% liposomal lidocaine) as compared with eutectic mixture of local anesthetics cream for pain reduction of venipuncture in children. *Pediatrics* 2002;109:1093–1099.
66. Taddio A, Herpreet KS, Schuh S, et al: Liposomal lidocaine to improve procedural success rates and reduce procedural pain among children: a randomized controlled trial. *CMAJ* 2005;172(13):1691.
67. Sutcliffe H: Detecting fine skin splinters—the soft soap method. *Aust Fam Physician* 1994;23(3):493.
68. Stein F: Foreign body injuries of the hand. *Emerg Med Clin North Am* 1985;3(2):383–390.
69. Patzakis MJ: Wound site as a predictor of complications following deep nail punctures to the foot. *West J Med* 1989;150(5):545–547.
70. Joseph WS, LeFrock JL: Infections complicating puncture wounds of the foot. *J Foot Surg* 1987;26(1 Suppl):S30–S33.
71. Lannigan S: Finding and removing small foreign bodies: a new technique for A & E. *J Accident Emerg Med* 1996;13(2):151.
72. Gilsdorf JR: A needle in the sole of the foot. *Surg Gynecol Obstet* 1984; 163:573–574.
73. Bhavsar MS: Technique of finding a metallic foreign body. *J Surg* 1981;141:305.
74. Gahhos F, Arons MS: Soft tissue foreign body removal: management and presentation of a new technique. *J Trauma* 1984;24(4):340–341.
75. Leidelmeyer R: The embedded broken-off needle. *J Am Coll Emerg Physician* 1976;5(5):362–363.
76. Weinstock RE: Noninvasive technique for the localization of radiopaque foreign bodies. *J Foot Surg* 1981;20(2):73–75.
77. Rickoff SE, Bauder T, Kerman BL: Foreign body localization and retrieval in the foot. *J Foot Surg* 1981;20(1):30–34.
78. Bocka JJ, Godfrey J: Emergency department use of an eye magnet for the removal of soft tissue foreign bodies. *Ann Emerg Med* 1994;23(2):350–351.
79. Mladick RA: Easy location of foreign body with "tagged hemoclips." *Plast Reconstr Surg* 1978;61:459–460.
80. Callegari L, Leonardi A, Bini A, et al: Ultrasound-guided removal of foreign bodies: personal experience. *Eur Radiol* 2009;19(5):1273–1279. Published online.
81. Cohen DM, Garcia CT, Dietrich AM, et al: Miniature c-arm imaging: an in vitro study of detecting foreign bodies in the emergency department. *Pediatr Emerg Care* 1997;13(4):247–249.
82. Wayne R, Carnazzo AJ: Needle in the foot. *Am J Surg* 1975;129(6):599–600.
83. Ariyan S: A simple stereotactic method to isolate and remove foreign bodies. *Arch Surg* 1977;112:857–859.
84. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:360–365.
85. Rodheaver GT, Pettry D, Thacker JG, et al: Wound cleansing by high-pressure irrigation. *Surg Gynecol Obstet* 1975;141:357–362.
86. Valente JH, Forti RJ, Freundlich LF, et al: Wound irrigation in children: saline solution or tap water? *Ann Emerg Med* 2003;41:609–616.
87. Dimick AR: Delayed wound closure indications and techniques. *Ann Emerg Med* 1988;17(12):1303–1304.
88. Moran GJ, Talan DA, Abrahamian FM: Antimicrobial prophylaxis for wounds and procedures in the emergency department. *Infect Dis Clin North Am* 2008;22(1):117–143.
89. Capellan O, Hollander JE: Management of lacerations in the emergency department. *Emerg Med Clin North Am* 2003;21:205–231.
90. Wilson W, Taubert KA, Gewitz M, et al: Prevention of infective endocarditis: Guidelines from the American Heart Association: A guideline from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee, Council on Cardiovascular Disease in the Young, and the Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and the Quality of Care and Outcomes Research Interdisciplinary Working Group. *Circulation* 2007;116:1736–1754.
91. Gindi M, Oravitz P, Sexton R, et al: Unreliability of reported tetanus vaccination histories. *Am J Emerg Med* 2005;23:120–122.
92. Centers for Disease Control and Prevention: Preventing tetanus, diphtheria, and pertussis among adults: use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine. *MMWR* 2006;55(no. RR-17):1–44.

REFERENCES

1. Bhavsar MS. Technique of finding a metallic foreign body. *Am J Surg* 1981; 141(2):305.
2. Hollander JE, Singer AJ, Valentine SM, et al: Risk factors for infection in patients with traumatic lacerations. *Acad Emerg Med* 2001;8(7):716–720.
3. Karcz A, Holbrook J, Auerbach BS, et al: Preventability of malpractice claims in emergency medicine: a closed claims study. *Ann Emerg Med* 1990; 19(8):865–873.
4. Kaiser CW, Slowick T, Spurling KP, et al: Retained foreign bodies. *J Trauma* 1997;43(1):107–111.
5. Soudack M, Nachtigal A, Gaitini D: Clinically unsuspected foreign bodies: the importance of sonography. *J Ultrasound Med* 2003;22(12):1381–1385.
6. Rockett MS, Gentile SC, Gudas CJ, et al: The use of ultrasonography for the detection of retained wooden foreign bodies in the foot. *J Foot Ankle Surg* 1995;34(5):478–484.
7. Manthey DE, Storrow AB, Milbourn JM, et al: Ultrasound versus radiography in the detection of soft-tissue foreign bodies. *Ann Emerg Med* 1996;28(1):7–9.
8. Friedman DI, Forti RJ, Wall SP, et al: The utility of bedside ultrasound and patient perception in detecting soft tissue foreign bodies in children. *Pediatr Emerg Care* 2005;21(8):487–492.
9. Courter BJ: Radiographic screening for glass foreign bodies—what does a "negative" foreign body series really mean? *Ann Emerg Med* 1990;19(9): 997–1000.
10. Wyn T, Jones J, McNinch D, et al: Bedside fluoroscopy for the detection of foreign bodies. *Acad Emerg Med* 1995;2(11):979–982.
11. Bray PW, Mahoney JL, Campbell JP: Sensitivity and specificity of ultrasound in the diagnosis of foreign bodies in the hand. *J Hand Surg Am* 1995;20(4):661–666.
12. Russell RC, Williamson DA, Sullivan JW, et al: Detection of foreign bodies in the hand. *J Hand Surg Am* 1991;16(1):2–11.
13. Anderson MA, Newmeyer WL 3rd, Kilgore ES Jr: Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;144(1):63–67.
14. Oikarinen KS, Nieminen TM, Mäkäräinen H, et al: Visibility of foreign bodies in soft tissue in plain radiographs, computed tomography, magnetic resonance imaging and ultrasound. An in vitro study. *Int J Oral Maxillofac Surg* 1993;22(2):119–124.
15. Mizel MS, Steinmetz ND, Trepman E: Detection of wooden foreign bodies in muscle tissue: experimental comparison of computed tomography, magnetic resonance imaging, and ultrasonography. *Foot Ankle Int* 1994;15(8):437–443.
16. Laine HR, Kurunmäki H, Koskimies AI: Intraductal foreign body in the breast found on sonography. *J Ultrasound Med* 2008;27(9):1406.
17. Turkcuer I, Atilla R, Topacoglu H, et al: Do we really need plain and soft-tissue radiographies to detect radiolucent foreign bodies in the ED? *Am J Emerg Med* 2006;24(7):763–768.
18. Dumarey A, De Maeseneer M, Ernst C: Large wooden foreign body in the hand: recognition of occult fragments with ultrasound. *Emerg Radiol* 2004;10(6):337–339. Epub Mar 23.
19. Levy AD, Harcke HT: Handheld ultrasound device for detection of non-opaque and semi-opaque foreign bodies in soft tissues. *J Clin Ultrasound* 2003;31(4):183–188.
20. Gilbert FH, Campbell RS, Bayliss AP: The role of ultrasound in the detection of non-radiopaque foreign bodies. *Clin Radiol* 1990;41(2):109–112.
21. Hill R, Conron R, Greissinger P, et al: Ultrasound for the detection of foreign bodies in human tissue. *Ann Emerg Med* 1997;29(3):353–356.
22. Jacobson JA, Powell A, Craig JG, et al: Wooden foreign bodies in soft tissue: detection at US. *Radiology* 1998;2006(1):45–48.
23. Shiels WE 2nd, Babcock DS, Wilson JL, et al: Localization and guided removal of soft-tissue foreign bodies with sonography. *AJR Am J Roentgenol* 190;155(6):1277–1281.
24. Schlager D, Sanders AB, Wiggins D, et al: Ultrasound for the detection of foreign bodies. *Ann Emerg Med* 1991;20(2):189–191.
25. Blankstein A, Cohen I, Heiman Z, et al: Localization, detection and guided removal of soft tissue in the hands using sonography. *Arch Orthop Trauma Surg* 2000;120(9):514–517.
26. Crawford R, Matheson AB: Clinical value of ultrasonography in the detection and removal of radiolucent foreign bodies. *Injury* 1989;20(6):341–343.
27. Fornage BD, Schernberg FL: Sonographic diagnosis of foreign bodies of the distal extremities. *AJR Am J Roentgenol* 1986;147(3):567–569.
28. Schlager D: Ultrasound detection of foreign bodies and procedure guidance. *Emerg Med Clin North Am* 1997;15(4):895–912.
29. Gooding GA: Ultrasonography of foreign bodies. *West J Med* 1994;160(5):455.
30. Harcke HT, Levy AD, Lonergan GJ: The sonographic appearance and detectability of nonopaque and semiopaque materials of military origin. *Mil Med* 2002;167(6):459–463.
31. Shiver SA, Lyon M, Blaivas M: Detection of metallic ocular foreign bodies with handheld sonography in a porcine model. *J Ultrasound Med* 2005; 24(10):1341–1346.
32. Pigott DC, Buckiingham RB, Eller RL, et al: Foreign body in the tongue: a novel use for emergency department ultrasonography. *Ann Emerg Med* 2005; 45(6):677–679.
33. Dorst JP, Reichelderfer TE, Sanders RC: Radiodensity of the proposed new penny. *Pediatrics* 1982;69(2):224–225.
34. Farrell SE, Vandevander P, Schoffstall JM, et al: Blood levels in emergency department patients with retained lead bullets and shrapnel. *Acad Emerg Med* 1999;6(3):208–212.
35. Boyse TD, Fessel DP, Jacobson JA, et al: US of soft-tissue foreign bodies and associated complications with surgical correlation. *Radiographics* 2001; 21(5):1251–1256.
36. Rubin JM, Adler RS, Bude RO, et al: Clean and dirty shadowing at US: a reappraisal. *Radiology* 1991;181(1):231–236.
37. Lyon M, Brannam L, Johnson D, et al: Detection of soft tissue foreign bodies in the presence of soft tissue gas. *J Ultrasound Med* 2004;23:677.
38. Turner J, Wilde CH, Hughes KC, et al: Ultrasound-guided retrieval of small foreign objects in subcutaneous tissue. *Ann Emerg Med* 1997;29(6):731–734.
39. Ozsarac M, Demircan A, Sener S: Glass foreign body in soft tissue: possibility of high morbidity due to delayed migration. *J Emerg Med* 2011;41:e125–e128.
40. Lammers RL: Soft tissue foreign bodies. *Ann Emerg Med* 1988;17(12): 1336–1347.
41. Dean AJ, Gronczewski CA, Constantino TG: Technique for emergency medicine bedside ultrasound identification of a radiolucent foreign body. *J Emerg Med* 2003;24(3):303–308.
42. Fernandez R, Griffiths R, Ussia C: Water for wound cleansing. *Cochrane Database Sys Rev* 2002;(4):CD003861.
43. Cummings P, Del Beccaro MA: Antibiotics to prevent infection of simple wounds: a meta-analysis of randomized studies. *Am J Emerg Med* 1995; 13(4):396–400.
44. Levine MR, Gorman SM, Young CF, et al: Clinical characteristics and management of wound foreign bodies in the ED. *Am J Emerg Med* 2008; 26(8):918–922.
45. Callegari L, Leonardi A, Bini A, et al: Ultrasound-guided removal of foreign bodies: personal experience. *Eur Radiol* 2009;19(5):1273–1279. Epub 2009 Jan 20.
46. Flom LL, Ellis GL: Radiologic evaluation of foreign bodies. *Emerg Med Clin North Am* 1992;10(1):163–177.
47. Lammers RL, Magill T: Detection and management of foreign bodies in soft tissue. *Emerg Med Clin North Am* 1992;10(4):767–781.
48. Fornage BD, Schernberg FL: Sonographic preoperative localization of a foreign body in the hand. *J Ultrasound Med* 1987;6(4):217–219.

REFERENCES

1. Zung JL, Lewengrub S, Rudzinska MA, et al: Fine structural evidence for the penetration of the Lyme disease spirochete *Borrelia burgdorferi* through the gut and salivary tissues of *Ixodes dammini. Can J Zool* 1989;67:1737–1748.
2. Story K: Biology and control of ticks. *Pest Control Tech* 1989;6:54–56.
3. De Boer R, Van Den Bogaard AEJM: Removal of attached nymphs and adults of *Ixodes ricinus. J Med Entomol* 1993;30(4):748–752.
4. Needham GR: Evaluation of five popular methods for tick removal. *Pediatrics* 1985;75(6):997–1002.
5. Schultheis L: A novel technique to remove the common dog tick. *Am Fam Physician* 1998;58(2):354–357.
6. Dolan DL, McKinsey JJ: Removing a tick. *N C Med J* 1985;46:471.
7. Lee MD, Sonenshine DE, Counselman FL: Evaluation of subcutaneous injection of local anesthetic agents as a method of tick removal. *Am J Emerg Med* 1995;13(1):14–16.
8. Karras DJ: Tick removal. *Ann Emerg Med* 1998;32(4):519.
9. Bowles DE, McHugh CP, Spradling SL: Evaluation of devices for removing attached *Rhipicephalus sanguineus* (acari: Ixodidae). *J Med Entomol* 1992; 29(5):901–902.
10. Stewart RL, Burgdorfer W, Needham GR: Evaluation of three commercial tick removal devices. *Wilderness Environ Med* 1998;9(3):137–142.

REFERENCES

1. Diekema DS: Fishhook removal, in King C, Henretig FM, King BR, et al (eds): *Textbook of Pediatric Emergency Procedures*, 2nd ed. Philadelphia: Lippincott Williams & Wilkins, 2002:1102–1106.
2. Dunmire SM, Paris PM: *Atlas of Emergency Procedures.* Philadelphia: Saunders, 1994:110–112.
3. Freidenberg S: How to remove an embedded fish-hook in five seconds without really trying. *N Engl J Med* 1971;284:733–734.
4. Haynes JH III: Fishhook removal, in Pfenninger JL, Fowler GC (eds): *Procedures for Primary Care Physicians.* St. Louis: Mosby, 1994:128–132.
5. Stone DB, Levine MR: Foreign body removal, in Roberts JR, Hedges JR, et al (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: WB Saunders, 2010:642–643.
6. Thommasen HV, Thommasen A: The occasional removal of an embedded fish hook. *Can J Rural Med* 2005;10(4):254–259.
7. Moran GJ, Krishnadasan A, Gorwitz RJ, et al: Methicillin-resistant *S. aureus* infections among patients in the emergency department. *New Engl J Med* 2006;355(7):666–674.
8. Pan CC, Wang CP, Huang JJ, et al: Intestinal perforation after the incidental ingestion of a fishhook. *J Emerg Med* 2010;38(5):e45–e48.
9. Swanson PB, Apicella SA, Rosen CA: Removal of a triple barbed fish hook from the hypopharynx with microlaryngoscopy. *Am J Otolaryngol* 2002;23(4):233–236.

REFERENCES

1. Drake DA, Lewis F, Newmeyer WL, et al: An unusual ring injury. *J Hand Surg* 1977;2(2):111–112.
2. Kuscher SH, Gellman H, Hume M: Embedded ring injuries. *Clin Orthop Rel Res* 1992;276:192–193.
3. Shafiroff BB: Easy removal of a partially embedded ring from a finger. *Plast Reconstr Surg* 1979;63(6):841–842.
4. Woodhouse C: Ulceration of a ring into a phalanx. *Hand* 1976;8(2):186–188.
5. Rubman MH, Taylor K: A rapid method for emergency ring removal. *Am J Orthop* 1996;25(1):42–44.
6. Cresap CR: Removal of a hardened steel ring from an extremely swollen finger. *Am J Emerg Med* 1995;13(3):318–320.
7. St. Laurent C: The caterpillar technique for removal of a tight ring (letter). *Anesth Analg* 2006;103(4):1060–1061.
8. Mizrahi S, Lunski I: A simplified method for ring removal from an edematous finger. *Am J Surg* 1986;151(3):412–413.
9. Belliappa PP: A technique for removal of a tight ring. *J Hand Surg Br* 1989; 14(1):127.
10. McElfresh EC, Peterson-Elijah RC: Removal of a tight ring by the rubber band. *J Hand Surg Br* 1991;16(2):225–226.
11. Thilagarajah M: An improved method of ring removal. *J Hand Surg Br* 1999;24(1):118–119.
12. Mullet STH: Ring removal from an oedematous finger, an alternative method. *J Hand Surg Br* 1995;20(4):496.
13. Clarke AC, Spencer RF: Ring removal from the injured or swollen finger. *J R Coll Surg Edinb* 1991;36(2):59.
14. Inoue S: Another simple method for ring removal. *Anesthesiology* 1995; 83(5):1133–1134.
15. Wee JTK, Chandra D: A rapid method of removal of rings impacted in fingers. *J Hand Surg Br* 1989;14(1):126–127.
16. Fasano FJ Jr, Hansen RH: Foreign body granuloma and synovitis of the finger: a hazard of ring removal by the sawing technique. *J Hand Surg Am* 1987;12(4):621–623.
17. Rubio PA: A simplified method for ring removal from an edematous finger. *Am J Surg* 1987;153(1):A42.

REFERENCES

1. Zook EG, Guy RJ, Russell RC: A study of nail bed injuries: causes, treatment, and prognosis. *J Hand Surg Am* 1984;9A(2):247–252.
2. Newmeyer WL, Kilgore ES: Common injuries of the fingernail and nail bed. *Am Fam Physician* 1977;16(4):93–95.
3. Guy RJ: The etiologies and mechanisms of nail bed injuries. *Hand Clin* 1990;6(1):9–19.
4. Sommer NZ, Brown RE: The perionychium, in Wolfe SW, Hotchkiss RN, Pederson WC, et al (eds): *Green's Operative Hand Surgery*, 6th ed. New York: Churchill Livingstone, 2011:333–354.
5. Hart RG, Kleinert HE: Fingertip and nail bed injuries. *Emerg Med Clin North Am* 1993;11(3):755–765.
6. Melone CP Jr, Grad JB: Primary care of fingernail injuries. *Emerg Med Clin North Am* 1985;3(2):255–261.
7. Van Beek AL, Kassan MA, Adson MH, et al: Management of acute fingernail injuries. *Hand Clin* 1990;6(1):23–35.
8. Russell RC, Casas LA: Management of fingertip injuries. *Clin Plast Surg* 1989;16(3):405–425.
9. Butler KH: Incision and drainage, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010: 657–691.
10. Simon RR, Wolgin M: Subungual hematoma: association with occult laceration requiring repair. *Am J Emerg Med* 1987;5(4):302–304.
11. Seaberg DC, Angelos WJ, Paris PM: Treatment of subungual hematomas with nail trephination: a prospective study. *Am J Emerg Med* 1991;9(3):209–210.
12. Roser SE, Gellman H: Comparison of nail bed repair versus nail trephination for subungual hematomas in children. *J Hand Surg Am* 1999;24(6): 1166–1170.
13. Chudnofsky CR, Sebastian S: Special wounds: nail bed, plantar puncture, and cartilage. *Emerg Med Clin North Am* 1992;10(4):801–822.
14. Lammers RL: Methods of wound closure, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010:592–633.

REFERENCES

1. Rudinsky GS, Barnett RC: Soft tissue foreign-body removal, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:623.
2. Haneke E, Tosti A, Piraccini BM: Sea urchin granuloma of the nail apparatus: report of 2 cases. *Dermatology* 1996;192(2):140–142.
3. de Berker D, Dawber R, Wojnarowska F: Subungual hair implantation in hairdressers. *Br J Dermatol* 1994;130(3):400–401.
4. Schwartz GR, Schwen SA: Subungual splinter removal. *Am J Emerg Med* 1997;15(3):330–331.
5. Epstein E: Treatment of subungual splinters. *J Am Acad Dermatol* 1996; 35 (3 Pt 1):491.
6. Miller MA, Brodell RT: Surgical pearl: treatment of subungual splinters. *J Am Acad Dermatol* 1995;33(4):667–668.
7. Davis LJ: Removal of subungual foreign bodies. *J Fam Pract* 1980;11(5):714.
8. Andrus CH: Instrument and technique for removal of subungual foreign bodies. *Am J Surg* 1980;140(4):588.

REFERENCES

1. Zook EG: Anatomy and physiology of the perionychium. *Hand Clin* 2002;18: 553–559.
2. Brown RE. Acute Nail bed injuries. *Hand Clin* 2002;18:561–575.
3. Rosenthal EA: Treatment of fingertip and nail bed injuries. *Orthop Clin North Am* 1983;14(4):675–697.
4. Chang J, Vernadakis A, McClellan WT: Fingertip injuries. *Clin Occup Environ Med* 2006;5:413–422.
5. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:351–353.
6. VanBeek AL, Kassan MA, Adson MH, et al: Management of acute fingernail injuries. *Hand Clin* 1990;6(1):25–35.
7. Zook EG: Discussion of "management of acute fingernail injuries." *Hand Clin* 1990;6(1):37–38.
8. Zook EG: Anatomy and physiology of the perionychium. *Hand Clin* 1990; 6(1):1–7.
9. Lammers RC, Freemyer BC: Hand, in Rosen P, Barkin R (eds): *Emergency Medicine: Concepts and Clinical Practice*, 3rd ed. St. Louis: Mosby, 1992: 544–588.
10. Shepard GH: Management of acute nail bed avulsions. *Hand Clin* 1990;6(1): 39–56.
11. Eberlein R: Hand and finger injuries, in Henritig FM, King C (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:1047–1061.
12. Ashbell TS, Kleinhert HE, Putcha SM, et al: The deformed fingernail, a frequent result of failure to repair nail bed injuries. *J Trauma* 1967;7(2):177–189.
13. Thomson CJ, Lalonde DH. Randomized double-blind comparison of duration of anesthesia among three most commonly used agents in digital nerve block. *Plast Reconstr Surg* 2006;118:429–432.
14. Wilhelmi BJ, Blackwell SJ, Miller JH, et al: Do not use epinephrine in digital blocks, myth or truth? *Plast Reconstr Surg* 2001;107:393–397.
15. Andrades RP, Olguin FA, Calderon W: Digital blocks with or without epinephrine. *Plast Reconstr Surg* 2003;111:1769–1770.
16. Khan MN, Naqvi AH: Antiseptics, iodine, povidone-iodine and traumatic wound cleansing. *J Tissue Viability* 2006;16:6–10.
17. Chakravarthy J, Qureshi A, Waldram MA, Porter K: Acute fingertip injuries. *Trauma* 2006;8:179–188.
18. Zook EG: Discussion of "management of acute nail bed avulsions." *Hand Clin* 1990;6(1):57–58.
19. Zook EG, Guy RJ, Russel RC: A study of nail bed injuries: causes, treatment and prognosis. *J Hand Surg* 1984;9:247–252.
20. Seaberg DC, Angelos WJ, Paris PM: Treatment of subungual hematomas with nail trephination: a prospective study. *Am J Emerg Med* 1991;9(3):209–210.
21. Simon RR, Wolgin M: Subungual hematoma: occult laceration requiring repair. *Am J Emerg Med* 1987;5:302–304.
22. Freedman BM, Oplinger EH, Freedman IS: Topical becaplermin improves outcomes in work related fingertip injuries. *J Trauma* 2005;59(4):965–968.
23. Corre KA, Arnold A: Iatrogenic digital compromise with tubular dressings. *West J Emerg Med* 2009;10(3):190–192.
24. Norris RL, Gilbert GH: Digital necrosis necessitating amputation after tube gauze dressing application in the ED. *Am J Emerg Med* 2006;24(5):618–621.

REFERENCES

1. Diao E, Moy OJ: Common tumors. *Orthop Clin North Am* 1992;1:187–196.
2. Dias JJ, Dhukaram V, Kumar P: The natural history of untreated dorsal wrist ganglia and patient reported outcome 6 years after intervention. *J Hand Surg Eur* 2007;32(5):502–508.
3. Razemon JP: Surgical treatment of ganglions of the wrist by partial excision of the joint capsule. Report on 303 cases. *Ann Chir Main* 1983;2(3):230–243.
4. Oni JA: Treatment of ganglia by aspiration alone. *J Hand Surg Br* 1992; 17B(6):660.
5. Thornburg LE: Ganglions of the hand and wrist. *J Am Acad Orthop Surg* 1999;7(4):231–238.
6. Zubowicz VN: Management of ganglion cysts of the hand by simple aspiration. *J Hand Surg Am* 1987;12A(4):618.
7. Hernandez-Lugo AM, Dominguez-Cherit J, Vega-Memije ME: Digital mucoid cyst: the ganglion type. *Int J Dermatol* 1999;38:533–535.
8. Rozbruch SR, Chang V, Bohne WH, et al: Ganglion cysts of the lower extremity: an analysis of 54 cases and review of the literature. *Orthopedics* 1998; 21(2):141–148.
9. Treadwell EL: Synovial cysts and ganglia: the value of magnetic resonance imaging. *Semin Arthritis Rheum* 1994;24(1):61–70.
10. Ferrick MR, Marzo JM: Suprascapular entrapment neuropathy and ganglion cysts about the shoulder. *Orthopedics* 1999;22(4):430–434.
11. Campagnolo MD, Davis BA, Blacksin MF, et al: Computed tomography-guided aspiration of a ganglion cyst of the anterior cruciate ligament: a case report. *Arch Phys Med Rehabil* 1996;77:732–733.
12. Teefey SA, Dahiya N, Middleton WD, et al: Ganglia of the hand and wrist: a sonographic analysis. *Am J Roentgenol* 2008;191(3):716–720.
13. Pontius J, Good J, Maxian SH: Ganglions of the foot and ankle. A retrospective analysis of 63 procedures. *J Am Podiatr Med Assoc* 1999;89(4):163–168.
14. Wright TW, Cooney WP, Ilstrup DM: Anterior wrist ganglion. *J Hand Surg Am* 1994;19(6):954–958.
15. Saboeiro GR, Sofka CM: Ultrasound-guided ganglion cyst aspiration. *HSS J* 2008;4(2):161–163.
16. Colberg RE, Sanchez CF, Lugo-Vicente H: Aspiration and triamcinolone injection of wrist synovial cysts in children. *J Pediatr Surg* 2008;43(11):2087–2090.
17. Varley GW, Needoff M, Davis TR, et al: Conservative management of wrist ganglia: aspiration versus steroid infiltration. *J Hand Surg Br* 1997;22(5):636.
18. Paul AS, Sochart DH: Improving the results of ganglion aspiration by the use of hyaluronidase. *J Hand Surg Br* 1997;22(2):219–221.
19. Otu AA: Wrist and hand ganglion treatment with hyaluronidase injection and fine-needle aspiration: a tropical African perspective. *J R Coll Surg Edinb* 1992;37(6):405–407.
20. Stephen AB, Lyons AR, Davis TR: A prospective study of two conservative treatments for ganglia of the wrist. *J Hand Surg Br* 1999;24(1):104–105.
21. Korman J, Pearl R, Hentz VR: Efficacy of immobilization following aspiration of carpal and digital ganglions. *J Hand Surg Am* 1992;17(6):1097–1099.
22. Osterman AL, Raphael J: Arthroscopic resection of dorsal ganglion of the wrist. *Hand Clin* 1995;11(1):7–12.
23. Stapczynski JS: Localized depigmentation after steroid injection of a ganglion cyst on the hand. *Ann Emerg Med* 1991;20(7):807–809.

REFERENCES

1. Meislin HW, Lerner SA, Graves MH, et al: Cutaneous abscesses: anaerobic and aerobic bacteriology and outpatient management. *Ann Intern Med* 1977; 87(2):145–149.
2. Llera JL, Levy RC: Treatment of cutaneous abscesses: a double-blind clinical study. *Ann Emerg Med* 1985;14(1):15–19.
3. Meislin HW, McGhee MD, Rosen P: Management and microbiology of cutaneous abscesses. *JACEP* 1978;7(5):186–191.
4. Burney RE: Incision and drainage procedures: soft tissue abscesses in the emergency service. *Emerg Med Clin North Am* 1986;4(3):527–542.
5. Warden TM, Fourre MW: Incision and drainage of cutaneous abscesses and soft tissue infections, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 2nd ed. Philadelphia: Saunders, 1991:591–609.
6. Simms MH, Curran F, Johnson RA, et al: Treatment of acute abscesses in the casualty department. *Br Med J* 1982;284:1827–1829.
7. Ghoneim ATM, McGoldrick J, Blick PWH, et al: Aerobic and anaerobic bacteriology of subcutaneous abscesses. *Br J Surg* 1981;68:498–500.
8. Robbins SL, Cotran RS, Kumar V: *Pathologic Basis of Disease*, 3rd ed. Philadelphia: Saunders, 1984:63–64.
9. Simms RL: Life-threatening soft tissue infections, in Peterson PK, Sabath LD, Caleron JE, et al (eds): *The Management of Infectious Diseases in Clinical Practice.* New York: Academic Press, 1982:211–228.
10. Biderman P, Hiatt JR: Management of soft-tissue infection of the upper extremity in parenteral drug abusers. *Am J Surg* 1987;154(5):526–528.
11. Brook I, Frazier EH: Aerobic and anaerobic bacteriology of wounds and cutaneous abscesses. *Arch Surg* 1990;125:1445–1451.
12. Zimmereli W, Zak O, Vosbeck K: Experimental hematogenous infection of subcutaneously implanted foreign bodies. *Scand J Infect Dis* 1985;17: 303–310.
13. Brook I, Finegold SM: Aerobic and anaerobic bacteriology of cutaneous abscesses in children. *Pediatrics* 1981;67(6):891–895.
14. Blick PWH, Flowers MW, Marsden AK, et al: Antibiotics in the surgical treatment of acute abscesses. *Br Med J* 1980;281:111–112.
15. MacFie J, Harvey J: Treatment of acute superficial abscesses: a prospective clinical trial. *Br J Surg* 1977;64:264–266.
16. Bobrow BJ, Pollack Jr CV, Gamble S, et al: Incision and drainage of cutaneous abscesses is not associated with bacteremia in afebrile adults. *Ann Emerg Med* 1997;29(3):404–408.
17. Moran, GJ, Krishnadasan A, Gorwitz RJ, et al: Methicillin-resistant *S. aureus* infections among patients in the Emergency Department. *New Eng J Med* 2006;355:666–674.
18. Cohen PR: Community-acquired methicillin-resistant *Staphylococcus aureus* skin infections: a review of epidemiology, clinical features, management, and prevention. *Int J Dermatol* 2007;46:1–11.
19. Gorwitz RJ, Jernigan DB, Powers JH, Jernigan JA, and Participants in the CDC-Convened Experts' Meeting on Management of MRSA in the Community. Strategies for clinical management of MRSA in the community: Summary of an experts' meeting convened by the Centers for Disease Control and Prevention, 2006. Available at http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca.html.
20. Daum RS: Skin and soft-tissue infections caused by methicillin-resistant *Staphylococcus aureus*. *N Engl J Med* 2007;357(13):380–390.
21. Young DM, Harris HW, Charlebois ED, et al: An epidemic of methicillin-resistant *Staphylococcus aureus* soft tissue infections among medically underserved patients. *Arch Surg* 2004;139(9):947–951.
22. Gorwitz, RJ: A review of community-associated methicillin-resistant *Staphylococcus aureus* skin and soft tissue infections. *Pediatr Infect Dis J* 2008;27:1–7.
23. Frazee BW, Lynn J, Charlebois ED, et al: High prevalence of methicillin-resistant *Staphylococcus aureus* in Emergency Department skin and soft tissue infections. *Ann Emerg Med* 2005;45:311–320.
24. Fridkin SK, Hageman JC, Morrison M, et al: Methicillin-resistant *Staphylococcus aureus* disease in three communities. *N Engl J Med* 2005; 352(22):2362.
25. Manji N, Hulyalkar AR, Keroack MA, et al: Cutaneous pseudo abscesses: an unusual presentation of severe pancreatitis. *Am J Gastroenterol* 1988;83(2): 177–179.
26. Paletta C, Jurkiewicz MJ: Hidradenitis suppurativa. *Clin Plast Surg* 1987; 14(2):383–390.
27. Scholefield JH, Duncan JL, Rogers K: Review of hospital experience of breast abscesses. *Br J Surg* 1987;74(6):469–470.
28. Fine BC, Sheckman PR, Bartlett JC: Incision and drainage of soft-tissue abscesses and bacteremia. *Ann Intern Med* 1985;103(4):645.
29. Wilson W, Taubert KA, Gewitz M, et al: Prevention of infective endocarditis: guidelines from the American Heart Association: a guideline from the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee, Council on Cardiovascular Disease in the Young, and the Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and the Quality of Care and Outcomes Research Interdisciplinary Working Group. *Circulation* 2007;116:1736–1754.
30. Roca B, Vilar C, Perez EV, et al: Breast abscess with lethal septicemia due to *Pseudomonas aeruginosa* in a patient with AIDS. *Presse Med* 1996;25(17): 803–804.
31. Fichtenbaum C, Dunagan WC, Powderly WG: The incidence and outcome of bacteremia in HIV-infected patients. *Int Conf AIDS* 1993;9(1):318.
32. Styrt BA, Chaisson RE, Moore RD: Prior antimicrobials and staphylococcal bacteremia in HIV-infected patients. *AIDS* 1997;11(10):1243–1248.
33. American College of Emergency Physicians: Clinical policy for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 1998; 31(5):663–677.
34. Callahan TE, Schecter WP, Horn JK: Necrotizing soft tissue infections masquerading as cutaneous abscess following illicit drug injection. *Arch Surg* 1998;133:812–819.
35. Connell P, Ellis JI: Cutaneous abscesses and gas gangrene, in Schwartz G, Cayten CG, Mangelsen MA, et al (eds): *Principles and Practice of Emergency Medicine.* Philadelphia: Lea & Febiger, 1992:1890–1897.
36. Abrahamian FM, Talan DA, Moran GJ: Management of skin and soft-tissue infections in the emergency department. *Infect Dis Clin North Am* 2008;22(1):89–116.
37. Webb D, Thadepalli H: Skin and soft tissue polymicrobial infections from intravenous abuse of drugs. *West J Med* 1979;130(3):200–204.
38. Squire BT, Fox JC, Anderson C: ABSCESS: applied bedside sonography for convenient evaluation of superficial soft tissue infections. *Acad Emerg Med* 2005;12:601–606.
39. Dewitz A, Frazee BW: Soft tissue, in Ma OJ, Mateer JR, Blaivas M (eds): *Emergency Ultrasound*. New York. McGraw-Hill, 2007:393–448.
40. Tayal VS, Hasan N, Norton HJ, Tomaszewski CA: The effect of soft-tissue ultrasound on the management of cellulitis in the emergency department. *Acad Emerg Med* 2006;13(4):384–388.
41. Chao HC, Lin SJ, Huang YC, Lin TY: Sonographic evaluation of cellulitis in children. *J Ultrasound Med* 2000;19(11):743–749.
42. Cardinal E, Bureau NJ, Aubin B, Chhem RK: Role of ultrasound in musculoskeletal infections. *Radiol Clin North Am* 2001;39(2):191–201.
43. Loyer EM, DuBrow RA, David CL, et al: Imaging of superficial soft-tissue infections: sonographic findings in cases of cellulitis and abscess. *Am J Roentgenol* 1996;166(1):149–52.
44. Arslan H, Sakarya ME, Bozkurt M, et al: The role of power Doppler sonography in the evaluation of superficial soft tissue abscesses. *Eur J Ultrasound* 1998;8(2):101–116.
45. Miller LG, Quan C, Shay A, et al: A prospective investigation of outcomes after hospital discharge for endemic, community-acquired methicillin-resistant and -susceptible *Staphylococcus aureus* skin infection. *Clin Infect Dis* 2007; 44:483–492.
46. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:357–360.
47. Cohen DM, Garcia CT, Dietrich AM, et al: Miniature c-arm imaging: an in vitro study of detecting foreign bodies in the emergency department. *Pediatr Emerg Care* 1997;13(4):247–249.
48. Meislin HW: Soft tissue infections, in Rosen P, Barkin RM, Braen RC, et al (eds): *Emergency Medicine: Concepts and Clinical Practice*, 3rd ed. St. Louis: Mosby Year-Book, 1992:850–861.
49. Flomenbaum N, Gallagher EJ, Eagen K, et al: Self-administered nitrous oxide: an adjunct analgesic. *JACEP* 1979;8(3):95–97.
50. Payne CG, Edbrooke DL, Davies GK: Minor procedures in the accident and emergency department: can entonox help. *Arch Emerg Med* 1991;24:24–32.
51. Willman EV, Andolfatto G: A prospective evaluation of "ketofol" (ketamine/propofol combination) for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 2007;49(1):23–30.

52. Lee MC, Rios AM, Aten MF, et al: Management and outcome of children with skin and soft tissue abscesses caused by community-acquired methicillin-resistant *Staphylococcus aureus*. *Pediatr Infect Dis J* 2004;23:123–127.
53. Paydar KZ, Hansen SL, Charlebois ED, et al: Inappropriate antibiotic use in soft tissue infections. *Arch Surg* 2006;141:850–856.
54. Rajendran, PM, Young D, Maurer T, et al: Randomized, double-blind, placebo-controlled trial of cephalexin for treatment of uncomplicated skin abscesses in a population at risk for community-acquired methicillin-resistant *Staphylococcus aureus* infection. *Antimicrob Agents Chemother* 2007; 51:4044–4048.
55. Ruhe JJ, Smith N, Bradsher RW, et al: Community-onset methicillin-resistant *Staphylococcus aureus* skin and soft-tissue infections: impact of antimicrobial therapy on outcome. *Clin Infect Dis* 2007;44:777–784.
56. Stevens DL, Bisno AL, Chambers HF, et al: Practice guidelines for the diagnosis and management of skin and soft tissue infections. *Clin Infect Dis* 2005;41:1373–1406.
57. Kaplan SL: Treatment of community-associated methicillin-resistant *Staphylococcus aureus* infections. *Pediatr Infect Dis J* 2005;24:457–458.
58. Baker CJ: Large CA-MRSA disease burden mandates prompt diagnosis, appropriate management. *AAP News* 2007;28;1–9.
59. Moellering RC: Current treatment options for methicillin-resistant *Staphylococcus aureus* infection. *Clin Infect Dis* 2008;46(7):1032–1037.
60. Dimick AR: Delayed wound closure indications and techniques. *Ann Emerg Med* 1988;17(12):1303–1304.
61. Simor AE, Phillips E, McGeer A, et al: Randomized controlled trial of chlorhexidine gluconate for washing, intranasal mupirocin, and rifampin and doxycycline versus no treatment for the eradication of methicillin-resistant *Staphylococcus aureus* colonization. *Clin Infect Dis* 2007;44(2):178–185.
62. O'Malley GF, Dominici P, Giraldo P, et al: Routine packing of simple cutaneous abscesses is painful and probably unnecessary. *Acad Emerg Med* 2009;16(5):470–473.
63. Singer AJ, Thode HC Jr, Chale S, et al: Primary closure of cutaneous abscesses: a systemic review. *Am J Emerg Med* 2011;29:361–366.
64. Milne K, Carpenter C: Abscesses: to pack or not to pack? *Emerg Physician Month* 2010;May:1031.

REFERENCES

1. Neviaser RJ: Infections, in Green DP (ed): *Operative Hand Surgery,* 3rd ed. New York: Churchill Livingstone, 1993:1021–1038.
2. Siegel DB, Gelberman RH: Infections of the hand. *Orthop Clin North Am* 1988;19(4):779–789.
3. Canales FL, Newmeyer WL, Kilgore ES: The treatment of felons and paronychias. *Hand Clin* 1989;5(4):515–523.
4. Brook I: Bacteriologic study of paronychia in children. *Am J Surg* 1981; 141:703–705.
5. Barlow AJ, Chattaway FW, Holgate MC, et al: Chronic paronychia. *Br J Dermatol* 1970;82:448–453.
6. Moran GJ, Talan DA: Hand infections. *Emerg Med Clin North Am* 1993; 11(3):601–619.
7. Louis DS, Silva Jr J: Herpetic whitlow: herpetic infections of the digits. *J Hand Surg Am* 1979;4(1):90–94.
8. Butler KH: Incision and drainage, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine,* 5th ed. Philadelphia: Saunders, 2010: 681–685.
9. Bednar MS, Lane LB: Eponychial marsupialization and nail removal for surgical treatment of chronic paronychia. *J Hand Surg Am* 1991;16A(2): 314–317.
10. Turkmen A, Warner RM, Page RE: Digital pressure test for paronychia. *Br J Plast Surg* 2004;57(1):93–94.
11. Wollina U: Acute paronychia: comparative treatment with topical antibiotic alone or in combination with corticosteroid. *J Eur Acad Dermatol Venereol* 2001;15(1):82–84.
12. Rigopolous D, Larios G, Gregoriou S, et al: Acute and chronic paronychia. *Am Fam Physician* 2008;77(3):339–346.
13. Daniel CR, Daniel MP, Daniel J, et al: Managing simple chronic paronychia and onycholysis with ciclopirox 0.77% and an irritant-avoidance regimen. *Cutis* 2004;73(1):81–85.
14. Brook I: Aerobic and anaerobic microbiology of paronychia. *Ann Emerg Med* 1990;19(9):994–996.

REFERENCES

1. Hausman MR, Lisser SP: Hand infections. *Orthop Clin North Am* 1992; 23(1):171–185.
2. Perry AW, Gottlieb LJ, Zachary LS, et al: Fingerstick felons. *Ann Plast Surg* 1988;20(3):249–251.
3. Canales FL, Newmeyer WL, Kilgore ES: The treatment of felons and paronychias. *Hand Clin* 1989;5(4):515–523.
4. Jebson PJL: Infections of the fingertip paronychias and felons. *Hand Clin* 1998;14(4):547–555.
5. Butler KH: Incision and drainage, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010: 685–687.
6. Bethel CA: Incision and drainage of a felon, in Henretig FM, King C, Joffe MD, et al (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams & Wilkins, 1997:1211–1215.
7. Kilgore ES, Brown LG, Newmeyer WL, et al: Treatment of felons. *Am J Surg* 1975;130:194–198.
8. Kanavel AB: *Infections of the Hand*, 4th ed. Philadelphia: Lea & Febiger, 1921.
9. Louis DS, Silva J Jr: Herpetic whitlow: herpetic infections of the digits. *J Hand Surg Am* 1979;4(1):90–94.
10. Talan, DA: MRSA: deadly super bug or just another staph? *Ann Emerg Med* 2008;51(3):299–302.
11. Imahara SD, Friedrich JB: Community-acquired methicillin-resistant *Staphylococcus aureus* in surgically treated hand infections. *J Hand Surg Am* 2010;35(1):97–103.
12. Watson PA, Jebson PJ: The natural history of a neglected felon. *Iowa Orthop J* 1996;16:164–167.

REFERENCES

1. Hodges RM: Pilonidal sinus. *Boston Med Surg J* 1880;103:485.
2. Hull TL, Wu J: Pilonidal disease. *Surg Clin N Am* 2002;82:1169–1185.
3. Lane WZ: Pilonidal cysts and sinuses in the Navy. *US Navy Med Bull* 1943; 41:1284–1295.
4. Buie LA: Jeep disease (pilonidal disease of mechanized warfare). *South Med J* 1944;37(2):103–109.
5. Jones DJ: ABC of colorectal disease. Pilonidal sinus. *BMJ* 1992;305:410.
6. Sebastian MW: Pilonidal cysts and sinuses, in Sabiston DC (ed): *Textbook of Surgery*, 15th ed. Philadelphia: Saunders, 1997:1332–1333.
7. Clothier PR, Haywood IR: The natural history of the post anal (pilonidal) sinus. *Ann R Coll Surg Engl* 1984;66(3):201–203.
8. Eftaiha M, Abcarian H: The dilemma of pilonidal disease: surgical treatment. *Dis Colon Rectum* 1977;20(4):279–286.
9. Golz A, Argov S, Barzilai A: Pilonidal sinus disease: comparison among various methods of treatment and a survey of 160 patients. *Curr Surg* 1980; 37(2):77–85.
10. Stephens FO, Stephens RBH: Pilonidal sinus: management objectives. *Aust N Z J Surg* 1995;65:558–560.
11. Chamberlain JW, Vawter GF: The congenital origin of pilonidal sinus. *J Pediatr Surg* 1974;9(4):441–444.
12. Lord PH: Anorectal problems: etiology of pilonidal sinus. *Dis Colon Rectum* 1975;18(8):661–664.
13. Hanley PH: Acute pilonidal abscess. *Surg Gyn Obstet* 1980;150(1):9–11.
14. Bascom J: Pilonidal disease: origin from follicles of hairs and results of follicle removal as treatment. *Surgery* 1980;87(5):567–572.
15. Jensen SL, Harling H: Prognosis after simple incision and drainage for a first-episode acute pilonidal abscess. *Br J Surg* 1988;75:60–61.
16. Llera JL, Levy RC: Treatment of cutaneous abscess: a double-blind clinical study. *Ann Emerg Med* 1985;14(1):15–19.
17. Shons AR, Mountjoy JR: Pilonidal disease: the case for excision with primary closure. *Dis Colon Rectum* 1971;14(5):353–355.
18. Brook I, Anderson KD, Controni G, et al: Aerobic and anaerobic bacteriology of pilonidal cyst abscess in children. *Am J Dis Child* 1980;134:679–680.
19. Ellis MW, Lewis JS: Treatment approaches for community-acquired methicillin resistant *Staphylococcus aureus* infections. *Curr Opin Infect Dis* 2005; 18:496–501.
20. Davis KA, Mock CN, Versaci A, et al: Malignant degeneration of pilonidal cysts. *Am Surg* 1994;60(3):200–204.

REFERENCES

1. Doberneck RC: Perianal suppuration: results of treatment. *Am Surg* 1987; 53(10):569–572.
2. Piazza DJ, Radhakrishnan J: Perianal abscess and fistula-in-ano in children. *Dis Colon Rectum* 1990;33(12):1014–1016.
3. Lunniss PJ, Jenkins PJ, Besser GM, et al: Gender differences in incidence of idiopathic fistula-in-ano are not explained by circulating sex hormones. *Int J Colorectal Dis* 1995;10(1):25–28.
4. Shafer AD, McGlone TP, Flanagan RA: Abnormal crypts of Morgagni: the cause of perianal abscess and fistula-in-ano. *J Pediatr Surg* 1987;22(3):203–204.
5. Vasilevsky CA: Fistula-in-ano and abscess, in Beck D, Wexher S (eds): *Fundamentals of Anorectal Surgery,* 2nd ed. Philadelphia: Saunders, 1998: 153–173.
6. Parks AG: Pathogenesis and treatment of fistulain-ano. *Br Med J* 1961;1: 463–469.
7. Read DR, Abcarian H: A prospective survey of 474 patients with anorectal abscess. *Dis Colon Rectum* 1979;22(8):566–568.
8. Parks AG: Intersphincteric abscess. *Br Med J* 1973;2:537–539.
9. Lunniss PJ, Sheffield JP, Talbot IC, et al: Persistence of idiopathic anal fistula may be related to epithelialization. *Br J Surg* 1995;82(1):32–33.
10. Weiss EG, Wexner SD: Surgery for anal lesions in HIV-infected patients. *Ann Med* 1995;27:467–475.
11. Hanley PH: Acute pilonidal abscess. *Surg Gynecol Obstet* 1980;150(1):9–11.
12. Philip RS: A simplified method for the incision and drainage of abscesses. *Am J Surg* 1978;135(5):721.
13. Llera JL, Levy RC: Treatment of cutaneous abscess: a double blind clinical study. *Ann Emerg Med* 1985;14(1):15–19.
14. Seow-Choen F, Hay AJ, Heard S, et al: Bacteriology of anal fistula. *Br J Surg* 1992;79(1):27–28.

REFERENCES

1. Mackie RM, Quinn AG: Epidermal skin tumors, in Burns T, Breathnach S, Cox N (eds): *Rook's Textbook of Dermatology*, 7th ed. Oxford: Blackwell, 2004:36–47.
2. Llera JL, Levy RC: Treatment of cutaneous abscess: a double-blind clinical study. *Ann Emerg Med* 1985;14(1):119.
3. Hankin A, Everett WW: Are antibiotics necessary after incision and drainage of a cutaneous abscess? *Ann Emerg Med* 2007;50:49–51.
4. Meislin HW, Lerner SA, Graves MH, et al. Cutaneous abscesses. Anaerobic and aerobic bacteriology and outpatient management. *Ann Intern Med* 1977; 87:145–149.
5. Hanley PH: Acute pilonidal abscess. *Surg Gynecol Obstet* 1980;150(1):9–11.
6. Kitamura K, Takahashi T, Toshiharu Y, et al: Primary resection of infectious epidermal cyst. *J Am Coll Surg* 1994;179:607.
7. Cohen PR. Community-acquired methicillin-resistant *Staphylococcus aureus* skin infections: implications for patients and practitioners. *Am J Clin Dermatol* 2007;8(5):259–270.

REFERENCES

1. McCaughey BG, Garrick J, Carey LC, et al: Naval support activity hospital Da Nang combat casualty deaths January to June 1968. *Mil Med* 1987; 152(6):284–289.
2. Carey ME: Analysis of wounds incurred by U.S. Army Seventh Corps personnel treated in corps hospitals during Operation Desert Storm, February 20 to March 10, 1991. *J Trauma* 1996;40(3):S165–S169.
3. Kelly JF, Ritenour AE, McLaughlin DF, et al: Injury severity and causes of death from Operation Iraqi Freedom and Operation Enduring Freedom: 2003–2004 versus 2006. *J Trauma* 2008;64(2):S21–S27.
4. Wester J, Sixma JJ, Geuze JJ, et al: Morphology of the early hemostasis in human skin wounds. Influence of acetylsalicylic acid. *Lab Invest* 1978; 39(3):298–311.
5. Lawrence WT: Physiology of the acute wound. *Clin Plast Surg* 1998; 25(3):321–340.
6. Hotter A: The physiology and clinical implications of wound healing. Part I. Wound healing physiology. *Plast Surg Nurs* 1984;4(1):4–13.
7. Parker RK, Dinehart SM: Hints for hemostasis. *Dermatol Clin* 1994;12(3): 601–606.
8. Salasche SJ: Acute surgical complications: cause, prevention, and treatment. *J Am Acad Dermatol* 1986;15(6):1163–1185.
9. Borja AR, Lansing AM: Immediate control of intermediate vascular bleeding. *Surg Gynecol Obstet* 1971;132(3):494–496.
10. Lammers RL: Principles of wound management, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:533–559.
11. Breitenbach KL, Bergera JJ: Principles and techniques of primary wound closure. *Prim Care* 1986;13(3):411–431.
12. Kelly JJ: Control of exsanguinating external hemorrhage, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 1997:367–376.
13. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:308.
14. Morris JA, Swiontkowski MF, Herrman HJ: Wilderness trauma emergencies, in Auerbach PS, Geehr EC (eds): *Management of Wilderness and Environmental Emergencies*, 2nd ed. St. Louis: Mosby, 1989:223–265.
15. Sebben JE: The status of electrosurgery in dermatologic practice. *Dermatol Surg* 1988;19(3):542–549.
16. Larson PO: Topical hemostatic agents for dermatologic surgery. *J Dermatol Surg Oncol* 1988;14(6):623–632.
17. Munchow OB, Denson JS: The effect of various vasoconstrictors on the blood vessels of human skin. A pilot study with a new method. *Surgery* 1964; 56(5):989–992.
18. Glasson DW: Topical adrenalin as a hemostatic agent. *Plast Reconstr Surg* 1984;74(3):451–452.
19. Snelling CFT, Shaw K: The effect of topical epinephrine hydrochloride in saline on blood loss following tangential excision of burn wounds. *Plast Reconstr Surg* 1983;72(6):830–836.
20. Shafi S, Gilbert JC: Minor pediatric injuries. *Pediatr Clin North Am* 1998; 45(4):831–851.
21. Singer AJ, McClain SA, Katz A: A porcine epistaxis model: hemostatic effects of octylcyanoacrylate. *Otolaryngol Head Neck Surg* 2004;130(5):553–557.
22. Fan Y, Sun H, Pei G, Ruan C: Haemostatic efficacy of an ethyl-2-cyanoacrylate-based aerosol in combination with tourniquet application in a large wound model with an arterial injury. *Injury* 2008;39(1):61–66.
23. Alam HB, Uy GB, Miller D, et al: Comparative analysis of hemostatic agents in a swine model of lethal groin injury. *J Trauma* 2003;54(6):1077–1082.
24. Seyednejad H, Imani M, Jamieson T, Seifalian AM: Topical haemostatic agents. *Br J Surg* 2008;95(10):1197–1225.
25. Wright JK, Kalns J, Wolf EA, et al: Thermal injury resulting from application of a granular mineral hemostatic agent. *J Trauma* 2004;57(2):224–230.
26. Carraway JW, Kent D, Young K, et al: Comparison of a new mineral based hemostatic agent to a commercially available granular zeolite agent for hemostasis in a swine model of lethal extremity arterial hemorrhage. *Resuscitation* 2008;78(2):230–235.
27. Kheirabadi BS, Edens JW, Terrazas IB, et al: Comparison of new hemostatic granules/powders with currently deployed hemostatic products in a lethal model of extremity arterial hemorrhage in swine. *J Trauma* 2009; 66(2):316–326.
28. Alam HB, Burris D, DaCorta JA, Rhee P: Hemorrhage control in the battlefield: role of new hemostatic agents. *Mil Med* 2005;170(1):63–69.
29. Wedmore I, McManus JG, Pusateri AE, Holcomb JB: A special report on the chitosan-based hemostatic dressing: experience in current combat operations. *J Trauma* 2006;60(3):655–658.
30. King DR, Cohn SM, Proctor KG: Modified rapid deployment hemostat bandage terminates bleeding in coagulopathic patients with severe visceral injuries. *J Trauma* 2004;57(4):756–759.
31. Alam HB, Chen Z, Jaskille A, et al: Application of a zeolite hemostatic agent achieves 100% survival in a lethal model of complex groin injury in Swine. *J Trauma* 2004;56(5):974–983.
32. Lubahn JD, Koeneman J, Kosar K: The digital tourniquet: how safe is it? *J Hand Surg Am* 1985;10A(5):664–669.
33. Rohrer TET, Lewlie B, Grande DJ: Dermatologic surgery of the hand. *J Dermatol Surg Oncol* 1994;20:19–34.
34. Trott AT: *Wounds and Lacerations: Emergency Care and Closure*, 2nd ed. St. Louis: Mosby, 1997.
35. Lemos MJ, Clark DE: Scalp lacerations resulting in hemorrhagic shock: case reports and recommended management. *J Emerg Med* 1988;6:377–379.
36. Coleman RJ, Rocko JM: Rapid control of hemorrhage of the scalp in the patient with trauma. *Surg Gynecol Obstet* 1988;166:165–166.
37. Kaback KR, Sanders AB, Meislin HW: MAST suit update. *JAMA* 1984; 252(18):2598–2603.
38. Wakai A: Pneumatic tourniquets in extremity surgery. *J Am Acad Orthop Surg* 2001;9(5):345–351.
39. Blaisdell F: The pathophysiology of skeletal muscle ischemia and the reperfusion syndrome: a review. *Cardiovasc Surg* 2002;10:620–630.
40. Navein J, Coupland R, Dunn R: The tourniquet controversy. *J Trauma* 2003; 54(suppl):S291–S220.
41. Lakstein D, Blumenfeld A, Sokolov T: Tourniquets for hemorrhage control on the battlefield: a 4-year accumulated experience. *J Trauma* 2003; 54(suppl):S221–S225.
42. Wolff L, Adkins T: Tourniquet problems in war injuries. *Bull US Army Med Dept* 1945;87:77–84.

REFERENCES

1. Scott NA, Guo B, Barton PM, et al: Trigger point injections for chronic non-malignant musculoskeletal pain: a systematic review. *Pain Med* 2009; 10(1):54–69.
2. Simmons DG, Travell JG, Simons LS: *Travell & Simons' Myofascial Pain Dysfunction: The Trigger Point Manual. Vol 1: Upper Half of Body*. Baltimore: Lippincott, Williams & Wilkins, 1999.
3. Trough EA, White AR, Richards R, et al: Variability of criteria used to diagnose myofascial trigger point pain syndrome—evidence from a review of the literature. *Clin J Pain* 2007;23:278–286.
4. Hong CZ: Lidocaine injection versus dry needling to myofascial trigger point. The importance of the local twitch response. *Am J Phys Med Rehabil* 1994;73:256–263.
5. Malanga G, Wolff E: Evidence-informed management of chronic low back pain with trigger point injections. *Spine J* 2008;8:243–252.
6. Alvarez DJ, Rockwell PG: Trigger points: diagnosis and management. *Am Family Physician* 2002;65(4):653–660.
7. Han SC, Harrison P: Myofascial pain syndrome and trigger-point management. *Reg Anesth* 1997;22:89–101.
8. Lavelle ED, Levelle W, Smith HS: Myofascial trigger points. *Med Clin N Am* 2007;91:229–239.
9. Iwama H, Ohomori S, Kaneko T, et al: Water-diluted local anesthetic for trigger-point injection in chronic myofascial pain syndrome: evaluation of types of local anesthetic and concentrations in water. *Reg Anesth Pain Med* 2001;26:333–336.

REFERENCES

1. Centers for Disease Control: Fire Deaths and Injuries. http://www.cdc.gov/ncipc/factsheets/fire.htm, Atlanta, GA 2008.
2. American Burn Association: Burn Incidence and Treatment in the US: 2007 Facet Sheet. http://www.ameriburn.org/resources_factsheet.php, Chicago, IL 2007.
3. American Burn Association: National Burn Repository, 2005 Report, 2006.
4. Inancsi W, Guidotti TL: Occupation related burns: five year experience of an urban burn center. *J Occup Med* 1987;29(9):730–733.
5. Finnerty CC, Herndon DN, Przkora R, et al: Cytokine expression profile over time in severely burned pediatric patients. *Shock* 2006;1:13–19.
6. Oldman KT, Guice KS, Till GO, et al: Activation of complement by hydroxyl radical in thermal injury. *Surgery* 1988;104(2):272–279.
7. Ward OA, Till GO: Pathophysiologic events related to thermal injury of skin. *J Trauma* 1990;30(12 Suppl): S75–S79.
8. Jeschke MG, Finnerty CC, Suman OE, et al: The effect of oxandrolone on the endocrinologic, inflammatory, and hypermetabolic responses during the acute phase postburn. *Ann Surg* 2007;246:351–362.
9. Orgill DP: Excision and skin grafting of thermal burns. *N Engl J Med* 2009;360(9):893–901.
10. Shaffle JR: Burns, in Lawrence P (ed): *Essentials of General Surgery*. Philadelphia: Lippincott, Williams & Wilkins, 2000:174–175.
11. Tsoutsos D, Rodopoulou S, Keramidas E, et al: Early escharotomy as a measure to reduce intraabdominal hypertension in full thickness burns of the thoracic and abdominal area. *World J Surg* 2003;27(12):1323–1328.
12. Tuggle D, Skinner S, Garza J, et al: The abdominal compartment syndrome in patients with burn injury. *Acta Clin Belg Suppl* 2007;1:136–140.
13. Oda J, Ueyama M, Yamashita K, et al: Effects of escharotomy as abdominal decompression on cardiopulmonary function and visceral perfusion in abdominal compartment syndrome with burn patients. *J Trauma* 2005;59(2):369–374.
14. Pegg SP: Escharotomy in burns. *Ann Acad Med Singapore* 1992;21(5):682–684.
15. Brown RL, Greenhalgh DG, Kagan RJ, et al: Adequacy of limb escharotomies-fasciotomies after referral to a major burn center. *J Trauma* 1994;37(6):916–920.
16. Bardakjian VB, Kenney JG, Edgerton MT, et al: Pulse oximetry for vascular monitoring in burned upper extremities. *J Burn Care Rehabil* 1988;9(1):63–65.
17. Semer N: Hand burns, in Semer N (ed): *Practical Plastic Surgery for Nonsurgeons*. Lincoln, NE: iUniverse, 2007:325–326.
18. Piccolo NS, Piccolo MS, Piccolo PD, et al: Escharotomies, fasciotomies and carpal tunnel release in burn patients—review of the literature and presentation of an algorithm for surgical decision making. *Handchir Mikrochir Plast Chir* 2007;39(3):161–167.

REFERENCES

1. Guyton AC: *Textbook of Medical Physiology*, 7th ed. Philadelphia: Saunders, 1986:373–377.
2. Reilly BM: *Practical Strategies in Outpatient Medicine*, 2nd ed. Philadelphia: Saunders, 1991:95–100.
3. Baraff LJ, Bass JW, Fleisher GR, et al: Practice guidelines of infants and children 0 to 36 months of age with fever without source. *Pediatrics* 1997; 92(1):1–12.
4. Duffner PK, Baumann RJ: A synopsis of the American Academy of Pediatrics' practice parameters on the evaluation and treatment of children with febrile seizures. *Pediatr Rev* 1999;20(8):285–287.
5. Offringa M, Beishuizen A, Derksen-Lubsen G, et al: Seizures and fever: can we rule out meningitis on clinical grounds alone? *Clin Pediatr* 1992; 31(9):514–522.
6. LeBlanc R: The minor leak preceding subarachnoid hemorrhage. *J Neurosurg* 1987;66:35–39.
7. Juvela S: Minor leak before rupture of an intracranial aneurysm and subarachnoid hemorrhage of unknown etiology. *Neurosurgery* 1992;30:7–11.
8. Van der Wee N, Rinkel GJ, Hasan D, et al: Detection of subarachnoid haemorrhage on early CT: is lumbar puncture still needed after a negative scan? *J Neurol Neurosurg Psychiatry* 1995;58:357–359.
9. Sidman R, Connolly E, Lemke T: Subarachnoid hemorrhage diagnosis: lumbar puncture is still needed when the computed tomography scan is normal. *Acad Emerg Med* 1996;3:827–831.
10. Byyny RL, Mower WR, Shum N, et al: Sensitivity of noncontrast cranial computed tomography for the emergency department diagnosis of subarachnoid hemorrhage. *Ann Emerg Med* 2008;51(6):697–703.
11. Kassel NF, Torner JC, Haley EC, et al: The international cooperative study on the timing of aneurysm surgery. 1. Overall management results. *J Neurosurgery* 1990;73:18–36.
12. Adams HO, Kassell NF, Torner JC, et al: CT and clinical correlations in recent aneurysmal subarachnoid hemorrhage: a preliminary report of the cooperative aneurysm study. *Neurology* 1983;33:981–988.
13. Shetty AK, Desselle BC, Craver RD, et al: Fatal cerebral herniation after lumbar puncture in a patient with a normal computed tomography scan. *Pediatrics* 1999;103:1284–1286.
14. Joffe AR: Lumbar puncture and brain herniation in acute bacterial meningitis: a review. *J Intensive Care Med* 2007;22:194–207.
15. van Crevel H, Hijdra A, de Gans J: Lumbar puncture and the risk of herniation: when should we first perform CT? *J Neurol* 2002;249:129–137.
16. Brewer NS, MacCarty CS, Wellman WE: Brain abscess: a review of recent literature. *Ann Intern Med* 1975;82:571–576.
17. Samson DS, Clark K: A current review of brain abscess. *Am J Med* 1973; 54:201–210.
18. Minns RA, Engleman HM, Stirling H: Cerebrospinal fluid pressure in pyogenic meningitis. *Arch Dis Child* 1989;64:814–820.
19. Oliver WJ, Shope TC, Kuhns LR: Fatal lumbar puncture: fact versus fiction—an approach to a clinical dilemma. *Pediatrics* 2003;112:e174–e176.
20. Hasbun R, Abrahams J, Jekel J, et al: Computed tomography of the head before lumbar puncture in adults with suspected meningitis. *N Engl J Med* 2001;345:1727–1733.
21. Haslan RHA: Role of CT in management of bacterial meningitis. *J Pediatr* 1991;119(1):157–159.
22. Cabral DA, Flodmark O, Farrell K, et al: Prospective study of computed tomography in acute bacterial meningitis. *J Pedriatr* 1987;111:201–205.
23. Archer BD: Computed tomography before lumbar puncture in acute meningitis: a review of the risks and benefits. *CMAJ* 1993;148(6): 961–965.
24. Gopal AK, Whitehouse JD, Simel DL, et al: Cranial computed tomography before lumbar puncture. A prospective clinical evaluation. *Arch Intern Med* 1999;159:2681–2685.
25. Baker ND, Kharazi H, Laurent L, et al: The efficacy of routine head computed tomography (CT scan) prior to lumbar puncture in the emergency department. *J Emerg Med* 1994;12(5):597–601.
26. Gower DJ, Baker AL, Bell WO, et al: Contraindications to lumbar puncture as defined by computed cranial tomography. *J Neurol Neurosurg Psychiatry* 1987;50:1071–1074.
27. Talan DA, Guterman JJ, Overturf GD, et al: Analysis of emergency department management of suspected bacterial meningitis. *Ann Emerg Med* 1989;18:856–862.
28. Bryan CS, Reynolds KL, Crout L: Promptness of antibiotic therapy in acute bacterial meningitis. *Ann Emerg Med* 1986;15:544–547.
29. Meadow WL, Lantos J, Tanz RR, et al: Ought "standard care" be the "standard of care"? *Am J Dis Child* 1993;147(1):40–44.
30. Talan DA, Zibulewsky J: Relationship of clinical presentation to time of antibiotics for the emergency department management of suspected meningitis. *Ann Emerg Med* 1993;22(11):1733–1738.
31. Silverman R, Kwiatkowski T, Bernstein S, et al: Safety of lumbar puncture in patients with hemophilia. *Ann Emerg Med* 1993;22(11):1739–1742.
32. McLellan D, Giebink GS: Perspectives on occult bacteremia in children. *J Pediatr* 1986;109(1):1–7.
33. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 3rd ed. Baltimore: Williams & Wilkins, 1994:167–175.
34. Thomas SR, Jamieson DRS, Muir KW: Randomised controlled trial of atraumatic versus standard needles for diagnostic lumbar puncture. *Br Med J* 2000;321:986–990.
35. Strupp M, Schueler O, Straube A, et al: "Atraumatic" Sprotte needle reduces the incidence of post-lumbar puncture headaches. *Neurology* 2001;57: 2310–2312.
36. Lavi R, Rowe JM, Avivi I: Traumatic vs. atraumatic 22 G needle for therapeutic and diagnostic lumbar puncture in the hematologic patient: a prospective clinical trial. *Haematologica* 2007;92(7):1007–1008.
37. O'Connor G, Gingrich R, Moffat M: The effect of spinal needle design, size, and penetration angle on dural puncture cerebral spinal fluid loss. *AANA J* 2007;75(2):111–116.
38. Arendt K, Demaerschalk BM, Wingerchuk DM, et al: Atraumatic lumbar puncture needles: after all these years, are we still missing the point? *Neurologist* 2009;15(1):17–20.
39. Lavi R, Yernitzky D, Rowe JM, et al: Standard versus atraumatic Whitacre needle for diagnostic lumbar puncture: a randomized trial. *Neurology* 2006;67:1492–1494.
40. Chong SY, Chong LA, Ariffin H: Accurate prediction of the needle depth required for successful lumbar puncture. *Am J Emerg Med* 2010;28: 606–606.
41. Abe KK, Yamamoto LG, Itoman EM, et al: Lumbar puncture needle length determination. *Am J Emerg Med* 2005;23:742–746.
42. Levinson G: Spinal anesthesia, in Benumof JL (ed): *Clinical Procedures in Anesthesia and Intensive Care*. Philadelphia: Lippincott, 1992:645–661.
43. Kooiker JC: Spinal puncture and cerebrospinal fluid examination, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:1054–1077.
44. Laska LL: *Med Malpract Verdicts Settl Experts* 2007;23(5):24–25.
45. Abo A, Chen L, Johnston P, et al: Positioning for lumbar puncture in children evaluated by bedside ultrasound. *Pediatrics* 2010;125:e1149–e1153.
46. Baxter AL, Fisher RG, Burke BL, et al: Local anesthetic and stylet styles: factors associated with resident lumbar puncture success. *Pediatrics* 2006; 117(3):876–881.
47. Fisher A, Lupu L, Gurevitz B, et al: Hip flexion and lumbar puncture: a radiological study. *Anaesthesia* 2001;56:262–266.
48. Sandoval M, Shestak W, Sturmann K, et al: Optimal patient position for lumbar puncture, measured by ultrasonography. *Emerg Radiol* 2004;10: 179–181.
49. Maitra AM, Palmer SK, Bachhuber SR, et al: Continuous epidural analgesia for cesarean section in a patient with morbid obesity. *Anesth Analg* 1979; 58:348–349.
50. de Fijter S, DiOrio M, Carmean J, et al: Bacterial meningitis after intrapartum spinal anesthesia—New york and Ohio, 2008–2009. *MMWR* 2010; 59(3):65–69.
51. Baer ET: Post-dural puncture bacterial meningitis. *Anesthesiology* 2006; 105(2):381–393.
52. Hepner DL: Gloved and masked—will gowns be next? The role of asepsis during neuraxial instrumentation. *Anesthesiology* 2006;105(2):241–243.
53. Cook TM, Fischer B, Bogod D, et al: Antiseptic solutions for central neuraxial blockade: which concentration of chlorhexidine in alcohol should we use? *Br J Anaesth* 2009;103(3):456–457.

54. Carraccio C, Feinberg P, Hart LS, et al: Lidocaine for lumbar punctures. A help not a hindrance. *Arch Pediatr Adolesc Med* 1996;150(10):1044–1046.
55. Fink BR, Walker S: Orientation of fibers in human dorsal lumbar dura mater in relation to lumbar puncture. *Anesth Analg* 1989;69:768–772.
56. Norris MC, Leighton BL, DeSimone CA: Needle bevel direction and headache after inadvertent dural puncture. *Anesthesiology* 1989;70:729–731.
57. Mihic DN: Postspinal headache and relationship of needle bevel to longitudinal fibers. *Reg Anesth* 1985;110:76–81.
58. Flaaten H, Thorsen T, Askeland B, et al: Puncture technique and postural postdural puncture headache. A randomized, double-blind study comparing transverse and parallel puncture. *Acta Anesthesiol Scand* 1998;42:1209–1214.
59. Kathirgamanathan A, Hawkins N: Reliability of the 'pop' sign as an indicator of dural puncture during obstetric spinal anaesthesia: a prospective observational clinical study. *Anaesthesia* 2007;62:802–805.
60. Nigrovic LE, Kuppermann N, Neuman MI: Risk factors for traumatic or unsuccessful lumbar punctures in children. *Ann Emerg Med* 2007;49(6): 762–771.
61. Strupp M, Brandt T: Should one reinsert the stylet during lumbar puncture?. *N Engl J Med* 1997;336(16):1190.
62. Gleason CA, Martin RJ, Anderson JV, et al: Optimal position for a spinal tap in preterm infants. *Pediatrics* 1983;71:31–35.
63. Weisman LE, Merenstein GB, Steenbarger JR: The effect of lumbar puncture position in sick neonates. *Am J Dis Child* 1983;137:1077–1079.
64. Fiser DH, Gober GA, Smith CE, et al: Prevention of hypoxemia during lumbar puncture in infancy with preoxygenation. *Pediatr Emerg Care* 1993;9(2):81–83.
65. Anand KJ, Hickey PR: Pain and its effects in the human neonate and fetus. *N Engl J Med* 1983;317:1321–1329.
66. Pinheiro JMB, Furdon S, Ocho LF: Role of local anesthesia during lumbar puncture in neonates. *Pediatrics* 1991;91:379–382.
67. Halperin DL, Koren G, Solh H, et al: Topical skin anesthesia for venous, subcutaneous drug reservoir and lumbar punctures in children. *Pediatrics* 1989;84:281–284.
68. Ralston SJ, Head-Rapson AG: Use of EMLA cream for skin anesthesia prior to extradural insertion in labour. *Anaesthesia* 1993;48:65–67.
69. Sharma SK, Garaj NM, Sidawi JE, et al: EMLA cream effectively reduces the pain of spinal needle insertion. *Reg Anesth* 1996;21:561–564.
70. Koscielniak-Nielsen Z, Hesselbjerg L, Brushoj, et al: EMLA patch for spinal puncture. A comparison of EMLA patch with lidocaine infiltration and placebo patch. *Anaesthesia* 1998;53:1209–1227.
71. Stiffler KA, Jwayyed S, Wilber ST, et al: The use of ultrasound to identify pertinent landmarks for lumbar puncture. *Am J Emerg Med* 2007;25: 331–334.
72. Ferre RM, Sweeney TW: Emergency physicians can easily obtain ultrasound images of anatomical landmarks relevant to lumbar puncture. *Am J Emerg Med* 2007;25:291–296.
73. Peterson MA, Abele J: Bedside ultrasound for difficult lumbar puncture. *J Emerg Med* 2005;28:197–200.
74. Sandoval M, Shestak W, Stürmann K, Hsu C: Optimal patient position for lumbar puncture, measured by ultrasonography. *Emerg Radiol* 2004; 10:179–181.
75. Nomura JT, Leech SJ, Shenbagamurthi S, et al: A randomized controlled trial of ultrasound-assisted lumbar puncture. *J Ultrasound Med* 2007; 26:1341–1348.
76. Coley BD, Shiels WE 2nd, Hogan MJ: Diagnostic and interventional ultrasonography in neonatal and infant lumbar puncture. *Pediatr Radiol* 2001; 31:399–402.
77. Huang M-Y, Lin AP, Chang W-H: Ultrasound-assisted localization for lumbar puncture in the ED. *Am J Emerg Med* 2008;955–957.
78. Strony R: Ultrasound-assisted lumbar puncture in obese patients. *Crit Care Clin* 2010;26:661–664.
79. Ferre RM, Sweeney TW, Strout TD: Ultrasound identification of landmarks preceding lumbar puncture: a pilot study. *Emerg Med J* 2009;26:276–277.
80. Shah KH, McGillicuddy D, Spear J, et al: Predicting difficult and traumatic lumbar punctures. *Am J Emerg Med* 2007;25:608–611.
81. Evans RW: Complications of lumbar puncture. *Neurol Clin* 1998;16(1): 83–105.
82. Lubic LG, Marotta JT: Brain tumor and lumbar puncture. *Arch Neurol Psychiatry* 1954;72:568–572.
83. Korein J, Craviato H, Leicach M: Reevaluation of lumbar puncture. *Neurology* 1959;9:290–297.
84. Zisfrein J, Tuchman AJ: Risks of lumbar puncture in the presence of intracranial mass lesions. *Mt Sinai J Med* 1988;55:283–287.
85. Horwitz SJ, Boxerbaum B, O'Beill J: Cerebral herniation in bacterial meningitis in childhood. *Ann Neurol* 1980;7:524–528.
86. Durand ML, Calderwood SB, Weber DJ, et al: Acute bacterial meningitis in adults. A review of 493 episodes. *N Eng J Med* 1993;328(1):21–28.
87. Rennick G, Shann F, de Campo J: Cerebral herniation during bacterial meningitis in children. *BMJ* 1998;306:953–955.
88. Duffy GP: Lumbar puncture in spontaneous subarachnoid hemorrhage. *Br Med J* 1982;285:1163–1164.
89. Hillman J: Should computed tomography scanning replace lumbar puncture in the diagnostic process in suspected subarachnoid hemorrhage? *Surg Neurol* 1986;26:547–550.
90. Ahmed SV, Jayawarna C, Jude E: Post lumbar puncture headache: diagnosis and management. *Postgrad Med J* 2006;82:713–716.
91. Leibold RA, Yealy DM, Coppola M, et al: Postdural puncture headache: characteristics, management, and prevention. *Ann Emerg Med* 1993;22: 1863–1870.
92. Lybecker H, Djernes M, Schmidt JF: Postdural puncture headache (PDPH): onset, duration, severity, and associated symptoms. An analysis of 75 consecutive patients with PDPH. *Acta Anaesthesiol Scand* 1995;39:605–612.
93. Ramamoorthy C, Geiduschek JM, Braton SL, et al: Postdural puncture headache in pediatric oncology patients. *Clin Pedriatr* 1998;37:247–252.
94. Carson D, Serpell M: Choosing the best needle for diagnostic lumbar puncture. *Neurology* 1996;47:33–37.
95. Norris MC, Leighton BL, DeSimone CA: Needle bevel direction and headache after inadvertent dural puncture. *Anesthesiology* 1989;70:729–731.
96. Mihic DN: Postspinal headache and relationship of needle bevel to longitudinal fibers. *Reg Anesth* 1985;110:76–81.
97. Richman J, Joe EM, Cohen SR, et al: Bevel direction and postdural puncture headache: a meta-analysis. *Neurologist* 2006;12:224–228.
98. Engelhardt A, Ohelm S, Neundorfer B: Post-lumbar puncture headache: experiences with Sprotte's atraumatic needle. *Cephalalgia* 1992;12(4):259.
99. Braune HJ, Huffman G: A prospective double blind clinical trial comparing the sharp Quincke needle (22G) with an "atraumatic" needle (22G) in the induction of post-lumbar puncture headache. *Acta Neurol Scand* 1992; 86:50–54.
100. Strupp M, Brandt T, Muller A: Incidence of post-lumbar puncture syndrome reduced by reinserting the stylet: a randomized prospective study of 600 patients. *J Neurol* 1998;245:589–592.
101. Seeberger MD, Kaufmann M, Staender S, et al: Repeated dural punctures increase the incidence of postdural puncture headache. *Anesth Analg* 1996; 82:302–305.
102. Dieterich M, Brandt T: Is obligatory bed rest after lumbar puncture obsolete? *Eur Arch Psychiatry Neurol Sci* 1985;235:71–75.
103. Carbaat PAT, van Crevel H: Lumbar puncture headache: controlled study on the preventative effect of 24 hours bed rest. *Lancet* 1981;2:1133–1135.
104. Cook PT, Davies MJ, Beavis RE: Bed rest and postlumbar puncture headache: the effectiveness of 24 hours' recumbency in reducing the incidence of postlumbar puncture headache. *Anaesthesia* 1989;445:389–391.
105. Vilming ST, Schrader H, Monstad I: Post-lumbar-puncture headache: the significance of body posture: a controlled study of 300 patients. *Cephalalgia* 1988;8:75–78.
106. Kuntz KM, Kokmen E, Stevens JC, et al: Post-lumbar puncture headaches: experience in 501 consecutive patients. *Neurology* 1992;42:1884–1887.
107. Tejavanija S, Sithinamsuwan P, Sithinamsuwan N, et al: Comparison of prevalence of post-dural puncture headache between six hour-supine recumbence and early ambulation after lumbar puncture in Thai patients: a randomized controlled study. *J Med Assoc Thai* 2006;89(6):814–820.
108. Dieterich M, Brandt T: Incidence of post-lumbar puncture headache is independent of daily fluid intake. *Eur Arch Psychiatry Neurol Sci* 1988;237: 194–195.
109. Camann WR, Murray RS, Mushlin PS, et al: Effects of oral caffeine on postdural puncture headache: a double-blind, placebo-controlled trial. *Anesth Analg* 1990;70:181–184.
110. Sechzer PH, Abel L: Post-spinal anesthesia headache treated with caffeine: evaluation with demand method. Part 1. *Curr Ther Res* 1978;24:307–331.
111. Yücel A, Özyalçin S, Talu G, et al: Intravenous administration of caffeine sodium benzoate for postdural puncture headache. *Reg Anesth Pain Med* 1999;24:51–54.

112. Carp H, Singh PJ, Vadhera R, et al: Effects of the serotonin-receptor agonist sumatriptan on post-dural puncture headache: report of six cases. *Anesth Analg* 1994;79:180–182.
113. Bussone G, Tullo V, d'Onofrio F, et al: Frovatriptan for the prevention of postdural puncture headache. *Cephalalgia* 2007;27:809–813.
114. Carter BL, Pasupuleti R: Use of intravenous cosyntropin in the treatment of postdural puncture headache. *Anesthesiology* 2000;92:272–274.
115. Canovas L, Barros C, Gomez A, et al: Use of intravenous tetracosactrin in the treatment of postdural puncture headache: our experience in forty cases. *Anesth Analg* 2002;94:1369.
116. Matute E, Bonilla S, Girones A, et al: Bilateral greater occipital nerve block for post-dural puncture headache. *Anaesthesia* 2008;63:557–558.
117. Naja Z, Al-Tannir M, El-Rajab M, et al: Nerve stimulator-guided occipital nerve blockade for postdural puncture headache. *Pain Pract* 2009;9(1): 51–58.
118. van Kooten F, Oedit R, Bakker SLM, et al: Epidural blood patch in post dural puncture headache: a randomized, observer-blind, controlled clinical trial. *J Neurol Neurosurg Psychiatry* 2008;79:553–558.
119. Tarkkila PJ, Miralles JA, Palomaki EA: The subjective complications and efficiency of the epidural blood patch in the treatment of post-dural puncture headache. *Reg Anesth* 1989;14:247–250.
120. Abouleish E, de la Vega S, Blendinger, et al: Long-term follow-up of the epidural blood patch. *Anesth Analg* 1975;54:459–463.
121. McGruder JM, Cooke JE, Conroy JM, et al: Epidural blood patch in the treatment of post dural puncture headache. *South Med J* 1988;81:1249–1252.
122. Olsen KS: Epidural blood patch in the treatment of post-lumbar puncture headache. *Pain* 1987;30:293–301.
123. Eng RHK, Seligman SJ: Lumbar puncture-induced meningitis. *JAMA* 1981; 245(14):1456–1459.
124. Shapiro ED, Aaron NH, Wald ER, et al: Risk factors for development of bacterial meningitis among children with occult bacteremia. *J Pediatr* 1986; 109:15–19.
125. Krishna V, Liu V, Singleton AF: Should lumbar puncture be routinely performed in patients with suspected bacteremia? *J Natl Med Assoc* 1983; 75(12):1153–1157.
126. Breuer AC, Tyler HR, Marzewski DJ, et al: Radicular vessels are the most probable source of needle induced blood in lumbar puncture. Significance for the thrombocytopenic cancer patient. *Cancer* 1982;49:2168–2172.
127. Egede LE, Moses H, Wang H: Spinal subdural hematoma: a rare complication of lumbar puncture. Case report and review of the literature. *Md Med J* 1999;48(1):15–17.
128. Varela Rios P, Gonzalez Garcia J, Perez Rodriguez MT, et al: Subdural spinal hematoma and intraventricular bleeding after lumbar puncture. *Rev Esp Anestesiol Reanim* 2009;56(3):189–190.
129. Sanchez-Menoyo JL, Ruiz-Ojeda J, Martinez-Arroyo A, et al: Spinal cord hemorrhage complicating diagnostic lumbar puncture. *Rev Neurol* 2009; 48(8):418–420.
130. Lee S-J, Lin Y-Y, Hsu C-W, et al: Intraventricular hematoma, subarachnoid hematoma and spinal epidural hematoma caused by lumbar puncture: an unusual complication. *Am J Med Sci* 2009;337(2):143–145.
131. Effron D, Schmidt KL, Sharma A: Subdural hematoma. *J Emerg Med* 2006;30(1):93–94.
132. Sinclair AJ, Carroll C, Davies B: Cauda equina syndrome following a lumbar puncture. *J Clin Neurosci* 2009;16(5):714–716.
133. Edelson RN, Chernik NL, Posner JB, et al: Spinal subdural hematomas complicating lumbar puncture. Occurrence in thrombocytopenic patients. *Arch Neurol* 1974;31:134–137.
134. Hart IK, Bone I, Hadley DM: Development of neurological problems after lumbar puncture. *BMJ* 1988;296:51–52.
135. Edelman JD, Wingard DW: Subdural haematomas after lumbar puncture. *Anesthesiology* 1980;52:166–167.
136. Vos PE, de Boer WA, Wurzer JAL, et al: Subdural hematoma after lumbar puncture: two case reports and review of the literature. *Clin Neurol Neurosurg* 1991;93(2):127–131.
137. Kock BL, Moosbrugger EA, Egelhoff JC: Symptomatic spinal epidural collections after lumbar puncture in children. *Am J Neuroradiol* 2007;28: 1811–1816.
138. Bhatoe HS, Gill HS, Kumar N, et al: Post lumbar puncture discitis and vertebral collapse. *Postgrad Med J* 1994;70:882–884.
139. Potgieter S, Dimin S, Lagae L, et al: Epidermoid tumours associated with lumbar punctures performed in early neonatal life. *Dev Med Child Neurol* 1997;39:266–269.
140. McDonald JV, Klump TE: Intraspinal epidermoid tumors caused by lumbar puncture. *Arch Neurol* 1986;43:936–939.
141. Per H, Kumandas S, Gumus H, et al: Iatrogenic epidermoid tumor: late complication of lumbar puncture. *J Child Neurol* 2007;22(3):332–336.
142. Ziv ET, McComb JG, Krieger MD, et al: Iatrogenic intraspinal epidermoid tumor: two cases and a review of the literature. *Spine* 2003;29(1):e.15–e.18.
143. Sahebkar-Moghaddam F, Adornato BT: The failed lumbar puncture. *Neurology* 2005;64:E24.
144. Kluger N, Sleth J-C, Guillot B, et al: Lumbar tattoos and lumbar puncture: the emperor's new clothes? *Can J Anesth* 2007;54(10):855.
145. Kuczkowski KM: Lumbar tattoos and lumbar epidural analgesia: unresolved controversies. *Can J Anesth* 2008;55(2):127–128.
146. Oski FA: *Principles and Practice of Pediatrics*, 2nd ed. Philadelphia: Lippincott, 1994.
147. Gorelick PB, Biller J: Lumbar puncture: technique, indications, and complications. *Postgrad Med* 1986;79(8):257–268.
148. Chadwick SL, Wilson JW, Levin JE, et al: Cerebrospinal fluid characteristics of infants who present to the emergency department with fever: establishing normal values by week of age. *Ped Infect Dis J* 2011;30(4):1–5.
149. Bonadio WA, Stanco L, Bruce R, et al: Reference values of normal cerebrospinal fluid composition in infants ages 0–8 weeks. *Pediatr Infect Dis J* 1992;11(7):589–591.
150. Klein JO, Feigin RD, McCracken GH Jr: Report of the task force on the diagnosis and management of meningitis. *Pediatrics* 1986;78(5 pt 2):959–982.
151. Powers WJ: Cerebrospinal fluid lymphocytosis in acute bacterial meningitis. *Am J Med* 1985;79:216–220.
152. Ratzan KR: Viral meningitis. *Med Clin North Am* 1985;69(2):399–413.
153. Negrini B, Kelleher KJ, Wald ER: Cerebrospinal fluid findings in aseptic versus bacterial meningitis. *Pediatrics* 2000;105:316–319.
154. Feigen RD, Shakelford PG: Value of repeat lumbar puncture in the differential diagnosis of meningitis. *N Engl J Med* 1973;289:571–574.
155. Bonadio W: Bacterial meningitis in children whose cerebrospinal fluid contains polymorphonuclear leukocytes without pleocytosis. *Clin Pediatr* 1988;27:4198–4200.
156. Greenberg RG, Smith PB, Cotton CM, et al: Traumatic lumbar punctures in neonates: test performance of the cerebrospinal fluid white blood cell count. *Ped Infect Dis J* 2008;27(12):1047–1051.
157. Faix RG: Adjustment of cerebrospinal fluid cell counts for a traumatic lumbar puncture does not aid diagnosis of meningitis in neonates. *J Pediatr* 2009;155(1):148–149.
158. Mayefsky JH, Roghmann KJ: Determination of leukocytosis in traumatic spinal tap specimens. *Am J Med* 1987;82:1175–1181.
159. Bonadio WA, Smith DS, Goddard S, et al: Distinguishing cerebrospinal fluid abnormalities in children with bacterial meningitis and traumatic lumbar puncture. *J Infect Dis* 1990;162:251–253.
160. Mazor SS, McNulty JE, Roosevelt GE: Interpretation of traumatic lumbar punctures: who can go home? *Pediatrics* 2003;111:525–528.
161. Powers WJ: Cerebrospinal fluid to serum glucose ratios in diabetes mellitus and bacterial meningitis. *Am J Med* 1981;71:217–220.
162. Marton KI, Gean AD: The spinal tap: a new look at an old test. *Ann Intern Med* 1986;104:840–848.
163. Conly JM, Ronald AR: Cerebrospinal fluid as a diagnostic body fluid. *Am J Med* 1983;75:102–108.
164. Lavoie FW: Meningitis, encephalitis, and central nervous system abscess, in Rosen P, Barkin R (eds): *Emergency Medicine Concepts and Clinical Practice*, 4th ed. St. Louis: Mosby-Year Book, 1998:2198–2211.
165. Karandanis D, Shulman JA: Recent survey of infectious meningitis in adults: review of laboratory findings in bacterial, tuberculous, and aseptic meningitis. *South Med J* 1976;69(4):449–457.
166. LaScolea JL: Connotation of bacteria in cerebrospinal fluid in blood of children with meningitis and its diagnostic significance. *J Clin Microbiol* 1984;19:187.
167. Jarvis CW, Saxena KM: Does prior antibiotic treatment hamper the diagnosis of acute bacterial meningitis. *Clin Pediatr* 1972;11(4):201–204.
168. Bolan G, Barza M: Acute bacterial meningitis in children and adults. A perspective. *Med Clin North Am* 1985;69(2):231–241.
169. Wiebe RA, Crast FW, Hall RA, et al: Clinical factors relating to prognosis of bacterial meningitis. *South Med J* 1972;65(3):257–264.
170. Talan DA, Hoffman JR, Yoshikawa TT, et al: Role of empiric parenteral antibiotics prior to lumbar puncture in suspected bacterial meningitis: state of the art. *Rev Infect Dis* 1988;10:365–376.

171. Blazer S, Berant M, Alon U: Effect of antibiotic treatment on cerebrospinal fluid. *Am J Neurosurg Psychiatry* 1988;51:342–344.
172. Vermeulen M: Subarachnoid haemorrhage: diagnosis and treatment. *J Neurol* 1996;243:496–501.
173. Vermeulen M, Hasan D, Blijenberg BG, et al: Xanthochromia after subarachnoid haemorrhage needs no revisitation. *J Neurol Neurosurg Psychiatry* 1989;52:826–828.
174. Sidman R, Spitalnic S, Demelis M, et al: Xanthochromia? by what method? A comparison of visual and spectrophotometric xanthochromia. *Ann Emerg Med* 2005;46:51–55.
175. Arora S, Swadron SP, Dissanayake V: Evaluating the sensitivity of visual xanthochromia in patients with subarachnoid hemorrhage. *J Emerg Med* 2010;39(1):13–16.
176. Lo BM, Quinn SM: Gross xanthochromia on lumbar puncture may not represent an acute subarachnoid hemorrhage. *Am J Emerg Med* 2009;27: 621–623.
177. Graves P, Sidman R: Xanthochromia is not pathognomonic for subarachnoid hemorrhage. *Acad merg Med* 2004;11(2):131–135.
178. Edlow JA, Caplan LR: Avoiding pitfalls in the diagnosis of subarachnoid hemorrhage. *N Engl J Med* 2000;342(1):29–36.
179. Marroquin BM, Fecho K, Salo-Coombs V, et al: Can parturients identify the midline during neuraxial block placement? *J Clin Anesth* 2011;23:3–6.
180. Beilin Y: Finding the ever elusive vertebral midline: does mother know best? *J Clin Anesth* 2011;23:1–2.
181. Bernard PA: Lumbar punctures: always use a stylet. *J Child Neurol* 2008; 23(8):969.

REFERENCES

1. Stone JL, Rifai MHS, Sugar O, et al: Subdural hematomas: I. Acute subdural hematoma: progress in definition, clinical pathology, and therapy. *Surg Neurol* 1983;19:216–231.
2. Ghajar JBG: A guide for ventricular catheter placement: technical note. *J Neurosurg* 1985;63:985–986.
3. Bauer DF, McGwin G Jr., Melton SM, et al: The relationship between INR and development of hemorrhage with placement of ventriculostomy. *J Trauma* 2011;70(5):1112–1117.

REFERENCES

1. Ward E, Orrison W, Watridge C: Anatomic evaluation of cisternal puncture. *Neurosurgery* 1989;25(3):412–415.
2. Mullan S, Harper PV, Hekmatpnah J, et al: Percutaneous interruption of spinal-pain tracts by means of a strontium 90 needle. *J Neurosurg* 1963;20: 931–939.
3. Zivin J: Lateral cervical puncture: an alternative to lumbar puncture. *Neurology* 1978;28:616–618.
4. Rogers LA: Acute subdural hematoma and death following lateral cervical puncture. *J Neurosurg* 1983;58:284–286.
5. Chin KR, Eiszner JR, Huang JL, et al: Myelographic evaluation of cervical spondylosis: patient tolerance and complications. *J Spinal Disord Tech* 2008; 21:334–337.
6. Servo A, Laasonen EM: Accidental introduction of contrast medium into the cervical spinal cord: a case report. *Neuroradiol* 1985;27:80–82.
7. Katoh Y, Itoh T, Tsuji H, et al: Complications of lateral C1-2 puncture myelography. *Spine* 1990;15:1085–1087.
8. Robertson HJ, Smith RD: Cervical myelography: survey of modes of practice and major complications. *Radiology* 1990;174:79–83.

REFERENCES

1. Black PM, Rossitch E: *Neurosurgery, An Introductory Text*. New York: Oxford University Press, 1995:99–100.
2. Sugiura K, Robinson G, Stuart D: *Illustrated Guide to the Central Nervous System*. St. Louis: Ishiyaku EuroAmerica, 1989:144–150.
3. Naguib M, Samarkandi AH, El-Din ME, et al: the dose of succinylcholine for excellent endotracheal intubating conditions. *Anesth Analg* 2006;102: 151–157.
4. Heros RC, Deshaies EM, Heros DO, et al: Principles of neurosurgery, in Bradley WG, Daroff RB, Fenichel GM, et al (eds): *Neurology in Clinical Practice*, 5th ed. Philadelphia: Butterworth Heinemann Elsevier, 2008: 939–964.
5. Bauer DF, McGwin G Jr, Melton SM, et al: The relationship between INR and development of hemorrhage with placement of ventriculostomy. *J Trauma* 2011;70(5):1112–1117.
6. Mapstone T, Ratcheson R: Techniques of ventricular puncture, in Wilkins R, Rengachary S (eds): *Neurosurgery*, 2nd ed. New York: McGraw-Hill, 1996: 179–183.
7. Perret G, Meyers R: Neurosurgery in infants and children. *Pediatr Clin N Am* 1960;7:543–582.
8. Binz DD, Toussaint LG III, Friedman JA: Hemorrhagic complications of ventriculostomy placement: a meta-analysis. *Neurocrit Care* 2009;10:153–256.
9. Wilson SR, Schauer B, Price DD: Transorbital ventricular decompression in an acutely decompensated hydrocephalic ED patient. *Am J Emerg Med* 2007;25(2):208–210.
10. Navarro IM, Renteria JA, Peralta VHR, et al: Transorbital ventricular puncture for emergency ventricular decompression. *J Neurosurg* 1981;54: 273–274.

REFERENCES

1. Pople I: Management of shunt complications, in Palmer JD (ed): *Neurosurgery 96: Manual of Neurosurgery*. New York: Churchill Livingstone, 1996:590–592.
2. Drake JM, Kestle JR, Milner R, et al: Randomized trial of cerebrospinal fluid shunt valve design in pediatric hydrocephalus. *Neurosurgery* 1998;43: 294–303.
3. Scott RM: Shunt complications, in Wilkins R, Rengachary S (eds): *Neurosurgery*, 2nd ed. New York: McGraw-Hill, 1996:3655–3664.
4. Muhonen M, Wellman J: Hydrocephalus and benign intracranial cysts, in Grossman R, Loftus C (eds): *Principles of Neurosurgery*, 2nd ed. Philadelphia: Lippincott-Raven, 1999:93–114.
5. Lee P, DiPatri AJ Jr: Evaluation of suspected cerebrospinal fluid shunt complications in children. *Clin Ped Emerg Med* 2008;9:76–82.
6. *Stedman's Illustrated Medical Dictionary*, 28th ed. Baltimore: Lippincott Williams & Wilkins, 2005.
7. Netter FH: *The CIBA Collection of Medical Illustrations, Volume I, Nervous System, Part II Neurologic and Neuromuscular Disorders*. Philadelphia: WB Saunders, 1994.
8. Miller JP, Fulop SC, Dashti SR, et al: Rethinking the indications for the ventriculoperitoneal shunt tap. *J Neurosurg Pediatr* 2008;1:435–438.
9. Oakes WJ: Ventriculoperitoneal shunt tap. *J Neurosurg Pediatr* 2008;1: 433–434.
10. Rocque BG, Lapsiwala S, Iskandar BJ: Ventricular shunt tap as a predictor of proximal shunt malfunction in children: a prospective study. *J Neurosurg Pediatr* 2008;1:439–443.
11. Olson S: The problematic slit ventricle syndrome. A review of the literature and proposed algorithm for treatment. *Pediatr Neurosurg* 2004;40:264–269.
12. Rekate HL: The slit ventricle syndrome: advances based on technology and understanding. *Pediatr Neurosurg* 2004;40:259–263.
13. Le H, Yamini B, Frim DM: Lumboperitoneal shunting as a treatment for slit ventricle syndrome. *Pediatr Neurosurg* 2002;6:178–182.
14. Pitetti R: Emergency department evaluation of ventricular shunt malfunction: is the shunt series really necessary? *Pediatr Emerg Care* 2007;23(3):137–141.
15. Wu TS, Kuroda R: Tension hydrothorax in a pediatric patient with a ventriculopleural shunt. *J Emerg Med* 2011;40(6):637–639.
16. Ouellette D, Lynch T, Bruder E, et al: Additive value of nuclear medicine shuntograms to computed tomography for suspected cerebrospinal fluid shunt obstruction in the pediatric emergency department. *Pediatr Emerg Care* 2009; 25(12):827–830.
17. Campbell JW: Shunt infections, in Albright L (ed): *Principles and Practice of Pediatric Neurosurgery.* New York: Thieme Medical Publishers, 2007: 1141–1147.
18. Duhaime AC: Evaluation and management of shunt infections in children with hydrocephalus. *Clin Pediatr* 2006;45:705–713.
19. Stenehjem E, Armstring WS: Central nervous system device infections. *Infect Dis Clin North Am* 2012;26(1):89–110.
20. Gilbert DN, Moellering RC, Eliopoulis GM, et al: *The Sanford Guide to Antimicrobial Therapy 2011*, 41st ed. Sperryville, VA: Antimicrobial Therapy Inc., 2011.
21. Madsen JR, Abazi GS, Fleming L, et al: Evaluation of the shuntcheck noninvasive thermal technique for shunt flow detection in hydrocephalic patients. *Neurosurgery* 2011;68(1):198–205.

REFERENCES

1. Litofsky NS, Raffel C, McComb JG: Management of symptomatic extra-axial fluid collections in pediatric patients. *Neurosurgery* 1992;31(3):445–450.
2. Markwalder T: Chronic subdural hematomas: a review. *J Neurosurg* 1981; 54:637–645.
3. Aoki N: Chronic subdural hematoma in infancy. *J Neurosurg* 1971;73:201–205.
4. McLaurin RL, Isaacs E, Lewis HP: Results of non-operative treatment in 15 cases of infantile subdural hematoma. *J Neurosurg* 1971;34:753–759.
5. Prober CG, Dyner L: Central nervous system infection, in Kliegman RM, Stanton BF, St. Geme JW III, et al (eds): *Nelson's Textbook of Pediatrics*, 19th ed. Philadelphia: Elsevier, 2011:2086–2098.
6. Aronyk KE: Subdural and epidural hematoma, in McLone DG (ed): *Pediatric Neurosurgery: Surgery of the Developing Nervous System*, 4th ed. Philadelphia: WB Saunders, 2001:646–653.
7. Nishikawa H, Hockley AD: Congenital defects, vascular malformations, and other lesions, in Levene MI, Chervenek FA (eds): *Fetal and Neonatal Neurology and Neurosurgery*, 4th ed. Edinburgh: Elsevier, 2009:856–866.
8. Cohle D, Hinds D, Yawn DH: Propionibacterium acnes infection following subdural tap. *Am J Clin Pathol* 1981;75(3):430–431.

REFERENCES

1. Thurman DJ, Burnett CC, Jeppson L, et al: Surveillance of spinal cord injuries in Utah, USA. *Paraplegia* 1994;32:665–669.
2. Gupta MC, Benson DR, Keenan TL: Initial evaluation and emergency treatment of the spine-injured patient, in Browner BD, Jupiter JB, Levine AM, et al (eds): *Skeletal Trauma: Basic Science, Management, and Reconstruction*, 4th ed. Philadelphia: Elsevier, 2008:729–752.
3. Crutchfield WG: Redesigned Crutchfield skull tongs, technical note describing the combined "squeeze" and "hook" principle. *J Neurosurg* 1966; 25:656–657.
4. Gardner WJ: The principle of spring-loaded points for cervical traction, technical note. *J Neurosurg* 1973;39:543–544.
5. Orthopedic Trauma Association: Comprehensive classification of fractures. *J Orthop Trauma* 1995;9(suppl):129–140.
6. White AA III, Panjabi M: *The Clinical Biomechanics of the Spine*, 2nd ed. Philadelphia: Lippincott, 1990.
7. Maiman DJ, Barolat G, Larson SJ: Management of bilateral locked facets of the cervical spine. *Neurosurgery* 1986;18(5):542–547.
8. Wolf A, Levi L, Mirvis S, et al: Operative management of bilateral facet dislocation. *J Neurosurg* 1991;75:883–890.
9. Fisher TJ, Williams SL, Levine AM: Spinal orthoses, in Browner BD, Jupiter JB, Levine AM, et al (eds): *Skeletal Trauma: Basic Science, Management, and Reconstruction*, 4th ed. Philadelphia: Elsevier, 2008:793–811.

REFERENCES

1. Rowland LP: Diseases of chemical transmission at the nerve-muscle synapse: myasthenia gravis, in Kandel ER, Schwartz JH, Jessell TM (eds): *The Principles of Neural Science*, 4th ed. New York: McGraw-Hill, 2000:298–309.
2. Patterson SK, Kaufmann P, Sosinsky MS: Myasthenia gravis and other disorders of the neuromuscular junction, in Brust JCM (ed): *Current Diagnosis and Treatment: Neurology*, 2nd ed. New York: McGraw-Hill, 2012:351–360.
3. Sanders DB, Howard JF Jr: Disorders of neuromuscular transmission, in Bradley WG, Daroff RB, Fenichel GM, et al (eds): *Neurology in Clinical Practice*, 5th ed. Philadelphia: Butterworth-Heinemann Elsevier, 2008: 2383–2402.
4. Scherer K, Bedlack RS, Simel DL: Does this patient have myasthenia gravis? *JAMA* 2005;293(15):1906–1914.
5. Pascuzzi RM: The edrophonium test. *Semin Neurol* 2003;23(1):83–88.
6. Meriggioli MN, Saunders DB: Advances in the diagnosis of neuromuscular junction disorders. *Am J Phys Med Rehabil* 2005;84:627–638.
7. Kusner LL, Puwanant A, Kaminski HJ: Ocular myasthenia: diagnosis, treatment, and pathogenesis. *The Neurologist* 2006;12(5):231–239.
8. Elrod RD, Weinberg DA: Ocular myasthenia gravis. *Ophth Clin N Am* 2004; 17:275–309.
9. Schwendimann RN, Burton E, Minagar A: Management of myasthenia gravis. *Am J Ther* 2005;12:262–268.
10. Karatas H, Nurlu G, Kansu T: Is there still a role for edrophonium in diagnosing ocular myasthenia. *Eur J Neurol* 2007;14:e4–e5.
11. Naguib M, Lien CA: Pharmacology of muscle relaxants and their antagonists, in Miller RD, Eriksson LI, Fleisher LA, et al (eds): *Miller's Anesthesia*, 7th ed. Philadelphia: Churchill Livingstone, 2009:859–911.
12. Drachman DB: Myasthenia gravis. *N Engl J Med* 1994;330(25):1797–1810.
13. Seybold ME: Myasthenia gravis: diagnosis and therapeutic perspectives in the 1990's. *Neurologist* 1995;1:345–360.
14. Wald JJ, Albers JW: Neuromuscular disorders, in Shah SM, Kelly KM, Wigenstein JG (eds): *Emergency Neurology: Principles and Practice*. Cambridge: Cambridge University Press, 1999:253–272.
15. Gilchrist JM: Myasthenia gravis, in Feldmann E, Feldman E (eds): *Current Diagnosis in Neurology*. St. Louis: Mosby-Year Book, 1994:350–352.
16. Golnik KC, Pena R, Lee AG, et al: An ice test for the diagnosis of myasthenia gravis. *Ophthalmology* 1999;106(7):1282–1286.
17. Sethi KD, Rivner MH, Swift TR: Ice pack test for myasthenia gravis. *Neurology* 1987;37(8):1383–1385.
18. Czaplinski A, Steck AJ, Fuhr P: Ice pack test for myasthenia gravis: a simple, noninvasive and safe diagnostic method. *J Neurol* 2003;250:883–884.
19. Griggs RC, Donohoe KM: Emergency management of neuromuscular disease, in Henning RJ, Jackson DL (eds): *Handbook of Critical Care Neurology and Neurosurgery*. New York: Praeger, 1985:211–246.
20. Rowland LP: Controversies about the treatment of myasthenia gravis. *J Neurol Neurosurg Psychiatry* 1980;43:644–659.

REFERENCES

1. Ruetsch YA, Boni T, Borgeat A: From cocaine to ropivacaine: the history of local anesthetic drugs. *Curr Top Med Chem* 2001;1(2):175–182.
2. Grzybowski A: The history of cocaine in medicine and its importance to the discovery of the different forms of anesthesia. *Klin Oczna* 2007;109(1–2): 101–105.
3. Halstead WS: Practical comments on the use and abuse of cocaine; suggested by its invariably successful employment in more than a thousand minor surgical operations. *NY Med J* 1885;42:294–295.
4. Akerman B: On the chemistry and pharmacology of local anesthetic agents, in Loftstrom JB, Sjostrand U (eds): *Monographs in Anesthesiology. Local Anesthesia and Regional Blockade: Pharmacology, Physiology and Clinical Effects*, Vol 15. New York: Elsevier Science Publishers, 1988:1–22.
5. Covino BG: New developments in the field of local anesthetics and the scientific basis for their clinical use. *Acta Anaesth Scand* 1982;26:242–249.
6. McLeskey CH: Rational use of local anesthetic drugs. *N C Med J* 1982; 43(7):496–500.
7. Ganong WF: Excitable tissue: nerve, in Ganong WF (ed): *Review of Medical Physiology*, 18th ed. Connecticut: Appleton and Lange, 1997:47–59.
8. Covino BG: Pharmacology of local anesthetic agents. *Br J Anaesth* 1986; 58:701–716.
9. Covino BG: Pharmacology of local anesthetics. *Res Staff Phys* 1982;28:60–70.
10. Covino BG: Local anesthetic agents for peripheral nerve blocks. *Reg Anesth* 1980;3:33–37.
11. Dullenkopf A, Borgeat A: Local anesthetics. Differences and similarities in the "-caines". *Anaesthesist* 2003;52(4):329–340.
12. Stewart RD: Local anesthesia, in Paris PM, Stewart RD (eds): *Pain Management in Emergency Medicine.* Norwalk, CT: Appleton & Lange, 1988: 33–50.
13. Miller RD, Katzung BG: *Local Anesthetics: Basic and Clinical Pharmacology*, 8th ed. New York: Lange Medical Books, 2001:436–445.
14. Albæert J, Löfström B: Effects of epinephrine in solutions of local anesthetic agents. *Acta Anaesth Scand* 1965;16:71–77.
15. Covino BG: Local anesthesia (first of two parts). *N Engl J Med* 1972;286(18): 975–983.
16. Glinert RJ, Zachary CB: Local anesthetic allergy: its recognition and avoidance. *J Dermatol Surg Oncol* 1991;17:491–496.
17. Savarese JJ, Covino BG: Basic and clinical pharmacology of local anesthetic drugs, in Miller RD (ed): *Anesthesia*, 2nd ed. New York: Churchill Livingstone, 1986:985–1013.
18. Giovannitti JA, Bennett CR: Assessment of allergy to local anesthetics. *J Am Dent Assoc* 1979;98:701–706.
19. Brown DT, Beamish D, Wildsmith JAW: Allergic reaction to an amide local anesthetic. *Br J Anaesth* 1981;53:435–437.
20. DeJong RH: Toxic effects of local anesthetics. *JAMA* 1978;239(12):1166–1168.
21. McLeskey CH: Allergic reaction to an amide local anesthetic. *Br J Anaesth* 1981;53:1105–1106.
22. Murphy MF: Local anesthetic agents. *Emerg Med Clin North Am* 1988; 6(4):769–776.
23. Johnson WT, DeStigter T: Hypersensitivity to procaine, tetracaine, mepivacaine, and methylparaben: report of a case. *J Am Dent Assoc* 1983;106:53–56.
24. Reynolds F: Adverse effects of local anesthetics. *Br J Anaesth* 1987;59:78–95.
25. Dronen SC: Complications of TAC. *Ann Emerg Med* 1983;12(5):333.
26. Berk WA, Welch TCD, Bock BF: Controversial issues in clinical management of the simple wound. *Ann Emerg Med* 1992;21(1):72–80.
27. Christopher RA, Buchanan L, Begalla K, et al: Pain reduction in local anesthetic administration through pH buffering. *Ann Emerg Med* 1988; 17(2):117–120.
28. Cheney PR, Molzen G, Tandberg D: The effect of pH buffering on reducing the pain associated with sub-cutaneous infiltration of bupivacaine. *Am J Emerg Med* 1991;9(2):147–148.
29. Ernst AA, Marvez-Valls E, Nick TG, et al: Comparison trial of four injectable anesthetics for laceration repair. *Acad Emerg Med* 1996;3(3):198–200.
30. Bartfield JM, Ford DT, Homer PJ: Buffered versus plain lidocaine for digital nerve blocks. *Ann Emerg Med* 1993;22(2):216–219.
31. Borgan GX, Giarrusso E, Hollander JE, et al: Comparison of plain, warmed, and buffered lidocaine for anesthesia of traumatic wounds. *Ann Emerg Med* 1995;26(2):121–125.
32. Mader TJ, Playe SJ, Garb JL: Reducing the pain of local anesthetic infiltration: warming and buffering have a synergistic effect. *Ann Emerg Med* 1994; 23(3):550–554.
33. Colaric KB, Overton DT, Moore K: Pain reduction in lidocaine administration through buffering and warming. *Am J Emerg Med* 2000;18(2):235–236.
34. Kelly AM, Cohen M, Richards D: Minimizing the pain of local infiltration anesthesia for wounds by injection into the wound edges. *J Emerg Med* 1994; 12(5):593–595.
35. Schechter NL, Zempsky WT, Cohen LL, et al: Pain reduction during pediatric immunizations: evidence-based review and recommendations. *Pediatrics* 2007;119(5):1184–1198.
36. Oka S, Shimamoto C, Kyoda N, et al: Comparison of lidocaine with and without bupivicaine for local dental anesthesia. *Anesth Prog* 1997;44(3):83–86.
37. Magee DA, Weet PT, Holland AJ: Epidural anesthesia with mixtures of bupivacaine and lidocaine. *Can Anaesth Soc J* 1983;30(2):174–178.
38. Mets B, Janicki P, James M, et al: Lidocaine and bupivacaine cardiorespiratory toxicity is additive. *Anesth Analg* 1992;75:611–614.
39. Jong R, Bonin JD: Mixtures of local anesthetics are no more toxic than the parent drugs. *J Anesthesiol* 1981;54(3):177–181.
40. Ernst AA, Marvez-Valls E, Mall G, et al: 1% lidocaine versus 0.5% diphenhydramine for local anesthesia in minor laceration repair. *Ann Emerg Med* 1994;23(6):1328–1332.
41. Green SM: What is the role of diphenhydramine in local anesthesia? *Acad Emerg Med* 1996;3(3):198–200.
42. Pollack CV, Swindle GM: Use of diphenhydramine for local anesthesia in "caine"-sensitive patients. *J Emerg Med* 1989;7(6):611–614.
43. Gall H, Kaufmann R, Kalveram CM: Adverse reactions to local anesthetics: analysis of 197 cases. *J Allergy Clin Immunol* 1996;97(4):933–937.
44. Englesson S, Matousek M: Central nervous system effects of local anesthetic agents. *Br J Anaesth* 1975;47(suppl):241–246.
45. Mallampati SR, Liu PL, Knapp RM: Convulsions and ventricular tachycardia from bupivacaine with epinephrine: successful resuscitation. *Anesth Analg* 1984;63:856–859.
46. Kim JT, Jung CW, Lee KH: The effect of insulin on the resuscitation of bupivacaine-induced severe cardiovascular toxicity in dogs. *Anesth Analg* 2004;99(3):728–733.
47. Mazoit JX, Le Guen R, Beloeil H, et al: Binding of long-lasting local anesthetics to lipid emulsions. *Anesthesiology* 2009;110(2):380–386.
48. Weinberg G: Lipid rescue resuscitation from local anesthetic cardiac toxicity. *Toxicol Rev* 2006;25(3):139–145.
49. Corman SL, Skledar SJ: Use of lipid emulsion to reverse local anesthetic-induced toxicity. *Ann Pharmacother* 2007;41(11):1873–1877.
50. LipidRescue: resuscitation for cardiac toxicity. http://lipidrescue.squarespace.com, Chicago, IL, 2007.
51. Thomson CJ, Lalonde DH, Denkler KA, et al: A critical look at the evidence for and against elective epinephrine use in the finger. *Plast Reconstr Surg* 2007;119(1):260–266.
52. Lalonde D, Bell M, Benoit P, et al: A multicenter prospective study of 3,110 consecutive cases of elective epinephrine use in the fingers and hand. *J Hand Surg* 2005;30(5):1061–1067.
53. Fitzcharles-Bowe C, Denkler K, Lalonde D: Finger injection with high-dose (1:1000) epinephrine: does it cause finger necrosis and should it be treated? *Hand* 2007;2(1):5–11.
54. Mrvos R, Anderson BD, Krenzelok EP: Accidental injection of epinephrine from and autoinjector: invasive treatment not always required. *J Allergy Clin Immunol* 2002;95:318–320.
55. Skorpinski EW, McGready SJ, Yousef E: Two cases of accidental epinephrine injection into a finger. *J Allergy Clin Immunol* 2006;117(2):463–464.
56. Singh T, Randhawa S, Khanna R: The EpiPen and the ischaemic finger. *Eur J Emerg Med* 2007;14(4):222–223.
57. McCauley WA, Gerace RV, Scilley C: Treatment of accidental digital injection of epinephrine. *Ann Emerg Med* 1991;20(6):665–668.
58. Ernst AA, Marvez-Valls E, Nick TG, et al: Comparison trial of four injectable anesthetics for laceration repair. *Acad Emerg Med* 1996;3(3):228–233.
59. Pedersen H, Finster M: Selection and use of local anesthetics. *Clin Obstet Gynecol* 1987;30(3):505–514.
60. Guay J: Methemoglobinemia related to local anesthetics: a summary of 242 episodes. *Anesth Analg* 2009;108(3):699–701.

REFERENCES

1. McNaughton C, Zhou C, Robert L, et al: A randomized, crossover comparison of injected buffered lidocaine, lidocaine cream, and no analgesia for peripheral intravenous cannula insertion. *Ann Emerg Med* 2009;54:214–220.
2. Hegenbarth MA, Altieri MF, Hawk WH, et al: Comparison of topical tetracaine, adrenaline and cocaine with lidocaine infiltration for repair of lacerations in children. *Ann Emerg Med* 1990;19(1):63–67.
3. Cannon CR, Chouteau S, Hutchinson K: Topically applied tetracaine, adrenaline and cocaine in the repair of traumatic wounds of the head and neck. *Otolaryngol Head Neck Surg* 1989;100(1):78–79.
4. Grant SAD, Hoffman RS: Use of tetracaine, epinephrine, and cocaine as a topical anesthetic in the emergency department. *Ann Emerg Med* 1992;21: 987–997.
5. Dailey RH: Fatality secondary to misuse of TAC solution. *Ann Emerg Med* 1988;17:159–160.
6. White NJ, Kim MK, Brousseau DC, et al: The anesthetic effectiveness of lidocaine–adrenaline–tetracaine gel on finger lacerations. *Pediatr Emerg Care* 2004;20(12):812–815.
7. Shachor-Meyouhas Y, Galbraith R, Shavit I: Application of topical analgesia in triage: a potential for harm. *J Emerg Med* 2008;35(1):39–41.
8. Kaweski S: Topical anesthetic creams. *Plast Reconstr Surg* 2008;121: 2161–2165.
9. Taddio A, Soin HK, Schuh S, et al: Liposomal lidocaine to improve procedural success rates and reduce procedural pain among children: a randomized controlled trial. *CMAJ* 2005;172(13):1691–1695.
10. Eidelman A, Weiss JM, Lau J, et al: Topical anesthetics for dermal instrumentation: a systematic review of randomized, controlled trials. *Ann Emerg Med* 2005;46:343–351.
11. Schultz AA, Strout TD, Jordan P, et al: Safety, tolerability, and efficacy of iontophoresis with lidocaine for dermal anesthesia in emergency department pediatric patients. *J Emerg Nursing* 2002;28(4):289–296.
12. Rose JB, Galinkin JL, Jantzen EC, et al: A study of lidocaine iontophoresis for pediatric venipuncture. *Anesth Analg* 2002;94:867–871.
13. Rattenbury JM, Worthy E: Is the sweat test safe? Some instances of burns received during pilocarpine iontophoresis. *Ann Clin Biochem* 1996;33: 456–458.
14. Strout TD, Schultz AA, Baumann MR, et al: Reducing pain in emergency department patients during lumbar puncture: the efficacy and feasibility of iontophoresis, collaborative approach. *J Emerg Nursing* 2004;30(5):423–430.
15. Mitragotri S, Kost J: Low-frequency sonophoresis: a non-invasive method of drug delivery and diagnosis. *Biotechnol Prog* 2000;16:488–492.
16. Skarbeck-Borowska S, Becker BM, Lovgren K, et al: Brief focal ultrasound with topical anesthetic decreases the pain of intravenous placement in children. *Pediatr Emerg Care* 2006;22(5):339–345.
17. Becker BM, Helfrich S, Baker E, et al: Ultrasound with topical anesthetic rapidly decreases pain of intravenous cannulation. *Acad Emerg Med* 2005;12(4):289–295.
18. Katz N, Shapiro D, Herrmann T, et al: Rapid onset of cutaneous anesthesia with EMLA cream after pretreatment with a new ultrasound-emitting device. *Anesth Analg* 2004;98:371–376.
19. Zempsky WT, Robbins B, McKay K: Reduction of topical anesthetic onset time using ultrasound: A randomized controlled trial prior to venipuncture in young children. *Pain Med* 2008;9(7):795–802.
20. Stowell CP, Trieu MQ, Chuang H, et al: Ultrasound-enabled topical anesthesia for pain reduction of phlebotomy for whole blood donation. *Transfusion* 2009;49:146–153.
21. Zempsky WT: Pharmacologic approaches for reducing venous access pain in children. *Pediatrics* 2008;122:s140–s153.
22. Zempsky WT, Bean-Lijewski J, Kauffman RE, et al: Needle-free powder lidocaine delivery system provides rapid effective analgesia for venipuncture or cannulation pain in children: randomized, double-blind comparison of venipuncture and venous cannulation pain after fast-onset needle-free powder lidocaine or placebo treatment trial. *Pediatrics* 2008;121:979–987.
23. Lysakowski C, Dumont L, Tramer MR, et al: A needle-free jet-injection system with lidocaine for peripheral intravenous cannula insertion: a randomized controlled trial with cost-effectiveness analysis. *Anesth Analg* 2003;96(1):215–219.
24. Jimenez N, Bradford H, Seidel KD: A comparison of a needle-free injection system for local anesthesia versus EMLA for intravenous catheter insertion in the pediatric patient. *Anesth Analg* 2006;102:411–414.
25. Spanos S, Booth R, Koenig H, et al: Jet injection of 1% buffered lidocaine versus topical ELA-max for anesthesia before peripheral intravenous catheterization in children. *Ped Emerg Care* 2008;24(8):511–515.
26. Peter DJ, Scott JP, Watkins HC, et al: Subcutaneous lidocaine delivered by jet-injector for pain control before IV catheterization in the ED: the patients' perception and preference. *Am J Emerg Med* 2002;20(6):562–566.
27. Migdal M, Chudzynska-Pomianowska E, Vause E, et al: Rapid, needle-free delivery of lidocaine for reducing the pain of venipuncture among pediatric subjects. *Pediatrics* 2005;115(4):e393–e398.
28. Auerbach M, Tunik M, Mojica M: A randomized, double-blind controlled study of jet lidocaine compared to jet placebo for pain relief in children undergoing needle insertion in the emergency department. *Acad Emerg Med* 2009;16:388–393.
29. Sawyer J, Febbraro S, Masud S: Heated lidocaine/tetracaine patch compared with lidocaine/prilocaine cream for topical anesthesia before vascular access. *BJA* 2009;102(2):210–215.
30. Singer AJ, Taira BR, Chisena EN, et al: Warm lidocaine/tetracaine patch versus placebo before pediatric intravenous cannulation: a randomized controlled trial. *Ann Emerg Med* 2008;52:41–47.
31. Singer AJ, Regev R, Weeks R, et al: Laser-assisted anesthesia prior to intravenous cannulation in volunteers: a randomized, controlled trial. *Acad Emerg Med* 2005;12:804–807.
32. Hijazi R, Taylor D, Richardson J: Effect of topical alkane vapocoolant spray on pain with intravenous cannulation in patient in emergency departments: randomized double blind placebo controlled trial. *BMJ* 2009;338:215.
33. Farion KJ, Splinter KL, Newhook K, et al: The effect of vapocoolant spray on pain due to intravenous cannulation in children: a randomized controlled trial. *CMAJ* 2008;179(1):31–36.
34. Ellis FD, Seiler JG, Palmore MM: Methemoglobinemia: a complication after fiberoptic orotracheal intubation with benzocaine spray. *J Bone Joint Surg* 1995;77:937.
35. Chung N-Y, Batra R, Itzkevitch M, et al: Severe methemoglobinemia linked to gel-type topical benzocaine use: a case report. *J Emerg Med* 2010; 38(5):601–606.
36. Hess GP, Walson PD: Seizures secondary to oral viscous lidocaine. *Ann Emerg Med* 1988;17:725–727.
37. Rothstein P, Dornbusch J, Shaywitz B: Prolonged seizures associated with the use of viscous lidocaine. *J Pediatr* 1982;101:461–463.
38. Chen JZ, Exiades-Armenakas MR, Bernstein L, et al: Two randomized, double-blind, placebo-controlled studies evaluating the S-Caine Peel for induction of local anesthesia before long-pulsed Nd:YAG laser therapy for leg veins. *Dermatol Surg* 2003;29:1012.
39. Jih MH, Friedman PM, Sadick N, et al: 60-minute application of S-Caine Peel prior to 1,064 nm long-pulsed Nd:YAG laser treatment of leg veins. *Lasers Surg Med* 2004;34:446.
40. Chen JZ, Jacobson LG, Bakus A, et al: Evaluation of the S-Caine Peel for induction of local anesthesia for laser-assisted tattoo removal: randomized, double-blind, placebo-controlled, multicenter study. *Dermatol Surg* 2005;31:281.
41. Barker R, Kober A, Hoerauf K, et al: Out-of-hospital auricular acupressure in elder patients with hip fracture: a randomized double-blind trial. *Acad Emerg Med* 2006;13:19–23.
42. Drago LA, Singh SB, Douglass-Bright A, et al: Efficacy of ShotBlocker in reducing pediatric pain associated with intramuscular injections. *Am J Emerg Med* 2009;27:536–543.
43. Rincon E, Baker RL, Iglesias AJ, et al: CNS toxicity after topical application of EMLA cream on a toddler with molluscum contagiosum. *Ped Emerg Care* 2000;16(4):252–254.
44. Franz-Montan M, Ranali J, Ramacciato JC, et al: Ulceration of gingival mucosa after topical application of EMLA: report of four cases. *Br Dent J* 2008;204(3):133–134.

REFERENCES

1. Brown J, Klein E, Lewis C, et al: Emergency Department analgesia for fracture pain. *Ann Emerg Med* 2003;42:197.
2. Cimpello L, Khine H, Avner J: Practice patterns of pediatric versus general emergency physicians for pain management of fractures in pediatric patients. *Pediatr Emerg Care* 2004;20(4):228.
3. Case R: Haematoma block—a safe method for reducing Colles' fractures. *Injury* 1985;16(7):469.
4. Johnson P, Noffsinger M: Hematoma block of distal forearm fractures. Is it safe? *Orthop Rev* 1991;20(11):977.
5. Meinig RP, Quick A, Lobmeyer L: Plasma lidocaine levels following hematoma block for distal radius fractures. *J Orthop Trauma* 1989;3(3):187.
6. Ogunlade S, Omololu A, Alonge T, et al: Haematoma block in reduction of distal radius fractures. *West Afr J Med* 2002;21(4):282.
7. Furia J, Alioto R, Marquardt J: The safety and efficacy of the hematoma block for fracture reduction in closed, isolated fractures. *Orthopedics* 1997;20(5):423.
8. Funk L: A prospective trial to compare three anaesthetic techniques used for the reduction of fractures of the distal radius. *Injury* 1997;3:209.
9. Singh G, Manglik R, Lakhtakia P, et al: Analgesia for the reduction of Colles fracture. A comparison of hematoma block and intravenous sedation. *Online J Curr Clin Trials* 1992;document number 23.
10. Abbaszadegan H, Jonsson U: Regional anesthesia preferable for Colles' fracture. Controlled comparison with local anesthesia. *Acta Orthop Scand* 1990;61(4):348.
11. Wardrope J, Flowers M, Wilson D: Comparison of local anaesthetic techniques in the reduction of Colles' fracture. *Arch Emerg Med* 1985;2:27.
12. Kendall J, Allen P, Younge P, et al: Haematoma block or Bier's block for Colles' fracture reduction in the accident and emergency department—which is best? *J Accid Emerg Med* 1997;14(6):352.
13. Alioto R, Furia J, Marquardt J: Hematoma block for ankle fractures: a safe and efficacious technique for manipulations. *J Orthop Trauma* 1995;9(2):113.
14. White B, Walsh M, Egol K, et al: Intra-articular block compared with conscious sedation for closed reduction of ankle fracture-dislocations. A prospective randomized trial. *J Bone Joint Surgery* 2008;90:731.
15. London N, Osman F, Ramagopal K, et al: Hyaluronidase (Hyalase): a useful addition in haematoma block? *J Accid Emerg Med* 1996;13:337.
16. Wilson S, Price D, Penner E: Pain control for sternal fracture using an ultrasound-guided hematoma block. *J Emerg Med* 2008;38(3):359–361.
17. Crystal C, Miller M, Young S: Ultrasound guided hematoma block: a novel use of ultrasound in the traumatized patient. *J Trauma* 2007;62(2):532.
18. Luhmann J, Schootman M, Luhmann S, et al: A randomized comparison of nitrous oxide plus hematoma block versus ketamine plus midazolam for Emergency Department forearm fracture reduction in children. *Pediatrics* 2006;118:1078.
19. Younge D: Haematoma block for fractures of the wrist: a cause of compartment syndrome. *J Hand Surg Br* 1989;14(2):194.
20. Dorf E, Kuntz A, Kelsey J, et al: Lidocaine-induced altered mental status and seizure after hematoma block. *J Emerg Med* 2006;31(3):251.
21. Basu A, Bhalaik V, Stanislas M, et al: Osteomyelitis following a haematoma block. *Injury* 2003;34:79.
22. Pfeifer HJ, Greenblatt DJ, Koch-Weser J: Clinical use and toxicity of intravenous lidocaine. A report from the Boston collaborative drug surveillance program. *Am Heart J* 1976;92:168.
23. Alfano SN, Leicht MJ, Skiendzielewski JJ: Lidocaine toxicity following subcutaneous administration. *Ann Emerg Med* 1984;13:465.
24. Scott DB: Toxic effects of local anaesthetic agents on the central nervous system. *Br J Anaesth* 1986;58:732.
25. Bishop D, Johnstone RE: Lidocaine toxicity treated with low-dose propofol. *Anaesthesiology* 1993;78:788.

REFERENCES

1. Stone MB, Wang R, Price DD: US-guided supraclavicular brachial plexus nerve block vs procedural sedation for the treatment of upper extremity emergencies. *Am J Emerg Med* 2006;26:706.
2. Stone MB, Price DD, Wang R: US-guided supraclavicular block for the treatment of upper extremity fractures, dislocations, and abscesses in the ED. *Am J Emerg Med* 2007;25:472.
3. Blaivas M, Lyon M: US-guided interscalene block for shoulder dislocation reduction in the ED. *Am J Emerg Med* 2006;24:293.
4. Liebmann O, Price D, Mills C, et al: Feasibility of forearm ultrasonography-guided nerve blocks of the radial, ulnar, and median nerves for hand procedures in the emergency department. *Ann Emerg Med* 2006;48:558.
5. Lewis L, Stephan M: Local and regional anesthesia, in Henretig FM, King C (eds): *Textbook of Pediatric Emergency Procedures*, 3rd ed. Baltimore: Williams & Wilkins, 1997:465–496.
6. Gregory PR, Sullivan MD, Sullivan JA: Nitrous oxide compared with intravenous regional anesthesia in pediatric forearm fracture manipulation. *J Pediatr Orthop* 1996;16(2):188–191.
7. Norris RL: Local anesthetics. *Emerg Med Clin North Am* 1992;10(4):707–718.
8. Keegan JJ, Garrett FD: The segmental distribution of the cutaneous nerves in the limbs of man. *Anat Rec* 1948;102:409–437.
9. Baker JD, Blackman BB: Local anesthesia. *Clin Plast Surg* 1985;12(1):25–31.
10. Tuckley JM: The pharmacology of local anesthetic agents. *Update in Anesthesia* 1994;issue #4, http://www.nda.ox.ac.uk/wfsa/html/u04/u04_014.htm.
11. Kretzschmar JL, Peters JE: Nerve blocks for regional anesthesia of the face. *Am Fam Physician* 1997;55(5):1701–1704.
12. Earle AS, Blanchard JM: Regional anesthesia in the upper extremity. *Clin Plast Surg* 1985;12(1):97–114.
13. Sites BD, Brull R: US guidance in peripheral regional anesthesia: philosophy, evidence-based medicine, and techniques. *Curr Opin Anaesthesiol* 2006; 19:630.
14. MacKenzie TA, Young ER: Local anesthetic update. *Anesth Prog* 1993;40: 29–34.
15. Walton SA, Hodge D: Regional anesthesia, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Illustrated Textbook of Pediatric Emergency and Critical Care Procedures*. St. Louis: Mosby, 1997:87–92.
16. Yaster M, Maxwell LG: Pediatric regional anesthesia. *Anesthesiology* 1989; 70:324–338.
17. Yentis SM, Vlassakov KV: Vassily von Anrep, forgotten pioneer of regional anesthesia. *Anesthesiology* 1999;90(3):890–895.
18. Auroy Y, Narchi P, Messiah A, et al: Serious complications related to regional anesthesia. *Anesthesiology* 1997;87(3):479–486.
19. Harbers JB, Beems T, Hoen MB, et al: A case of temporary facial nerve palsy after regional anesthesia of the scalp. *Anesth Analg* 1998;87(6):1375–1376.
20. Urmey WF, Talts KH, Sharrock NE: One hundred percent incidence of hemidiaphragmatic paresis associated with interscalene brachial plexus anesthesia as diagnosed by ultrasonography. *Anesth Analg* 1991;72:498.
21. Urmey WF, McDonald M: Hemidiaphragmatic paresis during interscalene brachial plexus blocks: effects on pulmonary function and chest wall mechanics. *Anesth Analg* 1992;74:352.
22. Dunmire SM, Paris PM: *Atlas of Emergency Procedures*, 2nd ed. Philadelphia: Saunders, 1994:35–54.
23. Blasier RD, White R: Intravenous regional anesthesia for management of children's extremity fractures in the emergency department. *Pediatr Emerg Care* 1996;12(6):404–406.
24. Philip BK: Supplemental medication for ambulatory procedures under regional anesthesia. *Anesth Analg* 1985;64:1117–1125.
25. Baker JD, Blackman BB: Local anesthesia. *Clin Plast Surg* 1985;12(1):25–31.
26. Carter PR: Regional anesthesia of the injured hand, in Carter PR (ed): *Common Hand Injuries and Infections—A Practical Approach to Early Treatment*. Philadelphia: Saunders, 1983:67–73.
27. Holzer A, Kapral S, Heilwagner K, et al: Severe pneumothorax after intercostal blockade: a case report. *Acta Anaesth Scand* 1998;42(9)1124–1126.
28. Hadzie A, Vloka JD: A comparison of the posterior versus lateral approaches to the block of the sciatic nerve in the popliteal fossa. *Anesthesiology* 1998; 88:1480–1486.
29. Hess J: A review of regional blocks for the foot. *J Am Assoc Nurse Anesthetists* 1998;66(1):82–87.
30. Eisenach JC, De Kock M, Klimscha W: α_2-Adrenergic agonists for regional anesthesia: a clinical review of clonidine (1984–1995). *Anesthesiology* 1996; 85(3):655–674.

REFERENCES

1. Bier A: Uber einen neun weg localanaesthesia an den gliedmassen zu erzeugen. *Arch Klin Chir* 1908;86:1007–1016.
2. Bier A: On a new method of local anesthesia. *Muench Med Wschir* 1909; 56:589.
3. Bier A: Concerning venous anesthesia. *Berl Klin Wschr* 1909;46:477–489.
4. Bier A: On local anesthesia with special reference to vein anesthesia. *Edinburgh Med J* 1910;5:103–123.
5. Morrison JT: Intravenous local anesthesia. *Brit J Surg* 1930–31;18:641–647.
6. Herreros LG: Regional anesthesia by the intravenous route. *Anesthesiology* 1946;7:558–560.
7. Holmes CMcK: Intravenous regional analgesia. A useful method of producing analgesia of the limbs. *Lancet* 1963;1:245–247.
8. Brown EM, McGriff JT, Malinowski RW: Intravenous regional anesthesia (Bier block): a review of 20 years' experience. *Can J Anaesth* 1989;36(3): 307–310.
9. Mazze RI, Dunbar RW: Intravenous regional anesthesia—report of 497 cases with a toxicity study. *Acta Anaesthesiol Scand* 1969;36:27–34.
10. Fields HL, Emson PC, Leigh BK, et al: Multiple opiate receptor sites on primary afferent fibers. *Nature* 1980;284:351–353.
11. Young WS, Wamsley JK, Zarbin MA, et al: Opioid receptors undergo axonal flow. *Science* 1980;210:76–78.
12. Boogaerts JR, Balatoni E, Lafont N, et al: Utilisation des morphiniques dans les blocs nerveux peripheriques. *Congres Ser Ars Medicina* 1985;3: 143–150.
13. Gobeaux D, Landais A: Utilisation de deux morphineiques dans les blocs du plexus brachial. *Can J Anaesth* 1988;36(6):437–440.
14. Gobeux D, Landais A, Bexon G, et al: Adjonction de fentanyl la lidocaine adrenaline pour le blocage du plexus brachial. *Can J Anaesth* 1987;35(3): 195–199.
15. Viel EJ, Eledjam JJ, de la Coussaye JE, et al: Brachial plexus block with opioids for postoperative pain relief: comparison between buprenorphine and morphine. *Reg Anesth* 1989;14(6):274–278.
16. Candido KD, Khan MA, Raja DS, et al: Brachial plexus block with buprenorphine for postoperative pain relief. *Reg Anesth* 2000;25(2):23.
17. Arthur JM, Mian T, Heavner JE, et al: Fentanyl and lidocaine versus lidocaine for Bier block. *Reg Anesth* 1992;17(4):223–227.
18. Bobart V, Hartmannsgruber MWB, Atanassoff PG, et al: Analgesia/anesthesia after fentanyl + lidocaine vs. plain lidocaine for intravenous regional anesthesia. *Anesth Analg* 1998;86:S3.
19. Abdulla WY, Fadhil NM: A new approach to intravenous regional anesthesia. *Anesth Analg* 1992;75:597–601.
20. Sztark F, Thicoipe M, Favarel-Garriques JF, et al: The use of 0.25% lidocaine with fentanyl and pancuronium for intravenous regional anesthesia. *Anesth Analg* 1997;84:777–779.
21. Subxedar DV, Gevirtz CM, Malik V, et al: Intravenous regional anesthesia: prospective evaluation of 0.25% lidocaine, with fentanyl and rocuronium. *Reg Anesth* 1997;22:41.
22. Thapar P, Skerman JH: Evaluation of 0.2% lidocaine with fentanyl and D-tubocurarine for intravenous regional anesthesia. *Anesth Analg* 1997;84:S342.
23. Reuben SS, Steiberg RB, Kreitzer JM, et al: Intravenous regional anesthesia using lidocaine and ketorolac. *Anesth Analg* 1995;81:110–113.
24. Steiberg RB, Reuben SS, Gardner G: The dose–response relationship of ketorolac as a component of intravenous regional anesthesia with lidocaine. *Anesth Analg* 1995;81(1):110–113.
25. Jankovic RJ, Visnjic MM, Milic DJ, et al: Does the addition of ketorolac and dexamethasone to lidocaine intravenous regional anesthesia improve postoperative analgesia and tourniquet tolerance for ambulatory hand surgery? *Minerva Anestesiol* 2008;74(10):521–527.
26. Choyce A, Peng P: A systematic review of adjuncts for intravenous regional anesthesia for surgical procedures. *Can J Anaesth* 2002;49(1):32–45.
27. Memiş D, Turan A, Karamanlioğlu B, et al: Adding dexmedetomidine to lidocaine for intravenous regional anesthesia. *Anesth Analg* 2004;98:835–840.
28. Bigat Z, Boztug N, Hadimioglu N, et al: Does dexamethasone improve the quality of intravenous regional anesthesia and analgesia? A randomized, controlled clinical study. *Anesth Analg* 2006;102:605–609.
29. Benlabed M, Hamza J, Jullian P, et al: Alkalization of 0.5% lidocaine for intravenous regional anesthesia. *Reg Anesth* 1990;15(2):59–60.
30. Armstrong P, Watters J, Whitfield A: Alkalinisation of prilocaine for intravenous regional anaesthesia. Suitability for clinical use. *Anaesthesia* 1990;45: 935–937.
31. Kennedy BR, Duthie AM, Parbrook GD, et al: Intravenous regional anesthesia: an appraisal. *Brit Med J* 1965;1:954–957.
32. Sukhani R, Garcia CJ, Munhall RJ, et al: Lidocaine disposition following intravenous regional anesthesia with different deflation technics. *Anesth Analg* 1989;68:633–637.
33. Winnie AP, Ramamurthy S: Pneumatic exsanguination for intravenous regional anesthesia. *Anesthesiology* 1970;33(6):664–665.
34. Armstrong P, Power I, Wildsmith JAW: Addition of fentanyl to prilocaine for intravenous regional anesthesia. *Anaesthesia* 1991;46:278–280.
35. Gupta A, Bengtsson M, Bjornsson A, et al: Lack of peripheral analgesic effect of low-dose morphine during intravenous regional anesthesia. *Reg Anesth* 1993;18(4):250–253.
36. Pitkanen MT, Rosenberg PH, Pere PJ, et al: Fentanyl–prilocaine mixture for intravenous regional anesthesia in patients undergoing surgery. *Anaesthesia* 1992;47:395–398.
37. Armstrong P, Brockway M, Wildsmith JAW: Alkalinization of prilocaine for intravenous regional anesthesia. *Anaesthesia* 1990;45:11–13.
38. Solak M, Akturk G, Erciyes N, et al: The addition of sodium bicarbonate to prilocaine solution during I.V. regional anesthesia. *Acta Anesthesiol Scand* 1991;35:572–574.
39. Cucchia G, Chasot-Di Dio V, VanGessei E, et al: Effect of addition of clonidine to local anesthetic during the Bier block on the pre- and postoperative analgesia. *Br J Anaesth* 1997;78(suppl 1):78–79.
40. Dunbar RW, Mazze RI: Intravenous regional anesthesia: experience with 779 cases. *Anesth Analg* 1967;46(6):806–811.
41. Bader AM, Concepcion M, Hurley RJ, et al: Comparison of lidocaine and prilocaine for intravenous regional anesthesia. *Anesthesiology* 1988;69(3): 409–412.
42. Tucker GT, Boas RA: Pharmacokinetic aspects of intravenous anesthesia. *Anesthesiology* 1971;34(6):538–548.
43. Ware RJ: Intravenous regional analgesia using bupivacaine. A double blind comparison with lignocaine. *Anaesthesia* 1979;34:231–235.
44. Smith CA, Steinhaus JE, Haynes CD: The safety and effectiveness of intravenous regional anesthesia. *South Med J* 1968;61:1057–1060.
45. Pitkanen MT, Suzuki N, Rosenberg PH: Intravenous regional anaesthesia with 0.5% prilocaine or 0.5% chloroprocaine. A double-blind comparison in volunteers. *Anaesthesia* 1992;47:618–619.
46. Bartholomew K, Sloan JP: Prilocaine for Bier's block: how safe is safe? *Arch Emerg Med* 1990;7:189–195.
47. Mazze RI, Dunbar RW: Plasma lidocaine concentrations after caudal, lumbar epidural, axillary block, and intravenous regional anesthesia. *Anesthesiology* 1966;27(5):574–578.
48. Davies JA, Walford AJ: Intravenous regional anaesthesia for foot surgery. *Acta Anaesthesiol Scand* 1986;30:145–147.
49. Kim DD, Shuman C, Sadr B: Intravenous regional anesthesia for outpatient foot and ankle surgery: a prospective study. *Orthopedics* 1993;16(10): 1109–1112.
50. Cotev S, Robin GC: Experimental studies on intravenous regional anaesthe sia using radioactive lignocaine. *Br J Anaesth* 1966;38:936–940.
51. Hargrove RL, Hoyle JR, Parker JB, et al: Blood lignocaine levels following intravenous regional analgesia. *Anaesthesia* 1966;21(1):37–41.
52. Larsen UT, Hommelgaard P: Pneumatic tourniquet paralysis following intravenous regional analgesia. *Anaesthesia* 1987;42:526–528.
53. Shaw-Wilgis EF: Observations on the effects of tourniquet ischemia. *J Bone Jt Surg Br* 1971;53A(7):1343–1345.
54. Mabee JR, Bostwick TL, Burke MK: Iatrogenic compartment syndrome from hypertonic saline injection in Bier block. *J Emerg Med* 1994;12(4): 473–476.
55. Quigley JT, Popich GA, Lanz UB: Compartment syndrome of the forearm and hand: a case report. *Clin Orthop* 1981;161:247–251.
56. Hastings H II, Misamore G: Compartment syndrome resulting from intravenous regional anesthesia. *J Hand Surg* 1987;12A(4):559–562.

57. Luce EA, Mangubat E: Loss of hand and forearm following Bier block: a case report. *J Hand Surg* 1983;8A(3):280–283.
58. Mohr B: Safety and effectiveness of intravenous regional anesthesia (Bier block) for outpatient management of forearm trauma. *Can J Emerg Med* 2006;8(4):247–250.
59. Pickering SAW, Hunter JB: Bier's block using prilocaine: safe, cheap and well tolerated. *Surg J R Coll Surg Edinb Irel* 2003;1(5):283–285.

REFERENCES

1. Minnitt RJ: Self-administered anaesthesia in children. *Br Med J* 1934;1: 501–502.
2. Seward EH: Obstetric analgesia: a new machine for the self-administration of nitrous oxide-oxygen. *Proc R Soc Med* 1949;42:745–746.
3. Ruben H: Nitrous oxide analgesia in dentistry: its use 15 years in Denmark. *Br Dent J* 1972;132:195–196.
4. Haelewyn B, David HN, Rouillon C, et al: Neuroprotection by nitrous oxide: facts and evidence. *Crit Care Med* 2008;36(99):2651–2659.
5. Donen N, Tweed WA, White D, et al: Pre-hospital analgesia with entonox. *Can Anesth Soc J* 1982;29(3):275–279.
6. Flomenbaum N, Gallagher EJ, Eagen K, et al: Self-administered nitrous oxide: an adjunct analgesic. *JACEP* 1979;8(3):95–97.
7. Burnweit C, Diana-Zerpa JA, Nahmad MH, et al: Nitrous oxide analgesia for minor pediatric surgical procedures: an effective alternative to conscious sedation? *J Pediatr Surg* 2004;39:495–496.
8. Gillman MA: Analgesic (subanesthetic) nitrous oxide interacts with the endogenous opioid system: a review of the evidence. *Life Sci* 1986;39(14): 1209–1221.
9. Sawamura S, Kingery WS, Davies MF, et al: Antinociceptive action of nitrous oxide is mediated by stimulation of noradrenergic neurons in the brainstem and activation of [alpha]2B adrenoceptors. *J Neurosci* 2000;20:9242–9251.
10. Fang F, Guo TZ, Davies MF, et al: Opiate receptors in the periaqueductal gray mediate analgesic effect of nitrous oxide in rats. *Eur J Pharmacol* 1997;336:137–141.
11. Ohashi Y, Guo T, Orii R, et al: Brain stem opioidergic and GABAergic neurons mediate the antinociceptive effects of nitrous oxide in Fischer rates. *Anesthesiology* 2003;99:947–954.
12. Jevtovic-Todorovic V, Todorovic SM, Mennerick S, et al: Nitrous oxide (laughing gas) is an NMDA agonist, neuroprotectant and neurotoxin. *Nat Med* 1998;4:460–463.
13. Pinell MC, Linscott MS: Nitrous oxide in the emergency department. *Am J Emerg Med* 1987;5(5):395–399.
14. Johnson JC, Atherton GL: Effectiveness of nitrous oxide in a rural EMS system. *J Emerg Med* 1991;9(1–2):45–53.
15. Thompson PL, Lown B: Nitrous oxide as an analgesic in acute myocardial infarction. *JAMA* 1976;235:924–927.
16. Nieto JM, Rosen P: Nitrous oxide at higher elevations. *Ann Emerg Med* 1980;9(12):610–612.
17. Babl FE, Oakley E, Seaman C, et al: High-concentration nitrous oxide for procedural sedation in children: adverse events and depth of sedation. *Pediatrics* 2008;121(3):e528–e532.
18. Luhmann JD, Schootman M, Luhmann SJ, et al: A randomized clinical trial of continuous-flow nitrous oxide and midazolam for sedation of young children during laceration repair. *Ann Emerg Med* 2001;37(1):20–27.
19. Evans JK, Buckley SL, Alexander AH, et al: Analgesia for the reduction of fractures in children: a comparison of nitrous oxide with intramuscular sedation. *J Pediatr Orthop* 1995;15(1):73–77.
20. Lyratzopoulos G, Blain KM: Inhalation sedation with nitrous oxide as an alternative to dental general anesthesia for children. *J Public Health Med* 2003;25(4):303–312.
21. Starck M, Tarkkila P, Mäkitie AA, et al: Nitrous oxide for applying local anesthesia in nasal operations: a randomized placebo-controlled single-blinded study. *Acta Otolaryngol* 2008;128:772–777.
22. Triner WR, Bartfield JM, Birdwell M, et al: Nitrous oxide for the treatment of acute migraine headache. *Am J Emerg Med* 1999;17:252–254.
23. Lockwood AJ, Yang YF: Nitrous oxide inhalation anaesthesia in the presence of intraocular gas can cause irreversible blindness. *Br Dental J* 2008; 204(5):247–248.
24. Weimann J: Toxicity of nitrous oxide. *Best Pract Res Clin Anaesthesiol* 2003;17(1):47–61.
25. Badner NH, Beattie WS, Freeman D, et al: Nitrous oxide-induced increased homocysteine concentrations are associated with increased postoperative myocardial ischemia in patients undergoing carotid endarterectomy. *Anesth Analg* 2000;91:1073–1079.
26. Nunn JF: Clinical aspects of the interaction between nitrous oxide and vitamin B_{12}. *Br J Anaesth* 1987;59:3–13.
27. Baum VC: When nitrous oxide is no laughing matter: nitrous oxide and pediatric anesthesia. *Pediatr Anaesth* 2007;17:824–830.
28. Felmet K, Robins B, Tilford D, et al: Acute neurologic decompensation in an infant with cobalamin deficiency exposed to nitrous oxide. *J Pediatr* 2000; 137:427–428.
29. Sanders RD, Weimann J, Maze M: Biologic effects of nitrous oxide. *Anesthesiol* 2008;109:707–722.
30. Rowland AS, Baird DD, Weinberg CR, et al: Reduced fertility among women employed as dental assistants exposed to high levels of nitrous oxide. *N Engl J Med* 1992;327(14):993–997.
31. Dula DJ, Skiendzielewski JJ, Royko M: Nitrous oxide levels in the emergency department. *Ann Emerg Med* 1981;10(11):575–578.
32. Dula DJ, Skiendzielewski JJ, Snover SW: The scavenger device for nitrous oxide administration. *Ann Emerg Med* 1983;12(12):759–761.
33. Stewart RD: Nitrous oxide, in Paris PM, Stewart RD (eds): *Pain Management in Emergency Medicine*. Norwalk, CT: Appleton and Lange, 1988:221–238.
34. Johnson RAA: Entonox in general practice. *Practitioner* 1979;222(1331): 681–683.
35. Thal ER, Montgomery SJ, Atkins JM, et al: Self-administered analgesia with nitrous oxide: adjunctive aid for emergency medical care systems. *JAMA* 1979;242(22):2418–2419.
36. Fink BR: Diffusion anoxia. *Anesthesiology* 1955;16:511–519.
37. Byhahn C, Westphal K, Wilke HJ, et al: Occupational exposure during mask induction and use of different types of endotracheal tubes. *Anaesth Intens Med* 1998;39:627–632.
38. Gray WW: Scavenging equipment. *Br J Anaesth* 1985;57:543–549.
39. Schneemilch CE, Hachenberg T, Ansorge S, et al: Effects of different anaesthetic agents on immune cell function *in vitro*. *Eur J Anaesthesiol* 2005;22: 616–623.
40. Reynolds E: Vitamin B12, folic acid, and the nervous system. *Lancet Neurol* 2006;5:949–960.
41. Badner NH, Beattie WS, Freeman D, et al: Nitrous oxide-induced increased homocysteine concentrations are associated with increased postoperative myocardial ischemia in patients undergoing carotid endarterectomy. *Anesth Analg* 2000;91:1073–1079.
42. Biovin J: Risk of spontaneous abortion in women occupationally exposed to anaesthetics gases: a meta-analysis. *Occup Environ Med* 1997;54:541–548.
43. Culley DJ, Raghavan SV, Waly M, et al: Nitrous oxide decrease cortical methionine synthase transiently but produces lasting memory impairment in aged rats. *Anesth Analg* 2007;105:83–88.

REFERENCES

1. Godwin SA, Caro DA, Wolf SJ, et al: American College of Emergency Physicians clinical policy for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 2005;45(2):177–196.
2. Innes G, Murphy M, Nijssen-Jordan C, et al: Procedural sedation and analgesia in the emergency department. Canadian consensus guidelines. *J Emerg Med* 1999;17(1):145–156.
3. Cote CJ, Wilson S, American Academy of Pediatrics and American Academy of Pediatric Dentistry: Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: an update. *Pediatrics* 2006;118(6):2587–2602.
4. Avramov MN, White PF: Methods for monitoring the level of sedation. *Crit Care Clin* 1995;11(4):803–826.
5. Roback MG, Bajaj L, Wathen JE, et al: Preprocedural fasting and adverse events in procedural sedation and analgesia in a pediatric emergency department: are they related? *Ann Emerg Med* 2004;44(5):454–459.
6. Treston G: Prolonged pre-procedural fasting time is unnecessary when using titrated intravenous ketamine for peadiatric procedural sedation. *Emerg Med Australasia* 2004;16:145–150.
7. Agrawal D, Manzi SF, Gupta R, et al: Preprocedural fasting state and adverse events in children undergoing procedural sedation and analgesia in a pediatric emergency department. *Ann Emerg Med* 2003;42(5):636–646.
8. O'Connor RE, Sama A, Burton JH, et al: ACEP sedation position: procedural sedation and analgesia in the emergency department: recommendations for physician credentialing, privileging, and practice. July 2011, www.acep.org.
9. American Medical Association Council on Scientific Affairs: The use of pulse oximetry during conscious sedation. *JAMA* 1993;270(12):1463–1468.
10. Deitch K, Chudnofsky CR, Dominici P: The utility of supplemental oxygen during emergency department procedural sedation with propofol: a randomized, controlled trial. *Ann Emerg Med* 2008;52(1):1–8.
11. Deitch K, Chudnofsky CR, Dominici P: The utility of supplemental oxygen during emergency department procedural sedation and analgesia with midazolam and fentanyl: a randomized, controlled trial. *Ann Emerg Med* 2007;49(1):1–8.
12. Krauss B, Hess DR: Capnography for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 2007;50(2):172–181.
13. Deitch K, Chudnofsky CR, Dominici P: The utility of supplemental oxygen during emergency department procedural sedation and analgesia with midazolam and fentanyl: a randomized, controlled trial. *Ann Emerg Med* 2007; 49(1):1–8.
14. Anderson JL, Junkins E, Pribble C, et al: Capnography and depth of sedation during propofol sedation in children. *Ann Emerg Med* 2007;49(1):9–13.
15. Deitch K, Miner J, Chudnofsky CR, et al: Does end tidal CO_2 monitoring during emergency department procedural sedation and analgesia with propofol decrease the incidence of hypoxic events? A randomized, controlled study. *Ann Emerg Med* 2010;55(3):258–264.
16. Burton JH, Harrah JD, Germann CA, et al: Does end-tidal carbon dioxide monitoring detect respiratory events prior to current sedation monitoring practices? *Acad Emerg Med* 2006;13(5):500–504.
17. Miner JR, Heegaard W, Plummer D: End-tidal carbon dioxide monitoring during procedural sedation. *Acad Emerg Med* 2002;9(4):275–280.
18. Bailey PL, Pace NL, Ashburn MA, et al: Frequent hypoxemia and apnea after sedation with midazolam and fentanyl. *Anesthesiology* 1990;73(5):826–830.
19. Holdgate A, Cao A, Lo KM: The implementation of intranasal fentanyl for children in a mixed adult and pediatric emergency department reduces time to analgesic administration. *Acad Emerg Med* 2010;17:214–217.
20. Miner JR, Kletti C, Herold M, et al: Randomized clinical trial of nebulized fentanyl citrate versus i.v. fentanyl citrate in children presenting to the emergency department with acute pain. *Acad Emerg Med* 2007;14(10): 895–898.
21. Furyk JS, Grabowski WJ, Black LH: Nebulized fentanyl versus intravenous morphine in children with suspected limb fractures in the emergency department: a randomized controlled trial. *Emerg Med Australasia* 2009; 21(3):203–209.
22. Borland M, Jacobs I, King B, et al: A randomized controlled trial comparing intranasal fentanyl to intravenous morphine for managing acute pain in children in the emergency department. *Ann Emerg Med* 2007;49(3): 335–340.
23. Mace SL, Brown LA, Francis L, et al: American College of Emergency Physicians clinical policy critical issues in the sedation of pediatric patients in the emergency department. *Ann Emerg Med* 2008;51(4):378–399.
24. Miner JR, Gray R, Delavari P, et al: Alfentanil for procedural sedation in the emergency department. *Ann Emerg Med* 2011;57(2):117–121.
25. Green SM, Rothrock SG, Lynch EL, et al: Intramuscular ketamine for pediatric sedation in the emergency department: safety profile in 1,022 cases. *Ann Emerg Med* 1998;31(6):688–697.
26. Green SM, Roback MG, Krauss B, et al: Anticholinergics and ketamine sedation in children: a secondary analysis of atropine versus glycopyrrolate. *Acad Emerg Med* 2010;17:157–162.
27. Sengupta A, Gupta PK, Pandy K: Investigation of glycopyrrolate as a premedicant drug. *Br J Anaesth* 1980;52:513–516.
28. Oduro KA: Glycopyrrolate methobromide 2 comparison with atropine sulphate in anesthesia. *Can Anaesth Soc J* 1975;22:466–473.
29. Brown L, Christian-Kopp S, Sherwin TS, et al: Adjunctive atropine is unnecessary during ketamine sedation in children. *Acad Emerg Med* 2008;15: 314–318.
30. Melendez E, Bachur R: Serious adverse events during procedural sedation with ketamine. *Pediatr Emerg Care* 2009;25(5):325–328.
31. Roback MG, Wathen JE, MacKenzie T, et al: A randomized, controlled trial of IV versus IM ketamine for sedation of pediatric patients receiving emergency department orthopedic procedures. *Ann Emerg Med* 2006;48(5):605–612.
32. Bar-Joseph G, Guilburd Y, Tamir A, et al: Effectiveness of ketamine in decreasing intracranial pressure in children with intracranial hypertension. *Neurosurg Pediatr* 2009;4(1):40–46.
33. Green SM, Roback MG, Krauss B, et al: Predictors of emesis and recovery agitation with emergency department ketamine sedation: an individual-patient data meta-analysis of 8,282 children. *Ann Emerg Med* 2009;54(2): 171–180.
34. Thorp AW, Brown L, Green SM: Ketamine-associated vomiting: is it dose related? *Pediatr Emerg Care* 2009;25(1):15–18.
35. Langston WT, Wathen JE, Roback MG, et al: Effect of ondansetron on the incidence of vomiting associated with ketamine sedation in children: a double-blind, randomized, placebo-controlled trial. *Ann Emerg Med* 2008;52(1): 30–34.
36. Sherwin TS, Green SM, Khan A, et al: Does adjunctive midazolam reduce recovery agitation after ketamine sedation for pediatric procedures? A randomized, double-blind, placebo-controlled trial [see comments]. *Ann Emerg Med* 2000;35(3):229–238.
37. Sener S, Eken C, Schultz CH, et al: Ketamine with and without midazolam for emergency department sedation in adults: a randomized controlled trial. *Ann Emerg Med* 2011;57(2):109–114.
38. Andolfatto G, Willman E: A prospective case series of pediatric procedural sedation and analgesia in the emergency department using single-syringe ketamine–propofol combination (ketofol). *Acad Emerg Med* 2010;17:194–201.
39. Willman EV, Andolfatto G: A prospective evaluation of "ketofol" (ketamine/propofol combination) for procedural sedation and analgesia in the emergency department. *Ann Emerg Med* 2007;49(1):23–30.
40. David H, Shipp J: A randomized controlled trial of ketamine/propofol versus propofol alone for emergency department procedural sedation. *Ann Emerg Med* 2011;57(5):435–442.
41. Shah A, Mosdossy G, McLeod S, et al: A blinded, randomized controlled trial to evaluate ketamine–propofol versus ketamine alone for procedural sedation in children. *Ann Emerg Med* 2011;57(5):425–433.
42. Sharieff GQ, Trocinski DR, Kanegaye JT, et al: Ketamine–propofol combination sedation for fracture reduction in the pediatric emergency department. *Pediatr Emerg Care* 2007;23(12):881–884.
43. Arora S: Combining ketamine and propofol ("ketofol") for emergency department procedural sedation and analgesia: a review. *West J Emerg Med* 2008;9(1):20–23.
44. Messenger DW, Murray HE, Dungey PE, et al: Subdissociative-dose ketamine versus fentanyl for analgesia during propofol procedural sedation: a randomized clinical trial. *Acad Emerg Med* 2008;15:877–886.
45. Zink BJ, Darfler K, Salluzzo RF, et al: The efficacy and safety of methohexital in the emergency department. *Ann Emerg Med* 1991;20(12):1293–1298.
46. Hildreth AN, Mejia VA, Maxwell RA, et al: Adrenal suppression following a single dose of etomidate for rapid sequence induction: a prospective randomized study. *J Trauma* 2008;65(3):573–579.

47. Di Liddo L, D'Angelo A, Nguyen B, et al: Etomidate versus midazolam for procedural sedation in pediatric outpatients: a randomized controlled trial. *Ann Emerg Med* 2006;48(4):433–440.
48. Hunt GS, spencer MT, Hays DP: Etomidate and midazolam for procedural sedation: prospective, randomized trial. *Am J Emerg Med* 2005;23: 299–303.
49. Van Keulen SG, Burton JH: Myoclonus associated with etomidate for ED procedural sedation and analgesia. *Am J Emerg Med* 2003;21:556–558.
50. Miner JR, Danahy M, Moch A, et al: Randomized clinical trial of etomidate versus propofol for procedural sedation in the emergency department. *Ann Emerg Med* 2007;49(1):15–22.
51. Perrone J, Band RA, Mathew R: Agitation complicating procedural sedation with etomidate. *Am J Emerg Med* 2006;24(4):511–512.
52. Miner JR, Burton JH: Clinical practice advisory emergency department procedural sedation with propofol. *Ann Emerg Med* 2007;50(2):182–187.
53. Salman AE, Salman MA, Saricaoglu F, et al: Pain on injection of propofol: a comparison of methylene blue and lidocaine. *J Clin Anesth* 2011;23: 270–274.
54. Lopez M, Beltran G: Pediatric procedural sedation. *Pediatric Emerg Med Rep* 2008;13(12):145–156.
55. Austin JD, Parke TJ: Admixture of ephedrine to offset side effects of propofol: a randomized, controlled trial. *J Clin Anesth* 2009;21:44–49.
56. Moore GD, Walker AM, MacLaren R: Fospropofol: a new sedative-hypnotic agent for monitored anesthesia care. *Ann Pharmacother* 2009;43(11): 1802–1808.
57. Hofer KN, McCarthy MW, Buck ML, et al: Possible anaphylaxis after propofol in a child with a food allergy. *Ann Pharmacother* 2003;37(3):398–403.
58. Jabre P, Combes X, Lapostolle F, et al: Etomidate versus ketamine for rapid sequence intubation in acutely ill patients: a multicentre randomised controlled trial. *Lancet* 2009;374(9686):293–300.

REFERENCES

1. Kaplan BC, Dart RG, Moskos M, et al: Ectopic pregnancy: prospective study with improved diagnostic accuracy. *Ann Emerg Med* 1996;28(1):10–17.
2. Buckley RG, King KJ, Disney JD, Gorman JD, Klausen JH: History and physical examination to estimate the risk of Ectopic pregnancy: validation of a clinical prediction model. *Ann Emerg Med* 1999;34:589–594.
3. Barnhart K, Mennuti MT, Benjamin I, Jacobson S, Goodman D, Coutifaris C: Prompt diagnosis of ectopic pregnancy in an ED setting. *Obstet Gynecol* 1994;84(6):1010–1015.
4. Strobino B, Pantel-Silverman J: Gestational vaginal bleeding and pregnancy outcome. *Am J Epidemiol* 1989;129:806–815.
5. Everett C: Incidence and outcome of bleeding before the 20th week of pregnancy: prospective study from general practice. *BMJ* 1997;315:32–34.
6. Shih C: Effect of emergency physician-performed pelvic sonography on length of stay in the emergency department. *Ann Emerg Med* 1997;29:348–352.
7. Burgher SW, Tandy TK, Dawdy MR: Transvaginal ultrasonography by emergency physicians decreases patient time in the emergency department. *Acad Emerg Med* 1998;5:802–807.
8. Choi H, Blaivas M, Lambert MJ: Gestational outcome in patients with first-trimester pregnancy complications and ultrasound-confirmed live intrauterine pregnancy. *Acad Emerg Med* 2000;7:200–203.
9. Jehle D, Davis E, Evans T, et al: Emergency department sonography by emergency physicians. *Am J Emerg Med* 1989;7:605–611.
10. Schlager D, Lazzareschi G, Whitten D, Sanders AB: A prospective study of ultrasonography in the ED by emergency physicians. *Am J Emerg Med* 1994;12:185–189.
11. Adhikari S, Blaivas M, Lyon M: Diagnosis and management of ectopic pregnancy using bedside transvaginal ultrasonography in the ED: a 2-year experience. *Am J Emerg Med* 2007;25(6):591–596.
12. Dart RG: Role of pelvic ultrasonography in evaluation of symptomatic first-trimester pregnancy. *Ann Emerg Med* 1999;33(3):310–320.
13. Durham B, Lane B, Burbridge I, Balasubramaniam S: Pelvic ultrasound performed by emergency physicians for the detection of ectopic pregnancy in complicated first-trimester pregnancies. *Ann Emerg Med* 1997;29:338–347.
14. Juliano M, Dabulis S, Heffner A: Characteristics of women with fetal loss in symptomatic first trimester pregnancies with documented fetal cardiac activity. *Ann Emerg Med* 2008;52(2):143–147.
15. Barnhart KT: Clinical practice. Ectopic pregnancy. *N Engl J Med* 2009; 361(4):379–387.
16. Bennett GL, Bromley B, Lieberman E, Benacerraf BR: Subchorionic hemorrhage in first-trimester pregnancies: prediction of pregnancy outcome with sonography. *Radiology* 1996;200(3):803–806.
17. Pisarka MD, Carson SA, Buster JE: Ectopic pregnancy. *Lancet* 1998;351: 1115–1120.
18. American College of Emergency Physicians Clinical Policies Subcommittee on Early Pregnancy: Clinical policy: critical issues in the initial evaluation and management of patients presenting to the emergency department in early pregnancy. *Ann Emerg Med* 2003;41:123–133.
19. Stovall TG, Kellerman AL, Ling FW, Buster JE: Emergency department diagnosis of ectopic pregnancy. *Ann Emerg Med* 1990;19:1098–1103.
20. Abbott J, Emmans LS, Lowenstein SR: Ectopic pregnancy: ten common pitfalls in the diagnosis. *Am J Emerg Med* 1990;8:515–522.
21. Dart R, Kaplan B, Cox C: Transvaginal ultrasound in patients with low beta human chorionic gonadotropin values: how often is the study diagnostic? *Ann Emerg Med* 1997;30:135–140.
22. Nyberg DA, Mack LA, Jeffrey Jr RB, Laing FC: Endovaginal sonographic evaluation of ectopic pregnancy: a prospective study. *Am J Roentgenol* 1987; 149:1181–1186.
23. Tayal VS, Cohen H, Norton HJ: Outcome of patients with an indeterminate emergency department first-trimester pelvic ultrasound to rule out ectopic pregnancy. *Acad Emerg Med* 2004;11(9):912–917.
24. Dart R, Howard K: Subclassification of indeterminate pelvic ultrasonograms: stratifying the risk of ectopic pregnancy. *Acad Emerg Med* 1998;5(4):313–319.
25. Parvey HR, Maklad N: Pitfalls in the transvaginal sonographic diagnosis of ectopic pregnancy. *J Ultrasound Med* 1993;12(3):139–144.

REFERENCES

1. Whitley N: *Manual of Clinical Obstetrics*. Philadelphia: Lippincott, 1985.
2. Joyce DN, Giva-Osagie F, Stevenson GW: Role of pelvimetry in active management of labor. *Br Med J* 1975;4:505–507.
3. Blackadar CS, Viera AJ: A retrospective review of performance and utility of routine clinical pelvimetry. *Fam Med* 2004;36(7):505–507.
4. National Collaborating Centre for Women's and Children's Health: NICE Clinical Guideline #13: Caesarean section. London, UK: National Institute for Clinical Excellence (NICE), 2004.
5. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin #106: Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation, and General Management Principles. *Obstet Gynecol* 2009; 114(1):192–202.
6. Cunningham FG, MacDonald PC, Gant NF, et al: *Williams Obstetrics*, 20th ed. Norwalk, CT: Appleton and Lange, 1997.
7. Kjeldsen J: Hemodynamic investigations during labor and delivery. *Acta Obstet Gynecol Scand* 1979;89(suppl):1–252.
8. American College of Obstetricians and Gynecologists: *Committee Opinion Number 173. Prevention of Early-Onset Group B Streptococcal Disease in Newborns*. Washington, DC: American College of Obstetricians and Gynecologists, 1996.
9. Gabbe SG, Simpson JL, Niebyl JR, et al: *Obstetrics: Normal and Problem*. New York: Churchill Livingstone, 2007.
10. Hankins GDV, Snyder RR, Hauth JC, et al: Nuchal cords and neonatal outcome. *Obstet Gynecol* 1987;70:687–691.
11. CDC: Prevention of perinatal group B streptococcal disease: revised guidelines from the CDC. *MMWR* 2002;51(RR11):1–22.
12. Thorp JM Jr, Jenkins T, Watson W: Utility of Leopold maneuvers in screening for malpresentation. *Obstet Gynecol* 1991;78:394–396.
13. Jönsson ER, Elfaghi I, Rydhström H, et al: Modified Ritgen's maneuver for anal sphincter injury at delivery: a randomized controlled trial. *Obstet Gynecol* 2008:112:212–217.
14. American Heart Association Neonatal resuscitation. 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation* 2005;112(22 Suppl III):91–99.
15. Velaphi S, Vidyasagar D: The pros and cons of suctioning at the perineum (intrapartum) and post-delivery with and without meconium. *Semin Fetal Neonatal Med* 2008;13:375–382.
16. Vain NE, Szyld EG, Prudent LM, et al: Oropharyngeal and nasopharyngeal suctioning of meconium-stained neonates before delivery of their shoulders: multicentre, randomised controlled trial. *Lancet* 2004;364:597–602.
17. Kliegman RM, Behrman RE, Jenson HB, et al: *Nelson Textbook of Pediatrics edition Text with Continually Updated Online Reference (Nelson Textbook of Pediatrics (Bherman))*. Philadelphia: Saunders, 2007.
18. Jerbi M, Hidar S, Elmoueddeb S: Oxytocin in the third stage of labor. *Int J Gynaecol Obstet* 2007;96:198–199.
19. Rogers J, Wood J, McCandlish R, et al: Active versus expectant management of third stage of labour: the Hinchingbrooke randomised controlled trial. *Lancet* 1998;351:693–699.
20. Jackson KW Jr, Albert JR, Schemmer GK, et al: A randomized controlled trial comparing oxytocin administration before and after placental delivery in the prevention of postpartum hemorrhage. *Am J Obstet Gynecol* 2001; 185:873–877.

REFERENCES

1. Gainey HL: Postpartum observation of pelvic tissue damage: further studies. *Am J Obstet Gynecol* 1955;70:800–805.
2. Gainey HL: Postpartum observation of pelvic tissue damage. *Am J Obstet Gynecol* 1943;45:457–463.
3. Hueston WJ: Factors associated with the use of episiotomy during vaginal delivery. *Obstet Gynecol* 1996;87(6):1001–1005.
4. Klein CM, Gauthier RJ, Robbins JM, et al: Relationship of episiotomy to perineal trauma and morbidity, sexual dysfunction, and pelvic floor relaxation. *Am J Obstet Gynecol* 1994;171:591–598.
5. Helwig JT, Thorp JM Jr, Bowes WA Jr: Does midline episiotomy increase the risk of third- and fourth-degree lacerations in operative vaginal deliveries? *Obstet Gynecol* 1993;82:276–279.
6. Thacker S, Banta H. Benefits and risks of episiotomy: an interpretative review of the English language literature, 1860–1980. *Obstet Gynecol Surv* 1983;38:322–338.
7. Carroli G, Mignini L. Episiotomy for vaginal birth. *Cochrane Database Syst Rev* 2009; 1:CD000081. DOI: 10.1002/ 14651858.CD000081.pub2.
8. American College of Obstetricians and Gynecologists: Episiotomy. ACOG Practice Bulletin Number 71. *Obstet Gynecol* 2006;107:957–992.
9. DeFrances CJ, Hall MJ, Podgornik MN: *2003 National Hospital Discharge Survey*. Advance data; no. 359. Hyattsville (MD): National Center for Health Statistics, 2005. Available at: http:www.cdc.gov/nchs/data/ad/ad359.pdf.
10. Frankman EA, Wang L, Bunker C, et al: Episiotomy in the United States: has anything changed? *Am J Obstet Gynecol* 2009;200:573.e1–573.e7.
11. Hale R, Ling F. *Episiotomy: Procedure and Repair Techniques*. Washington, DC: The American College of Obstetricians and Gynecologists, 2007.
12. Woddman PJ, Graney DO. Anatomy and physiology of the female perineal body with relevance to obstetrical injury and repair. *Clin Anat* 2002; 15:321–334.
13. Varner MW: Episiotomy: techniques and indications. *Clin Obstet Gynecol* 1986:29(2):309–317.
14. Nichols DH: *Gynecologic and Obstetric Surgery*, 1st ed. St. Louis: Mosby-Year Book, 1993:1048–1056.
15. Cunningham FG, Leveno KJ, Hauth JC, et al: *William's Obstetrics*, 22nd ed. Norwalk, CT: McGraw-Hill, 2005:435–438.
16. O'Brien WF, Cefalo RC: *Obstetrics, Normal and Problem Pregnancies*, 3rd ed. New York: Churchill Livingstone, 1996:374–375.
17. Combs CA, Robertson AP, Laros KR: Risk factors for third-degree and fourth-degree perineal lacerations in forceps and vacuum deliveries. *Am J Obstet Gynecol* 1988;158:100–104.
18. Buekens P, Lagasse R, Dramaix M, et al: Episiotomy and third-degree tears. *Br J Obstet Gynecol* 1985;92:820–823.
19. Anthony S, Buitendijk SE, Zondervan KT, et al: Episiotomies and the occurrence of severe perineal lacerations. *Eur J Obstet Gynecol Reprod Biol* 1994;56:103–106.
20. Blondel B, Pusch D, Schmidt E: Some characteristics of antenatal care in 13 European countries. *Br J Obstet Gynecol* 1985;92:565–568.
21. Coats PM, Chan KK, Wilkins M, et al: A comparison between midline and mediolateral episiotomies. *Br J Obstet Gynecol* 1980;87:408–412.
22. Buekens P, Lagasse R, Dramaix M, et al: Episiotomy and third-degree tears. *Br J Obstet Gynecol* 1985;92:820–823.
23. Anthony S, Buitendijk SE, Zondervan KT, et al: Episiotomies and the occurrence of severe perineal lacerations. *Eur J Obstet Gynecol Reprod Biol* 1994;56:103–106.
24. Gilstrap LC, Cunningham FG, Vandorstem JP. *Operative Obstetrics*. New York: McGraw-Hill, 2002:65.
25. Brogatta L, Piening LS, Cohen RW: Association of episiotomy and delivery position with deep peroneal laceration during spontaneous delivery in nulliparous women. *Am J Obstet Gynecol* 1989;160:294–297.
26. Henriksen TB, Bek KM, Hedegaard M, et al: Episiotomy and perineal lesions in spontaneous vaginal deliveries. *Br J Obstet Gynecol* 1992;99:950–954.
27. Grant A: Repair of episiotomies and perineal tears. *Br J Obstet Gynecol* 1986; 93:417–419.
28. Grant A: The choice of suture materials and techniques for repair of perineal trauma: an overview of the evidence from controlled trials. *Br J Obstet Gynecol* 1989;96:1281–1289.
29. Ramin S, Gilstrap LC. Episiotomy and early repair of dehiscence. *Clin Obstet Gynecol* 1994;37(4):816–823.
30. Isager-Sally L, Legarth J, Jacobsen B, et al: Episiotomy repair—immediate and long-term sequelae. A prospective randomized study of three different methods of repair. *Br J Obstet Gynecol* 1986;93:420–425.
31. Gerrits DD, Brand R, Gravenhorst JB: The use of an episiotomy in relation to the professional education of the delivery attendant. *Eur J Obstet Gynecol Reprod Biol* 1994;56:103–106.
32. Argentine Episiotomy Trial Collaborative Group: Routine vs. selective episiotomy: a randomized controlled trial. *Lancet* 1993;342:1517–1518.
33. Seidman SD, Armon Y, Roll D, et al: Grand multi-parity: an obstetric or neonatal risk factor? *Am J Obstet Gynecol* 1988;158:1034–1039.

REFERENCES

1. Gabbe SG, Niebyl JR, Simpson JL: *Obstetrics: Normal and Problem Pregnancies*, 5th ed. New York: Churchill Livingstone, 2007:447–451.
2. Benedetti TJ, Gabbe SG: Shoulder dystocia: a complication of fetal macrosomia and prolonged second stage labor with midpelvic delivery. *Obstet Gynecol* 1978;52(5):526–529.
3. Baskett TF, Allen AC: Perinatal implications of shoulder dystocia. *Obstet Gynecol* 1995;86:14–17.
4. Gross TL, Sokol RJ, Williams T, et al: Shoulder dystocia: a fetal-physician risk. *Am J Obstet Gynecol* 1987;156(6):1408–1418.
5. Nocon JJ, McKenzie DK, Thomas LJ, et al: Shoulder dystocia: an analysis of risks and obstetric maneuvers. *Am J Obstet Gynecol* 1993;168(6): 1732–1739.
6. McFarland M, Hod M, Piper JM, et al: Are labor abnormalities more common in shoulder dystocia? *Am J Obstet Gynecol* 1995;173(4):1211–1214.
7. Gonik B, Allen R, Sorab J: Objective evaluation of the shoulder dystocia phenomenon: effect of maternal pelvic orientation on force reduction. *Obstet Gynecol* 1989;74(1):44–48.
8. American College of Obstetricians and Gynecologists: ACOG Practice Bulletin #40: Shoulder Dystocia. *Obstet Gynecol* 2002;100(5):847–1059.
9. Creasy RK, Resnik R: *Maternal-Fetal Medicine*, 6th ed. Philadelphia: Saunders, 2009.
10. Chatfield J: ACOG issues guidelines on fetal macrosomia. *Am Fam Physician* 2001;64(1):169–170.
11. Watterson L: Paracervical block. http://www.manbit.com/oa/c46.htm.
12. Miller RD: *Miller's Anesthesia*, 7th ed. Philadelphia: Churchill Livingstone, 2009:2217–2218.
13. Gonik B, Stringer CA, Held B: An alternate maneuver for management of shoulder dystocia. *Am J Obstet Gynecol* 1983;145(7):882–884.
14. Seigworth GR: Shoulder dystocia—review of 5 years experience. *Obstet Gynecol* 1966;28(6):764–767.
15. Cunningham FG, MacDonald PC, Gant NF, et al: *Williams Obstetrics*, 23rd ed. Norwalk, CT: Appleton & Lange, 2010:481–485.
16. Sandberg EC: The Zavanelli maneuver: a potentially revolutionary method for the resolution of shoulder dystocia. *Am J Obstet Gynecol* 1985; 152(4):479–484.
17. Sandberg EC: The Zavanelli maneuver: 12 years of recorded experience. *Obstet Gynecol* 1999;93(2):312–317.
18. Hartfield VJ: Symphysiotomy for shoulder dystocia. *Am J Obstet Gynecol* 1986;155(1):228.
19. Lipscomb KR, Gregory K, Shaw K: The outcome of macrosomic infants weighing at least 4500 grams: Los Angeles County/University of Southern California experience. *Obstet Gynecol* 1995;85(4):558–564.
20. Acker DB, Sachs BP, Friedman EA: Risk factors for shoulder dystocia. *Obstet Gynecol* 1985;66(6):762–768.

REFERENCES

1. Cunningham FG, Leveno KJ, Bloom SL, et al: *Breech Presentation and Delivery. Williams Obstetrics*, 22nd ed. New York: McGraw-Hill, 2005.
2. Lanni SM, Seeds JW: Malpresentations, in Gabbe SG, Niebyl JR, Simpson JL (eds): *Obstetrics—Normal and Problem Pregnancies*, 4th ed. New York: Churchill Livingstone, 2002:482–493.
3. Gilstrap LC, Cunningham FG, VanDorsten JP: *Breech Delivery Operative Obstetrics*, 2nd ed. New York: McGraw-Hill.
4. Danielian PJ, Wang J, Hall MH: Long-term outcome by method of delivery of fetuses in breech presentation at term: population-based follow up. *Br Med J* 1996;312(7044):1451–1453.
5. Hannah ME, Hannah WJ, Hewson SA, et al: Planned cesarean section versus planned vaginal birth for breech presentation at term: a randomized multicenter trial. Term Breech Trial Collaborative Group. *Lancet* 2000;356: 1375–1383.
6. Centers for Disease Control. Births 2002. National Vital Statistics Report, 2003.
7. Collea JV, Chein C, Quilligan EJ: The randomized management of term frank breech presentation: a study of 208 cases. *Am J Obstet Gynecol* 1980; 137(2):235–244.
8. Gimovsky ML, Wallace RL, Schifrin BS, et al: Randomized management of the non-frank breech presentation at term: a preliminary report. *Am J Obstet Gynecol* 1983;146(1):34–40.
9. Whyte H, Hannah MD, Saigal S, et al: Outcomes of children at 2 years after planned cesarean birth versus planned vaginal birth for breech presentation at term: the International Randomized Term Breech Trial. Term Breech Trial Collaborative Group. *Am J Obstet Gynecol* 2004;191:864–871.
10. Flanagan TA, Mulchahey KM, Korenbrot CC, et al: Management of the term breech presentation. *Am J Obstet Gynecol* 1987;156(6):1492–1502.
11. Cheng M, Hannah M: Breech delivery at term: a critical review of the literature. *Obstet Gynecol* 1993;82(4 pt 1):605–618.
12. American College of Obstetricians and Gynecologists: Mode of term singleton breech delivery. ACOG Committee Opinion No. 340. *Obstet Gynecol* 2006;108:235–237.
13. Doyle NM, Riggs JW, Ramin SM, et al: Outcomes of term vaginal breech delivery. *Am J Perinatol* 2005;22:325–328.
14. Alarab M, Regan C, O'Connell MP, et al: Singleton vaginal breech delivery at term: still a safe option. *Obstet Gynecol* 2004;103:407–412.
15. Guiliani A, Scholl WM, Basver A, et al: Mode of delivery and outcome of 699 term singleton breech deliveries at a single center. *Am J Obstet Gynecol* 2002;187:1694–1698.
16. Yamamura Y, Ramin KD, Ramin SM: Trial of vaginal breech delivery: current role. *Clin Obstet Gynecol* 2007;50(2):526–536.
17. Milner RDG: Neonatal mortality of breech deliveries with and without forceps to the aftercoming head. *Br J Obstet Gynaecol* 1975;82:783–785.
18. Blickstein I, Schwartz-Shoham Z, Lancet M: Vaginal delivery of the second twin in breech presentation. *Obstet Gynecol* 1987;69(5):774–776.
19. Fishman A, Grubb DK, Kovacs BW: Vaginal delivery of the nonvertex second twin. *Am J Obstet Gynecol* 1993;168(3 pt 1):861–864.
20. Green JE, McLean F, Smith LP, et al: Has an increased cesarean section rate for term breech delivery reduced the incidence of birth asphyxia, trauma, and death? *Am J Obstet Gynecol* 1982;142(3 pt 1):643–648.
21. Croughan-Minihane MS, Pettiti DB, Gordis L, et al: Morbidity amongst breech infants according to method of delivery. *Obstet Gynecol* 1990;75(5): 821–825.
22. Zatuchni GI, Andros GJ: Prognostic index for vaginal delivery in breech presentation at term. *Am J Obstet Gynecol* 1965;93(2):237–242.
23. Weissman A, Blazer S, Zimmer EZ, et al: Low birth-weight breech infant: short term and long term outcome by method of delivery. *Am J Perinatol* 1988;5(3):289–292.
24. Cheng M, Hannah M: Breech delivery at term: a critical review of the literature. *Obstet Gynecol* 1993;82(4 pt 1):605–618.
25. Bingham P, Lilford RJ: Management of the selected term breech presentation: assessment of the risks of selected vaginal delivery versus cesarean section for all cases. *Obstet Gynecol* 1987;69(6):965–978.

REFERENCES

1. Combs CA, Murphy EL, Laros RK: Factors associated with postpartum hemorrhage with vaginal birth. *Obstet Gynecol* 1991;77(1):69–76.
2. Combs CA, Murphy EL, Laros RK: Factors associated with hemorrhage in cesarean deliveries. *Obstet Gynecol* 1991;77(1):77–82.
3. Herbert WN, Zelop CA: *ACOG Practice Bulletin Number 76*: postpartum hemorrhage. *Obstet Gynecol* 2006;108(4):1039–1047.
4. Sorokin Y: Obstetrical hemorrhage, in Ransom SB (ed): *Practical Strategies in Obstetrics and Gynecology*. Philadelphia: Saunders, 2000:311–320.
5. Cunningham FG, Gant NF, Leveno KJ, et al: *Williams Obstetrics*, 22nd ed. New York: McGraw-Hill, 2005:810–854.
6. Cunningham FG, Gant NF, Leveno KJ, et al: *Williams Obstetrics*, 22nd ed. New York: McGraw-Hill, 2005:698.
7. Gilstrap LC, Hauth JC, Hankins GDV, et al: Effect of type of anesthesia on blood loss at cesarean section. *Obstet Gynecol* 1987;69(3 pt 1):328–332.
8. O'Connell KA, Wood JJ, Wise RP, et al: Thromboembolic adverse events after use of recombinant human coagulation factor VIIa. *JAMA* 2006;295: 293–298.
9. Oleen MA, Mariano JP: Controlling refractory atonic postpartum hemorrhage with hemabate sterile solution. *Am J Obstet Gynecol* 1990;162(1): 205–208.
10. Dildy GA III: Postpartum hemorrhage: new management options. *Clin Obstet Gynecol* 2002;45:330.

REFERENCES

1. Katz DL, Dotters DJ, Droegemueller W: Perimortem cesarean delivery. *Obstet Gynecol* 1986;68(4):571–576.
2. Katz VL, Balderson K, DeFreest M: Perimortem cesarean delivery: were our assumptions correct? *Am J Obstet Gynecol* 2005;192:1916–1921.
3. Creasy RK, Resnik R, Iams JD, et al (eds): *Creasy & Resnik's Maternal-Fetal Medicine*, 6th ed. Philadelphia: Saunders Elsevier 2009;57:1188–1191.
4. Mallampalli A, Powner DJ, Gardner MO: Cardiopulmonary resuscitation and somatic support of the pregnant patient. *Crit Care Clin* 2004;20:747–761.
5. Dildy GA, Clark SL: Cardiac arrest during pregnancy. *Obstet Gynecol Clin N Am* 1995;22(2):303–314.
6. Atta E, Gardner M: Cardiopulmonary resuscitation in pregnancy. *Obstet Gynecol Clin N Am* 2007;34:585–597.
7. Whitten M, Irvine LM: Postmortem and perimortem caesarean section: what are the indications? *J Royal Soc Med* 2000;93:7–9.
8. Strong TH, Lowe RA: Perimortem cesarean section. *Am J Emer Med* 1989; 7(5):489–494.
9. Lagrew DC, Bush MC, McKeown AM, et al: Emergent (crash) cesarean delivery: indications and outcomes: *Am J Obstet Gynecol* 2006;194:1638–1643.
10. Cunningham FG, Leveno KJ, Bloom SL, et al (eds): *Williams Obstetrics*, 22nd ed. New York: McGraw-Hill, 2005;25:592–606.

REFERENCES

1. Van Roosmalen J: Symphysiotomy as an alternative to cesarean section. *Int J Gynaecol Obstet* 1987;25(6):451–458.
2. Menticoglou SM: Symphysiotomy for the trapped aftercoming parts of the breech: a review of the literature and a plea for its use. *Aust N Z J Obstet Gynaecol* 1990;30(1):1–9.
3. Van Roosmalen J: Safe motherhood: cesarean section or symphysiotomy? *Am J Obstet Gynecol* 1990;163(1 pt 1):1–4.
4. Verkuyl DAA: Think globally act locally: the case for symphysiotomy. *PLoS Med* 2007;4(3):401–406.
5. Goodwin TM, Banks E, Millar LK, et al: Catastrophic shoulder dystocia and emergency symphysiotomy. *Am J Obstet Gynecol* 1997;177(2):463–464.
6. Toppozada HK: Subcutaneous partial symphysiotomy. *Am J Obstet Gynecol* 1983;46(3):344.
7. Moore KL, Dalley AF, Agur AMR: *Clinically Oriented Anatomy,* 6th ed. Baltimore: Lippincott Williams and Wilkins, 2010:326–434.
8. Gibbs RS, Karlan BY, Haney AF, et al (eds): *Danforth's Obstetrics and Gynecology,* 10th ed. Philadelphia: Lippincott Williams & Wilkins, 2008.
9. Cunningham GF, Leveno KJ, Bloom SL, et al: *Williams' Obstetrics,* 23rd ed. Norwalk, Philadelphia: Lippincott Williams & Wilkins, 2010.
10. Armon PJ, Philip M: Symphysiotomy and subsequent pregnancy in the Kilimanjaro region of Tanzania. *East Afr Med J* 1978;55(7):306–313.
11. Björklund K: Minimally invasive surgery for obstructed labour: a review of symphysiotomy during the twentieth century. *BJOG* 2002;109: 236–248.
12. Pust RE, Hirschler RA, Lennox CE: Emergency symphysiotomy for the trapped head in breech delivery: indications, limitations and method. *Trop Doct* 1992;22(2):71–75.
13. Kariuki HC: The place of symphysiotomy in the treatment of disproportion in Uganda. A study of 30 cases. *East Afr Med J* 1975;52(12):686–693.
14. Hartfield VJ: Late effects of symphysiotomy. *Trop Doct* 1975;5(2):76–78.
15. Wright JG, McGeer AJ, Chyatte D, et al: Mechanisms of glove tears and sharp injuries among surgical personnel. *JAMA* 1991;266:1668–1671.
16. Norman RJ: Six years' experience of symphysiotomy in a teaching hospital. *S Afr Med J* 1978;54(27):1121–1125.

REFERENCES

1. Eckert LO, Lentz GM: Infections of the lower genital tract, in Katz VL, Lentz GM, Lobo RA, et al (eds): *Comprehensive Gynecology*, 5th ed. Philadelphia: Mosby, 2007:569–607.
2. Azzan BB: Bartholin's cyst and abscess: a review of treatment of 53 cases. *Br J Clin Pract* 1978;32:101–102.
3. Kaufman RH: Cystic tumors, in Kaufman RH, Faro S, Brown D (eds): *Benign Diseases of the Vulva and Vagina*, 5th ed. Philadelphia: Elsevier, 2005: 240–249.
4. Word B: Office treatment of cyst and abscess of Bartholin's gland duct. *South Med J* 1968;61(5):514–518.
5. Agur AMR, Dalley AF: *Grant's Atlas of Anatomy*, 12th ed. Baltimore: Lippincott Williams and Wilkins, 2008.
6. Wheelock JB, Goplerud DR, Dunn LJ, et al: Primary carcinoma of the Bartholin gland: a report of 10 cases. *Obstet Gynecol* 1984;63(6):820–824.
7. Hill DA, Lense JJ: Office management of Bartholin gland cysts and abscesses. *Am Fam Physician* 1998;57(7):1611–1616.
8. Marzano DA, Haefner HK: The Bartholin gland cyst: past, present, and future. *J Low Genit Tract Dis* 2004;8(3):195–204.
9. Horowitz IR, Buscema J, Maymudaar J: Surgical conditions of the vulva, in Rock JA, Jones HW (eds): *Te Linde's Operative Gynecology*, 10th ed. Philadelphia: Lippincott Williams and Wilkins, 2008:480–507.
10. Heah J: Methods of treatment for cysts and abscesses of Bartholin's gland. *Br J Obstet Gynaecol* 1998;95(4):321–322.
11. Boardman LA, Kennedy CM: Benign vulvovaginal disorders, in Gibbs RS, Karlan BY, Haney AF, et al. (eds): *Danforth's Obstetrics and Gynecology*, 9th ed. Philadelphia: Lippincott Williams and Wilkins, 2008:625–647.
12. Wilkinson EJ: Benign diseases of the vulva, in Kurman RJ, Ellenson LH, Ronnett BM (eds): *Blaustein's Pathology of the Female Genital Tract*, 6th ed. New York: Springer-Verlag, 2010:37–99.
13. Copeland LJ, Sneige N, Gershenson DM, et al: Bartholin gland carcinoma. *Obstet Gynecol* 1986;67(6):794–801.
14. Chamlain DL, Taylor HB: Primary carcinoma of Bartholin's gland: a report of 24 patients. *J Obstet Gynecol* 1972;39(4):489–494.
15. Visco AG, Del Priore G: Postmenopausal Bartholin gland enlargement: a hospital-based cancer risk assessment. *Obstet Gynecol* 1996;87(2):786–790.
16. Lee YH, Rankin JS, Alpert S, et al: Microbiological investigation of Bartholin's gland abscesses and cysts. *Am J Obstet Gynecol* 1977;129(2):150–153.
17. Brook I: Aerobic and anaerobic microbiology of Bartholin's abscess. *Surg Gynecol Obstet* 1989;169:32–34.
18. Wren MWD: Bacteriological findings in cultures of clinical material from Bartholin's abscess. *J Clin Pathol* 1977;30:1025–1027.
19. Bleker OP, Smalbraak DJC, Schutte MF: Bartholin's abscess: the role of *Chlamydia trachomatis*. *Genitourin Med* 1990;66:24–25.
20. Cheetham DR: Bartholin's cyst: marsupialization or aspiration? *Am J Obstet Gynecol* 1985;152:569–570.
21. Vlasis G: Treatment of Bartholin's cysts. *Am Fam Physician* 1971;3(6):85–86.
22. Golberg JE: Simplified treatment for disease of Bartholin's gland. *Obstet Gynecol* 1970;35(1):109–110.
23. Jacobson P: Vulvovaginal (Bartholin) cyst treatment by marsupialization. *West J Surg Obstet Gynecol* 1950;58(12):704–708.
24. Blakey DH, Dewhurst CJ, Tipton RH: The long-term results after marsupialization of Bartholin's cysts and abscesses. *J Obstet Gynaecol Br Commonw* 1966;73:1006–1009.
25. Curtis JM: Marsupialization techniques for Bartholin's cyst. *Aust Fam Physician* 1993;22:369.
26. Jacobson P: Marsupialization of vulvovaginal (Bartholin) cysts: report of 140 patients with 152 cysts. *Am J Obstet Gynecol* 1960;79:73–78.
27. Cho JY, Ahn MO, Cha KS: Window operation: an alternative treatment method for Bartholin gland cysts and abscesses. *Obstet Gynecol* 1990;76: 886–888.
28. Moran GJ, Krishnadasan A, Gorwitz R, et al: Methicillin-resistant *S. aureus* infections among patients in the emergency department. *N Engl J Med* 2006; 355:666–674.
29. Thurman AR, Satterfield TM, Soper DE: Methicillin-resistant *Staphylococcus aureus* as a common cause of vulvar abscesses. *Obstet Gynecol* 2008;112(3): 538–544.
30. Shearin RS, Boehlke J, Karanth S: Toxic shock-like syndrome associated with Bartholin's gland abscess: case report. *Am J Obstet Gynecol* 1989; 160(5 pt 1):1073–1074.
31. Lopez-Zeno JA, Ross E, O'Grady JP: Septic shock complicating drainage of a Bartholin gland abscess. *Obstet Gynecol* 1990;76(5 pt 2):915–916.
32. Kushnir VA, Mosquera C: Novel technique for management of Bartholin gland cysts and abscesses. *J Emerg Med* 2009;36(4):388–390.
33. Gennis P, Li S, Provataris J, et al: Jacobi ring catheter treatment of Bartholin's abscesses. *Am J Emerg Med* 2005;23(3):414–415.

REFERENCES

1. National Victim Center, Crime Victims Research and Treatment Centers: *Rape in America—A Report to the Nation*. Charleston, SC: Medical University of South Carolina, 1992.
2. Tjaden PG, Thoennes N: *Extent, Nature, and Consequences of Rape Victimization: Findings from the National Violence Against Women Survey*. Washington, DC: National Institute of Justice, 2006.
3. Linden JA: Care of the adult patient after sexual assault. *New Engl J Med* 2011;365:834.
4. Holmes MM, Resnick HS, Kilpatrick DG, et al: Rape-related pregnancy: estimates and characteristics from a national sample of women. *Am J Obstet Gynecol* 1996;175(2):320.
5. Linden JA: Sexual assault. *Emerg Med Clin North Am* 1999;17(3):685.
6. Ullman SE, Siegel JM: Victim–offender relationship and sexual assault. *Violence Vict* 1993;8(2):121.
7. Stark E, Flitcraft A, Zuckerman D, et al: *Wife Abuse in the Medical Setting: An Introduction for Health Personnel*. Rockville, MD: National Clearinghouse on Domestic Violence, 1981.
8. Rennison CM: *Bureau of Justice Statistics. Criminal Victimization 1998: Changes 1997–98 with trends 1993–98*. Washington, DC: US Department of Justice, 1999.
9. Koss MP, Koss PG, Woodruff WJ: Deleterious effects of criminal victimization on women's health and medical utilization. *Arch Intern Med* 1991; 151:342.
10. Marchbank PA, Lui KJ, Mercy JA: Risk of injury from resisting rape. *Am J Epidemiol* 1990;132(3):540.
11. Sommers MS: Defining patterns of genital injury from sexual assault: a review. *Trauma Violence Abuse* 2007;8:270.
12. Levine DL, Kaufman LE: Rape and sexual violence: the adult and adolescent female victim, in Bernstein E, Bernstein J (eds): *Case Studies in Emergency Medicine and the Health of the Public*. Boston: James & Bartlett, 1996:100.
13. Dupre AR, Hampton HL, Morrison H, et al: Sexual assault. *Obstet Gynecol Surv* 1993;45:640.
14. Deming JE, Mittleman RE, Wetli CV: Forensic science aspects of fatal sexual assaults on women. *J Forensic Sci* 1983;28(3):572.
15. Schiff AF: A statistical evaluation of rape. *J Forensic Sci* 1973;2:339.
16. Lenahan LC, Ernst A, Johnson B: Colposcopy in evaluation of the adult sexual assault victim. *Am J Emerg Med* 1998;16(2):183.
17. http://www.cdc.gov/std/treatment/2010/sexual-assault.htm, accessed 10/10/11.
18. American College of Emergency Physicians: Management of the patient with the complaint of sexual assault. http://www.acep.org/Content.aspx?id=29562&terms=sexual%20asault, accessed 10/10/11.
19. American Congress of Obstetricians and Gynecologists: Committee opinion no. 99. Sexual assault. *Obstet Gynecol* 2011;118:96.
20. Yuzpe AA, Smith RP, Rademaker AW: A multicenter clinical investigation employing ethinyl estradiol combined with DL-norgestrel as postcoital contraceptive agent. *Fertil Steril* 1982;37(4):508.
21. The World Health Organization Task Force on Postovulatory Methods of Fertility Regulation: Randomised controlled trial of levonorgestrel versus the Yuzpe regimen of combined oral contraceptives for emergency contraception. *Lancet* 1998;352:428.
22. von Hertzen H, Piaggo G, Ding J, et al: Low dose mifepristone and two regimens of levonorgestrel for emergency contraception: a WHO multicentre randomised trial. *Lancet* 2002;360:1803.
23. Glasier AF, Camerson ST, Fine PM, et al: Ulipristal acetate versus levonorgestrel for emergency contraception: a randomized non-inferiority trial and meta-analysis. *Lancet* 2010;375:555.
24. Fine P, Mathé H, Ginde S, et al: Ulipristal acetate taken 48–120 hours after intercourse for emergency contraception. *Obstet Gynecol* 2011;115:257.
25. Zieman M, Hatcher RA, et al: *A Pocket Guide to Managing Contraception*. Tiger, GA: Bridging the Gap Foundation, 2007.
26. Grimes DA, Lopez LM, Schulz KF: Antibiotic prophylaxis for intrauterine contraceptive device insertion. *Cochrane Database Syst Rev* 1999;3:CD001327. DOI: 10.1002/14651858.CD001327.
27. Jenny C, Hooton TM, Bowers A, et al: Sexually transmitted disease in victims of rape. *N Engl J Med* 1990;322(11):713.
28. Katz MH, Gerberding JL: The care of persons with recent sexual exposure to HIV. *Ann Intern Med* 1988;128:306.

REFERENCES

1. Chen PC, Sickler GK, Dubinsky TJ, et al: Sonographic detection of echogenic fluid and correlation with culdocentesis in the evaluation of ectopic pregnancy. *AJR Am J Roentgen* 1998;170(5):1299–1302.
2. Elliot M, Riccio J, Abbot J: Serous culdocentesis in ectopic pregnancy: a report of two cases caused by coexistent corpus luteum cysts. *Ann Emerg Med* 1990;19(4):407–410.
3. Hammond CB, Bachus KE: Ectopic pregnancy, in Scott JR, DiSaia PJ, Hammond CB, et al (eds): *Danforth's Obstetrics and Gynecology*, 7th ed. Philadelphia: Lippincott, 1994:194–195.
4. Krol LV, Abbott JT: The current role of culdocentesis. *Am J Emerg Med* 1992;10(4):354–358.
5. Lucas C, Hassim AM: Place of culdocentesis in the diagnosis of ectopic pregnancy. *Br Med J* 1970;1:200–202.
6. Cartwright PS, Vaughn B, Tuttle D: Culdocentesis and ectopic pregnancy. *J Reprod Med* 1984;29(2):88–91.
7. Wolcott HD, Stock RJ, Kaunitz AM: Ectopic pregnancy, in Benrubi GI (ed): *Obstetric and Gynecologic Emergencies*. Philadelphia: Lippincott, 1994: 41–50.
8. Cunningham FG, MacDonald PC, Gant NF, et al: *Williams Obstetrics*, 21st ed. New York: McGraw-Hill, 2001:883–910.
9. Brenner PF, Roys S, Mishell DR: Ectopic pregnancy: a study of 300 consecutive surgically treated cases. *JAMA* 1980;243(7):673–676.

REFERENCES

1. Parker GA, Nichols DH: Genital prolapse, in Altchek A, Deligdisch L (eds): *The Uterus: Pathology, Diagnosis, and Management*. New York: Springer-Verlag, 1991:368–387.
2. Roberge RJ, McCandlish MM, Dorfsman ML: Urosepsis associated with vaginal pessary use. *Ann Emerg Med* 1999;33(5):581–583.
3. Hendrix SL, Clark A, Nygaard I, et al: Pelvic organ prolapse in the Women's Health Initiative: gravity and gravidity. *Am J Obstet Gynecol* 2002;186:1160.
4. Subak LL, Waetjen LE, Eeden S, et al: Cost of pelvic organ prolapse surgery in the United States. *Obstet Gynecol* 2001;98:646.
5. Tarnay C: Pelvic organ prolapse, in De Cherney AH, Nathan L, Goodwin TM, et al (eds): *Current Diagnosis and Treatment Obstetrics and Gynecology*, 10th ed. New York: McGraw-Hill, 2006.
6. Mukalian GG: Traumatic uterine prolapse. *J Trauma* 1997;42(3):553–554.
7. Richter HE, Varner RE: Pelvic organ prolapse, in Berek JS (ed): *Berek and Novak's Gynecology*, 14th ed. Baltimore: Lippincott Williams and Wilkins, 2006:897–934.
8. Gill EJ, Hurt WG: Pathophysiology of pelvic organ prolapse. *Obstet Gynecol Clin North Am* 1998;25(4):757–769.
9. Bordman R, Telner D, Jackson B, et al: Step by step approach to managing pelvic organ prolapse. *Can Fam Physician* 2007;53(3):485–487.
10. Bump RC, Norton PA: Epidemiology and natural history of pelvic floor dysfunction. *Obstet Gynecol Clin North Am* 1998;25(4):723–746.
11. Bidmead J, Cardozo LD: Pelvic floor changes in the older woman. *Br J Urol* 1998;82(1):18–25.
12. Jackson SR, Avery NC, Tarlton JF, et al: Changes in metabolism of collagen in genitourinary prolapse. *Lancet* 1996;347(9016):1658–1661.
13. Shull BL. Clinical evaluation of women with pelvic support defects. *Clin Obstet Gynecol* 1993;36:939.
14. Lentz GM: Anatomic defects of the abdominal wall and pelvic floor, in Katz VL, Lentz GM, Lobo RA, et al (eds): *Comprehensive Gynecology*, 5th ed. St. Louis: Mosby, 2007:501–536.
15. Theofrastous JP, Swift SE: The clinical evaluation of pelvic floor dysfunction. *Obstet Gynecol Clin North Am* 1998;25(4):783–804.
16. Cundiff GW, Addison WA: Management of pelvic organ prolapse. *Obstet Gynecol Clin North Am* 1998;25(4):907–921.
17. Morley GW: Treatment of uterine and vaginal prolapse. *Clin Obstet Gynecol* 1996;39(4):959–969.
18. Adam RA: The nonsurgical management of pelvic organ prolapse: the use of vaginal pessaries, in Rock JA, Jones HW (eds): *Te Linde's Operative Gynecology*, 9th ed. Philadelphia: Lippincott Williams & Wilkins 2003:936–941.
19. Probst BD: Emergency childbirth, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010:1042–1062.
20. Davila GW: Vaginal prolapse: management with nonsurgical techniques. *Postgrad Med* 1996;99(4):171–185.
21. Zeitlin MP, Lebherz TB: Pessaries in the geriatric patient. *J Am Geriatr Soc* 1992;40(6):635–639.
22. Schraub S, Sun XS, Maingon P, et al: Cervical and vaginal cancer associated with pessary use. *Cancer* 1992;69(10):2505–2509.

REFERENCES

1. Carter HB: Instrumentation and endoscopy, in Walsh PC, Retik AB, Vaughan ED, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:159–169.
2. McAninch JW: Traumatic injuries of the urethra. *J Trauma* 1981;21(4): 291–297.
3. McCallum RW: The adult male urethra: normal anatomy, pathology, and method of urethrography. *Radiol Clin North Am* 1979;17:227–244.
4. Wright EJ, Webster GD: Urethral stricture and disruption, in Graham SD Jr, Glenn JF, (eds): *Glenn's Urologic Surgery*, 5th ed. Philadelphia: Lippincott Williams and Wilkins, 1998:425–438.
5. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott Williams and Wilkins, 2002:427–431.
6. Shlamovitz GZ: Urethral catheterization, men. http://emedicine.medscape.com/article/80716, 2008.
7. Shlamovitz GZ: Urethral catheterization, women. http://emedicine.medscape.com/article/80735, 2008.
8. Selius BA, Subedi R: Urinary retention in adults: diagnosis and initial management. *Am Fam Physician* 2008;77(5):643–650.
9. Gerard LL, Cooper CS, Duethman KS, Gordley BM, Kleiber CM: Effectiveness of lidocaine lubricant for discomfort during pediatric urethral catheterization. *J Urol* 2003;170(2 Pt 1):564–567.
10. Siderias J, Guadio F, Singer AJ: Comparison of topical anesthetics and lubricants prior to urethral catheterization in males: a randomized controlled trial. *Acad Emerg Med* 2004;11(6):703–706.
11. Hart S: Urinary catheterization. *Nurs Stand* 2008;22(27):44–48.
12. Moffat LE, Teo C, Dawson I: Ultrasound in management of undeflatable foley catheter balloon. *Urology* 1985;26:79–82.
13. Gerard LL, Cooper CS, Duethman KS, et al: Effectiveness of lidocaine lubricant for discomfort during pediatric urethral catheterization. *J Urol* 2003;170:564–567.
14. Mularoni PP, Cohen LL, DeGuzman M, et al: A randomized clinical trial of lidocaine gel for reducing infant distress during urethral catheterization. *Pediatr Emerg Care* 2009;25(7):439–443.
15. Siderias J, Guadio F, Singer AJ: Comparison of topical anesthetics and lubricants prior to urethral catheterization in males: a randomized controlled trial. *Acad Emerg Med* 2004;11(6):703–706.
16. Turner TWS: Intravesical catheter knotting: an uncommon complication of urinary catheterization. *Pediatr Emerg Care* 2004;20(2):115–117.

REFERENCES

1. Carter HB: Instrumentation and endoscopy, in Walsh PC, Retik AB, Vaughan ED, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:159–169.
2. Newman CGH, O'Neil P, Parker A: Pyuria in infancy, and the role of suprapubic aspiration of urine in diagnosis of infection of urinary tract. *Br Med J* 1967;2:227–279.
3. Schaeffer AJ: Infections of the urinary tract, in Walsh PC, Retik AB, Vaughan ED, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:533–614.
4. Stamey TA: *The Prevention of Recurrent Urinary Tract Infection*. New York: Science and Medicine, 1973.
5. Stoller ML: Retrograde instrumentation of the urinary tract, in Tanago EA, McAninch JW (eds): *Smith's General Urology*, 14th ed. Stamford, CT: Simon and Schuster, 1995:160–171.
6. Rosh AJ: Suprapubic aspiration. http://emedicine.medscape.com/article/82964, 2008.
7. Sastre JB, Aparicio AR, Cotallo GD, et al: Urinary tract infection in the newborn: clinical and radio imaging studies. *Pediatr Nephrol* 2007; 22(10):1735–1741.
8. Selius BA, Subedi R: Urinary retention in adults: diagnosis and initial management. *Am Fam Physician* 2008;77(5):643–650.
9. Villanueva C, Hemstreet GP 3rd: Difficult male urethral catheterization: a review of different approaches. *Int Braz J Urol* 2008;34(4):401–411.
10. Titus MO, White SJ: Suprapubic bladder tap aspiration in an elderly female. *J Emerg Med* 2006;30(4):421–423.
11. Gochman RF, Karasic RB, Heler MB: Use of portable ultrasound to assist urine collection by suprapubic aspiration. *Ann Emerg Med* 1991;20:631.
12. Ozkan B, Kaya O, Akdag R, et al: Suprapubic bladder aspiration with or without ultrasound guidance. *Clin Pediatr* 2000;39:625.
13. Witt M, Baumann BM, McCans K: Bladder ultrasound increases catheterization success in pediatric patients. *Acad Emerg Med* 2005;12:371.
14. Ramage IJ, Chapman JP, Hollman AS, et al: Accuracy of clean-catch urine collection in infancy. *J Pediatr* 1999;135:765.
15. Moustaki M, Stefos E, Malliou C, et al: Complications of suprapubic aspiration in transiently neutropenic children. *Pediatr Emerg Care* 2007;23(11): 823–825.
16. Aguilera PA, Choi T, Durham BA: Ultrasound-guided suprapubic cystostomy catheter placement in the emergency department. *J Emerg Med* 2004; 26:319.

REFERENCES

1. Blocksom BH Jr: Bladder pouch for prolonged tubeless cystostomy. *J Urol* 1957;78:398–401.
2. Carter HB: Instrumentation and endoscopy, in Walsh PC, Retik AB, Vaughn ED, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:159–169.
3. Papanicolaou N, Pfister RC, Nocks BN: Percutaneous, large-bore, suprapubic cystostomy: techniques and results. *AJR Am J Roentgen* 1989;152:303–306.
4. Stroller ML: Retrograde instrumentation of the urinary tract, in Tanago EA, McAninch JW (eds): *Smith's General Urology*, 14th ed. Stamford, CT: Simon and Schuster, 1995:160–171.
5. Wright EJ, Webster GD: Urethral stricture and disruption, in Graham SD Jr, Glenn J, (eds): *Glenn's Urologic Surgery*, 5th ed. Philadelphia: Lippincott Williams and Wilkins, 1998:871–878.
6. Zdreic SA, Hanno PM: Suprapubic cystostomy and cutaneous vesicostomy, in Fowler JE (ed): *Urologic Surgery*. Boston: Little Brown, 1992:235–236.
7. Parry NG, Rozycki GS, Feliciano DV, et al: Traumatic rupture of the urinary bladder: is the suprapubic tube necessary? *J Trauma* 2003;54(3):431–436.
8. Rosh AJ: Suprapubic aspiration. http://emedicine.medscape.com/article/82964, 2008.
9. Shlamovitz GZ: Suprapubic catheterization. http://emedicine.medscape.com/article/145909, 2008.
10. Aguilera PA, Choi T, Durham BA: Ultrasound-guided suprapubic cystostomy catheter placement in the emergency department. *J Emerg Med* 2004;26(3):319–321.
11. Lin ACM, Wu CC, Wang TL, et al: An unusual cause of volvulus: the misplaced suprapubic catheter. *J Emerg Med* 2005;28(2):219–220.

REFERENCES

1. Heare MM, Heare TC, Gillespy T: Diagnostic imaging of the pelvic and chest wall trauma. *Radiol Clin North Am* 1989;27:873–889.
2. Spirnak JP: Pelvic fracture and injury to the lower urinary tract. *Surg Clin North Am* 1988;68:1057–1069.
3. Diekmann-Guiroy B, Young DH: Female urethral injury secondary to blunt pelvic trauma. *Ann Emerg Med* 1991;20:1376–1378.
4. Carroll PR, McAninch JW: Major bladder trauma: mechanisms of injury and a unified method of diagnoses. *J Urol* 1984;132:254–257.
5. Patterson BM: Pelvic ring injury and associated urologic trauma: an orthopaedic perspective. *Semin Urol* 1995;13:25–33.
6. Friedland GW, Filly R, Goris ML, et al: Anatomy, in Friedland GW, Filly R, Goris ML, et al (eds): *Uroradiology: An Integrated Approach*. New York: Churchill Livingstone, 1983:118–141.
7. Dixon CM: Diagnosis and acute management of posterior urethral disruptions, in McAninch JW, Carroll PR, Jordan GH (eds): *Traumatic and Reconstructive Urology*. Philadelphia: Saunders, 1996:347–355.
8. Oosterlinck W: Controversies in management of urethral trauma after pelvic fracture in men. *Acta Urol Belg* 1998;66(2):49–53.
9. Rehm CG, Mure AJ, O'Malley KF, et al: Blunt traumatic bladder rupture: the role of retrograde cystogram. *Ann Emerg Med* 1991;20(8):845–847.
10. Friedland GW, Goris ML, Gross D: Voiding cystourethrography, retrograde urethrography, and seminal vesiculography, in Friedland GW, Filly R, Goris ML, et al (eds): *Uroradiology: An Integrated Approach*. New York: Churchill Livingstone, 1983:249–264.
11. Schneider RE: Urologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:947–987.
12. Corriere JN Jr, Sandler CM: Diagnosis and management of bladder injuries. *Urol Clin North Am* 2006;33(1):67–71.
13. Platter DL: Bladder trauma. http://emedicine.medscape.com/article/377735, 2008.
14. Quagliano PV, Delair SM, Malhotra AK: Diagnosis of blunt bladder injury: a prospective comparative study of computed tomography and conventional retrograde cystography. *J Trauma* 2006;61(2):410–421.
15. Shlamovitz GZ, McCullough L: Blind urethral catheterization in trauma patients suffering from lower urinary tract injuries. *J Trauma* 2007;62(2):330–335.
16. Moore FO, Petersen SR, Norwood SH: Diagnosis of blunt urethral injuries with computed tomogram retrograde urethrography. *J Trauma* 2010;68(5):1264.
17. Brockow K, Kanny G, Bircher A, et al: Management of hypersensitivity reactions in iodinated contrast media. *Allergy* 2005;60:150–158.
18. Currarino G, Weinberg A, Putnam R: Resorption of contrast material from the bladder during cystourethrography causing an excretory urethrogram. *Radiology* 1977;123:149–150.
19. Weese Dl, Greenberg HM, Zimmern PE: Contrast media reactions during voiding cystourethrography or retrograde pyelography. *Urology* 1993;41:81–84.
20. Bhayani SB, Siegel CL: Urinary tract imaging: basic principles, in Wein AJ (ed.) Campbell-Walsh Urology, 9th ed. Philadelphia: WB Saunders, 2007.

REFERENCES

1. Hinman F: *Atlas of Urologic Surgery*, 1st ed. Philadelphia: Saunders, 1989: 958–962.
2. Cassady JF: Regional anesthesia for urologic procedures. *Urol Clin North Am* 1987;14(1):43–50.
3. Hinman F: *Atlas of Urosurgical Anatomy*, 1st ed. Philadelphia: Saunders, 1993:46–47.
4. Kindscher JD: Operative and postoperative pain management for the urologic patient. *AUA Update Ser* 1999;XVI:1007, lesson 3:20.
5. Eltherington L, Chase R: Neural blockade for plastic surgery, in Cousins MJ, Bridenbaugh PO (eds): *Neural Blockade in Clinical Anesthesia and Management of Pain*, 2nd ed. Philadelphia: Lippincott, 1999:657–658.
6. Brown TCK, Schultz-Steinberg O: Neural blockade for pediatric surgery, in Cousins MJ, Bridenbaugh PO (eds): *Neural Blockade in Clinical Anesthesia and Management of Pain*, 2nd ed. Philadelphia: Lippincott, 1999:685–688.
7. Kaye KW, Lange PH, Fraley EE: Spermatic cord block in urologic surgery. *J Urol* 1982;128(4):720–721.
8. Fuchs EF: Cord block anesthesia for scrotal surgery. *J Urol* 1982;128(4): 718–719.

REFERENCES

1. Callaway T: Unusual case of priapism. *London Med Repository* 1824:286–287.
2. Hodgson D: Of gods and leeches: treatment of priapism in the nineteenth century. *J R Soc Med* 2003;96(11):562–565.
3. Montague DK, Jarow J, Broderick GA, et al: American Urological Association guideline on the management of priapism. *J Urol* 2003;170(4 Pt 1):1318–1324.
4. Berger R, Billups K, Brock G, et al: Report of the American Foundation for Urologic Disease (AFUD) Thought Leader Panel for evaluation and treatment of priapism. *Int J Impot Res* 2001;13(suppl 5):S39–S43.
5. Papadopoulos I, Kelami A: Priapus and priapism: from mythology to medicine. *Urology* 1988;32(4):385–386.
6. Eland IA, van der Lei J, Stricker BH, et al: Incidence of priapism in the general population. *Urology* 2001;57(5):970–972.
7. Burnett AL, Bivalacqua TJ: Priapism: current principles and practice. *Urol Clin North Am* 2007;34(4):631–642, viii.
8. Emond AM, Holman R, Hayes RJ, et al: Priapism and impotence in homozygous sickle cell disease. *Arch Intern Med* 1980;140(11):1434–1437.
9. Pohl J, Pott B, Kleinhans G: Priapism: a three-phase concept of management according to aetiology and prognosis. *Br J Urol* 1986;58(2):113–118.
10. Saenz de Tejada I, Ware JC, Blanco R, et al: Pathophysiology of prolonged penile erection associated with trazodone use. *J Urol* 1991;145(1):60–64.
11. Sood S, James W, Bailon MJ: Priapism associated with atypical antipsychotic medications: a review. *Int Clin Psychopharmacol* 2008;23(1):9–17.
12. Altman AL, Seftel AD, Brown SL, et al: Cocaine associated priapism. *J Urol* 1999;161(6):1817–1818.
13. Aoyagi T, Hayakawa K, Miyaji K, et al: Sildenafil induced priapism. *Bull Tokyo Dent Coll* 1999;40(4):215–217.
14. Kachhi PN, Henderson SO: Priapism after androstenedione intake for athletic performance enhancement. *Ann Emerg Med* 2000;35(4):391–393.
15. Bschleipfer TH, Hauck EW, Diemer TH, et al: Heparin-induced priapism. *Int J Impot Res* 2001;13(6):357–359.
16. Krco MJ, Jacobs SC, Lawson RK: Priapism due to solid malignancy. *Urology* 1984;23(3):264–266.
17. Hebuterne X, Frere AM, Bayle J, et al: Priapism in a patient treated with total parenteral nutrition. *JPEN J Parenter Enteral Nutr* 1992;16(2):171–174.
18. Kolbenstvedt A, Jenssen G, Hedlund H: Priapism of the glans and corpus spongiosum. Report of two cases with angiography. *Acta Radiol* 2003; 44(4):456–459.
19. Bertolotto M, Ciampalini S, Martingano P, et al: High-flow priapism complicating ischemic priapism following iatrogenic laceration of the dorsal artery during a Winter procedure. *J Clin Ultrasound* 2009;37(1):61–64.
20. Arrigo T, Crisafulli G, Salzano G, et al: High-flow priapism in testosterone-treated boys with constitutional delay of growth and puberty may occur even when very low doses are used. *J Endocrinol Invest* 2005;28(4):390–391.
21. Caumartin Y, Lacoursiere L, Naud A: High-flow priapism: an overview of diagnostic and therapeutic concepts. *Can J Urol* 2006;13(5):3283–3290.
22. Van der Horst C, Stuebinger H, Seif C, et al: Priapism—etiology, pathophysiology and management. *Int Braz J Urol* 2003;29(5):391–400.
23. Cherian J, Rao AR, Thwaini A, Kapasi F, Shergill IS, Samman R: Medical and surgical management of priapism. *Postgrad Med J* 2006;82(964):89–94.
24. Yuan J, Desouza R, Westney OL, et al: Insights of priapism mechanism and rationale treatment for recurrent priapism. *Asian J Androl* 2008;10(1):88–101.
25. Hakim LS, Kulaksizoglu H, Mulligan R, Greenfield A, Goldstein I: Evolving concepts in the diagnosis and treatment of arterial high flow priapism. *J Urol* 1996;155(2):541–548.
26. Ciampalini S, Savoca G, Buttazzi L, et al: High-flow priapism: treatment and long-term follow-up. *Urology* 2002;59(1):110–113.
27. Ahmed I, Shaikh NA: Treatment of intermittent idiopathic priapism with oral terbutaline. *Br J Urol* 1997;80(2):341.
28. Lowe FC, Jarow JP: Placebo-controlled study of oral terbutaline and pseudoephedrine in management of prostaglandin E1-induced prolonged erections. *Urology* 1993;42(1):51–53;discussion 53–54.
29. Roberts JR, Price C, Mazzeo T: Intracavernous epinephrine: a minimally invasive treatment for priapism in the emergency department. *J Emerg Med* 2009;36(3):285–289.
30. Vilke GM, Harrigan RA, Ufberg JW, Chan TC: Emergency evaluation and treatment of priapism. *J Emerg Med* 2004;26(3):325–329.
31. Govier FE, Jonsson E, Kramer-Levien D: Oral terbutaline for the treatment of priapism. *J Urol* 1994;151(4):878–879.
32. Sadeghi-Nejad H, Dogra V, Seftel AD, Mohamed MA: Priapism. *Radiol Clin North Am* 2004;42(2):427–443.
33. Mulhall JP, Honig SC: Priapism: etiology and management. *Acad Emerg Med* 1996;3(8):810–816.
34. Roberts J, Isenberg DL: Adrenergic crisis after penile epinephrine injection for priapism. *J Emerg Med* 2009;36(3):309–310.

REFERENCES

1. Hollowood AD, Sibley GN: Non-painful paraphimosis causing partial amputation. *Br J Urol* 1997;80(6):958.
2. Houghton GR: The "iced-glove" method of treatment of paraphimosis. *Br J Surg* 1973;60(11):876–877.
3. Green M, Strange GR: Paraphimosis reduction, in Henretig FM, King C, Joffee MD, et al (eds): *Textbook of Pediatric Emergency Procedures*. Baltimore: Williams and Wilkins, 1997:1007–1010.
4. Shaw KN: Reduction of paraphimosis, in Dieck-mann RA, Fiser DH, Selbst SM (eds): *Pediatric Emergency and Critical Care Procedures*. St. Louis: Mosby, 1997:435–436.
5. DeVries CR, Miller AK, Packer MG: Reduction of a paraphimosis with hyaluronidase. *Urology* 1996;48:464–465.
6. Holman JR, Stuessi KA: Adult circumcision. *Am Fam Physician* 1999;59(6): 1514–1518.
7. Dunmire SM, Paris PM: *Atlas of Emergency Procedures*. Philadelphia: Saunders, 1994:187–188.
8. Schneider RE: Urologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 4th ed. Philadelphia: Saunders, 1998:947–952.
9. Olson C: *Emergency treatment of paraphimosis*. Can Fam Physician 1998; 44:1253–1254.
10. Ganti SU, Sayegh N, Addonizio JC: Simple method for reduction of paraphimosis. *Urology* 1985;25(1):77.
11. Skoglund RW, Chapman WH: Reduction of a paraphimosis. *J Urol* 1970; 104:137.
12. Turner CD, Kim HL, Cromie WJ: Dorsal band traction for reduction of paraphimosis. *Urology* 1999;54(5):917–918.
13. Little B, White M: Treatment options for paraphimosis. *Int J Clin Pract* 2005;59(5):591–593.
14. Fuenfer MM, Najmaldin A: Emergency reduction of paraphimosis. *Eur J Pediatr Surg* 1994;4(6):370–371.
15. Reynard JM, Barua JM: Reduction of paraphimosis the simple way—the Dundee technique. *Br J Urol* 1999;83(7):859–860.
16. Barone JG, Fleisher MH: Treatment of paraphimosis using the "puncture" technique. *Pediatr Emerg Care* 1993;9(5):298–299.
17. Hamdy FC, Hastie KJ: Treatment of paraphimosis using the "puncture" technique. *Br J Surg* 1990;77:1186.
18. Kerwat R, Shandall A, Stephenson B: Reduction of paraphimosis with granulated sugar. *Br J Urol* 1998;82:755.
19. Coutts AG: Treatment of paraphimosis. *Br J Surg* 1991;78(2):252.
20. Raveenthiran V: Reduction of paraphimosis: a technique based on pathophysiology. *Br J Surg* 1996;83:1247.
21. Gonzalez FM, Sousa EMA, Parrl ML: Sugar; treatment of choice in irreducible paraphimosis. *Actas Urol Esp* 2001;25:393–395.

REFERENCES

1. Gillenwater JY, Howards SS, Grayhack JT, et al (eds): *Adult and Pediatric Urology*, 3rd ed. St. Louis: Mosby, 1995:2730–2731.
2. Kostakopoulos A, Lascaratos J, Louras G: Penile surgical techniques described by Oribasius. *Br J Urol* 1999;84(1):16–19.
3. Caffaratti J, Garat JM, Orsola A: Conservative treatment of phimosis in children using a topical steroid. *Urology* 2000;56(2):307–310.
4. Baba K, Iwamoto T, Yamagoe M, et al: Conservative treatment of childhood phimosis with topical conjugated equine estrogen ointment. *Int J Urol* 2000;7(1):1–3.
5. Schneider RE: Urologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:947–987.
6. Gillenwater JY, Howard SS, Grayhack JT, et al (eds): *Adult and Pediatric Urology*, 3rd ed. St. Louis: Mosby, 1995:2005.
7. Cheng W, Saing H: A prospective randomized study of wound approximation with tissue glue in circumsion in children. *J Paediatr Child Health* 1997;33(6):515–516.
8. Baumgartner IM, Forte A, Gallinaro LS, et al: Local anaesthesia with eutectic cream of lidocaine and prilocaine for treatment of cicatrizial phimosis in outpatients. *Eur Rev Med Pharmacol Sci* 1998;2(5–6):207–208.
9. Dean GE, Ritchie ML, Zaontz MR: La Vega slit procedure for the treatment of phimosis. *Urology* 2000;55(3):419–421.
10. Kessler CS, Bauml J: Non-traumatic urologic emergencies in men: a clinical review. *West J Emerg Med* 2009;10(4):281–287.
11. Palmer LS, Palmer JS: The efficacy of topical betamethasone for treating phimosis: a comparison of two treatment regimens. *Urology* 2008;72(1):68–71.
12. Little B, White M: Treatment options for paraphimosis. *Int J Clin Pract* 2005;59(5):591–593.
13. Barber NJ, Chappell B, Carter PG, Britton JP: Is preputioplasty effective and acceptable? *J R Soc Med* 2003;96(9):452–453. doi:10.1258/jrsm.96.9.452. PMID: 12949202. PMC: 539601.
14. McGregor TB, Pike JG, Leonard MP: Pathologic and physiologic phimosis: approach to the phimotic foreskin. *Can Fam Physician* 2007;53(3): 445–448.
15. Copper CS, Joudi FN, Williams RD: Urology, in Doherty GM (ed): *Current Diagnosis & Treatment; Surgery,* 13th ed. New York: McGraw-Hill, 2009:902–965.
16. Bondesson JD: Urologic conditions, in Knoop KJ, Stack LB, Storrow AB (eds): *The Atlas of Emergency Medicine,* 3rd ed. New York: McGraw-Hill, 2002:217–230.
17. Cristoph RA: Urogynecologic problems in children and adolescents, in Tintinalli JE, Stapczynski JS, Ma OJ, et al (eds): *Tintinalli's Emergency Medicine: A Comprehensive Study Guide,* 7th ed. New York: McGraw-Hill, 2010:934–939.
18. Bleeker MCG, Heideman DAM, Snijders PJF, et al: Penile cancer: epidemiology, pathogenesis, and prevention. *World J Urol* 2009;27:141–150.
19. Van Howe RS: Cost-effective treatment of phimosis. *Pediatrics* 1998; 102(4):e43.

REFERENCES

1. Jordan GH, Schlossberg SM, Devine CJ: Surgery of the penis and urethra, in Walsh P, Retik A, Vaughan E, Wein A (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:3317–3394.
2. Maizels M: Normal and anomalous development of the urinary tract, in Walsh P, Retik A, Vaughan E, Wein A (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:1545–1595.
3. Hinman F Jr, Stempen PH: *Atlas of Urosurgical Anatomy*, 1st ed. Philadelphia: Saunders, 1993:422–444.
4. Hinman F Jr, Stempen PH: *Atlas of Urologic Surgery*, 1st ed. Philadelphia: Saunders, 1989:81.
5. McGregor TB, Pike JG, Leonard MP: Pathologic and physiologic phimosis. *Can Fam Physician* 2007;53:445–448.
6. Huang CJ: Problems of the foreskin and glans penis. *Clin Pediatr Emerg Med* 2009;10(1):56–59.
7. Trainor JL: Paraphimosis reduction, in Goodman DM, Green TP, Unti SM, Powell EC (eds): *Current Procedures: Pediatrics*. New York (NY): McGraw Hill Medical, 2007:145–147.
8. Kerwat R, Shandall A, Stephenson B: Reduction of paraphimosis with granulated sugar. *Br J Urol* 1998;(82):755.
9. Kumar V, Javle P: Modified puncture technique for reduction of paraphimosis. *Ann R Coll Surg Engl* 2001;83:126–127.
10. Forte A, Palumbo P, Baumgartner IM, et al: Local anesthesia with eutectic cream of lidocaine and prilocaine for treatment of cicatrizial phimosis in outpatients. *Eur Rev Med Pharmacol Sci* 1998;2(5–6):207–208.
11. Cheng W, Saing H: A prospective randomized study of wound approximation with tissue glue in circumcision in children. *J Paediatr Child Health* 1997;33(6):515–516.
12. Schneider RE: Urologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 4th ed. Philadelphia: Saunders, 1998:947–952.
13. Shaw KN: Reduction of paraphimosis, in Dieckmann RA, Fiser DH, Selbst SM (eds): *Pediatric Emergency and Critical Care Procedures*. St. Louis: Mosby, 1997:435–436.
14. Houghton GR: The "iced-glove" method of treatment of paraphimosis. *Br J Surg* 1973;60(11):876–877.
15. Holman JR, Stuessi KA: Adult circumcision. *Am Fam Physician* 1999;59(6): 1514–1518.

REFERENCES

1. Rigby HM, Howard R: Torsion of the testes. *Lancet* 1907;1:1415–1421.
2. Williamson RC: Torsion of the testis and allied conditions. *Br J Surg* 1976; 63(6):465–476.
3. Gunther P, Schenk JP, Wunsch R, et al: Acute testicular torsion in children: the role of sonography in the diagnostic workup. *Eur Radiol* 2006; 16(11):2527–2532.
4. Cummings JM, Boullier JA, Sekhon D, Bose K: Adult testicular torsion. *J Urol* 2002;167(5):2109–2110.
5. Lee LM, Wright JE, McLoughlin MG: Testicular torsion in the adult. *J Urol* 1983;130(1):93–94.
6. Davol P, Simmons J: Testicular torsion in a 68-year-old man. *Urology* 2005; 66(1):195.
7. Ilbey YO, Ozbek E, Simsek A: Torsion of testis with large epididymal cyst in a 57-year-old man: a case report. *Arch Ital Urol Androl* 2008;80(3):111–112.
8. Kuremu RT: Testicular torsion: case report. *East Afr Med J* 2004;81(5): 274–276.
9. Elsaharty S, Pranikoff K, Magoss IV, Sufrin G: Traumatic torsion of the testis. *J Urol* 1984;132(6):1155–1156.
10. Sessions AE, Rabinowitz R, Hulbert WC, Goldstein MM, Mevorach RA: Testicular torsion: direction, degree, duration and disinformation. *J Urol* 2003;169(2):663–665.
11. Sells H, Moretti KL, Burfield GD: Recurrent torsion after previous testicular fixation. *ANZ J Surg* 2002;72(1):46–48.
12. Ciftci AO, Senocak ME, Tanyel FC, Büyükpamukçu N: Clinical predictors for differential diagnosis of acute scrotum. *Eur J Pediatr Surg* 2004;14(5): 333–338.
13. Hughes ME, Currier SJ, Della-Giustina D: Normal cremasteric reflex in a case of testicular torsion. *Am J Emerg Med* 2001;19(3):241–242.
14. Nelson CP, Williams JF, Bloom DA: The cremasteric reflex: a useful but imperfect sign in testicular torsion. *J Pediatr Surg* 2003;38(8):1248–1249.
15. Kapoor S: Testicular torsion: a race against time. *Int J Clin Pract* 2008;62(5): 821–827.
16. Haynes BE, Bessen HA, Haynes VE: The diagnosis of testicular torsion. *JAMA* 1983;249(18):2522–2527.
17. Ransler CW 3rd, Allen TD: Torsion of the spermatic cord. *Urol Clin North Am* 1982;9(2):245–250.
18. Schwab RA: Acute scrotal pain requires quick thinking and a plan of action. *Emer Med Rep* 1992;13:11–18.
19. Bickerstaff KI, Sethia K, Murie JA: Doppler ultrasonography in the diagnosis of acute scrotal pain. *Br J Surg* 1988;75(3):238–239.
20. Lerner RM, Meza MP, et al: color flow imaging in children with clinically suspected testicular torsion. *Pediatr Radiol* 1993;23(7):574.
21. Lerner RM, Mevorach RA, Hulbert WC, Rabinowitz R: Color Doppler US in the evaluation of acute scrotal disease. *Radiology* 1990;176(2):355–358.
22. Hawtrey CE: Assessment of acute scrotal symptoms and findings. A clinician's dilemma. *Urol Clin North Am* 1998;25(4):715–723.
23. Lewis AG, Bukowski TP, Jarvis PD, Wacksman J, Sheldon CA: Evaluation of acute scrotum in the emergency department. *J Pediatr Surg* 1995;30(2): 277–281;discussion 281–282.
24. Nagler HM, Deitch AD, deVere White R: Testicular torsion: temporal considerations. *Fertil Steril* 1984;42(2):257–262.
25. Koşar A, Küpeli B, Alçigir G, et al: Immunologic aspect of testicular torsion: detection of antisperm antibodies in contralateral testicle. *Eur Urol* 1999;36:640–644.
26. Garel L, Dubois J, Azzie G, et al: Preoperative manual detorsion of the spermatic cord with Doppler ultrasound monitoring in patients with intravaginal acute testicular torsion. *Pediatr Radiol* 2000;30(1):41–44.
27. Kyriazis ID, Dimopoulos J, Sakellaris G, Waldschmidt J, Charissis G: Extravaginal testicular torsion: a clinical entity with unspecified surgical anatomy. *Int Braz J Urol* 2008;34(5):617–623;discussion 623–626.
28. Rajfer J: Congenital anomalies of the testis and scrotum, in Walsh P, Retik A, Vaughan E, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:2172–2186.
29. Rozanski T, Bloom D, Colodny A: Surgery of the scrotum and testis in children, in Walsh P, Retik A, Vaughan E, et al (eds): *Campbell's Urology*, 7th ed. Philadelphia: Saunders, 1998:2193–2206.
30. Lindsey D, Stanisic TH: Diagnosis and management of testicular torsion: pitfalls and perils. *Am J Emerg Med* 1988;6(1):42–46.
31. Nagler HM: A clinical approach to testicular torsion, in Seidmon EJ, Hanno PM (eds): *Current Urologic Therapy*, 3rd ed. Philadelphia: Saunders, 1994:480–482.
32. Cattolica EV: Preoperative manual detorsion of the torsed spermatic cord. *J Urol* 1985;133(5):803–805.
33. Kiesling VJ Jr, Schroeder DE, Pauljev P, Hull J: Spermatic cord block and manual reduction: primary treatment for spermatic cord torsion. *J Urol* 1984;132(5):921–923.
34. Cornel EB, Karthaus HF: Manual derotation of the twisted spermatic cord. *BJU Int* 1999;83(6):672–674.
35. Davidson JM: Manual detorsion of testis using xylocaine block. *Ann Emerg Med* 1984;13(6):482–483.
36. Akgur FM, Kilinç K, Tanyel FC, Büyükpamukçu N, Hiçsönmez A: Ipsilateral and contralateral testicular biochemical acute changes after unilateral testicular torsion and detorsion. *Urology* 1994;44(3):413–418.
37. Vigueras RM, Reyes G, Rojas-Castañeda J, Rojas P, Hernández R: Testicular torsion and its effects on the spermatogenic cycle in the contralateral testis of the rat. *Lab Anim* 2004;38(3):313–320.
38. Stern JA, Lui RC, LaRegina MC, Herbold DR, Tolman KC, Johnson FE: Long-term outcome following testicular ischemia in the rat. *J Androl* 1990; 11(4):390–395.

REFERENCES

1. Wyatt JP, Scobie WG: The management of penile zip entrapment in children. *Injury* 1994;25(1):59–60.
2. Morgan-Jones RL, Mattu GS, Hicks RJC: Safe manipulation of penile zip entrapment. *Injury* 1995;26(2):132.
3. Watson CCM: Zipper injuries. *Clin Pediatr* 1971;10(3):188.
4. Ezell WW, Smith EI, McCarthy RP, et al: Mechanical traumatic injury to the genitalia in children. *J Urol* 1969;102:788–792.
5. Saraf P, Rabinowitz R: Zipper injury of the foreskin. *Am J Dis Child* 1982; 136(6):557–558.
6. Flowerdew R, Fishman IJ, Churchill BM: Management of penile zipper injury. *J Urol* 1977;117(5):671.
7. Nolan JF, Stillwell TJ, Sands JP: Acute management of the zipper-entrapped penis. *J Emerg Med* 1990;8:305–307.
8. Oosterlinck W: Unbloody management of penile zipper injury. *Eur Urol* 1981;7:365–366.
9. Kanegaye JT, Schonfeld N: Penile zipper entrapment: a simple and less threatening approach using mineral oil. *Pediatr Emerg Care* 1993;9:90–91.
10. Strait RT: A novel method for removal of penile zipper entrapment. *Pediatr Emerg Care* 1999;15(6):412–413.
11. Schneider R, Williams MA: Pediatric urology in the emergency department. AUA Update Series 1997;Vol XVI, lesson 20:156.
12. Inoue N, Crook SC, Yamamoto LG: Comparing 2 methods of emergent zipper release. *Am J Emerg Med* 2005;23:480–482.
13. Raveenthiran V: Releasing of zipper-entrapped foreskin, a novel nonsurgical technique. *Pediatr Emerg Care* 2007;23(7):463–464.
14. Kanegaye JT, Schonfeld N: Penile zipper entrapment: a simple and less threatening approach using mineral oil. *Pediatr Emerg Care* 1993;9:90–91.
15. Mydlo JH: Treatment of a delayed zipper injury. *Urol Int* 2000;64:45–46.

REFERENCES

1. Palay DA, Krachmer JH: *Ophthalmology for the Primary Care Physician*. St Louis: Mosby, 1997.
2. Vaughn DG, Asbury T, Riordan-Eva P: *General Ophthalmology*, 13th ed. East Norwalk, CT: Appleton & Lange, 1992.
3. Catalano RA: *Ocular Emergencies*. Philadelphia: Saunders, 1992.
4. Handler JA, Ghezzi KT: General ophthalmologic examination. *Emerg Med Clin North Am* 1995;13(3):521–538.
5. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.
6. Datner EM, Jolly BT: Pediatric ophthalmology. *Emerg Med Clin North Am* 1995;13(3):669–679.
7. Barish RA, Naradzay J: Ophthalmologic therapeutics. *Emerg Med Clin North Am* 1995;13(3):649–667.
8. Newell FW: *Ophthalmology Principles and Concepts*, 8th ed. St. Louis: Mosby, 1996.
9. Leitman MW, Gartner S, Henkind P: *Manual for Eye Examination and Diagnosis*, 2 ed. Oradel, NJ: Medical Economics Company, 1981:47.
10. Cuculina G: Common ophthalmologic emergencies: a systematic approach to evaluation and management. Emergency Medicine Reports, 2002.
11. Farina GA: Red eye evaluation, E Medicine, 2005, available at: http://www.emedicine.com/oph/topic267.htm.
12. Knoop K, Trott A: Ophthalmologic procedures in the emergency department—part I: immediate sight-saving procedures. *Acad Emerg Med* 1994;1(4):408–411.
13. Knoop K, Trott A: Ophthalmologic procedures in the emergency department—part II: routine evaluation procedures. *Acad Emerg Med* 1995;2(2):144–150.
14. Knoop K, Trott A: Ophthalmologic procedures in the emergency department—part III: slit lamp use and foreign bodies. *Acad Emerg Med* 1995;2(3):224–230.
15. Rosenwasser GOD: Complications of topical ocular anesthetics. *Int Ophth Clin* 1989;29:157–169.
16. Brilakis HS, Deutsch TA: Topical tetracaine with bandage soft contact lens pain control after photorefractive keratectomy. *J Refract Surg* 2000;16:444–449.
17. Ball IM, Desai N, Seabrook J, et al: Challenging the dogma: topical proparacaine is safe and effective for the outpatient management of acute traumatic corneal injuries. *Can J Emerg Med* 2007;9(3):186.
18. Ball IM, Seabrook J, Desai N, et al: Dilute proparacaine for the management of acute corneal injuries in the emergency department. *Can J Emerg Med* 2010;12(5):389–396.

REFERENCES

1. Levy B, McNamara N, Corzine J, et al: Prospective trial of daily and extended wear disposable contact lenses. *Cornea* 1997;16(3):274–276.
2. Fonn D, du Toit R, Simpson TL, et al: Sympathetic swelling response of the control eye to soft lenses in the other eye. *Invest Ophth Vis Sci* 1999; 40(13):3116–3121.
3. Tatham AJ, Redmill B: Contact Lens Removal: emedicine from WebMD, in Juang PSC, Windle ML, Kulkarni R (eds): http://emedicine.medscape.com/article/1413506-print. Omaha, NE, 2009.
4. Fonn D, Situ P, Simpson T: Hydrogel lens dehydration and subjective comfort and dryness ratings in symptomatic and asymptomatic contact lens wearers. *Optom Vis Sci* 1999;76(10):700–704.
5. Zola E, van der Meulen IJ, Lapid-Gortzak R, et al: A conjunctival mass in the deep superior fornix after a long retained hard contact lens in a patient with keloids. *Cornea* 2008;27(10):1204–1206.
6. Gould H: How to remove contact lenses from comatose patients. *Am J Nurs* 1976;76(9):1483–1485.
7. Dunn JL: Removing contact lenses. *Nursing* 1975;5:58.
8. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.

REFERENCES

1. Pfister RR: Chemical corneal burns, in Olson RJ (ed): *Common Corneal Problems*. Boston: Little Brown, 1984:157–168.
2. Edwards RS: Ophthalmic emergencies in a district general hospital casualty department. *Br J Ophthalmol* 1987;71(12):938–942.
3. Kuckelkorn R, Kottek A, Schrage N, et al: Poor prognosis of severe chemical and thermal eye burns: the need for adequate emergency care and primary prevention. *Int Arch Occup Environ Health* 1995;67(4):281–284.
4. Wagoner MD: Chemical injuries of the eye: current concepts in pathophysiology and therapy. *Surv Ophthalmol* 1997;41(4):275–313.
5. Pfister RR: Chemical injuries of the eye. *Ophthalmology* 1983;90(10): 1246–1253.
6. Maudgal PC: Ocular burn caused by soft brown soap. *Bull Soc Belge Ophtalmol* 1996;263:81–84.
7. Brahma AK, Inkster C: Alkaline chemical ocular injury from EMLA cream. *Eye* 1995;9(pt 5):658–659.
8. White JE, McClafferty K, Orton RB, et al: Ocular alkali burn associated with automobile air-bag activation. *Can Med Assoc J* 1995;153(7):933–934.
9. Smith RS, Shear G: Corneal alkali burns arising from accidental instillation of a hair straightener. *Am J Ophthalmol* 1975;79(4):602–605.
10. Grant WM, Schuman JS: *Toxicology of the Eye*, 4th ed. Springfield, IL: Charles C Thomas, 1993.
11. Linden JA, Renner GS: Trauma to the globe. *Emerg Med Clin North Am* 1995;13(3):581–604.
12. Swisher L: Ocular burns. http://www. emedicine.com, 1999.
13. Harris LS, Cohn K, Galin MA: Alkali injury from fireworks. *Ann Ophthalmol* 1971;3(8):849–851.
14. Herr RD, White GL Jr, Bernhisel K, et al: Clinical comparison of ocular irrigation fluids following chemical injury. *Am J Emerg Med* 1991;9(3):228–231.
15. Lee RJ, Yolton RL, Yolton DP, et al: Personal defense sprays: effects and management of exposure. *J Am Optom Assoc* 1996;67(9):548–560.
16. Poe CA: Eye-irrigating lens more effective if applied seconds after accident. *Occup Health Safety* 1990;59(1):43–47.
17. Burns FR, Paterson C: Prompt irrigation of chemical eye injuries may avert severe damage. *Occup Health Safety* 1989;58(4):33–36.
18. Smilkstein MJ: Ophthalmic principles, in Goldfrank LR, Flomenbaum NE, Lewin NA, et al (eds): *Goldfrank's Toxicologic Emergencies*, 6th ed. New York: McGraw-Hill, 1998:447–456.
19. Snell RS, Smith MS: *Clinical Anatomy for Emergency Medicine*. St. Louis: Mosby, 1998:243–285.
20. Onofrey BE: Management of corneal burns. *Optom Clin* 1995;4(3):31–40.
21. Rost KM, Jaeger RW, deCastro FJ: Eye contamination: a poison center protocol for management. *Clin Toxicol* 1979;14(3):295–300.
22. Das S, Chohan A, Snibson GR, et al: Capsicum spray injury of the eye. *Intern Ophthalmol* 2005;26(4–5):171–173.
23. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.
24. Bartfield JM, Holmes TJ, Raccio-Robak N: A comparison of proparacaine and tetracaine eye anesthetics. *Acad Emerg Med* 1994;1(4):364–367.
25. O'Malley GF, Fasano C, Dominici P, Aguilera E: Eye irrigation is more comfortable with a lidocaine-containing irrigation solution compared with normal saline. *J Trauma* 2008;64(5):1360–1362.
26. Terzidou C, Georgiadis N: A simple ocular irrigation system for alkaline burns of the eye. *Ophthalm Surg Lasers* 1997;28(3):255–257.
27. Yamabayashi S, Furuya T, Gohd T, et al: Newly designed continuous corneal irrigation system for chemical burns. *Ophthalmologica* 1990;201(4):174–179.
28. Hammerton ME: Management of ocular burns. *Aust Fam Physician* 1995; 24(6):1006–1010.
29. Dunmire SM, Paris PM: *Atlas of Emergency Procedures*. Philadelphia: Saunders, 1994:97–104.
30. Veser FR, O'Connor RE: Corneal abrasion during eyelid retraction. *Ann Emerg Med* 1995;26(6):758–760.
31. Blumberg EJ: Use of Water-Piks in acute chemical burns of the eye. *Tex Med* 1973;69(8):92.
32. Watts MT, Mulira A: The use of a new design irrigator for the emergency treatment of chemical eye injuries in an accident and emergency department. *Arch Emerg Med* 1989;6(2):149–152.
33. Nilsson SE, Andersson L: The use of contact lenses in environments with organic solvents, acids or alkalies. *Acta Ophthalmol (Copenh)* 1982; 60(4):599–608.
34. Guthrie JW, Seitz GF: An investigation of the chemical contact lens problem. *J Occup Med* 1975;17(3):163–166.
35. Jones JB, Schoenleber DB, Gillen JP: The tolerability of lactated Ringer's solution and BSS plus for ocular irrigation with and without the Morgan therapeutic lens. *Acad Emerg Med* 1998;5(12):1150–1156.
36. McGary WB, Ernst AA, Nick TG, et al: Normal saline vs lactated Ringer's solution for ocular irrigation. *Acad Emerg Med* 1998;5(4):371–372.
37. Ernst AA, Thomson T, Haynes M, et al: Warmed versus room temperature saline solution for ocular irrigation: a randomized clinical trial. *Ann Emerg Med* 1998;32(6):676–679.
38. Werwath DL, Schwab CW, Scholten JR, et al: Microwave ovens. A safe new method of warming crystalloids. *Am Surg* 1984;50(12):656–659.
39. Saidinejad M, Burns MM: Ocular irrigant alternatives in pediatric emergency medicine. *Ped Emerg Care* 2005;21(1):23–26.
40. Sigg T, Leikin JB, Sigg K, et al: Treatment of ocular potassium permanganate exposure with 5% ascorbic acid solution. *Ann Emerg Med* 1998;32(6):754–755.
41. Brown VKH, Box VL, Simpson BJ: Decontamination procedures for skin exposed to phenolic substances. *Arch Environ Health* 1975;30:1–6.
42. Beiran I, Miller B, Bentur Y: The efficacy of calcium gluconate in ocular hydrofluoric acid burns. *Hum Exp Toxicol* 1997;16(4):223–228.
43. Lubeck D, Greene JS: Corneal injuries. *Emerg Med Clin North Am* 1988; 6(1):73–94.
44. Kompa S, Redbrake C, Dunkel B, et al: Corneal calcification after chemical eye drops containing phosphate buffer. *Burns* 2006;32(6):744–747.
45. Assi A, Casey JH, McGuinness A: Diving reflex induced by ocular irrigation. *Lancet* 1994;344(8927):952.
46. Arndt GA, Stock C: Bradycardia during cold ocular irrigation under general anaesthesia: an example of the diving reflex. *Can J Anaesth* 1993;40(6): 511–514.

REFERENCES

1. Moses RA, Hart WM: *Adler's Physiology of the Eye Clinical Application*, 8th ed. St. Louis: Mosby, 1987:223.
2. Colton T, Ederer F: The distribution of intraocular pressures in the general population. *Surv Ophthalmol* 1980;25:123–129.
3. Lai J, Fekrat S, Barron Y, et al: Traumatic hyphema in children. *Arch Ophthalmol* 2001;119:64–70.
4. Threlkeld AB, Froggatt JW 3rd, Schein OD, Forman MS: Efficacy of a disinfectant wipe method for the removal of adenovirus 8 from tonometer tips. *Ophthalmology* 1993;100(12):1841–1845.
5. Pepose JS, Linette G, Lee SF, et al: Disinfection of Goldman tonometers against human immunodeficiency virus type I. *Arch Ophthalmol* 1998; 107(7):983–985.
6. Birnbach CD, Lean MM: Digital palpation of intraocular pressure. *Ophthalmic Surg Lasers* 1998;29(9):754–757.
7. Schiøtz H: Eine neuer tonometer. *Arch Augenheilkd* 1905;52:401.
8. Friedenwald JS: Tonometer calibration: an attempt to remove discrepancies found in the 1954 calibration scale for Schiøtz tonometers. *Trans Am Acad Ophthalmol Otolaryngol* 1957;61:108–122.
9. Goldman H, Schmidt TH: Applanation tonometry. *Ophthalmologica* 1957; 134:221–242.
10. Mentor Massachusetts Incorporated: *Mentor Tono-Pen XL*. Norwell, MA: Mentor Massachusetts Incorporated, 1999, sections 1–8.
11. Troost A, Specht K, Krummenauer F, et al: Deviations between transpalpebral tonometry using TGDc-01 and Goldmann applanation tonometry depending on the IOP level. *Graefes Arch Clin Exp Ophthalmol* 2005;243(9): 853–858.
12. Munkwitz S, Thieme H: Comparison of the iCare rebound tonometer and the Goldman applanation tonometer over a wide IOP range. *Graefes Arch Clin Exp Ophthalmol* 2008;246:875–879.

REFERENCES

1. Korner-Stiefbold U**:** Central retinal artery occlusion etiology, clinical picture and therapeutic possibilities. *Ther Umsch* 2001;58(1):36–40.
2. Cinotti AA, Gombos GM: *Handbook of Ophthalmologic Emergencies*. New York: Elsevier Science, 1985:30–33.
3. Weinberger AW, Siekmann UP, Wolf S, et al: Treatment of acute central retinal artery occlusion (CRAO) by hyperbaric oxygenation therapy (HBO), pilot study with 21 patients. *Klin Monbl Augenheilk* 2002;219(10):728–734.
4. Rathi V, Basti S, Gupta S: Globe rupture during digital massage after peribulbar anesthesia. *J Cataract Refract Surg* 1997;23(2):297–299.
5. Thompson EM, Egan RA, Nesbit GM, et al: Rapid intra-arterial thrombolysis in stent-associated retinal artery occlusion. *J Vasc Intervent Radiol* 2011;22(3):410–412.
6. Fraser S, Siriwardena D: Interventions for acute non-arteritic central retinal artery occlusion. *Cochrane Database Syst Rev* 2002;1:CD001989.
7. Sharma S, Brown M, Brown GC: Retinal artery occlusions. *Ophthal Clin N Am* 1998;11(4):591–600.
8. Knoop K, Trott A: Ophthalmologic procedures in the emergency department: I: immediate sight-saving procedures. *Acad Emerg Med* 1994;1(4): 408–411.

REFERENCES

1. Vanderlelij A, Rothovci A: Diagnostic anterior chamber paracentesis in uveitis: a safe procedure. *Br J Ophthalmol* 1997;81(11):976–979.
2. Lam DS, Chua J, Tham C, et al: Efficacy and safety of immediate anterior chamber paracentesis in treatment of acute primary angle closure glaucoma. *Ophthalmology* 2002;109(1):64–70.
3. Bozeman W: *Acute angle-closure glaucoma*, in Harwood-Nuss A, et al. (eds): *The Clinical Practice of Emergency Medicine*. Philadelphia: Lippincott Williams & Wilkins, 2001:62–63.
4. Rumelt S, Brown G: Update on treatment of retinal arterial occlusions. *Curr Opin Ophthalmol* 2003;14(3):139–141.
5. Arnavielles, Creuzot-Garcher C, Bron AM: Anterior chamber paracentesis in patients with acute elevated intraocular pressures. *Graefes Arch Clin Exp Ophthalmol* 2007;245(3):345–350.
6. Rubichon F, Arnavielle S, Malvitte L, et al: Anterior chamber paracentesis in the treatment of acute elevations of intraocular pressures. *Invest Ophthalmol Vis Sci* 2005;46:106.
7. Carnahan MC, Platt LW: Serial paracentesis in the management of acute elevations of intraocular pressure. *Ophthalmology* 2002;109:1604–1606.
8. Finger PJ, Papp C, Latkany P, Kurli M, Iacob CE: Anterior chamber paracentesis cytology (cytospin technique) for the diagnosis of intraocular lymphoma. *Br J Ophthalmol* 2006;90(6):690–692.
9. Ahusmith MR, Skaggs C, Kimura SJ: Diagnostic value of anterior chamber paracentesis in 14 cases of postoperative endophthalmitis. *Trans Am Ophthalmol Soc* 1970;68:337–355.
10. Chern KC, Foley E, Reddy A, et al: *Ophthalmic Office Procedures: A Step-by-Step Approach*. New York: McGraw Hill, 2004:17–20.
11. May DR, Null FG: An improved approach to aqueous paracentesis. *Ophthalmic Surg* 1988;19:821–822.
12. O'Rourke J, Taylor DM, McDonald P, et al: An aqueous paracentesis pipet. *Ophthalmic Surg* 1991;22:166–167.
13. Helbig H, Noske W, Kleineidam M, et al: Bacterial endophthamitis after anterior chamber paracentesis. *Br J Ophthalmol* 1995;79(9):866.
14. Sang JL, Lee JJ, Kim SD: Multiple retinal hemorrhage following anterior chamber paracentesis in uveitic glaucoma. *Korean J Ophthalmol* 2006;20(2): 128–130.
15. Wertheim MS, Connell PP, Majid MA, et al: The minim technique for diagnostic anterior chamber paracentesis. *Eye* 2009;23:1491.
16. Sridhar MS, Sharma S, Gopinathan U, et al: Anterior chamber tap. Diagnostic and therapeutic indications in the management of ocular infections. *Cornea* 2002;21(7):718–722.
17. Sarabia Vision Specialists Group: Controlled anterior chamber paracentesis effective for acute angle-closure glaucoma. www.sarabiavision.com, accessed June 23, 2011.
18. Trivedi D, Denniston AKO, Murray PI: Safety profile of anterior chamber paracentesis performed at the slit lamp. *Clin Exp Ophthalmol* 2011;39(8): 725–728. doi: 10.1111/j.1442-9071.2011.02565.x.
19. Pong JCF: Anterior chamber paracentesis in patients with acute elevation of intraocular pressure. *Graefes Arch Clin Exp Ophthalmol* 2008;246:463–464.
20. Cheung CMG, Durrani OM, Murray PI: The safety of anterior paracentesis in patients with uveitis. *Br J Ophthalmol* 2004;88:582–583.

REFERENCES

1. Augeri PA: Corneal foreign body removal and treatment. *Optom Clin* 1991; 1(4):59–70.
2. Roper-Hall MJ: Foreign bodies of the eye and their treatment. *Nurs Mirror Midwives J* 1966;123(7):7–8.
3. Wolf MA: The management of corneal abrasions and corneal foreign bodies. *Occup Health Nurs* 1981;29(6):32–33.
4. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.
5. Kaiser PK: A comparison of pressure patching versus no patching for corneal abrasions due to trauma or foreign body removal. *Ophthalmology* 1995; 102(12):1936–1942.
6. Shah S, Brahma AK, Sabala A: Pain and corneal foreign bodies. *J R Soc Med* 1995;88:406P–408P.
7. Kaye-Wilson LG: Localisation of corneal foreign bodies. *Br J Ophthalmol* 1992;76:741–742.
8. Knoop K, Trott A: Ophthalmologic procedures in the emergency department—part III: slit lamp use and foreign bodies. *Acad Emerg Med* 1995;2(3):224–230.
9. Liston RL, Olson RJ, Mamalis N: A comparison of rust-ring removal methods in a rabbit model: small-gauge hypodermic needle versus electric drill. *Ann Ophthalmol* 1991;23:24–27.
10. Hulbert MFG: Efficacy of eye pad in corneal healing after corneal foreign body removal. *Lancet* 1991;337:643.
11. Janda AM: Ocular trauma: triage and treatment. *Postgrad Med* 1991;90(7): 51–60.
12. Szucs PA, Nashed AH, Allegra FR, et al: Safety and efficacy of diclofenac ophthalmic solution in the treatment of corneal abrasions. *Ann Emerg Med* 2000;35:131–136.
13. Kaiser PK, Pineda R: A study of topical nonsteroidal anti-inflammatory drops and no pressure patching in the treatment of corneal abrasions. *Ophthalmology* 1997;104(8):1353–1359.
14. Brahma AK, Shah S, Hillier VF, et al: Topical analgesia for superficial corneal injuries. *J Accid Emerg Med* 1996;13:186–191.

REFERENCES

1. Liston RL, Olson RJ, Mamalis N: A comparison of rust-ring removal methods in a rabbit model: small-gauge hypodermic needle versus electric drill. *Ann Ophthalmol* 1991;23(1):24–27.
2. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.
3. Brown N, Clemett R, Grey R: Corneal rust removal by electric drill: clinical trial by comparison with manual removal. *Br J Ophthal* 1975;59:586–589.
4. Hardesty HH: Electric rust-ring remover technique. *Am J Ophthalmol* 1965; 60(3):526–527.
5. Janda AM: Ocular trauma: triage and treatment. *Postgrad Med* 1991; 90(7):51–60.
6. North PJ: Treatment of corneal rust rings with desferrioxamine. *Br J Ophthalmol* 1970;54:498–499.
7. Removal of corneal rust stains. *Med J Aust* 1971;2(16):786.
8. Newell FW: *Ophthalmology Principles and Concepts*. St. Louis: Mosby, 1978:186.
9. Shah S, Brahma AK, Sabala A: Pain and corneal foreign bodies. *J R Soc Med* 1995;88:406P–408P.
10. Kaye-Wilson LG: Localization of corneal foreign bodies. *Br J Opthalmol* 1992;76:741–742.
11. Owens JK, Scibilia J, Hezoucky N: Corneal foreign bodies—first aid, treatment, and outcomes: skills review for an occupational health setting. *AAOHN J* 2001;49(5):226–230.
12. Crouch ER Jr, Crouch ER, Grant TR: Ophthalmology, in Rakel RE, Rakel DP (eds): *Textbook of Family Medicine*, 8th ed. Philadelphia, PA: WB Saunders, 2011.

REFERENCES

1. Lubeck D: Penetrating ocular injuries. *Emerg Med Clin North Am* 1988; 6(1):127–146.
2. Colvin J, Langford S, Emonson D, et al: Initial management and transport of patients with perforating eye injuries. *Aust Fam Physician* 1995; 24(6):1017–1020.
3. Scott-Brown WG, Kerr AG: *Scott-Brown's Otolaryngology,* 6th ed. Oxford, England: Butterworth-Heinemann, 1997.
4. Santen SA, Scott JL: Ophthalmologic procedures. *Emerg Med Clin North Am* 1995;13(3):681–701.
5. Campanile TM, St. Clair DA, Benaim M: The evaluation of eye patching in the treatment of traumatic corneal epithelial defects. *J Emerg Med* 1997; 15(6):769–774.
6. Wilson SA, Last A: Management of corneal abrasions. *Am Fam Physician* 2004;70(1):123–128.
7. Turner A, Rabiu M: Patching for corneal abrasion. *Cochrane Database Syst Rev* 2006;19(2):CD004764.
8. Calder L, Balasubramanian S, Stiell I: Lack of consensus on corneal abrasion management: results of a national survey. *CJEM* 2004;6(6):402–407.
9. Linden JA, Renner GS: Trauma to the globe. *Emerg Med Clin North Am* 1995;13(3):581–605.
10. Pokhrel PK, Loftus SA: Ocular emergencies. *Am Fam Physician* 2007;76(6): 829–836.
11. Kaiser PK, Pineda R: A study of topical nonsteroidal anti-inflammatory drops and no pressure patching in the treatment of corneal abrasions. Corneal Abrasion Patching Study Group. *Ophthalmology* 1997;104(8):1353–1359.
12. Kylstra JA: Management of suspected ocular laceration or rupture. *Can J Ophthalmol* 1991;26(4):224–228.
13. Weisman RA, Savino PJ: Management of patients with facial trauma and associated ocular/orbital injuries. *Otolaryngol Clin North Am* 1991;24(1):37–57.
14. Edwards MG, Pieramici DJ, Fekrat S, et al: Corneoscleral lacerations and ruptures, in MacCumber MW (ed): *Management of Ocular Injuries and Emergencies.* Philadelphia: Lippincott-Raven, 1998:207–226.
15. Garcia GE: Management of ocular emergencies and urgent eye problems. *Am Fam Physician* 1996;53(2):565–574.
16. Colvin J: Penetrating eye injury. *Med J Aust* 1980;2(11):630.
17. Patterson J, Fetzer D, Krall J, et al: Eye patch treatment for the pain of corneal abrasion. *South Med J* 1996;89(2):227–229.
18. Kaiser PK: A comparison of pressure patching versus no patching for corneal abrasions due to trauma or foreign body removal. Corneal Abrasion Patching Study Group. *Ophthalmology* 1995;102(12):1936–1942.
19. Michael JG, Hug D, Dowd MD: Management of corneal abrasion in children: a randomized clinical trial. *Ann Emerg Med* 2002;40(1):67–72.
20. Hulbert MF: Efficacy of eyepad in corneal healing after corneal foreign body removal. *Lancet* 1991;337(8742):643.
21. Donnenfeld ED, Selkin BA, Perry HD, et al: Controlled evaluation of a bandage contact lens and a topical nonsteroidal anti-inflammatory drug in treating traumatic corneal abrasions. *Ophthalmology* 1995;102(6):979–984.
22. Ahmed A: When is facial paralysis Bell Palsy? Current diagnosis and treatment. *Cleve Clin J Med* 2005;72(5):398–405.
23. Holland NJ, Weiner GM: Recent developments in Bell's palsy. *BMJ* 2004; 829:553–557.
24. Calder LA, Balasubramanian S, Fergusson D: Topical nonsteroidal anti-inflammatory drugs for corneal abrasions: meta-analysis of randomized trials. *Acad Emerg Med* 2005;12(5):467–473.
25. Weaver CS, Terrell KM: Evidence-based emergency medicine. Update: do ophthalmic nonsteroidal anti-inflammatory drugs reduce the pain associated with simple corneal abrasion without delaying healing? *Ann Emerg Med* 2003;41(1):134–140.
26. Biehl JW, Valdez J, Hemady RK, et al: Penetrating eye injury in war. *Mil Med* 1999;164(11):780–784.

REFERENCES

1. Fry HJH: Orbital decompression after facial fractures. *Med J Aust* 1967;1: 264–267.
2. Hislop WS, Dutton GN, Douglas PS: Treatment of retrobulbar haemorrhage in accident and emergency departments. *Br J Oral Maxillofac Surg* 1996;34: 289–292.
3. Kersten RC, Rice CD: Subperiosteal orbital hematoma: visual recovery following delayed drainage. *Ophthalm Surg* 1987;18:423–427.
4. Cartwright MJ, Ginsburg RN, Nelson CC: Tension pneumoorbitus. *Ophthal Plast Reconstr Surg* 1992;8:303–304.
5. Fleishman JA, Beck RW, Hoffman RO: Orbital emphysema as an ophthalmologic emergency. *Ophthalmology* 1984;91:1389–1391.
6. Jordan DR, White GL, Anderson RL, et al: Orbital emphysema: a potential blinding complication following orbital fractures. *Ann Emerg Med* 1988;17: 853–855.
7. Hunts JH, Patrinely JR, Stal S: Orbital hemorrhage during rhinoplasty. *Ann Plast Surg* 1996;37:618–623.
8. Petrelli RL, Petrelli EA, Allen WE: Orbital hemorrhage with loss of vision. *Am J Ophthalmol* 1980;89:593–597.
9. Anderson RL, Edwards JJ: Bilateral visual loss after blepharoplasty. *Ann Plast Surg* 1980;5:288–292.
10. Stewart WB, Toth BA: A multidisciplinary approach to orbital neoplasm. *Clin Plastic Surg* 1988;15:263–272.
11. Hislop WS, Dutton GN: Retrobulbar hemorrhage: can blindness be prevented? *Injury* 1994;25:663–665.
12. Gioia VM, Linberg JV, McCormick SA: The anatomy of the lateral canthal tendon. *Arch Ophthalmol* 1987;105:529–533.
13. Hargaden M, Goldberg SH, Cunningham D, et al: Optic neuropathy following simulation of orbital hemorrhage in the nonhuman primate. *Ophthalm Plast Reconstr Surg* 1996;12:264–272.
14. Linberg JV: Orbital compartment syndromes following trauma. *Adv Ophthalm Plast Reconstr Surg* 1987;6:51–62.
15. Sacks SH, Lawson W, Edelstein D, et al: Surgical treatment of blindness secondary to intraorbital hemorrhage. *Arch Otolaryngol Head Neck Surg* 1988;114:801–804.
16. Schabdach DG, Goldberg SH, Breton ME, et al: An animal model of visual loss from orbital hemorrhage. *Ophthalm Plast Reconstr Surg* 1994;10: 200–205.
17. Young VL, Gumucio CA, Lund H, et al: Long-term effect of retrobulbar hematomas on the vision of cynomolgus monkeys. *Plast Reconstr Surg* 1992; 89:70–75.
18. Hayreh SS, Weingest TA: Experimental occlusion of the central retinal artery of the retina: I. ophthalmoscopic and fluorescein fundus angiographic studies. *Br J Ophthalmol* 1980;64:896–912.
19. Hamasaki DI, Kroll AJ: Experimental central retinal artery occlusion. *Arch Ophthalmol* 1968;80:243–248.
20. Kroll AJ: Experimental central retinal artery occlusion. *Arch Ophthalmol* 1968;79:453–469.
21. Hayreh SS, Weingest TA: Experimental occlusion of the central artery of the retina: IV. Retinal tolerance time to acute ischaemia. *Br J Ophthalmol* 1980; 64:818–825.
22. Muthukumar N: Traumatic haemorrhagic optic neuropathy: case report. *Br J Neurosurg* 1997;11:166–167.
23. Krausen AS, Ogura JH, Burde RM, et al: Emergency orbital decompression: a reprieve from blindness. *Otolaryngol Head Neck Surg* 1981;89:252–256.
24. Mauriello JA, DeLuca J, Krieger A, et al: Management of traumatic optic neuropathy—a study of 23 patients. *Br J Ophthalmol* 1992;76:349–352.
25. Frenkel REP, Spoor TC: Diagnosis and management of traumatic optic neuropathies. *Adv Ophthalmol Plast Reconstr Surg* 1987;6:71–90.
26. Heinze JB, Hueston JT: Blindness after blepharoplasty: mechanism and early reversal. *Plast Reconstr Surg* 1978;61:347–354.
27. Jafek BW, Kreiger AE, Morledge D: Blindness following blepharoplasty. *Arch Otolaryngol* 1973;98:366–369.
28. Goldberg RA, Marmor MF, Shorr N, et al: Blindness following blepharoplasty: two case reports, and a discussion of management. *Ophthalmol Surg* 1990;21:85–89.
29. Sullivan SR, Ahmadi AJ, Singh CN, et al: Elevated orbital pressure: another untoward effect of massive resuscitation after burn injury. *J Trauma* 2006; 60:72–76.

REFERENCES

1. Love JN, Bertram-Love NE: Luxation of the globe. *Am J Emerg Med* 1993; 11(1):61–63.
2. Alexandrakis G, Tse DT, Chang WJ: Spontaneous globe luxation associated with floppy eyelid syndrome and shallow orbits. *Arch Ophthalmol* 1999;117(1):138–139.
3. Offenbach B: Dislocation (luxation) of the eyeball. *N Engl J Med* 1954; 251(9):338–339.
4. Chhabra HN, Kawuma AMS: Luxation of the eyeball. *Br J Ophthalmol* 1986; 70:150–151.
5. Wood CM, Pearson ADJ, Craft AW, et al: Globe luxation in histiocytosis X. *Br J Ophthalmol* 1988;72(8):631–633.
6. Samples JR, Hedges JR: Ophthalmologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:1116–1119.
7. Reuling FH, Hadlund RL: Traumatic luxation of the globe. *EENT Mon* 1970;49(3):129–130.
8. Van Der Wal KGH, Van Der Pol BAE: Traumatic luxation of the eyeball. *J Craniomaxillofac Surg* 1991;19(5):205–207.
9. Fowler JG: Spontaneous luxation of the eyeball. *JAMA* 1941;116:1206–1208.
10. Zengin N, Karakurt A, Gültan E, et al: Traumatic globe luxation. *Acta Ophthalmol* 1992;70(6):844–846.
11. Zeller J, Murray SB, Fisher J: Spontaneous globe subluxations in a patient with hyperemesis gravidum: a case report and review of the literature. *J Emer Med* 2007;32(3):285–287.
12. Tse DT: A simple maneuver to reposit a subluxed globe. *Arch Ophthalmol* 2000;118:410–411.

REFERENCES

1. Sullivan JH: Lids, in Riordan-Eva P, Whitcher JP (eds): *Vaughan & Asbury's General Ophthalmology*, 17th ed. New York: Lange Medical Books/McGraw Hill, 2008:79–80.
2. Maldonado MJ, Juberias JR, Moreno-Montañés J: Extensive corneal epithelial defect associated with internal hordeolum after uneventful laser in situ keratomileusis. *J Cataract Refract Surg* 2002;28:1700–1702.
3. Raja V, Job R, Hubbard A, Moriarty B: Periorbital necrotising fasciitis: delay in diagnosis results in loss of lower eyelid. *Int Ophthalmol* 2008;28(1):67–69.
4. Zimmerman RK: *Staphylococcus aureus* hordeolum as a cause of bacteremia and secondary foci. *J Fam Pract* 1989;29(4):433–435.
5. Wald ER: Periorbital and orbital infections. *Pediatr Rev* 2004;25(9):312–320.
6. Kiratli HK, Akar Y: Multiple recurrent hordeola associated with selective IgM deficiency. *J AAPOS* 2001;5(1):60–61.
7. Kim JH, Yang SM, Kim HM, Oh J: Inadvertent ocular perforation during lid anesthesia for hordeolum removal. *Korean J Ophthalmol* 2006;20(3):199–200.
8. Bezan DJ: Hordeolum, in Roberts DK, Jerry JE (eds): *Ocular Disease Diagnosis and Treatment*, 2nd ed. Newton, MA: Butterworth, 1996:466.
9. Mueller JB, McStay CM: Ocular infection and inflammation. *Emerg Med Clin N Am* 2008;26(1):57–72.
10. Trevor-Roper PD: Diseases of the eyelids. *Int Ophthalmol Clin* 1974;14:362–393.
11. Fraunfelder FT: Hordeolum, in Fraunfelder FT, Roy FH (eds): *Current Ocular Therapy*, 4th ed. Philadelphia: Saunders, 1995:578–579.
12. Hudson RL: Treatment of styes and meibomian cysts. Practical procedures. *Aust Fam Phys* 1981;10:714–717.

REFERENCES

1. Singer JI, Edwards D, VanDeHoef S: "There's something in my ear": tools of the trade for foreign body entrapment and retained penetration. *Pediatr Emerg Med Rep* 2009;14(8):97–108.
2. Ballenger JJ, Snow JB: *Otorhinolaryngology: Head and Neck Surgery*. Baltimore: Williams & Wilkins, 1996:978–980.
3. Ansley JF: Treatment of aural foreign bodies in children. *Pediatrics* 1998; 101(4 Pt 1):638–641.
4. Bressler K, Shelton C: Ear foreign-body removal: a review of 98 consecutive cases. *Laryngoscope* 1993;103(4):367–370.
5. Balbani APS, Sanchez TG, Ossamu B, et al: Ear and nose foreign body removal in children. *Int J Pediatr Otorhinolaryngol* 1998;46:37–42.
6. Burke M: Small things from small places. *Aust Fam Physician* 1999;28(2): 132–133.
7. Linstrom CJ, Lucente FE: Infections of the external ear, in Bailey BJ (ed): *Head and Neck Surgery—Otolaryngology*. Philadelphia: Lippincott, 1993: 1542–1544.
8. Manthey DE, Harrison BP: Otolaryngologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*. Philadelphia: Saunders, 1998:1120–1149.
9. Ballenger JJ: *Diseases of the Nose, Throat, Ear, Head, and Neck*, 14th ed. Philadelphia: Lea & Febiger, 1991.
10. McRae D, Premachandra DJ, Gatland DJ: Button batteries in the ear, nose, and cervical esophagus: a destructive foreign body. *J Otolaryngol* 1989;18(6):317–319.
11. Roland PS, Smith TL, Schwartz SR, et al: Clinical practice guideline: cerumen impaction. *Otolaryngol Head Neck Surg* 2008;139(3 suppl 2):S1–S21.
12. Ballachanda BB, Peers CJ: Cerumen management. Instruments and procedures. *ASHA* 1992;34(2):43–46.
13. Carne S: Ear syringing. *Br Med J* 1980;280(6211):374–376.
14. Hanger HC, Mulley GP: Cerumen: its fascination and clinical importance: a review. *J R Soc Med* 1992;85(6):346–349.
15. Scott-Brown WG, Kerr AG: *Scott-Brown's Otolaryngology*, 6th ed. Oxford, England: Butterworth-Heinemann, 1997.
16. Thompson MP: Removing objects from the external auditory canal. *N Engl J Med* 1984;311(25):1635.
17. Abadir WF, Nakhla V, Chong P: Removal of super-glue from the external ear using acetone: case report and literature review. *J Laryngol Otol* 1995; 109:1219–1221.
18. Sharp JF, Wilson JA, Ross L, et al: Ear wax removal: a survey of current practice. *Br Med J* 1990;301(6763):1251–1253.
19. Kumar S, Kumar M, Lesser T, et al: Foreign bodies in the ear: a simple technique for removal analyzed in vitro. *Emerg Med J* 2005;22:266–268.
20. Jensen JH: Technique for removing a spherical foreign body from the nose or ear. *Ear Nose Throat J* 1976;55(8):270–271.
21. Schittek A: Insect in the external auditory canal—a new way out. *JAMA* 1980;243(4):331.
22. Dinsdale RC, Roland PS, Manning SC, et al: Catastrophic otologic injury from oral jet irrigation of external auditory canal. *Laryngoscope* 1991; 101(1 Pt 1):75–78.
23. Marin JR, Trainor JL: Foreign body removal from the external auditory canal in a pediatric emergency department. *Peds Emerg Care* 2006;22(9):630–634.
24. Brown L, Denmark TK, Wittlake WA, et al: Procedural sedation use in the ED: management of pediatric ear and nose foreign bodies. *Am J Emerg Med* 2004;22:310–314.

REFERENCES

1. Burton MJ, Doree C: Ear drops for the removal of ear wax. *Cochrane Database Syst Rev* 2003;(3):CD004326.
2. Sharp JF, Wilson JA, Ross L, et al: Ear wax removal: a survey of current practice. *Br Med J* 1990;301(6763):1251–1253.
3. Dinsdale RC, Roland PS, Manning SC, et al: Catastrophic otologic injury from oral jet irrigation of the external auditory canal. *Laryngoscope* 1991; 101(1 Pt 1):75–78.
4. Roland PS, Smith TL, Schwartz SR, et al: Clinical practice guideline: cerumen impaction. *Otolaryngol Head Neck Surg* 2008;139(3 suppl 2):S1–S21.
5. Linstrom CJ, Lucente FE: Infections of the external ear, in Bailey BJ (ed): *Head and Neck Surgery—Otolaryngology*. Philadelphia: Lippincott, 1993: 1542–1544.
6. Manthey DE, Harrison BP: Otolaryngologic procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*. Philadelphia: Saunders, 1998:1120–1149.
7. Hanger HC, Mulley GP: Cerumen: its fascination and clinical importance: a review. *J R Soc Med* 1992;85(6):346–349.
8. Carne S: Ear syringing. *Br Med J* 1980;280(6211):374–376.
9. Ballachanda BB, Peers CJ: Cerumen management. Instruments and procedures. *ASHA* 1992;34(2):43–46.
10. Ballenger JJ: *Diseases of the Nose, Throat, Ear, Head, and Neck,* 14th ed. Philadelphia: Lea & Febiger, 1991.
11. Vaile L, Williamson T, Waddell A, Taylor G: Interventions for ear discharge associated with grommets (ventilation tubes). *Cochrane Database Syst Rev* 2006;(2):CD001933.
12. Kumar S, Kumar M, Lesser T, Banhegyi G: Foreign bodies in the ear: a simple technique for removal analyzed in vitro. *Emerg Med J* 2005;22:266–268.
13. Singer JI, Edwards D, VanDeHoef S: "There's something in my ear": tools of the trade for foreign body entrapment and retained penetration. *Pediatr Emerg Med Rep* 2009;14(8):97–108.
14. Bellini MJ, Terry RM, Lewis FA: An evaluation of common cerumenolytic agents: an in vitro study. *Clin Otolaryngol* 1989;14(1):23–25.
15. Ballenger JJ, Snow JB: *Otorhinolaryngology: Head and Neck Surgery.* Baltimore: Williams & Wilkins, 1996:978–980.
16. Ansley JF: Treatment of aural foreign bodies in children. *Pediatrics* 1998; 101(4 Pt 1):638–641.
17. Scott-Brown WG, Kerr AG: *Scott-Brown's Otolaryngology*, 6th ed. Oxford, England: Butterworth-Heinemann, 1997.
18. Burke M: Small things from small places. *Aust Fam Physician* 1999;28(2): 132–133.
19. Scott-Brown WG, Kerr AG: *Scott-Brown's Otolaryngology*, chap 6, vol 3, 6th ed. Oxford, England: Butterworth-Heinemann, 1997:11–12.
20. Bailey BJ: Impacted ear wax and a water-pick instrument. *JAMA* 1983; 250(11):1456.

REFERENCES

1. Bluestone CD: Role of surgery for otitis media in the era of resistant bacteria. *Pediatr Infect Dis J* 1998;17(11):1090–1100.
2. Green M, Wald ER: Emerging resistance to antibiotics: impact on respiratory infections in the outpatient setting. *Ann Allergy Asthma Immunol* 1996; 77(3):167–173.
3. Poole MD: It's time to bring back diagnostic tympanocentesis. *ENT J* 1994; 73(1):49–50.
4. Potsic WP, Cotton RT, Handler SD: *Surgical Pediatric Otolaryngology*. New York: Thieme Medical, 1997:10–11.
5. Haberman A, Paradine J: Acute otitis media: diagnosis and management in the year 2000. *Pediatr Ann* 2000;29(10):610–620.
6. Pichehiro M, Wright T: Use of tympanocentesis in the diagnosis and management of AOM. *Curr Infect Dis Rep* 2006;8(3):189–195.

REFERENCES

1. Templer J, Renner GJ: Injuries of the external ear. *Otolaryngol Clin North Am* 1990;23(5):1003–1018.
2. Martinez MJ, Friedman MJ: External ear procedures, in King C, Henretig FM, King BK (eds): *Textbook of Pediatric Emergency Procedures*, 2nd ed. Baltimore: Williams & Wilkins, 2008:593–599.
3. Mathes SJ: *Plastic Surgery, Volume 4: Pediatric Plastic Surgery*. St. Louis: Saunders, 2005.
4. Lucente FE, Hanson M: Diseases of the external ear, in Wackym PA, Snow JB (eds): *Ballenger's Otorhinolaryngology: Head and Neck Surgery*, 17th ed. PMPH USA, 2008:191–200.
5. Dunmire SM, Paris PM: *Atlas of Emergency Procedures*. Philadelphia: Saunders, 1994:77–81.
6. Spira M, Hardy SB: Management of the injured ear. *Am J Surg* 1963;106: 678–684.
7. Eade GG: Preventing cauliflower ears. *Northwest Med* 1964;63:99.
8. Liston SL, Cortez EA, McNabney WK, et al: External ear injuries. *JACEP* 1978;7(6):233–236.
9. Gacek RR: Anatomy of the auditory and vestibular systems, in Wackym PA, Snow JB (eds): *Ballenger's Otorhinolaryngology: Head and Neck Surgery*, 17th ed. PMPH USA, 2008:1–16.
10. Rhee JS, Tseng J: Otoplasty for the prominent ear, in Wackym PA, Snow JB (eds): *Ballenger's Otorhinolaryngology: Head and Neck Surgery*, 17th ed. PMPH USA, 2008:627–632.
11. Snell RS, Smith MS: *Clinical Anatomy for Emergency Medicine*. St. Louis: Mosby, 1993.
12. Rosse C, Gaddurn-Rosse P: *Hollinshead's Textbook of Anatomy*, 5th ed. Philadelphia: Lippincott, Williams and Wilkins, 1997.
13. Adriani J: *Regional Anesthesia: Techniques and Clinical Applications*, 4th ed. St. Louis: Warren H. Green, 1985.
14. Suresh S, Jagannathan N: Somatic blockade of head and neck, in Cousins MJ, Bridenbaugh PO, Carr DB, et al (eds): *Cousins' and Bridenbaugh's Neural Blockade in Clinical Anesthesia and Pain Medicine*, 4th ed. Philadelphia: Lippincott, Williams and Wilkins, 2008:405–426.
15. Bumsted RM, Ceilley RI: Surgical gems: local anesthesia of the auricle. *J Dermatol Surg Oncol* 1979;5(6):448–449.
16. Riviello RJ, Brown NA: Otolaryngologic procedures, in Roberts JR, Hedges JR, et al (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010:1178–1216.
17. Trott AT: *Wounds and Lacerations: Emergency Care and Closure*, 3rd ed. St. Louis: Mosby, 2005.
18. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott, Williams & Wilkins, 2002:123–125.
19. Scarcella JV: Tie-over dressing to prevent recurrence of a hematoma of the ear: case report. *Plast Reconstr Surg* 1978;61(4):610–611.
20. Silverberg M, Lucches M: Common disorders of the external, middle, and inner ear, in Tintinalli JE, Stapczynski J, Ma OJ, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 7th ed. New York: McGraw-Hill, 2010:1550–1557.
21. Lee EC, Soliman AM, Kim J: Traumatic auricular hematoma: a case report. *J Craniomaxillofac Trauma* 1997;3(1):32–35.
22. Quine SM, Roblin DG, Cuddihy PJ, et al: Treatment of acute auricular haematoma. *J Laryngol Otol* 1996;110(9):862–863.
23. O'Donnell BP, Eliezri YD: The surgical treatment of traumatic hematoma of the auricle. *Dermatol Surg* 1999;25(10):803–805.
24. Henderson JM, Salama AR, Blanchaert RH Jr: Management of auricular hematoma using a thermoplastic splint. *Arch Otolaryngol Head Neck Surg* 2000;126:888–890.
25. Macdonald DJM, Calder N, Perett G, et al: Case presentation: a novel way of treating acule cauliflower ear in a professional rugby player. *Br J Sports Med* 2005;39:e.29–e.30.
26. Giles WC, Iverson KC, King JD, et al: Incision and drainage followed by mattress suture repair of auricular hematoma. *Laryngoscope* 2007;117: 2097–2099.
27. Vuyk HD, Bakkers EJM: Absorbable mattress sutures in the management of auricular hematoma. *Laryngoscope* 1991;101:1124–1126.
28. Schuller DE, Dankel SD, Strauss RH: A technique to treat wrestler's auricular hematoma without interrupting training or competition. *Arch Otolaryngol Head Neck Surg* 1989;115:202–206.
29. Ghanem T, Rasamny JK, Park SS: Rethinking auricular trauma. *Laryngoscope* 2005;115:1251–1255.

REFERENCES

1. Baker MD: Foreign bodies in the ears and nose of childhood. *Pediatr Emerg Care* 1987;3:67–70.
2. Tong MCF, Ying SY, van Hasselt CA: Nasal foreign bodies in children. *Int J Pediatr Otorhinolaryngol* 1996;35:207–211.
3. Kadish HA, Corneli HM: Removal of nasal foreign bodies in the pediatric population. *Am J Emerg Med* 1997;15:54–58.
4. Brown L, Denmark TK, Wittlake WA, et al: Procedural sedation use in the ED: management of pediatric ear and nose foreign bodies. *Am J Emerg Med* 2004; 22:310–314.
5. Kalan A, Tariq M: Foreign bodies in the nasal cavities: a comprehensive review of the aetiology, diagnostic pointers, and therapeutic measures. *Postgrad Med J* 2000;76:484–487.
6. Anon JB, Rontal M, Zinreich SJ: *Anatomy of the Paranasal Sinuses*. New York: Thieme, 1996:38–39.
7. Lin VY, Daniel SJ, Papsin BC: Button batteries in the ear, nose and aerodigestive tract. *Int J Pediatr Otorhinolaryngol* 2004;68:473–479.
8. Loh WS, Leong JL, Tan HK: Hazardous foreign bodies: complications and management of button batteries in nose. *Ann Otol Rhinol Laryngol* 2003; 112:379–383.
9. Shapiro RS: Foreign bodies of the nose, in Bluestone CD, Stool SE (eds): *Pediatric Otolaryngology*, 2nd ed. Philadelphia: Saunders, 1990:752–759.
10. Bledsoe RD: Magnetically adherent nasal foreign bodies: a novel method of removal and case series. *Am J Emerg Med* 2008;26:839.e1–e2.
11. McCormick S, Brennan P, Yassa J, et al: Children and mini-magnets: an almost fatal attraction. *Emerg Med J* 2001;19:71–73.
12. Tong MCF, van Hasselt CA, Woo JKS: The hazards of button batteries in the nose. *J Otolarygol* 1982;21(6):458–460.
13. Fallon MJ, Plante DM, Brown LW: Wooden transnasal intracranial penetration: an unusual presentation. *J Emerg Med* 1992;10:439–443.
14. Francois M, Hamrioui R, Narcy P: Nasal foreign bodies in children. *Eur Arch Otorhinolaryngol* 1998;255:132–134.
15. Nandapalan V, McIlwain JC: Removal of nasal foreign bodies with a Fogarty biliary balloon catheter. *J Laryngol Otol* 1994;108:758–760.
16. Rotello L: Removal of foreign bodies from the nose, in Jastremski MS, Dumas M (eds): *Emergency Procedures*. Philadelphia: Saunders, 1992:130–133.
17. Balbani APS, Sanchez TG, Butugan O, et al: Ear and nose foreign body removal in children. *Int J Pediatr Otorhinolaryngol* 1998;46:37–42.
18. Singer JI, Edwards D, VanDeHoef S: "There's something in my ear": tools of the trade for foreign body entrapment and retained penetration. *Pediatr Emerg Med Rep* 2009;14(8):97–108.
19. Jensen JH: Technique for removing a spherical foreign body from the nose or ear. *Ear Nose Throat J* 1976;55(8):270–271.
20. Backlin SA: Positive-pressure technique for nasal foreign body removal in children. *Ann Emerg Med* 1995;25:554–555.
21. Botma M, Bader R, Kubba H: A "parent's kiss": evaluating an unusual method for removing nasal foreign bodies in children. *J Laryngol Otol* 2000; 114:598–600.
22. Finkelstein JA: Oral Ambu-bag insufflation to remove unilateral nasal foreign bodies. *Am J Emerg Med* 1996;14:57–58.
23. Navitsky RC, Beamsley A, McLaughlin S: Nasal positive-pressure technique for nasal foreign body removal in children. *Am J Emerg Med* 2000;20:103–104.
24. Hill RW, Brown JC, Brownstein D: Barotrauma: a complication of positive pressure for nasal foreign body removal in a pediatric patient. *Ann Emerg Med* 2008;52:623–625.
25. Hanson RM, Stephens M: Cyanoacrylate-assisted foreign body removal from the ear and nose in children. *J Paediatr Child Health* 1994;30:77–78.
26. Handler SD: Nasal wash technique for nasal foreign body removal. *Pediatr Emerg Care* 2000;16:307.
27. Lehman DA, Roy S: Septal perforation caused by nasal magnetic foreign bodies. *Ear Nose Throat J* 2005;84(5):266–267.
28. Lancaster J, Mathews J, Sherman IW: Magnetic nasal foreign bodies. *Injury* 2000;31:123.
29. Douglas SA, Mirza S, Stafford FW: Magnetic removal of a nasal foreign body. *Int J Pediatr Otorhinolaryngol* 2002;68:473–479.
30. Starke L: Easy removal of nasal magnets. *Pediatr Emerg Care* 2005;21(9): 598–599.
31. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Baltimore: Lippincott, Williams & Wilkins, 2002:307–309.

REFERENCES

1. Bailey BJ: Nasal fractures, in Bailey BJ, Johnson JT, Newlands SD, et al (eds): *Head and Neck Surgery—Otolaryngology*, 4th ed. Philadelphia: Lippincott, Williams & Wilkins, 2006:995–1009.
2. Dickson MG, Sharpe DT: A prospective study of nasal fractures. *J Laryngol Otol* 1986;100:543–551.
3. Illum P, Kristensen S, Jorgensen K, et al: Role of fixation in the treatment of nasal fractures. *Clin Otolaryngol* 1983;8:191–195.
4. Murray JAM: Management of acute nasal trauma, in Daniel RK, Regnault P, Goldwyn RM (eds): *Aesthetic Plastic Surgery: Rhinoplasty*, 1st ed. Boston: Little Brown & Co., 1993:643–656.
5. Colton JJ, Beekhuis GJ: Management of nasal fractures. *Otolaryngol Clin North Am* 1986;19(1):73–85.
6. Chegar BE, Tatum SA III: Nasal fractures, in Flint PW, Haughey BH, Lund VJ, et al (eds): *Cummings Otolaryngology—Head and Neck Surgery*, 5th ed. St. Louis: Mosby, 2010:496–508.
7. Mayell MF: Nasal fractures: their occurrence, management, and some late results. *J R Coll Surg Edinb* 1973;18(1):31–36.
8. Illum P: Long-term results after treatment of nasal fractures. *J Laryngol Otol* 1986;100:273–277.
9. Clayton MI, Lesser THJ: The role of radiography in the management of nasal fractures. *J Laryngol Otol* 1986;100:797–801.
10. De Lacey GJ: The radiology of nasal injuries: problems of interpretation and clinical relevance. *Br J Radiol* 1977;50(594):412–414.
11. Clark WD: Nasal and nasal septal fractures. *Ear Nose Throat J* 1983;62: 25–32.
12. Stranc MF, Robertson GA: A classification of injuries of the nasal skeleton. *Ann Plast Surg* 1979;2(6):468–474.
13. Murray JAM, Maran AGD: A pathological classification of nasal fractures. *Injury* 1986;17(5):338–344.
14. Mathog RH: Post-traumatic telecanthus, in Mathog RH (ed): *Maxillofacial Trauma*. Baltimore: Williams & Wilkins, 1984:303–318.
15. Gross CW, Parks SS: Nasal fractures, in English GM (ed): *Otolaryngology*, vol 4. Philadelphia: Lippincott-Raven, 1997:1–14.
16. Harrison DH: Nasal Injuries: their pathogenesis and treatment. *Br J Plast Surg* 1979;32(1):57–64.
17. Murray JAM, Muran AGD, Mackenzie IJ, et al: Open vs. closed reduction of the fractured nose. *Arch Otolaryngol* 1984;110:797–802.
18. Grymer LF, Gutierrez C, Stoksted P: Nasal fractures in children: influence on the development of the nose. *J Laryngol Otol* 1985;99:735–739.
19. Stucker FJ, Bryarly RC, Shockley WW: Management of nasal trauma in children. *Arch Otolaryngol* 1984;110:190–192.
20. Moran W: Nasal trauma in children. *Otolaryngol Clin North Am* 1977; 10(1):95–101.
21. East CA, O'Donaghue G: Acute nasal trauma in children. *J Pediatr Surg* 1987; 22(4):308–310.
22. Houghton DJ, Hanafi Z, Papakostas K, et al: Efficacy of external fixation following nasal manipulation under local anesthesia. *Clin Otolaryngol* 1998; 23:169–171.
23. El-Kholy A: Manipulation of the fractured nose using topical local anesthesia. *J Layngol Otol* 1989;103:580–581.
24. Arndt KA, Burton C, Noe JM: Minimizing the pain of local anesthesia. *Plast Reconstr Surg* 1983;72(5):676–679.
25. Kurihara K, Kim K: Open reduction and interfragment wire fixation of comminuted nasal fractures. *Ann Plast Surg* 1990;24(2):179–185.
26. Kaban LB, Mulliken JB, Murray JE: Facial fractures in children. *Plast Reconstr Surg* 1977;59(1):15–20.

REFERENCES

1. Hwang PH, Abdalkhani A: Embryology, anatomy and physiology of the nose and paranasal simuses, in Snow JB, Wackym PA (eds): *Ballenger's Otorhinolaryngology: Head and Neck Surgery*, 17th ed. Baltimore: Williams & Wilkins, 2008:456–464.
2. Ginsburg CM: Nasal septal hematoma. *Pediatr Rev* 1998;19(4):142–143.
3. Ginsburg CM, Leach JL: Infected nasal septal hematoma. *Pediatr Infect Dis J* 1995;14(11):1012–1013.
4. Jackman AH, Fried MP: Complications of nasal surgery and epistaxis, in Eisele DW, Smith RV (eds): *Complications in Head and Neck Surgery*, 2nd ed. Philadelphia: Mosby, 2008:531–542.
5. Feinberg AN, Gushurst CA, Purdy WK, et al: Bilateral nasal septal hematomas. *Arch Pediatr Adolesc Med* 1998;6:601–602.
6. Canty PA, Berkwitz RG: Hematoma and abscess of the nasal septum in children. *Arch Otolaryngol Head Neck Surg* 1996;122(12):1373–1376.
7. Becker W, Naumann HH, Pfaltz CR: *Ear, Nose and Throat Diseases: A Pocket Reference*, 2nd ed. New York: Thieme, 1994:260–262.
8. Summers SM, Bey T: Epistaxis, nasal fracture, and rhinosinusitis, in Tintinalli JE, Stapczynski JS, Ma OJ, et al (eds): *Tintinalli's Emergency Medicine, A Comprehensive Study Guide*, 7th ed. New York: McGraw-Hill, 2010: 1532–1539.
9. Gates GA: *Current Therapy in Otolaryngology: Head and Neck Surgery*, 6th ed. St. Louis: Mosby, 1998:133–134, 168.
10. Standring S: *Grays Anatomy: The Anatomical Basis of Clinical Practice*, 40th ed. New York: Churchill Livingstone, 2008:547–561.
11. Hinderer KH: *Fundamentals of Anatomy and Surgery of the Nose.* Birmingham: Aesculapius, 1978:104–107.
12. Chan TC: Septal hematoma drainage, in Rosen P, Chan TC, Vilke GM, et al (eds): *Atlas of Emergency Procedures.* St. Louis: Mosby, 2001:198–199.
13. Dunmire SM, Paris PM: *Atlas of Emergency Procedures.* Philadelphia: Saunders, 1994:94–95.
14. Mull CC, Ginsburg MA: Drainage and packing of a nasal septal hematoma, in King C, Henretig FM, King BR, et al (eds): *Textbook of Pediatric Emergency Procedures.* Baltimore: Williams & Wilkins, 2007:615–619.
15. Votey S, Dudley JP: Emergency ear, nose, and throat procedures. *Emerg Med Clin North Am* 1989;7(1):117–154.
16. Simon RR, Brenner BE: *Emergency Procedures and Techniques*, 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2002:401–402.

REFERENCES

1. Small M, Maran AGD: Epistaxis and arterial ligation. *J Laryngol Otol* 1984; 98:281–284.
2. Pallin DJ, Chng Y-M, McKay MP, et al: Epidemiology of epistaxis in US emergency departments, 1992 to 2001. *Ann Emerg Med* 2005;46:77–81.
3. Grandis JR, Parnes SM, Dibiase PA, et al: *The Management of Epistaxis.* Self-instructional package (SIPac) number 77399. Alexandria, VA: American Academy of Otolaryngology-Head and Neck Surgery Foundation Inc., 1977:11–28.
4. Murray AB, Milner RA: Allergic rhinitis and recurrent epistaxis in children. *Ann Allergy Asthma Immunol* 1995;74:30–33.
5. O'Reilly BJ, Simpson DC, Dharmeratnam R: Recurrent epistaxis and septal deviation in young adults. *Clin Otolaryngol* 1996;21:12–14.
6. Garth RJN, Cox HJ, Thomas MR: Haemorrhage as a complication of inferior turbinectomy: a comparison of anterior and radical trimming. *Clin Otolaryngol* 1995;20:236–238.
7. Weiss NS: Relation of high blood pressure to headache, epistaxis and selected other symptoms. The United States health examination survey of adults. *N Engl J Med* 1972;287(13):631–633.
8. Mitchell JRA: Nose bleeding and high blood pressure. *Br Med J* 1959;1:25–27.
9. Watson MG, Shenoi PM: Drug-induced epistaxis? *J R Soc Med* 1990;83: 162–164.
10. Shaheen OH: Arterial epistaxis. *J Laryngol Otol* 1975;89(1):17–34.
11. Damrose JF, Maddalozzo J: Pediatric epistaxis. *The Laryngoscope* 2006; 116(3):387–393.
12. Pringle MB, Beasley P, Brightwell AP: The use of merocel nasal packs in the treatment of epistaxis. *J Laryngol Otol* 1996;110:543–546.
13. Singer AJ, Blanda M, Cronin K: Comparison of nasal tampons for the treatment of epistaxis in the emergency department: a randomized controlled trial. *Ann Emerg Med* 2005;45(2):134–139.
14. Boston Medical Products: *ENTaxis Nasal Packing.* Boston: Boston Medical Products.
15. Mathiasen R, Cruz R: Prospective, randomized controlled clinical trial of a novel matrix hemostatic sealant in patients with acute anterior epistaxis. *Laryngoscope* 2005;115:899–902.
16. Goker H, Haznedaroglu IC, Ercetin S, et al: Haemostatic actions of the folkloric medicinal plant extract Ankaferd Blood Stopper. *J Int Med Res* 2008; 36:163–170.
17. Kurt M, Oztas E, Kuran S, et al: Tandem oral, rectal, and nasal administrations of Ankaferd Blood Stopper to control profuse bleeding leading to hemodynamic instability. *Am J Emerg Med* 2008;27:631.e1–631.e2.
18. Viducich RA, Blanda MP, Gerson LW: Posterior epistaxis: clinical features and acute complications. *Ann Emerg Med* 1995;25(5):592–596.
19. Wurtele P: How I do it: emergency nasal packing using an umbilical cord clamp to secure a Foley catheter for posterior epistaxis. *J Otolaryngol* 1996; 25(1):46–47.
20. Camp, AA, Dutton JM, Caldarelli DD: Endoscopic transnasal transethmoid ligation of the anterior ethmoid artery. *Am J Rhinol Allergy* 2009;23(2):1–3.
21. Sandoval C, Dong S, Visintainer P, et al: Clinical and laboratory features of 178 children with recurrent epistaxis. *J Pediatr Hematol Oncol* 2002; 24(1):47–49.
22. Elahi MM, Parnes LS, Fox AJ, et al: Therapeutic embolization in the treatment of intractable epistaxis. *Arch Otolaryngol Head Neck Surg* 1995;121: 65–69.
23. Cassisi NJ, Biller HF, Ogura JH: Changes in arterial oxygen tension and pulmonary mechanics with the use of posterior packing in epistaxis: a preliminary report. *Laryngoscope* 1971;81:1261–1266.

REFERENCES

1. Saunders WH: Physical examination, in Schuller DE, Schleuning AJ (eds): *DeWeese and Saunders' Otolaryngology: Head and Neck Surgery*, 8th ed. St. Louis: Mosby, 1994:3–27.
2. Benjamin BNP: *Diagnostic Laryngoscopy: Adults and Children*, 2nd ed. Philadelphia: Saunders, 1990.
3. Fried MP, Meller SM, Rinaldo A: Adult laryngeal anatomy, in Fried MP, Ferlito A (eds): *The Larynx: A Multidisciplinary Approach*, 3rd ed. San Diego, CA: Plural Publishing Inc., 2009:85–100.
4. Sasaki CT, Hundal J, Ross DA: Laryngeal physiology: normal and abnormal, in Fried MP, Ferlito A (eds): *The Larynx: A Multidisciplinary Approach*, 3rd ed. San Diego, CA: Plural Publishing Inc., 2009:101–112.

REFERENCES

1. Darrow DH, Holinger LD: Foreign bodies of the larynx, trachea, and bronchi, in Bluestone CD, Stool SE, Kenna MA (eds): *Pediatric Otolaryngology*, 3rd ed. Philadelphia: Saunders, 1996:1390–1401.
2. Schroeder T, Down SC, McDonald A, et al: Nonfatal choking-related episodes among children—United States, 2001. *MMWR* 2002;51(42):945–948.
3. Ryan CA, Yacoub W, Paton T, et al: Childhood deaths from toy balloons. *Am J Dis Child* 1990;144:1221–1224.
4. McGuirt WF, Holmes KD, Feehs R, et al: Tracheo-bronchial foreign bodies. *Laryngoscope* 1988;98:615–618.
5. Hollinshead WH: *Anatomy for Surgeons: The Head and Neck*, 3rd ed. Philadelphia: Harper & Row, 1982:389–441.
6. Holinger PH, Johnson KC, Schiller F: Congenital anomalies of the larynx. *Ann Otol Rhinol Laryngol* 1954;63:581–606.
7. Holinger LD, Green CG: Anatomy, in Holinger LD, Lusk RP, Green CG (eds): *Pediatric Laryngology and Bronchoesophagology.* Philadelphia: Lippincott, Williams & Wilkins, 1997:19–33.
8. Dayan SH, Portugal LG, Walner DL, et al: Laryngeal obstruction after inhalation of a penny from a metered-dose inhaler. *Otolaryngol Head Neck Surg* 1999;120(4):548–551.
9. Lima JA: Laryngeal foreign bodies in children: a persistent, life-threatening problem. *Laryngoscope* 1989;99:415–420.
10. Heimlich H: A lifesaving maneuver to prevent food choking. *JAMA* 1975;234(4):398–401.
11. American Heart Association: *Pediatric Advanced Life Support Manual.* Dallas, TX: American Heart Association, 2011.
12. Committee on Accident and Poison Prevention: First aid for the choking child. *Pediatrics* 1988;81(5):740–742.
13. Gibson SE, Shott SR: Foreign bodies of the upper aerodigestive tract, in Myer CM, Cotton RT, Shott SR (eds): *The Pediatric Airway.* Philadelphia: Lippincott, 1995:195–222.
14. Mu L, He P, Sun D: Inhalation of foreign bodies in Chinese children: a review of 400 cases. *Laryngoscope* 1991;101:657–660.
15. Hughes CA, Baroody FM, Marsh BR: Pediatric tracheobronchial foreign bodies: historical review from the Johns Hopkins hospital. *Ann Otol Rhinol Laryngol* 1996;105:555–561.
16. Burton EM, Riggs W, Kaufman R, et al: Pneumomediastinum caused by foreign body aspiration in children. *Pediatr Radiol* 1989;20:45–47.

REFERENCES

1. Sakae FA, Imamura R, Sennes LU, et al: Microbiology of peritonsillar abscesses. *Rev Bras Otorhinolaringol* 2006;72(2):247–251.
2. Herzon FS: Peritonsillar abscess: incidence, current management practices, and a proposal for treatment guidelines. Mosher award thesis. *Laryngoscope* 1995;105(8 Pt 3):1–17.
3. Blaivas M, Theodoro D, Duggal S: Ultrasound-guided drainage of peritonsillar abscess by the emergency physician. *Am J Emerg Med* 2003;21:155–159.
4. Buckley A, Moss E, Blokmanis A: Diagnosis of peritonsillar abscess: value of intraoral sonography. *Am J Roentgenol* 1994;162:961–970.
5. Strong EB, Woodward PJ, Johnson LP: Intraoral ultrasound evaluation of peritonsillar abscess. *Laryngoscope* 1995;105:779–783.
6. Kristensen S, Juul A, Nielsen F: Quinsy: a bilateral presentation. *J Laryngol Otol* 1985;99:401–403.
7. Spires JR, Owens JJ, Woodson GE, et al: Treatment of peritonsillar abscess: a prospective study of aspiration vs incision and drainage. *Arch Otolaryngol Head Neck Surg* 1987;113:984–989.
8. Passy V: Pathogenesis of peritonsillar abscess. *Laryngoscope* 1994;104(2): 185–190.
9. Galioto NJ: Peritonsillar abscess. *Am Fam Physician* 2008;77(2):199–202.
10. Steyer TE: Peritonsillar abscess: diagnosis and treatment. *Am Fam Physician* 2002;65:93–96.
11. Kieff DA, Bhattacharyya N, Siegel NS, et al: Selection of antibiotics after incision and drainage of peritonsillar abscesses. *Otolaryngol Head Neck Surg* 1999;120(1):57–61.
12. Wolf M, Even-Chen I, Kronenberg J: Peritonsillar abscess: repeated needle aspiration versus incision and drainage. *Ann Otol Rhinol Laryngol* 1994; 103(7):554–557.
13. Maharaj D, Rajah V, Hemsley S: Management of peritonsillar abscess. *J Laryngol Otol* 1991;105(9):743–745.
14. Spires JR, Owens JJ, Woodsen GE, et al: Treatment of peritonsillar abscess. A prospective study of aspiration versus incision and drainage. *Arch Otolaryngol Head Neck Surg* 1987;11:984–986.
15. Stringer SP, Schaefer SD, Close LG: A randomized trial for outpatient management of peritonsillar abscess. *Arch Otolaryngol Otol* 1988;114:278–298.
16. Johnson RF, Stewart MG, Wright CC: An evidence-based review of the treatment of peritonsillar abscess. *Otolaryngol Head Neck Surg* 2003;128: 332–343.
17. Weinberg E, Brodsky L, Stanievich J, et al: Needle aspiration of peritonsillar abscesses in children. *Arch Otolaryngol Head Neck Surg* 1993;119:169–172.
18. Al-Yaghchi C, Cruise A, Kapoor K, et al: Outpatient management of patients with peritonsillar abscess. *Clin Otolaryngol* 2008;33:32–55.
19. Lo C-C, Luo C-M, Fang T-J: Aberrant internal carotid artery in the mouth mimicking peritonsillar abscess. *Am J Emerg Med* 2010;28:259.e5–259.e6.
20. Maisel RH: Peritonsillar abscess; tonsil antibiotic levels in patients treated by acute abscess surgery. *Laryngoscope* 1982;92:80–87.
21. Zalzal GH, Cotton RT: Pharyngitis and adenotonsillar disease, in Cummings CS, Fredrickson JM, Hanker CA, et al (eds): *Otorhinolaryngology—Head and Neck*, 2nd ed. St. Louis: Mosby, 1993:1180–1198.
22. MacDougall G, Denholm SW: Audit of the treatment of tonsillar and peritonsillar sepsis in an ear, nose and throat unit. *J Laryngol Otol* 1995; 109(6):531–533.
23. Ozbek C, Aygenc E, Tuna EU, et al: Use of steroids in the treatment of peritonsillar abscess. *J Laryngol Otol* 2004;118:439–442.
24. Lyon M, Blaivas M: Intraoral ultrasound in the diagnosis and treatment of suspected peritonsillar abscess in the emergency department. *Acad Emerg Med* 2005;12:85–89.
25. Braude DA, Shalit M: A novel approach to enhance visualization during drainage of peritonsillar abscess. *J Emerg Med* 2008;35(3):297–298.

REFERENCES

1. Wilson-Pauwels L, Stewart PA, Akesson EJ: *Cranial Nerves: Function and Dysfunction*, 3rd ed. Philadelphia: B.C. Decker, 2010.
2. Baart JA, Brand HS: *Local Anaesthesia in Dentistry.* Wiley-Blackwell, UK, 2009.
3. Jastak JT, Yagiela JA, Donaldson D: *Local Anesthesia of the Oral Cavity*. Philadelphia: Saunders, 1995.
4. Lustig JP, Zusman SP: Immediate complications of local anesthetic administered to 1,007 consecutive patients. *J Am Dental Assoc* 1999;130:496–499.
5. Malamed SF: *Handbook of Local Anesthesia*, 5th ed. St. Louis: Elsevier Mosby, 2004.
6. Pogrel MA, Schmidt BL, Sambajon V, et al: Lingual nerve damage due to inferior alveolar nerve blocks: a possible explanation. *J Am Dental Assoc* 2003;134:195–199.
7. Pogrel MA, Thamby S: Permanent nerve involvement resulting: from inferior alveolar nerve blocks. *J Am Dental Assoc* 2000;131:901–907.

REFERENCES

1. Hicks JL, Vaughan GG: Odontogenic and periodontal sources of oral pain, in Montgomery MT, Redding SW (eds): *Orofacial Emergencies: Diagnosis and Management*. Portland, OR: JBK Publishing, 1994:1–39.
2. Mongomery S, Ferguson CD: Endodontics: diagnostic, treatment planning, and prognostic considerations. *Dent Clin North Am* 1986;30(3):533–547.
3. Benko K: Emergency dental procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 4rd ed. Philadelphia: Saunders, 2004:1317–1340.
4. Herrmann HJ, Laskin DM: Wilderness dentistry and management of facial emergencies, in Auerbach PS (ed): *Wilderness Medicine*, 5th ed. St. Louis: Mosby, 2007:625–644.
5. Ross DJ, Kirsch T: Dental emergencies, in Vanrooyen M, Kirsch T, Clem K, et al (eds): *Emergent Field Medicine*. New York: McGraw-Hill, 2001.
6. Flynn TR: Principles of management and prevention of odontogenic infections, in Hupp JR, Ellis E, Tucker MR, et al (eds): *Contemporary Oral and Maxillofacial Surgery*, 5th ed. St. Louis: Mosby, 2008:291–315.
7. Rossman LE, Hasselgreen G, Wolcott JF: Diagnosis and management of orofacial dental pain emergencies, in Cohen S, Hargreaves KM, et al (eds): *Pathways of the Pulp*, 9th ed. St. Louis: Mosby, 2006:40–58.
8. Amsterdam JT: Dental disorders, in Rosen P, Barkin R, Danzl DD, et al (eds): *Emergency Medicine, Concepts and Clinical Practice*, 6th ed. St. Louis: Mosby, 2006:1026–1043.
9. Antrim DD, Bakland LK: Treatment of common endodontic urgent care cases. *Dent Clin North Am* 1986;30(3):549–572.
10. King RC: Orofacial infections, in Montgomery MT, Redding SW (eds): *Orofacial Emergencies: Diagnosis and Management*. Portland, OR: JBK Publishing, 1994:40–87.
11. Flynn TR: Complex odontogenic infections, in Hupp JR, Ellis E, Tucker MR, et al (eds): *Contemporary Oral and Maxillofacial Surgery*, 5th ed. St. Louis: Mosby, 2008:317–336.
12. Haddon R, Peacock WR: Face and jaw emergencies, in Tintalli JE, Kelen GD, Stapczynski JS, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill, 2004:1471–1478.
13. Beaudreau RW: Oral and dental emergencies, in Tintalli JE, Kelen GD, Stapczynski JS, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill, 2004:1482–1494.
14. Baumgartner JC, Hutter JW, Siqueria JF: Endodontic microbiology and treatment of infections, in Cohen S, Hargreaves KM (eds): *Pathways of the Pulp*, 9th ed. St. Louis: Mosby, 2006:580–607.
15. Flynn TR: The swollen face: severe odontogenic infections. *Emerg Med Clin North Am* 2000;18(3):481–519.
16. Schneider K: Dental abscesses, in Hennes H, Steele RW, Wolfram W, et al (eds): *eMedicine: Dental Abscess*. http://emedicine.medscape.com/article/909373, 2009.
17. Ahl DR, Hilgeman JL, Snyder JD: Periodontal emergencies. *Dent Clin North Am* 1986;30(3):459–472.
18. Klokkevold P: Common dental emergencies: evaluation and management for emergency physicians. *Emerg Med Clin North Am* 1989;7(1):29–63.
19. Gibson DE, Verono AA: Dentistry in the emergency department. *J Emerg Med* 1987;5(1):35–44.
20. Hupp JR: Principles of management in impacted teeth, in Hupp JR, Ellis E, Tucker MR, et al (eds): *Contemporary Oral and Maxillofacial Surgery*, 5th ed. St. Louis: Mosby, 2008:153–184.
21. Nweeia MT: Dental medicine on expeditions, in Bledsoe GH, Manyak MJ, Townes DA, et al (eds): *Expedition and Wilderness Medicine*. New York: Cambridge, 2009:595–610.
22. Josell SD, Abrams RG: Managing common dental problems and emergencies. *Pediatr Clin North Am* 1995;38(5):1325–1342.
23. American Heart Association: Endocarditis Prophylaxis Information. http://circ.ahajournals.org/content/116/15/1736.full.pdf, 2007.
24. American Dental Association: Infective Endocarditis. http://www.ada.org/prof/resources/topics/infective_endocarditis.asp, Chicago, IL, 2009.
25. Dodson TB, Kaban LB: Special considerations for the pediatric emergency patient. *Emerg Med Clin North Am* 2000;18(3):539–548.
26. American Academy of Pediatric Dentistry: Guideline on Appropriate Use of Antibiotic Therapy for Pediatric Dental Patients. http://www.aapd.org/media/Policies_Guidelines/G_AntibioticTherapy.pdf, Chicago, IL, 2005.

REFERENCES

1. Hupp JR: Postoperative patient management, in Hupp JR, Ellis E III, Tucker MR (eds): *Contemporary Oral and Maxillofacial Surgery*, 5th ed. St. Louis: Mosby-Year Book, 2008:179–184.
2. Neville BW, Damm DD, Allen CM: *Oral and Maxillofacial Pathology*. Philadelphia: Saunders, 1995:119–121.
3. Hermesch CB, Hilton TJ, Biesbrock AR, et al: Perioperative use of 0.12% chlorhexidine gluconate for the prevention of alveolar osteitis: efficacy and risk factor analysis. *Oral Surg Oral Med Oral Path Oral Radiol Endod* 1998;85(4):381–387.
4. Birm H: Etiology and pathogenesis of fibro alveolitis (dry socket). *Int J Oral Surg* 1973;2:241–246.
5. Colby RC: The general practitioner's perspective of the etiology, prevention, and treatment of dry socket. *Gen Dent* 1997;45(5):461–467.
6. Garibaldi JA, Greenlaw J, Choi J, et al: Treatment of post-operative pain. *J Calif Dental Assoc* 1995;23(4):71–74.

REFERENCES

1. Hupp JR: Postoperative patient management, in Hupp JR, Ellis E III, Tucker MR (eds): *Contemporary Oral and Maxillofacial Surgery*, 5th ed. St. Louis: Mosby-Year Book, 2008:179–184.
2. Sonis ST, Fazio RC, Fang L: *Principles and Practice of Oral Medicine,* 2nd ed. Philadelphia: Saunders, 1995:249–261.
3. Simon RR, Brenner BE: *Emergency Procedures and Techniques,* 4th ed. Philadelphia: Lippincott, William & Wilkins, 2001:331.

REFERENCES

1. Klokkevold P: Common dental emergencies: evaluation and management for emergency physicians. *Emerg Med Clin North Am* 1989;1:29–63.
2. Gibson DE, Verono AA: Dentistry in the emergency department. *J Emerg Med* 1987;5(1):35–44.
3. Herrmann HJ, Laskin DM: Wilderness dentistry and management of facial emergencies, in Auerbach PS (ed): *Wilderness Medicine*, 5th ed. St. Louis: Mosby, 2007:625–644.
4. Howes DS, Dowling PJ: Triage and initial evaluation of the oral facial emergency. *Emerg Med Clin North Am* 2000;18(3):371–378.
5. Naudi AB, Fung DE: Tooth fragment reattachment after retrieval from the lower lip—a case report. *Dent Traumatol* 2007;23(3):177.
6. Naudi AB, Fung DE: Tooth fragment reattachment in multiple complicated permanent incisor crown-root fractures: a report of two cases. *Dent Traumatol* 2008;24(2):248.
7. Yurdakul AS, Kanbay A, Kurul C, et al: An occult foreign body aspiration with bronchial anomaly mimicking asthma and pneumonia. *Dent Traumatol* 2007;23(6):368.
8. Pektas ZO, Kircelli BH, Uslu H: Displacement of tooth fragments to the lower lip: a report of a case presenting an immediate diagnostic approach. *Dent Traumatol* 2007;23(6):376.
9. Cai HX, Long X, Cheng Y, et al: Dislocation of an upper third molar into the maxillary sinus after a severe trauma: a case report. *Dent Traumatol* 2007; 23(3):181.
10. Luna HB, Moreira RWF, de Moraes M, et al: Traumatic intrusion of maxillary permanent incisors into the nasal cavity: report of a case. *Dent Traumatol* 2008;24(2):244.
11. Antrim DD: Treatment of traumatic dental injuries by nondental personnel. *US Navy Med* 1983;74(3):18–23.
12. Amsterdam JT: Emergency dental procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3rd ed. Philadelphia: Saunders, 1998:1045–1064.
13. Glass BJ, Kuel RF, Langlais RP: Treatment of common orofacial conditions. *Dent Clin North Am* 1986;30(3):421–446.
14. Ross DJ, Kirsch T: Dental emergencies, in Vanrooyen M, Kirsch T, Clem K, et al (eds): *Emergent Field Medicine*. New York: McGraw-Hill, 2001:276–302.
15. Neville BW, Damm DD, White DK, et al: *Color Atlas of Clinical Oral Pathology*, 1st ed. Philadelphia: Lea & Febiger, 1991.
16. Regezi JA, Sciubba JJ: *Oral Pathology: Clinical Pathologic Correlations*, 1st ed. Philadelphia: Saunders, 1989.
17. Nweeia MT: Dental medicine on expeditions, in Bledsoe GH, Manyak MJ, Townes DA, et al (eds): *Expedition and Wilderness Medicine*. New York: Cambridge, 2009:595–610.
18. Blank LW, Charbeneau GT: Urgent treatment in operative dentistry. *Dent Clin North Am* 1986;30(3):489–501.
19. Dickson M: *Where There Is No Dentist*, 1st ed. Berkley: The Hesperian Foundation, 1983.
20. Robertello FJ, Taybos GM, Cotton WR: Complications and prognostic considerations in operative dentistry. *Dent Clin North Am* 1986;30(3):473–488.
21. Elderton RJ: The prevalence of failure of restorations: a literature review. *J Dent* 1976;4(5):207–210.
22. Hicks JL, Vaughan GG: Odontogenic and periodontal sources of oral pain, in Montgomery MT, Redding SW (eds): *Orofacial Emergencies: Diagnosis and Management*. Portland, OR: JBK Publishing, 1994:1–39.
23. Segerdal MJN: *Temporary Dentistry*, 1st ed. LaCanada, CA: PIBL, 1993.

REFERENCES

1. Lewis C, Lynch H, Johnston B: Dental complaints in emergency departments: a national perspective. *Ann Emerg Med* 2003;42(1):93–99.
2. Dale RA: Dentoalveolar trauma. *Emerg Med Clin North Am* 2000;18(3): 521–538.
3. Camp JH, Stewart C, Winograd SM: Dental trauma: diagnostic considerations, emergency procedures and definitive management. *Emerg Med Rep* 1995;16(9):79–86.
4. Gibson DE, Verono AA: Dentistry in the emergency department. *J Emerg Med* 1987;5(1):35–44.
5. Beaudreau RW: Oral and dental emergencies, in Tintalli JE, Kelen GD, Stapczynski JS, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill, 2004:1482–1494.
6. Amsterdam JT: Dental disorders, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine, Concepts and Clinical Practice*, 6th ed. St. Louis: Mosby, 2006:1026–1043.
7. Andreasen JO, Andreasen FM: *Essentials of Traumatic Injuries to the Teeth*, 2nd ed. Oxford: Blackwell, 2000.
8. Andreasen JO, Andreasen FM, Bakland LK, et al: *Traumatic Dental Injuries: A Manual*, 2nd ed. Oxford: Blackwell, 2003.
9. International Association of Dental Traumatology: Guidelines for the Management of Traumatic Dental Injuries in the Primary Dentition, March 2007 update. http://www.iadtdentaltrauma.org/web/index.php?option=com_content&task=view&id=42&Itemid=68.
10. Yurdakul AS, Kanbay A, Kurul C, et al: An occult foreign body aspiration with bronchial anomaly mimicking asthma and pneumonia. *Dent Traumatol* 2007;23(6):368.
11. Pektas ZO, Kircelli BH, Uslu H: Displacement of tooth fragments to the lower lip: a report of a case presenting an immediate diagnostic approach. *Dent Traumatol* 2007;23(6):376.
12. Naudi AB, Fung DE: Tooth fragment reattachment after retrieval from the lower lip—a case report. *Dent Traumatol* 2007;23(3):177.
13. Cai HX, Long X, Cheng Y, et al: Dislocation of an upper third molar into the maxillary sinus after a severe trauma: a case report. *Dent Traumatol* 2007;23(3):181.
14. Luna AHB, Moreira RWF, de Moraes M: Traumatic intrusion of maxillary permanent incisors into the nasal cavity: report of a case. *Dent Traumatol* 2008;24(2):244.
15. Ross DJ, Kirsch T: Dental emergencies, in Vanrooyen M, Kirsch T, Clem K, et al (eds): *Emergent Field Medicine*. New York: McGraw-Hill, 2001: 276–302.
16. International Association of Dental Traumatology: Guidelines for the Management of Traumatic Dental Injuries in the Primary Dentition, March 2007 update. http://www.iadtdentaltrauma.org/web/index.php?option=com_content&task=view&id=41&Itemid=69.
17. Klokkevold P: Common dental emergencies: evaluation and management for emergency physicians. *Emerg Med Clin North Am* 1989;1:29–63.
18. Reichert L, Assuncao DS, Ferelle A, et al: Effects on permanent teeth after luxation injuries to the primary predecessors: a study in children assisted at an emergency service. *Dent Traumatol* 2009;25(2):165.
19. Benko K: Emergency dental procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3th ed. Philadelphia: Saunders, 2004:1317–1340.
20. Trope M: Clinical management of the avulsed tooth. *Dent Clin North Am* 1995;39(1):93–112.
21. Antrim DD, Bakland LK, Parker MW: Treatment of endodontic urgent care cases. *Dent Clin North Am* 1986;30(3):549–573.
22. Tekin U, Filippi A, Pohl Y, et al: Expression of proliferating cell nuclear antigen in pulp cells of extracted immature teeth preserved in two different storage media. *Dent Traumatol* 2008;24(1):38.
23. Swiatkowski W, Rahnama M, Tomaszewski T: Replantation and transplantation following avulsion of two maxillary incisors. *Dent Traumatol* 2007; 23(1):60.
24. Cobankara FK, Ungor M: Replantation after extended dry storage of avulsed permanent incisors: a case report. *Dent Traumatol* 2007;23(4):251.
25. Rosenberg H, Rosenberg H, Hickey M: Emergency management of a traumatic tooth avulsion. *Ann Emerg Med* 2011;57(4):375–377.

REFERENCES

1. Lewis C, Lynch H, Johnston B: Dental complaints in emergency departments: a national perspective. *Ann Emerg Med* 2003;42(1):93–99.
2. Camp JH, Stewart C, Winograd SM: Dental trauma: diagnostic considerations, emergency procedures and definitive management. *Emerg Med Rep* 1995;16(9):79–86.
3. Gibson DE, Verono AA: Dentistry in the emergency department. *J Emerg Med* 1987;5(1):35–44.
4. Beaudreau RW: Oral and dental emergencies, in Tintalli JE, Kelen GD, Stapczynski JS, et al (eds): *Emergency Medicine: A Comprehensive Study Guide*, 6th ed. New York: McGraw-Hill, 2004:1482–1494.
5. Amsterdam JT: Dental disorders, in Rosen P, Barkin R, Danzl DF, et al (eds): *Emergency Medicine, Concepts and Clinical Practice*, 4th ed. St. Louis: Mosby, 1998:2680–2697.
6. Ross DJ, Kirsch T: Dental emergencies, in Vanrooyen M, Kirsch T, Clem K, et al (eds): *Emergent Field Medicine*. New York: McGraw-Hill, 2001:276–302.
7. Yurdakul AS, Kanbay A, Kurul C, et al: An occult foreign body aspiration with bronchial anomaly mimicking asthma and pneumonia. *Dent Traumatol* 2007;23(6):368.
8. Pektas ZO, Kircelli BH, Uslu H, et al: Displacement of tooth fragments to the lower lip: a report of a case presenting an immediate diagnostic approach. *Dent Traumatol* 2007;23(6):376.
9. Naudi AB, Fung DE: Tooth fragment reattachment after retrieval from the lower lip—a case report. *Dent Traumatol* 2007;23(3):177.
10. Cai HX, Long X, Cheng Y, et al: Dislocation of an upper third molar into the maxillary sinus after a severe trauma: a case report. *Dent Traumatol* 2007;23(3):181.
11. Luna AHB, Moreira RWF, de Moraes M, et al: Traumatic intrusion of maxillary permanent incisors into the nasal cavity: report of a case. *Dent Traumatol* 2008;24(2):244.
12. Andreasen JO, Andreasen FM: *Essentials of Traumatic Injuries to the Teeth*, 2nd ed. Oxford: Blackwell, 2000.
13. Andreasen JO, Andreasen FM, Bakland LK, et al: *Traumatic Dental Injuries: A Manual*, 2nd ed. Oxford: Blackwell, 2003.
14. International Association of Dental Traumatology: Guidelines for the Management of Traumatic Dental Injuries in the Primary Dentition, March 2007 update. http://www.iadtdentaltrauma.org/web/index.php?option=com_content&task=view&id=42&Itemid=68.
15. Klokkevold P: Common dental emergencies: evaluation and management for emergency physicians. *Emerg Med Clin North Am* 1989;7(1):29–63.
16. Antrim DD, Bakland LK, Parker MW: Treatment of endodontic urgent care cases. *Dent Clin North Am* 1986;30(3):549–573.
17. Antrim DD: Treatment of traumatic dental injuries by nondental personnel. *US Navy Med* 1983;74(3):18–23.
18. Benko K: Emergency dental procedures, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 3th ed. Philadelphia: Saunders, 2004:1317–1340.
19. International Association of Dental Traumatology: Guidelines for the Management of Traumatic Dental Injuries in the Primary Dentition, March 2007 update. http://www.iadtdentaltrauma.org/web/index.php?option=com_content&task=view&id=41&Itemid=69.
20. Morris JA Jr, Swiontkowski MF, Herrmann HJ: Wilderness trauma emergencies, in Auerbach PS (ed): *Wilderness Medicine*, 3rd ed. St Louis: Mosby, 1995:343–352.
21. Hile LM, Linklater DR: Use of 2-octyl cyanoacrylate for the repair of a fractured molar tooth. *Ann Emerg Med* 2006;47(5):424.
22. Research Forum Educational Program 2007. *Ann Emerg Med* 2007;50(3):A3.
23. Thomas JJ, Edwards AR, Moore M: Fractured teeth, in Kadkade PP, Kulkarni R, Lovato LM, et al (eds): *eMedicine: Fractured Teeth*. http://emedicine.medscape.com/article/82755, 2008.

REFERENCES

1. Heitz CR: Face and jaw emergencies, in Tintinalli JE, Stapczynski J, Ma OJ, et al (eds): *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*, 7th ed. New York: McGraw-Hill, 2011:1557–1564.
2. Kruger G-O: *Textbook of Oral and Maxillofacial Surgery*. St. Louis: Mosby, 1984.
3. Amsterdam JT: Oral medicine, in Marx JA, Hockberger RS, Walls RM, et al (eds): *Rosen's Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St. Louis: Mosby, 2010:856–857.
4. Kai S, Kai H, Nakayama E, et al: Clinical symptoms of open lock position of the condyle. Relation to anterior dislocation of the temporomandibular joint. *Oral Surg Oral Med Oral Pathol* 1992;74:143.
5. Undt G, Kermer C, Piehslinger E, et al: Treatment of recurrent mandibular dislocation, part I: Leclerc blocking procedure. *Int J Oral Maxillofac Surg* 1997;26:92.
6. Shorey CW, Campbell JH: Dislocation of the temporomandibular joint. *Oral Surg Oral Med Oral Path Oral Radiol Endod* 2002;89:662.
7. Whiteman PJ, Pradel EC: Bilateral temporomandibular joint dislocation in a 10-month-old infant after vomiting. *Pediatr Emerg Care* 2000;16:418.
8. Luyk NH, Larsen PE: The diagnosis and treatment of the dislocated mandible. *Am J Emerg Med* 1989;7:332.
9. Awang MN: A new approach to the reduction of acute dislocation of the temporomandibular joint: a report of three cases. *Br J Oral Maxillofac Surg* 1987;25:244.
10. Cheng D: Unified hands technique for mandibular dislocation. *J Emerg Med* 2010;366–367.
11. Sanders B: *Pediatric Oral and Maxillofacial Surgery*. CV Mosby, St. Louis, 1979:51.
12. Ziegler CM, Haag C, Muhling J: Treatment of recurrent temporomandibular joint dislocation with intramuscular botulinum toxin injection. *Clin Oral Investig* 2003;7:52.

REFERENCES

1. Heidelbaugh JJ, Lee H: Management of the ingrown toenail. *Am Fam Physician* 2009;79(4):303–308.
2. Losa Iglesias ME, Veiga de Cabo J, Tejedor Traspaderne J, et al: Safety of phenol vapor inhalation during performance of chemical matrixectomy to treat ingrown toenails. *Dermatol Surg* 2008;34(11):1515–1519.
3. Rounding C, Bloomfield S: Surgical treatments for ingrowing toenails. *Cochrane Database Syst Rev* 2005;(2):CD001541.
4. Shaikh FM, Jafri M, Giri SK, et al: Efficacy of wedge resection with phenolization in the treatment of ingrowing toenails. *J Am Podiatr Med Assoc* 2008; 98(2):118–122.
5. Yang G, Yanchar NL, Lo AY, et al: Treatment of ingrown toenails in the pediatric population. *J Pediatr Surg* 2008;43(5):931–935.
6. Buckley D: Segmental phenolic ablation for ingrown toenails in general practice. *Ir Med J* 2000;93:242–244.
7. Kominsky SJ, Daniels MD: A modified approach to the phenol and alcohol chemical partial matrixectomy. *J Am Podiatr Med Assoc* 2000;90:208–210.
8. Bostanci S, Ekmekci P, Gurgey E: Chemical matrixectomy with phenol for the treatment of ingrowing toenail: a review of the literature and follow-up of 172 treated patients. *Acta Derm Venereol* 2001;81:181–183.

REFERENCES

1. Jahss MH: Chronic and recurrent dislocations of the fifth toe. *Foot Ankle* 1981;1:275–278.
2. Armagan OE, Shereff MJ: Injuries to the toes and metatarsals. *Orthop Clin N Am* 2001;32:1–10.
3. Early JS: Fractures and dislocations of the midfoot and forefoot, in Bucholz RW, Heckman JD (eds): *Rockwood and Green's Fractures in Adults*. Philadelphia: Lippincott Williams & Wilkins, 2001:2235–2239.
4. Mann RA, Coughlin MJ: *Surgery of the Foot and Ankle*. Toronto: Mosby, 1993:1642.
5. Dimmen S, Nordsletten L, Madsen JE: Parecoxib and indomethacin delay early fracture healing: a study in rats. *Clin Ortho Rel Res* 2009;467(8): 1992–1999.
6. Cobey JC: Treatment of undisplaced toe fractures with metatarsal bar made from tongue blades. *Clin Orthop Relat Res* 1974;103:56.

REFERENCES

1. Thomas JL, Blitch EL, Chaney DM, et al: Diagnosis and treatment of forefoot disorders: Morton's intermetatarsal neuroma. *J Foot Ankle Surg* 2009; 48(2):251–256.
2. Mendicino SS, Rockett MS: Morton's neuroma—update on diagnosis and imaging. *Clin Podiatr Med Surg* 1997;14(2):303–311.
3. Nunan PJ, Giesy BD: Management of Morton's neuroma in athletes. *Clin Podiatr Med Surg* 1997;14(3):489–501.
4. Zanetti M, Strehle JK, Zollinger H, et al: Morton neuroma and fluid in the intermetatarsal bursae on MRI images of 70 asymptomatic volunteers. *Radiology* 1997;203(2):516–520.
5. Helal B, Wilson D: *The Foot*. Philadelphia: Churchill Livingstone, 1988: 493–499.
6. Mulder JD: The causative mechanism in Morton's metatarsalgia. *J Bone Joint Surg Br* 1951;33:94–95.
7. Wasserman G: Treatment of Morton's neuroma with the carbon dioxide laser. *Clin Podiatr Med Surg* 1992;9(3):671–686.
8. Kaminsky S, Griffin L, Milsap J, et al: Is ultrasonography a reliable way to confirm the diagnosis of Morton's neuroma? *Orthopedics* 1997;20(1):37–39.
9. Rasmussen MR, Kitaoka HB, Patzer GL: Nonoperative treatment of plantar interdigital neuroma with a single corticosteroid injection. *Clin Orthop* 1996;326:188–193.
10. Wu KK: Morton's interdigital neuroma: a clinical review of its etiology, treatment and results. *J Foot Ankle Surg* 1996;35(2):112–119.
11. Saygi B, Yildirim Y, Saygi EK, et al: Morton's neuroma: comparative results of two conservative methods. *Foot Ankle Int* 2005;26:556–559.
12. Bennett GL, Graham CE, Mauldin DM: Morton's interdigital neuroma: a comprehensive treatment protocol. *Foot Ankle Int* 1995;16(12):760–763.
13. Kilmartin TE, Wallace WA: Effect of pronation and supination orthosis on Morton's neuroma and lower extremity function. *Foot Ankle Int* 1994; 15(5):256–262.
14. Hughes RJ, Ali K, Jones H: Treatment of Morton's neuroma with alcohol injection under sonographic guidance: follow-up of 101 cases. *AJR* 2007; 188:1535–1539.
15. Fanucci E, Masala S, Fabiano S, et al: Treatment of intermetatarsal Morton's neuroma with alcohol injection under US guide: 10-month follow-up. *Eur Radiol* 2004;14(3):514–518.
16. Okafor B, Shergill G, Angel J: Treatment of Morton's neuroma by neurolysis. *Foot Ankle Int* 1997;18(5):284–287.
17. Keh RA, Ballew KK, Higgins KR, et al: Long-term follow-up of Morton's neuroma. *J Foot Surg* 1992;31(1):93–95.
18. Diebold PF, Daum B, Dang-Vu V, et al: True epineural neurolysis in Morton's neuroma: a 5-year follow up. *Orthopedics* 1996;19(5):397–400.
19. Basadonna PT, Rucco V, Gasparini D, et al: Plantar fat pad atrophy after corticosteroid injection for an interdigital neuroma: a case report. *Am J Phys Med Rehabil* 1999;78(3):283–285.
20. Reddy PD, Zelicof SB, Ruotolo C, et al: Interdigital neuroma. Local cutaneous changes after corticosteroid injection. *Clin Orthop Relat Res* 1995;317: 185–187.

REFERENCES

1. National Safety Council: Injury Facts 2008;8:14–15.
2. Berg MD, Schexnayder SM, Chameides L, et al: American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiac care: Pediatric Basic Life Support. *Circulation* 2010;122(18 suppl 3):s862–s875.
3. Berg RA, Hemphill R, Abella BS, et al: American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiac care: Adult Basic Life Support. *Circulation* 2010;122(18 suppl 3):s685–s705.
4. Hoffman JR: Treatment of foreign body obstruction of the upper airway. *West J Med* 1982;136(1):11–22.
5. Birrer RB, Garven BA: Tooth aspiration in a six-year-old boy. *Am J Emerg Med* 2001;19(7):598–600.
6. Paediatric advanced life support: Australian Resuscitation Council Guidelines 2006. *Emerg Med Australas* 2006;18(4):357–371.
7. Sharma HS, Sharma S: Management of laryngeal foreign bodies in children. *J Accid Emerg Med* 1999;16(2):150–153.
8. Fraga Ade M, Reis MC, Zambon MP, et al: Foreign body aspiration in children: clinical aspects, radiological aspects and bronchoscopic treatment. *J Bras Pneumol* 2008;34(2):74–82.
9. Redding JS: The choking controversy: critique of evidence on the Heimlich maneuver. *Crit Care Med* 1979;7(10):475–479.
10. Airway: Australian Resuscitation Council Guideline 2006. *Emerg Med Australas* 2006;18(4):325–327.
11. Rotta AT, Wiryawan B: Respiratory emergencies in children. *Respir Care* 2003;48(3):248–258;discussion 58–60.
12. Stix MS: Knees-to-abdomen "Heimlich maneuver" in a morbidly obese patient. *Anesth Analg* 2001;92(6):1619.
13. Rubio Quinones F, Munoz Saez M, Povatos Serrano EM, et al: Magill forceps: a vital forceps. *Pediatr Emerg Care* 1995;11(5):302–303.
14. Porter AC: Use of a urethral catheter to remove an upper airway foreign body. *Anaesthesia* 1998;53(3):313–314.

REFERENCES

1. Zheng ZJ, Croft JB, Giles WH, et al: Sudden cardiac death in the United States, 1989 to 1998. *Circulation* 2001;104(18):2158–2163.
2. Polderman KH: Induced hypothermia and fever control for prevention and treatment of neurological injuries. *Lancet* 2008;371(9628):1955–1969.
3. Neumar RW, Nolan JP, Adrie C, et al: Post-cardiac arrest syndrome: epidemiology, pathophysiology, treatment, and prognostication. *Circulation* 2008;118(23):2452–2483.
4. The Hypothermia After Cardiac Arrest Study Group: Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. *N Engl J Med* 2002;346(8):549–556.
5. Bernard SA, Gray TW, Buist MD, et al: Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia. *N Engl J Med* 2002;346(8):557–563.
6. Cheung KW, Green RS, Magee KD: Systematic review of randomized controlled trials of therapeutic hypothermia as a neuroprotectant in post cardiac arrest patients. *Can J Emerg Med* 2006;8(5):329–337.
7. Holzer M, Bernard SA, Hachimi-Idrissi S, et al: Hypothermia for neuroprotection after cardiac arrest: systematic review and individual patient data meta-analysis. *Crit Care Med* 2005;33(2):414–418.
8. Holzer M, Mullner M, Sterz F, et al: Efficacy and safety of endovascular cooling after cardiac arrest: cohort study and Bayesian approach. *Stroke* 2006;37(7):1792–1797.
9. Busch M, Soreide E, Lossius HM, et al: Rapid implementation of therapeutic hypothermia in comatose out-of-hospital cardiac arrest survivors. *Acta Anaesthesiol Scand* 2006;50(10):1277–1283.
10. Sunde K, Pytte M, Jacobsen D, et al: Implementation of a standardised treatment protocol for post resuscitation care after out-of-hospital cardiac arrest. *Resuscitation* 2007;73(1):29–39.
11. Skulec R, Kovarnik T, Dostalova G, et al: Induction of mild hypothermia in cardiac arrest survivors presenting with cardiogenic shock syndrome. *Acta Anaesthesiol Scand* 2008;52(2):188–194.
12. Oddo M, Schaller MD, Feihl F, et al: From evidence to clinical practice: effective implementation of therapeutic hypothermia to improve patient outcome after cardiac arrest. *Crit Care Med* 2006;34(7):1865–1873.
13. Dixon SR, Whitbourn RJ, Dae MW, et al: Induction of mild systemic hypothermia with endovascular cooling during primary percutaneous coronary intervention for acute myocardial infarction. *J Am Coll Cardiol* 2002;40(11):1928–1934.
14. Wolfrum S, Pierau C, Radke PW, et al: Mild therapeutic hypothermia in patients after out-of-hospital cardiac arrest due to acute ST-segment elevation myocardial infarction undergoing immediate percutaneous coronary intervention. *Crit Care Med* 2008;36(6):1780–1786.
15. Merchant RM, Soar J, Skrifvars MB, et al: Therapeutic hypothermia utilization among physicians after resuscitation from cardiac arrest. *Crit Care Med* 2006;34(7):1935–1940.
16. Laver S, Farrow C, Turner D, et al: Mode of death after admission to an intensive care unit following cardiac arrest. *Int Care Med* 2004;30(11):2126–2128.
17. Polderman KH, Rijnsburger ER, Peerdeman SM, et al: Induction of hypothermia in patients with various types of neurologic injury with use of large volumes of ice-cold intravenous fluid. *Crit Care Med* 2005;33(12):2744–2751.
18. Nolan JP, Morley PT, Hoek TL, et al: Therapeutic hypothermia after cardiac arrest. An advisory statement by the Advancement Life support Task Force of the International Liaison committee on Resuscitation. *Resuscitation* 2003;57(3):231–235.
19. Rittenberger JC, Kelly E, Jang D, et al: Successful outcome utilizing hypothermia after cardiac arrest in pregnancy: a case report. *Crit Care Med* 2008;36(4):1354–1356.
20. Bernard S, Buist M, Monteiro O, et al: Induced hypothermia using large volume, ice-cold intravenous fluid in comatose survivors of out-of-hospital cardiac arrest: a preliminary report. *Resuscitation* 2003;56(1):9–13.
21. Kim F, Olsufka M, Longstreth WT Jr., et al: Pilot randomized clinical trial of prehospital induction of mild hypothermia in out-of-hospital cardiac arrest patients with a rapid infusion of 4 degrees C normal saline. *Circulation* 2007;115(24):3064–3070.
22. Bruel C, Parienti JJ, Marie W, et al: Mild hypothermia during advanced life support: a preliminary study in out-of-hospital cardiac arrest. *Crit Care Med* 2008;12(1):R31.
23. Jordan JD, Carhuapoma JR: Hypothermia: comparing technology. *J Neurol Sci* 2007;261(1–2):35–38.
24. Steinberg GK, Ogilvy CS, Shuer LM, et al: Comparison of endovascular and surface cooling during unruptured cerebral aneurysm repair. *Neurosurgery* 2004;55(2):307–314.
25. Merchant RM, Abella BS, Peberdy MA, et al: Therapeutic hypothermia after cardiac arrest: unintentional overcooling is common using ice packs and conventional cooling blankets. *Crit Care Med* 2006;34(12 Suppl):S490–S494.
26. Kliegel A, Janata A, Wandaller C, et al: Cold infusions alone are effective for induction of therapeutic hypothermia but do not keep patients cool after cardiac arrest. *Resuscitation* 2007;73(1):46–53.
27. Kimberger O, Ali SZ, Markstaller M, et al: Meperidine and skin surface warming additively reduce the shivering threshold: a volunteer study. *Crit Care* 2007;11(1):R29.
28. Shankaran S, Laptook AR, Ehrenkranz RA, et al: Whole-body hypothermia for neonates with hypoxic-ischemic encephalopathy. *N Engl J Med* 2005;353(15):1574–1584.
29. Rundgren M, Rosen I, Friberg H: Amplitude-integrated EEG (aEEG) predicts outcome after cardiac arrest and induced hypothermia. *Int Care Med* 2006;32(6):836–842.
30. Mokhtarani M, Mahgoub AN, Morioka N, et al: Buspirone and meperidine synergistically reduce the shivering threshold. *Anesth Analg* 2001;93(5):1233–1239.
31. Zweifler RM, Voorhees ME, Mahmood MA, et al: Magnesium sulfate increases the rate of hypothermia via surface cooling and improves comfort. *Stroke* 2004;35(10):2331–2334.
32. Sessler DI: Complications and treatment of mild hypothermia. *Anesthesiology* 2001;95(2):531–543.

REFERENCES

1. Gentilello LM: Advances in the management of hypothermia. *Surg Clin North Am* 1995;75(2):243–256.
2. Eddy VA, Morris JA Jr, Cullinane DC: Hypothermia, coagulopathy, and acidosis. *Surg Clin North Am 2000*;80:845–854.
3. Peng RY, Bongard FS: Hypothermia in trauma patients. *J Am Coll Surg* 1999; 188(6):685–696.
4. Gregory J, Townsend M, Cloutier C, et al: Timing and incidence of hypothermia ($T < 36°C$) in operated trauma patients. Presented at the 50th Annual Meeting of the AAST, Tucson (AZ), September 22, 1990.
5. Luna G, Maier R, Pavlin E, et al: Incidence and effect of hypothermia in seriously injured patients. *J Trauma* 1987;27(9):1014–1018.
6. Aragon D: Temperature management in trauma patients across the continuum of care: the TEMP group. *AACN Clin Issues* 1999;10(1):113–123.
7. Lee-Chiong TL, Stitt JT: Accidental hypothermia. *Postgrad Med* 1996; 99(1):77–88.
8. Jolly BT, Ghezzi KT: Accidental hypothermia. *Emerg Med Clin North Am* 1992;10(2):311–327.
9. Hanania NA, Zimmerman JL: Accidental hypothermia. *Crit Care Clin* 1999; 15(2):235–249.
10. Roe C, Goldberg M, Blair C, et al: The influence of body temperature on early postoperative oxygen consumption. *Surgery* 1966;60:85–92.
11. Doufas AG: Consequences of inadvertent perioperative hypothermia. *Best Pract Res Clin Anaesthesiol* 2003;17(4):535–549.
12. Valeri C, Feingold H, Cassidy G, et al: Hypothermia induced reversible platelet dysfunction. *Ann Surg* 1987;205:175–181.
13. Wolberg AS, Meng ZH, Monroe DM 3rd, et al: A systematic evaluation of the effect of temperature on coagulation enzyme activity and platelet function. *J Trauma* 2004;56(6):1221–1228.
14. Reed R, Bracey A, Hudson J, et al: Hypothermia and blood coagulation: dissociation between enzyme activity and clotting factor levels. *Circ Shock* 1990;32:141–152.
15. Marion DW, Leonov Y, Ginsberg M, et al: Resuscitative hypothermia. *Crit Care Med* 1996;24(2):S81–S89.
16. The Hypothermia After Cardiac Arrest Study Group: Mild therapeutic hypothermia to improve the neurologic outcome after cardiac arrest. *N Engl J Med* 2002;346:549–556.
17. Bernard SA, Gray TW, Buist MD, et al: Treatment of comatose survivors of out-of-hospital cardiac arrest with induced hypothermia. *N Engl J Med* 2002;346:557–563.
18. Nolan JP, Morley PT, Vanden Hoek TL, et al: Therapeutic hypothermia after cardiac arrest: an advisory statement by the advanced life support task force of the International Liaison Committee on Resuscitation. *Circulation* 2003;108:118–121.
19. Young CC, Sladen RN: Temperature monitoring. *Int Anesth Clin* 1996; 34(3):149–174.
20. Rathinam S, Annam V, Steyn R, et al: A randomised controlled trial comparing Mediwrap(R) heat retention and forced air warming for maintaining normothermia in thoracic surgery. *Interact Cardiovasc Thorac Surg* 2009;9(1):15–19.
21. Wagner K, Swanson E, Raymond CJ, Smith CE: Comparison of two convective warming systems during major abdominal and orthopedic surgery. *Can J Anaesth* 2008;55(6):358–363.
22. Gentilello LM, Cobean RA, Offner PJ, et al: Arteriovenous rewarming: rapid reversal of hypothermia in critically ill patients. *J Trauma* 1992;32(3):316–327.
23. Komatsu S, Shimomatsuya T, Kobuchi T, et al: Severe accidental hypothermia successfully treated by rewarming strategy using continuous venovenous hemodiafiltration system. *J Trauma* 2007;62(3):775–776.
24. Josephs JD, Farmer JC: Hypothermia and extracorporeal rewarming: the journey toward a less invasive, more accessible methodology. *Crit Care Med* 1998;26(12):1944–1945.
25. Haughn C, Gallo U, Raimonde AJ, et al: Feasibility of a novel veno-veno circuit as a central rewarming method in a severely hypothermic canine model. *Curr Surg* 2003;60(4):442–448.
26. Röggla M, Frossard M, Wagner A, et al: Severe accidental hypothermia with or without hemodynamic instability: rewarming without the use of extracorporeal circulation. *Wien Klin Wochenschr* 2002;114(8–9):315–320.
27. Seiji M, Sadaki I, Shigeaki I, et al: The efficacy of rewarming with a portable and percutaneous cardiopulmonary bypass system in accidental deep hypothermia patients with hemodynamic instability. *J Trauma* 2008; 65(6):1391–1395.
28. Binnema R, van der Wal A, Visser C, et al: Treatment of accidental hypothermia with cardiopulmonary bypass: a case report. *Perfusion* 2008;23(3): 193–196.
29. Guenther U, Varelmann D, Putensen C, et al: Extended therapeutic hypothermia for several days during extracorporeal membrane-oxygenation after drowning and cardiac arrest. Two cases of survival with no neurological sequelae. *Resuscitation* 2009;80(3):379–381.
30. Ruttmann E, Weissenbacher A, Ulmer H, et al: Prolonged extracorporeal membrane oxygenation-assisted support provides improved survival in hypothermic patients with cardiocirculatory arrest. *J Thorac Cardiovasc Surg* 2007;134(3):594–600.
31. Scaife ER, Connors RC, Morris SE, et al: An established extracorporeal membrane oxygenation protocol promotes survival in extreme hypothermia. *J Pediatr Surg* 2007;42(12):2012–2016.
32. Oberhammer R, Beikircher W, Hörmann C, et al: Full recovery of an avalanche victim with profound hypothermia and prolonged cardiac arrest treated by extracorporeal re-warming. *Resuscitation* 2008;76(3):474–480.
33. Knight DA, Manifold CA, Blue J, et al: A randomized, controlled trial comparing arteriovenous to venovenous rewarming of severe hypothermia in a porcine model. *J Trauma* 2003;55(4):741–746.
34. Laniewicz M, Lyn-Kew K, Silbergleit R: Rapid endovascular warming for profound hypothermia. *Ann Emerg Med* 2008;51(2):160–163.

REFERENCES

1. Center for Disease Control and Prevention: Heat related deaths—Dallas, Wichita, and Cooke Counties, Texas, and U.S. 1996. *MMWR* 1997;46(23): 528–531.
2. Hett HA, Brechtelsbayer DA: Heat related illness. *Postgrad Med* 1998; 103(6):107–120.
3. Costrini A: Emergency treatment of exertional heat-stroke and comparison of whole body cooling techniques. *Med Sci Sports Exerc* 1990;22(1):15–18.
4. Weiner JS, Khogali M: A physiological body-cooling unit for treatment of heat stroke. *Lancet* 1980;1:505–509.
5. Semenza JC, Rubin CH, Falter KH, et al: Heat related deaths during the July 1995 heat wave in Chicago. *N Engl J Med* 1996;335(2):84–90.
6. Dematte JE, O'Mara K, Buescher J, et al: Near fatal stroke during the 1995 heat wave in Chicago. *Ann Intern Med* 1998;129(3):173–181.
7. Center for Disease Control and Prevention: Heat-related deaths—United States, 1999–2003. *MMWR* 2006;55(29);796–798.
8. Wyndham CH, Strydom NB, Cooke HM, et al: Methods of cooling subjects with hyperpyrexia. *J Appl Phys* 1959;14:771–776.
9. Horowitz BZ: The golden hour in heat stroke: use of iced peritoneal lavage. *Am J Emerg Med* 1989;7(6):616–619.
10. Syverud S, Barker WJ, Amsterdam JT, et al: Iced gastric lavage for treatment of heatstroke: efficacy in a canine model. *Ann Emerg Med* 1985;14(5): 424–432.
11. Platt M, Vicario S: Heat illness, in Marx JA, Hockberger RS, Walls RM, et al (eds): *Rosen's Emergency Medicine: Concepts and Clinical Practice*, 7th ed. St Louis: Elsevier, 2010:1882–1892.
12. Marini JJ, Wheeler AP: *Critical Care Medicine: The Essentials*, 4th ed. Baltimore: Lippincott Williams & Wilkins, 2009:456–464.
13. Smith JE: Cooling methods used in the treatment of exertional heat illness. *Br J Sports Med* 2005;39:503–507.
14. Proulx CI, Ducharme MB, Kenny GP: Safe cooling limits from exercise-induced hyperthermia. *Eur J Appl Physiol* 2006;96:434–445.
15. Magazanik A, Epstein Y, Udassin R, et al: Tap water, an efficient method for cooling heat stroke victims—a model in dogs. *Aviat Space Environ Med* 1980;51(9):864–867.
16. Giesbrecht GG, Jamieson C, Cahill F: Cooling hyperthermic firefighters by immersing forearms and hands in 10 degrees C and 20 degrees C water. *Aviat Space Med* 2007;78:561–567.
17. Vincent J-L, Abraham E, Moore FA, et al (eds): *Textbook of Critical Care*, 6th ed. Philadelphia: Saunders, 2011.
18. Tek D, Olshaker JS: Heat illness. *Emerg Med Clin North Am* 1992;10(2): 299–310.

REFERENCES

1. National Center for Health Statistics Vital Statistics System: Ten leading causes of death by age group, United States. http://www.cdc.gov/injury/wisqars/LeadingCauses.html, 2006.
2. Nunez TC, Cotton BA: Transfusion therapy in hemorrhagic shock. *Curr Opin Crit Care* 2009;15(6):536–541.
3. Bulger EM, Maier RV: Autologous blood transfusion in trauma. *Trauma* 2001;3(1):1–7.
4. Malone DL, Dunne J, Tracy JK, et al: Blood transfusion, independent of shock severity, is associated with worse outcome in trauma. *J Trauma* 2003; 54(5):898–907.
5. Charles A, Shaikh AA, Walters M, et al: Blood transfusion is an independent predictor of mortality after blunt trauma. *Am Surg* 2007;73(1):1–5.
6. Weinberg JA, McGwin G Jr, Griffin RL, et al: Age of transfused blood: an independent predictor of mortality despite universal leukoreduction. *J Trauma* 2008;65(2):279–284.
7. Spiess BD. Blood transfusion: the silent epidemic. *Ann Thorac Surg* 2001; 72(5):S1832–S1837.
8. Elmendorf A: Ueber Wiederinfusion nach Punktion eines frischen hamatothorax. *Munch Med Wochenschr* 1917;64:36.
9. Brown AL, Debenham MW: Autotransfusion: use of blood from hemothorax. *JAMA* 1931;96:1223–1228.
10. Symbas PN: Extra operative autotransfusion from hemothorax. *Surgery* 1978; 84:722–727.
11. Chest Drain Autotransfusion—Atrium Medical Corporation. http://www.atriummed.com/pdf/ats%20ifu.pdf, Hudson, NH, 2011.
12. Autotransfusion (ATS): Chest ube drainage post open heart surgery or trauma. http://nursing.uchc.edu/unit_manuals/intensive_care/docs/Autotransfusion%20-%20ATS%20-%20Chest%20Tube%20Drainage.pdf Farmington, CT, 2009.
13. Autotransfusion of Blood Using Pleurovac Chest Drainage System: http://www.deaconess.com/pdfs/TraumaGuideLines/Management/AutotransfusionofBloodUsingPleurovac.pdf, Evansville, IN, 2008.
14. Johnson HD, Gibbs JM: Is a microfilter necessary in a single unit blood transfusion. *N Z Med J* 1980;92(670):305–308.
15. Pleu-Evac Autotransfusion Bags: http://www.teleflex.com/en/usa/prod_a-1500.php, Research Triangle Park, NC, 2011.
16. Red Handbook 342267D—Atrium Medical Corporation. http://www.atriummed.com/pdf/Red%20Handbook.pdf, Hudson, NH, 2004.
17. Blood Transfusions by Nurses Informations: http://www.slideshare.net/blueash/blood-transfusion-by-nurses-informations, 2008. Accessed October 2011.
18. Reul GJ, Solis RT, Greenberg SD, et al: Experience with autotransfusion in the surgical management of trauma. *Surgery* 1974;76(4):546–555.
19. American Association of Blood Banks (AABB): *Standards for Blood Banks and Transfusion Services*, 21st ed. Bethesda, MD: AABB, 2003.
20. Horst HM, Dlugos S, Fath JJ, et al: Coagulopathy and intraoperative blood salvage (IBS). *J Trauma* 1992;32(5):646–652.
21. Burman JF, Westlake AS, Davidson SJ, et al: Study of five cell salvage machines in coronary artery surgery. *Transfus Med* 2002;12(3):173–179.
22. Sloan TB, Myers G, Janik DJ, et al: Intraoperative autologous transfusion of hemolyzed blood. *Anesth Analg* 2009;109(1):38–42.
23. McKie JS, Herzenberg JE: Coagulopathy complicating intraoperative blood salvage in a patient who had idiopathic scoliosis. A case report. *J Bone Joint Surg Am* 1997;79(9):1391–1394.
24. Stillman RM, Wrezlewicz WW, Stanczewski B, et al: The hematological hazards of autotransfusion. *Br J Surg* 1976;63(8):651–654.
25. Rother RP, Bell L, Hillmen P, et al: The clinical sequelae of intravascular hemolysis and extracellular plasma hemoglobin: a novel mechanism of human disease. *JAMA* 2005;293(13):1653–1662.
26. Klodell CT, Richardson JD, Bergamini TM, et al: Does cell-saver blood administration and free hemoglobin load cause renal dysfunction? *Am Surg* 2001;67(1):44–47.
27. Mattox KL, Walker LE, Beall AC, et al: Blood availability for the trauma patient-autotransfusion. *J Trauma* 1975;15(8):663–669.
28. Klebanoff G: Intraoperative autotransfusion with the Bentley ATS-100. *Surgery* 1978;84(5):708–712.
29. Klebanoff G, Phillips J, Evans W: Use of a disposable autotransfusion unit under varying conditions of contamination. *Am J Surg* 1970;120(3):351–354.
30. Website for Pleur-Evac: http://www.teleflexmedical.com.
31. Website for Atrium: http://www.atriummed.com/EN/default.asp.
32. Brewster DC, Ambrosino JJ, Darling RC, et al: Intraoperative autotransfusion in major vascular surgery. *Am J Surg* 1979;137(4):507–513.
33. Atrium Drain Support and Education: http://www.atriummed.com/Products/Chest_drains/edu-ats.asp, Hudson, NH, 2011.

REFERENCES

1. Brabson TA, Greenfield BS: Prehospital Immobilization, in Roberts JR, Hedges JR (eds): *Clinical Procedures in Emergency Medicine*, 5th ed. Philadelphia: Saunders, 2010:832–839.
2. Donaldson WF III, Lauerman WC, Heil B, et al: Helmet and shoulder pad removal from a player with suspected cervical spine injury. *Spine* 1998;23(16):1729–1733.
3. Max W, Stark B, Root S: Putting the lid on injury costs: the impact of the California motorcycle helmet law. *J Trauma* 1998;45(3):550–556.
4. Waninger KN, Richards JG, Pan WT, et al: An evaluation of head movement in backboard-immobilized helmeted football, lacrosse, and ice hockey players. *Clin J Sports Med* 2001;11:82–86.
5. Gastel J, Palumbo MA, Hulstyn MJ: Emergency removal of football equipment. A cadaveric cervical spine injury model. *Ann Emerg Med* 1998;32(4):411–417.
6. Meyer R, Daniel WW: The biomechanics of helmets and helmet removal. *J Trauma* 1985;25(4):329–332.
7. Roberts WO: Helmet removal in head and neck trauma. *Phys Sports Med* 1998;26(7):77–78.
8. Owsley HK: Helmet removal in athletics. *Emerg Med Serv* 2005;34(5):73–77.
9. Sherbondy PS, Hertel JN, Sebastianelli WJ: The effect of protective equipment on cervical spine alignment in collegiate lacrosse players. *Am J Sports Med* 2006;34(10):1675–1679.
10. Treme G, Diduch DR, Hart J, et al: Cervical spine alignment in the youth football athlete. *Am J Sports Med* 2008;36(8):1582–1586.
11. Swenson TM, Lauerman WC, Blanc RO, et al: Cervical spine alignment in the immobilized football player: radiographic analysis before and after helmet removal. *Am J Sports Med* 1997;25(2):226–230.
12. American Heart Association: *Pediatric Advanced Life Support Manual*. Austin, TX: American Heart Association, 2010.
13. Palumbo MA, Hulstyn MJ, Fadale PD, et al: The effect of protective football equipment on alignment of the injured cervical spine: radiographic analysis in a cadaveric model. *Am J Sports Med* 1996;24(4):446–453.
14. Koenig WJ: Helmet removal, in Dieckman RA, Fiser DH, Selbst SM (eds): *Illustrated Textbook of Pediatric Emergency and Critical Care Procedures*. St Louis: Mosby, 1997:602–603.
15. Davidson RM, Burton JH, Snowise M, et al: Football protective gear and cervical spine imaging. *Ann Emerg Med* 2001;38(1):26–30.
16. Veenema K, Greenwald R, Karnali M, et al: The initial lateral cervical spine film for the athlete with a suspected neck injury: helmet and shoulder pads on or off? *Clin J Sports Med* 2002;12:123–127.
17. Waninger KN, Rothman R, Foley J, et al: Computed tomography is diagnostic in the cervical imaging of helmeted football players with shoulder pads. *J Athl Train* 2004;39:217–221.
18. Kelly KP: Helmet removal, in King C, Henretig FM, King BR, et al (eds): *Textbook of Pediatric Emergency Procedures*, 2nd ed. Baltimore: Lippincott Williams & Wilkins, 2008:325–330.
19. Jenkins HL, Valovich TC, Arnold BL, et al: Removal tools are faster and produce less force and torque on the helmet than cutting tools during facemask retraction. *J Athl Train* 2002;37(3):246–251.
20. Budassi SA: Helmet removal from injured patients. *J Emerg Nurs* 1981;7:290.
21. Aprahamian C, Thompson BM, Darin JC: Recommended helmet removal techniques in a cervical spine injured patient. *J Trauma* 1984;24(9):841–842.
22. American College of Surgeons Committee on Trauma: Skills station IX: head and neck trauma assessment and management, in *Advanced Trauma Life Support for Doctors*, 6th ed. Chicago: American College of Surgeons, 1997:205–213.

REFERENCES

1. Leonard RB: Hazardous materials accidents: initial scene assessment and patient care. *Aviat Space Environ Med* 1993;64(6):546–551.
2. Hau ML: Emergency care in acute chemical exposure. *AAOHN J* 1995; 43(4):276–284.
3. Burgess JL, Kirk M, Borron SW, et al: Emergency department hazardous materials protocol for contaminated patients. *Ann Emerg Med* 1999; 34(2):177–182.
4. Kirk MA, Cisek J, Rose SR: Emergency department response to hazardous materials. *Emerg Med Clin North Am* 1994;12(2):461–481.
5. Clarke SF, Chilcott RP, Wislon JC, et al: Decontamination of multiple casualties who are chemically contaminated: a challenge for acute hospitals. *Prehosp Disaster Med* 2008;23(2):175–181.
6. Agency for Toxic Substances and Disease Registry: *Managing Hazardous Materials Incidents:* Vol III: *Medical Management Guidelines for Acute Chemical Exposures*. Atlanta, GA: ATSDR, 2001:33–42.
7. United States Department of Labor, Occupational Safety & Health Administration: OSHA best practices for hospital-based first receivers of victims form mass casualty incidents involving the release of hazardous substances. http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html.
8. Agency for Toxic Substances and Disease Registry: *Managing Hazardous Materials Incidents: Vol II: Hospital Emergency Departments: A Planning Guide for the Management of Contaminated Patients*. Atlanta, GA: ATSDR, 2001:23–39.
9. Freyberg CW, Arquilla B, Fertel BS, et al: Disaster preparedness: hospital decontamination and the pediatric patient—guidelines for hospitals and emergency planners. *Prehosp Disaster Med* 2008;23(2):166–173.
10. Olson KR: Hazmat-o-phobia. Why aren't hospitals ready for chemical accidents? *West J Med* 1998;168:32–33.
11. Levitin HW, Siegelson HJ: Hazardous materials. Disaster medical planning and response. *Emerg Med Clin North Am* 1994;12(2):327–348.
12. Cox RD: Decontamination and management of hazardous materials exposure victims in the emergency department. *Ann Emerg Med* 1994;23(4): 761–770.
13. Levitin HW, Siegelson HJ, Dickinson S, et al: Decontamination of mass casualties—re-evaluating existing dogma. *Prehosp Disaster Med* 2003;18(3): 200–207.
14. Handbook on the Medical Aspects of NBC Defensive Operations FM 8–9. United States Army Military Research Institute for Infectious Diseases (USAMRIID). http://www.fas.org/nuke/guide/usa/doctrine/dod/fm8-9/toc.htm, 1999.
15. Byers M, Russell M, Lockey DJ: Clinical care in the "hot zone". *Emerg Med J* 2008;25:108–112.
16. Minnesota Department of Public Health: Full barrier personal protective equipment (PPE) with powered air purifying respirator (PAPR). http://www.health.state.mn.us/divs/idepc/dtopics/infectioncontrol/ppe/ppepapr.html.

INFORMATION RESOURCES

1. Local Poison Control Centers will provide detailed medical information for any hazardous material.
2. U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR). 4770 Buford Hwy NE, Atlanta, GA, 30341. http://www.atsdr.cdc.gov/. The ATSDR website has on-line information for the management of specific hazardous materials exposures.
3. CHEMTREC. Information Service of the Chemical Manufacturers Association. 24-hour telephone number: (800) 424-9300, http://www.chemtrec.com/Chemtrec. CHEMTREC will provide chemical information and assist in obtaining medical information and site decontamination.
4. National Pesticide Information Center (NPIC). Oregon State University/ Environmental Protection Agency. Phone (800) 858-7378, 7 days per week, 6:30–16:30 Pacific Time, excluding holidays. http://npic.orst.edu will provide chemical information on pesticide products. The book "Recognition and Management of Pesticide Poisonings" can be downloaded under "Emergency" on the homepage.
5. Nuclear Regulatory Commission (NRC) Emergency Center. 24-hour telephone number: (301) 816-5100 (Back-up tel. 301 951-0550 or 301 415-0550, fax 301 816-5151). Will coordinate assistance for nuclear accidents or releases by one of four national NRC centers, including information, advice, and personnel if needed.
6. National Response Center. 24-hour telephone number: (800) 424-8802. Takes reports on any chemical or nuclear release or spill, or suspected terrorist attack, and forward information to federal agencies, including but not limited to the FBI and the Chemical/Biological Defense Command of the U.S. Army.
7. United States Army Military Research Institute on Infectious Diseases (USAMRIID). Phone (301) 619-2833 during business hours. Homepage: http://www.usamriid.army.mil/index.htm. Information on diagnostics, medical management, and vaccines relating to biological weapons can be obtained by contacting the commander of the USAMRIID.
8. Chemical Hazard Response Information System (CHRIS), CIS, Inc., http://www.chrismanual.com.
9. Toxicology Data Network (ToxNet), The National Library of Medicine, http://toxnet.nlm.nih.gov/.
10. United States Department of Labor, Occupational Safety & Health Administration. OSHA best practices for hospital-based first receivers of victims form mass casualty incidents involving the release of hazardous substances. http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html.

REFERENCES

1. Allen MH, Currier GW: Use of restraints and pharmacotherapy in academic psychiatric emergency services. *Gen Hosp Psychiatry* 2004;26:42–49.
2. Dorfman DH, Kastner B: The use of physical and chemical restraints in the pediatric emergency department. *Pediatr Emerg Care* 2000;16:355–360.
3. Kynoch, Wu CJ, Chang AM: Interventions for preventing and managing aggressive patients admitted to an acute hospital setting: a systematic review. *Worldviews Evid Based Nurs* 2011;8(8):76–85.
4. Currier GW, Allen MH: Emergency psychiatry: physical and chemical restraint in the psychiatric emergency service. *Psychiatr Serv* 2000;51:717–719.
5. Zun LS: A prospective study of the complications of use of patient restraint in the emergency department. *J Emerg Med* 2003;24(2):119–124.
6. Department of Health and Human Services, Centers for Medicare and Medicaid Services: Medicare and Medicaid Programs; hospital conditions of participation; patients' rights; finale rule. *Federal Register* 2006;71(236): 71377–71428.
7. Sandu SK, Mion LC, Khan RH, et al: Likelihood of ordering physical restraints: influence of physician characteristics. *J Am Geriatr Soc* 2010;58:1272–1278.
8. Rice MM, Moore GP: Management of the violent patient: therapeutic and legal considerations. *Emerg Med Clin North Am* 1991;9:13–30.
9. Annas G: The last resort—the use of physical restraints in medical emergencies. *New Engl J Med* 1999;341:1408–1412.
10. Joint Commission on Accreditation of Health Care Organizations: *Comprehensive Accreditation Manual for Hospitals: The Official Handbook*. Oak Brook Terrace, IL: Joint Commission on Accreditation of Health Care Organizations, 1996:TX-47–58.
11. Harris County Hospital District Policies and Procedures Manual. Policy 7.02 *Restraint and Seclusion*, 2007.
12. Miller D, Walker MC, Friedman D: Use of holding technique to control the violent behavior of seriously disturbed adolescents. *Hosp Community Psychiatry* 1989;40:520–524.
13. De Hert M, Dirix N, Demunter H, et al: Prevalence and correlates of seclusion and restraint use in children and adolescents: a systematic review. *Eur Child Adolesc Psychiatry* 2011;20:221–230.
14. Smith N: *Physical Restraints: Applying in Children and Adolescents.* Glendale, CA: Cinahl Information Systems, 2011.
15. Zun LS: Evidence-based treatment of psychiatric patient. *J Emerg Med* 2005;28:277–283.
16. Reeves J: Guidelines for recording the use of physical restraint. *Mental Health Practice* 2011;15:22–24.
17. Stratton SJ, Rogers C, Brickett K, et al: Factors associated with sudden death of individuals requiring restraint for excited delirium. *Am J Emerg Med* 2001; 19:187–191.
18. Pollanen MS, Chaisson DA, Cairns JT, et al: Unexpected death related to restraint for excited delirium: a retrospective study of deaths in police custody and in the community. *CMAJ* 1998;158(2):1603–1607.
19. Grant JR, Southall PE, Fowler DR, et al: Death in custody: a historical analysis. *J Forensic Sci* 2007;52(5):1177–1181.
20. Reay DT, Fligner Cl, Stillwell AD, et al: Positional asphyxia during law enforcement transport. *Am J Forensic Med Pathol* 1992;13(2):90–97.
21. Hick JL, Smith SW, Lynch MT: Metabolic acidosis in restraint-associated cardiac arrest: a case series. *Acad Emerg Med* 1999;6(3):239–243.
22. Chan TC, Neuman T, Clausen J, et al: Weight force during prone restraint and respiratory function. *Am J Forensic Med Pathol* 2004;25(3):185–189.
23. Chan TC, Vilke GM, Neuman T, et al: Restraint position and positional asphyxia. *Ann Emerg Med* 1997;30(5):578–586.
24. Michalewicz BA, Chan TC, Vilke GM, et al: Ventilatory and metabolic demands during aggressive physical restraint in healthy adults. *J Forensic Sci* 2007;52(1):171–175.
25. Crellin D, Babl FE, Sullivan TP, et al: Procedural restraint use in preverbal and early-verbal children. *Pediatr Emerg Care* 2011;27(7):622–627.

REFERENCES

1. Lavoie FW, Carter GL, Danzl DF, et al: Emergency department violence in United States teaching hospitals. *Ann Emerg Med* 1988;17(11):1227–1233.
2. Lavoie FW: Consent, involuntary treatment, and the use of force in an urban emergency department. *Ann Emerg Med* 1992;21(1):25–32.
3. Currier GW, Allen MH: Emergency psychiatry: physical and chemical restraint in the psychiatric emergency service. *Psychiatr Serv* 2000;51(6): 717–719.
4. Allen MH: Managing the agitated psychotic patient: a reappraisal of the evidence. *J Clin Psychiatry* 2000;61(Suppl 14):11–20.
5. Allen MH, Currier GW, Carpenter D, et al: Expert consensus panel for behavioral emergencies 2005. the expert consensus guideline series. Treatment of behavioral emergencies 2005. *J Psychiatr Pract* 2005;11(Suppl 1):105–108.
6. Marder SR: A review of agitation in mental illness: treatment guidelines and current therapies. *J Clin Psychiatry* 2006;67(Suppl 10):13–21.
7. Fleischman JK, Ananthamoorthy R, Greenberg H, et al: An unexplained death in the psychiatric emergency room: a case of undiagnosed obstructive sleep apnea? *Gen Hosp Psych* 2008;30(1):83–86.
8. Zun LS: Evidence-based treatment of psychiatric patient. *J Emerg Med* 2005; 28(3):277–283.
9. Department of Health and Human Services: Centers for Medicare & Medicaid services. 42 CFR part 482 Medicare and Medicaid programs; hospital conditions of participation: Patients' rights; final rule. http://www.cms.hhs.gov/CFCsAndCoPs/06_Hospitals.asp#TopOfPage.
10. Revised 2009 accreditation requirements as of March 26, 2009. Hospital accreditation program. Chapter: Provision of care, treatment, and services. http://www.jointcommission.org/AccreditationPrograms/Hospitals/Standards/.
11. Rice MM, Moore GP: Management of the violent patient: therapeutic and legal considerations. *Emerg Med Clin North Am* 1991;9(1):13–30.
12. Lewin MR, Montauk L, Shalit M, et al: An unusual case of subterfuge in the emergency department: covert administration of antipsychotic and anxiolytic medications to control an agitated patient. *Ann Emerg Med* 2006;47(1): 75–78.
13. Lynn EW, Rios K: Covert administration of psychotropic medications in the emergency department: an opposing view. *Ann Emerg Med* 2006;48(4):478.
14. Hughes DH, Kleespies PM: Treating aggression in the psychiatric emergency service. *J Clin Psychiatry* 2003;64(Suppl 4):10–15.
15. Petit JR: Management of the acutely violent patient. *Psychiatr Clin North Am* 2005;28(3):701–711.
16. Blanchard JC, Curtis KM: Violence in the emergency department. *Emerg Med Clin North Am* 1999;17(3):717–731.
17. Viken R: Combative delirium. *Am Fam Physician* 2008;77(3):363–364.
18. Fulton JA, Axelband J, Jacoby JL, et al: Intramuscular ziprasidone: an effective agent for sedation of the agitated ED patient. *Am J Emerg Med* 2006; 24(2):254–255.
19. Rund DA, Ewing JD, Mitzel K, et al: The use of intramuscular benzodiazepines and antipsychotic agents in the treatment of acute agitation or violence in the emergency department. *J Emerg Med* 2006;31(3):317–324.
20. Lukens TW, Wolf SJ, Edlow JA, et al: Clinical policy: critical issues in the diagnosis and management of the adult psychiatric patient in the emergency department. *Ann Emerg Med* 2006;47(1):79–99.
21. Battaglia J, Moss S, Rush J, et al: Haloperidol, lorazepam, or both for psychotic agitation? A multicenter, prospective, double-blind, emergency department study. *Am J Emerg Med* 1997;15(4):335–340.
22. Lexi-Comp Inc.: Drug information. Copyright 1978–2009. http://uptodateoneline.com, 2009.
23. Battaglia J: Pharmacological management of acute agitation. *Drugs* 2005; 65(9):1207–1222.
24. Nobay F, Simon BC, Levitt MA, et al: A prospective, double-blind, randomized trial of midazolam versus haloperidol versus lorazepam in the chemical restraint of violent and severely agitated patients. *Acad Emerg Med* 2004; 11(7):744–749.
25. Martel M, Sterzinger A, Miner J, et al: Management of acute undifferentiated agitation in the emergency department: a randomized double-blind trial of droperidol, ziprasidone, and midazolam. *Acad Emerg Med* 2005; 12(12):1167–1172.
26. Wright SW, Chudnofsky CR, Dronen SC, et al: Midazolam use in the emergency department. *Am J Emerg Med* 1990;8(2):97–100.
27. Spain D, Crilly J, Whyte I, et al: Safety and effectiveness of high-dose midazolam for severe behavioural disturbance in an emergency department with suspected psychostimulant-affected patients. *Emerg Med Australas* 2008;20(2):112–120.
28. Garza-Trevino ES, Hollister LE, Overall JE, et al: Efficacy of combinations of intramuscular antipsychotics and sedative-hypnotics for control of psychotic agitation. *Am J Psychiatry* 1989;146(12):1598–1601.
29. Caine ED: Clinical perspectives on atypical antipsychotics for treatment of agitation. *J Clin Psychiatry* 2006;67(Suppl 10):22–31.
30. Allen MH, Currier GW, Hughes DH, et al: Expert consensus panel for behavioral emergencies. The expert consensus guideline series. Treatment of behavioral emergencies. *Postgrad Med* 2001;1:88–96.
31. Baldessarini RJ, Cohen BM, Teicher MH: Significance of neuroleptic dose and plasma level in the pharmacological treatment of psychoses. *Arch Gen Psychiatry* 1988;45(1):79–91.
32. Richards JR, Derlet RW, Duncan DR: Chemical restraint for the agitated patient in the emergency department: lorazepam versus droperidol. *J Emerg Med* 1998;16(4):567–573.
33. Thomas H Jr, Schwartz E, Petrilli R: Droperidol versus haloperidol for chemical restraint of agitated and combative patients. *Ann Emerg Med* 1992; 21(4):407–413.
34. De Fruyt J, Demyttenaere K: Rapid tranquilization: new approaches in the emergency treatment of behavioral disturbances. *Eur Psychiatry* 2004; 19(5):243–249.
35. United States Food & Drug Administration: FDA strengthens warnings for droperidol. http://www.fda.gov/bbs/topics/ANSWERS/2001/ANS01123.html, 2001.
36. Kamin J, Manwani S, Hughes D: Emergency psychiatry: extrapyramidal side effects in the psychiatric emergency service. *Psychiatr Serv* 2000; 51(3):287–289.
37. Lesem MD, Zajecka JM, Swift RH, et al: Intramuscular ziprasidone, 2 mg versus 10 mg, in the short-term management of agitated psychotic patients. *J Clin Psychiatry* 2001;62(1):12–18.
38. Daniel DG, Potkin SG, Reeves KR, et al: Intramuscular (IM) ziprasidone 20 mg is effective in reducing acute agitation associated with psychosis: a double-blind, randomized trial. *Psychopharmacology (Berl)* 2001;155(2): 128–134.
39. Preval H, Klotz SG, Southard R, et al: Rapid-acting IM ziprasidone in a psychiatric emergency service: a naturalistic study. *Gen Hosp Psychiatry* 2005; 27(2):140–144.
40. Glassman AH, Bigger JT Jr: Antipsychotic drugs: prolonged QTc interval, torsade de pointes, and sudden death. *Am J Psychiatry* 2001;158(11): 1774–1782.
41. Currier GW, Chou JC, Feifel D, et al: Acute treatment of psychotic agitation: a randomized comparison of oral treatment with risperidone and lorazepam versus intramuscular treatment with haloperidol and lorazepam. *J Clin Psychiatry* 2004;65(3):386–394.
42. Wright P, Birkett M, David SR, et al: Double-blind, placebo-controlled comparison of intramuscular olanzapine and intramuscular haloperidol in the treatment of acute agitation in schizophrenia. *Am J Psychiatry* 2001; 158(7):1149–1151.
43. Meehan K, Zhang F, David S, et al: A double-blind, randomized comparison of the efficacy and safety of intramuscular injections of olanzapine, lorazepam, or placebo in treating acutely agitated patients diagnosed with bipolar mania. *J Clin Psychopharmacol* 2001;21(4):389–397.
44. Meehan KM, Wang H, David SR, et al: Comparison of rapidly acting intramuscular olanzapine, lorazepam, and placebo: a double-blind, randomized study in acutely agitated patients with dementia. *Neuropsychopharmacology* 2002;26(4):494–504.
45. Belgamwar RB, Fenton M: Olanzapine IM or velotab for acutely disturbed/agitated people with suspected serious mental illnesses. *Cochrane Database Syst Rev* 2005;(2):CD003729.
46. Lindborg SR, Beasley CM, Alaka K, et al: Effects of intramuscular olanzapine vs. haloperidol and placebo on QTc intervals in acutely agitated patients. *Psychiatry Res* 2003;119(1–2):113–123.
47. Breier A, Meehan K, Birkett M, et al: A double-blind, placebo-controlled dose–response comparison of intramuscular olanzapine and haloperidol in the treatment of acute agitation in schizophrenia. *Arch Gen Psychiatry* 2002;59(5):441–448.

48. Damsa C, Adam E, Lazignac C, et al: A naturalistic study of consecutive agitated emergency department patients treated with intramuscular olanzapine prior to consent. *Am J Psychiatry* 2008;165(4):535–536.
49. Dubin WR, Feld JA: Rapid tranquilization of the violent patient. *Am J Emerg Med* 1989;7(3):313–320.
50. Diaz JE: Chemical restraint. *J Emerg Med* 2000;19(3):289–291.
51. Kamin J, Manwani S, Hughes D: Emergency psychiatry: extrapyramidal side effects in the psychiatric emergency service. *Psychiatr Serv* 2000;51(3): 287–289.
52. Einarson A, Einarson TR: Maternal use of antipsychotics in early pregnancy: little evidence of increased risk of congenital malformations. *Evid Based Ment Health* 2009;12(1):29.
53. Jain AE, Lacy T: Psychotropic drugs in pregnancy and lactation. *J Psychiatr Pract* 2005;11(3):177–191.
54. Organization of Teratology Information Specialists. 2005 September. Available from: http://www.otispregnancy.org/pdf/benzodiazepines.pdf.
55. Iqbal MM, Sobhan T, Ryals T: Effects of commonly used benzodiazepines on the fetus, the neonate, and the nursing infant. *Psychiatr Serv* 2002;53(1): 39–49.
56. Ladavac AS, Dubin WR, Ning A, et al: Emergency management of agitation in pregnancy. *Gen Hosp Psychiatry* 2007;29(1):39–41.
57. Wichman CL: Atypical antipsychotic use in pregnancy: a retrospective review. *Arch Womens Ment Health* 2009;12(1):53–57.
58. Hilt RJ, Woodward TA: Agitation treatment for pediatric emergency patients. *J Am Acad Child Adolesc Psychiatry* 2008;47(2):132–138.
59. Gilligan J, Lee B: The psychopharmacologic treatment of violent youth. *Ann New York Acad Sci* 2004;1036:356–381.
60. Sorrentino A: Chemical restraints for the agitated, violent, or psychotic pediatric patient in the emergency department: controversies and recommendations. *Curr Opin Pediatr* 2004;16(2):201–205.
61. Dorfman DH, Kastner B: The use of restraint for pediatric psychiatric patients in emergency departments. *Pediatr Emerg Care* 2004;20(3):151–156.
62. Blumer JL: Clinical pharmacology of midazolam in infants and children. *Clin Pharmacokinet* 1998;35(1):37–47.
63. Lane RD, Schunk JE: Atomized intranasal midazolam use for minor procedures in the pediatric emergency department. *Pediatr Emerg Care* 2008; 24(5):300–303.
64. Barzman DH, Findling RL: Pharmacological treatment of pathologic aggression in children. *Int Rev Psychiatry* 2008;20(2):151–157.