

Chapter 47

REFERENCES

- Richardson MG, Wissler RN. Density of lumbar cerebrospinal fluid in pregnant and nonpregnant humans. *Anesthesiology*. 1996;85:326-330.
- Lirk P, Kolbitsch C, Putz C. Cervical and high thoracic ligamentum flavum frequently fails to fuse in the midline. *Anesthesiology*. 2003;99:1387-1390.
- Bernards CM, Shen DD, Sterling ES, et al. Epidural, cerebrospinal fluid, and plasma pharmacokinetics of epidural opioids (part 1): differences among opioids. *Anesthesiology*. 2003;99:455-465.
Hoffmann VL, Vercauteran MP, Buczkowski, et al. A new combined spinal-epidural apparatus: measurement of the distance to the epidural and subarachnoid spaces. *Anaesthesia*. 1997;52:350-355.
- Liu SS, Melmed AP, Klos JW, et al. Prospective experience with a 20-gauge Tuohy needle for lumbar epidural steroid injections: is confirmation with fluoroscopy necessary? *Reg Anesth Pain Med*. 2001;26:143-146.
- Neal JM, Bernards CM, Hadzic A, et al. ASRA Practice Advisory on Neurologic Complications in Regional Anesthesia and Pain Medicine. *Reg Anesth Pain Med*. 2008;33(5):404-415.
- Kopacz DJ, Neal JM, Pollock JE. The regional anesthesia "learning curve." What is the minimum number of epidural and spinal blocks to reach consistency? *Reg Anesth*. 1996;21:182-190.
- Kopacz DJ, Bainton BG. Combined spinal epidural anesthesia: a new "hanging drop." *Anesth Analg*. 1996;82:433-434.
- Goobie SM, Montgomery CJ, Basu R, et al. Confirmation of direct epidural catheter placement using nerve stimulation in pediatric anesthesia. *Anesth Analg*. 2003;97:984-988.
- Lechner TJ, van Wijk MG, Maas AJ, et al. Clinical results with the acoustic puncture assist device, a new acoustic device to identify the epidural space. *Anesth Analg*. 2003;96:1183-1187.
- Perlas A. Evidence for the use of ultrasound in neuraxial blocks. *Reg Anesth Pain Med*. 2010;35(2 Suppl):S43-S46.
- Baledent O, Henry-Feugeas MC, Idy-Peretti I. Cerebrospinal fluid dynamics and relation with blood flow: a magnetic resonance study with semiautomated cerebrospinal fluid segmentation. *Invest Radiol*. 2001; 36:368-377.
- Hogan QH, Prost R, Kulier A, et al. Magnetic resonance imaging of cerebrospinal fluid volume and the influence of body habitus and abdominal pressure. *Anesthesiology*. 1996;84:1341-1349.
- Pitkanen M, Haapaniemi L, Tuominen M, et al. Influence of age on spinal anaesthesia with isobaric 0.5% bupivacaine. *Br J Anaesth*. 1984;56:279-284.
- Taivainen T, Tuominen M, Rosenberg PH. Influence of obesity on the spread of spinal analgesia after injection of plain 0.5% bupivacaine at the L3-4, or L4-5, interspace. *Br J Anaesth*. 1990;64:542-546.
- Horlocker TT, Wedel DJ. Density, specific gravity, and baricity of spinal anesthetic solutions at body temperature. *Anesth Analg*. 1993;76:1015-1018.
- Bodily MN, Carpenter RL, Owens BD. Lidocaine 0.5% spinal anaesthesia: a hypobaric solution for short-stay perirectal surgery. *Can J Anaesth*. 1992;39:770-773.
- Greene NM. Distribution of local anesthetic solutions within the subarachnoid space. *Anesth Analg*. 1985;64:715-730.
- Na KB, Kopacz DJ. Spinal chloroprocaine solutions: density at 37 degrees C and pH titration. *Anesth Analg*. 2004;98:70-74.
- Higuchi H, Hirata J, Adachi Y, et al. Influence of lumbosacral cerebrospinal fluid density, velocity, and volume on extent and duration of plain bupivacaine spinal anesthesia. *Anesthesiology*. 2004;100:106-114.
- Bengtsson M, Malmqvist LA, Edstrom HH. Spinal analgesia with glucose-free bupivacaine—effects of volume and concentration. *Acta Anaesthesiol Scand*. 1984;28:583-586.
- Janik R, Dick W, Stanton-Hicks MD. Influence of barbotage on block characteristics during spinal anesthesia with hyperbaric tetracaine and bupivacaine. *Reg Anesth*. 1989;14:26-30.
- Visser WA, Liem TH, van Egmond J, et al. Extension of sensory blockade after thoracic epidural administration of a test dose of lidocaine at three different levels. *Anesth Analg*. 1998;86(2):332-335.
- Yokoyama M, Hanazaki M, Fujii H, et al. Correlation between the distribution of contrast medium and the extent of blockade during epidural anesthesia. *Anesthesiology*. 2004;100(6):1504-1510.
- Hirabayashi Y, Shimizu R. Effect of age on extradural dose requirement in thoracic extradural anaesthesia. *Br J Anaesth*. 1993;71:445-446.
- Duggan J, Bowler GM, McClure JH, et al. Extradural block with bupivacaine: influence of dose, volume, concentration and patient characteristics. *Br J Anaesth*. 1988;61:324-331.
- Fagraeus L, Urban BJ, Bromage PR. Spread of epidural analgesia in early pregnancy. *Anesthesiology*. 1983;58:184-187.

27. Butterworth JF 4th, Walker FO, Lysak SZ. Pregnancy increases median nerve susceptibility to lidocaine. *Anesthesiology*. 1990;72(6):962-965.
28. Liu SS, McDonald SB. Current issues in spinal anesthesia. *Anesthesiology*. 2001;94:888-906.
29. Freedman JM, Li DK, Drasner K, et al. Transient neurologic symptoms after spinal anesthesia: an epidemiologic study of 1,863 patients. *Anesthesiology*. 1998;89:633-641.
30. McDonald SB, Liu SS, Kopacz DJ, et al. Hyperbaric spinal ropivacaine: a comparison to bupivacaine in volunteers. *Anesthesiology*. 1999;90:971-977.
31. Halpern SH, Walsh V. Epidural ropivacaine versus bupivacaine for labor: a meta-analysis. *Anesth Analg*. 2003;96:1473-1479.
32. Sakura S, Sumi, M, Sakaguchi Y, et al. The addition of phenylephrine contributes to the development of transient neurologic symptoms after spinal anesthesia with 0.5% tetracaine. *Anesthesiology*. 1997;87:771-778.
33. Zayas VM, Liguori GA, Chisolm MF. Dose-response relationships for isobaric spinal mepivacaine using the combined spinal epidural technique. *Anesth Analg*. 1999;89:1167-1171.
34. YaDeau JT, Liguori GA, Zayas VM. The incidence of transient neurologic symptoms after spinal anesthesia with mepivacaine. *Anesth Analg*. 2005;101:661-665.
35. Martinez-Bourio R, Arzuaga M, Quintana JM, et al. Incidence of transient neurologic symptoms after hyperbaric subarachnoid anesthesia with 5% lidocaine and 5% prilocaine. *Anesthesiology*. 1998;88:624-628.
36. Carpenter RL, Caplan RA, Brown DL, et al. Incidence and risk factors for side effects of spinal anesthesia. *Anesthesiology*. 1992;76:906-916.
37. Gissen AJ, Datta S, Lambert D. The chloroprocaine controversy. II. Is chloroprocaine neurotoxic? *Reg Anesth*. 1984;9:135-145.
38. Wang BC, Hillman DE, Spielholz NI. Chronic neurological deficits and Nesacaine-CE: an effect of the anesthetic 2-chloroprocaine, or the antioxidant, sodium bisulfite? *Anesth Analg*. 1984;63:445-447.
39. Taniguchi M, Bollen AW, Drasner K. Sodium bisulfite: scapegoat for chloroprocaine neurotoxicity? *Anesthesiology*. 2004;100:85-91.
40. Smith KN, Kopacz DJ, McDonald SB. Spinal 2-chloroprocaine: a dose-ranging study and the effect of added epinephrine. *Anesth Analg*. 2004;98:81-88.
41. Yoos JR, Kopacz DJ. Spinal 2-chloroprocaine for surgery: an initial 10-month experience. *Anesth Analg*. 2005;100:553-558.
42. Vath JS, Kopacz DJ. Spinal 2-chloroprocaine: the effect of added fentanyl. *Anesth Analg*. 2004;98:89-94.
43. Warren DT, Kopacz DJ. Spinal 2-chloroprocaine: the effect of added dextrose. *Anesth Analg*. 2004;98:95-101.
44. Kouri ME, Kopacz DJ. Spinal 2-chloroprocaine: a comparison with lidocaine in volunteers. *Anesth Analg*. 2004;98:75-80.
45. Kopacz DJ. Spinal 2-chloroprocaine: minimum effective dose. *Reg Anesth Pain Med*. 2005;30:36-42.
46. Casati A, Danelli G, Berti M, et al. Intrathecal 2-chloroprocaine for lower limb outpatient surgery: a prospective, randomized, double-blind, clinical evaluation. *Anesth Analg*. 2006;103(1):234-238.
47. Stevens RA, Urmev WF, Urquhart BL, et al. Back pain after epidural anesthesia with chloroprocaine. *Anesthesiology*. 1993;78:492-497.
48. Hamber EA, Viscomi CM. Intrathecal lipophilic opioids as adjuncts to surgical spinal anesthesia. *Reg Anesth Pain Med*. 1999;24:255-263.
49. Schneider SP, Eckert WA, Light AR. Opioid-activated post-synaptic, inward rectifying potassium currents in whole cell recordings in substantia gelatinosa neurons. *J Neurophysiol*. 1998;80:2954-2962.
50. Liu S, Chiu AA, Carpenter RL, et al. Fentanyl prolongs lidocaine spinal anesthesia without prolonging recovery. *Anesth Analg*. 1995;80:730-734.
51. Ben-David B, Solomon E, Levin H, et al. Intrathecal fentanyl with small-dose dilute bupivacaine: better anesthesia without prolonging recovery. *Anesth Analg*. 1997;85:560-565.
52. Harukuni I, Yamaguchi H, Sato S, et al. The comparison of epidural fentanyl, epidural lidocaine, and intravenous fentanyl in patients undergoing gastrectomy. *Anesth Analg*. 1995;81(6):1169-1174.
53. Ginosar Y, Riley ET, Angst MS. The site of action of epidural fentanyl in humans: the difference between infusion and bolus administration. *Anesth Analg*. 2003;97(5):1428-1438.
54. Coda BA, Brown MC, Schaffer R, et al. Pharmacology of epidural fentanyl, alfentanil, and sufentanil in volunteers. *Anesthesiology*. 1994;81(5):1149-1161.
55. Eisenach JC, De Kock M, Klimscha W. Alpha(2)-adrenergic agonists for regional anesthesia: a clinical review of clonidine (1984-1995). *Anesthesiology*. 1996;85:655-674.
56. Gentili M, Bonnet F. Spinal clonidine produces less urinary retention than spinal morphine. *Br J Anaesth*. 1996;76(6):872-873.
57. Gaumann DM, Brunet PC, Jirounek P. Hyperpolarizing afterpotentials in C fibers and local anesthetic effects of clonidine and lidocaine. *Pharmacology*. 1994;48:21-29.
58. De Kock M, Eisenach J, Tong C, et al. Analgesic doses of intrathecal but not intravenous clonidine increase acetylcholine in cerebrospinal fluid in humans. *Anesth Analg*. 1997;84(4):800-803.
59. Malinovsky JM, Bernard JM. Spinal clonidine fails to provide surgical anesthesia for transurethral resection of prostate. A dose-finding pilot study. *Reg Anesth*. 1996;21(5):419-423.
60. Bonnet F, Buisson VB, Francois Y, et al. Effects of oral and subarachnoid clonidine on spinal anesthesia with bupivacaine. *Reg Anesth*. 1990;15(4):211-214.
61. Ota K, Namiki A, Iwasaki H, et al. Dose-related prolongation of tetracaine spinal anesthesia by oral clonidine in humans. *Anesth Analg*. 1994;79(6):1121-1125.
62. Strebel S, Gurzeler JA, Schneider MC, et al. Small-dose intrathecal clonidine and isobaric bupivacaine for orthopedic surgery: a dose-response study. *Anesth Analg*. 2004;99(4):1231-1238.
63. Davis BR, Kopacz DJ. Spinal 2-chloroprocaine: the effect of added clonidine. *Anesth Analg*. 2005;100(2):559-565.
64. De Kock M, Gautier P, Fanard L, et al. Intrathecal ropivacaine and clonidine for ambulatory knee arthroscopy: a dose-response study. *Anesthesiology*. 2001;94(4):574-578.
65. Aveline C, El Metaoua S, Masmoudi A, et al. The effect of clonidine on the minimum local anesthetic concentration of epidural ropivacaine during labor. *Anesth Analg*. 2002;95(3):735-740.
66. Landau R, Schiffer E, Morales M, et al. The dose-sparing effect of clonidine added to ropivacaine for labor epidural analgesia. *Anesth Analg*. 2002;95(3):728-734.

67. Bouguet D. Caudal clonidine added to local anesthetics enhances post-operative analgesia after anal surgery in adults [abstract]. *Anesthesiology*. 1994;81:A942.
68. Klimscha W, Chiari A, Krafft P, et al. Hemodynamic and analgesic effects of clonidine added repetitively to continuous epidural and spinal blocks. *Anesth Analg*. 1995;80:322-327.
69. Wu CT, Jao SW, Borel CO, et al. The effect of epidural clonidine on perioperative cytokine response, postoperative pain, and bowel function in patients undergoing colorectal surgery. *Anesth Analg*. 2004;99(2):502-509.
70. De Kock M, Versailles H, Colinet B, et al. Epidemiology of the adverse hemodynamic events occurring during "clonidine anesthesia": a prospective open trial of intraoperative. *J Clin Anesth*. 1995;7:403-410.
71. Nishikawa T, Kimura T, Taguchi N, et al. Oral clonidine preanesthetic medication augments the pressor responses to intravenous ephedrine in awake or anesthetized patients. *Anesthesiology*. 1991;74:705-710.
72. Inomata S, Nishikawa T, Kihara S, et al. Enhancement of pressor response to intravenous phenylephrine following oral clonidine medication in awake and anesthetized patients. *Can J Anaesth*. 1995;42:119-125.
73. Burm, AG, van Kleef JW, Gladines MP, et al. Epidural anesthesia with lidocaine and bupivacaine: effects of epinephrine on plasma concentration profiles. *Anesth Analg*. 1986;65:1281-1284.
74. Lee BB, Ngan Kee WD, Plummer JL, et al. The effect of the addition of epinephrine on early systemic absorption of epidural ropivacaine in humans. *Anesth Analg*. 2002;95(5):1402-1407.
75. Niemi G, Breivik H. Epinephrine markedly improves thoracic epidural analgesia produced by a small-dose infusion of ropivacaine, fentanyl, and epinephrine after major thoracic or abdominal surgery: a randomized, double-blinded crossover study with and without epinephrine. *Anesth Analg*. 2002;94:1598-1605.
76. Sakura S, Sumi M, Morimoto N, et al. The addition of epinephrine increases intensity of sensory block during epidural anesthesia with lidocaine. *Reg Anesth Pain Med*. 1999;24(6):541-546.
77. Kozody R, Palahniuk RJ, Wade JG, et al. The effect of subarachnoid epinephrine and phenylephrine on spinal cord blood flow. *Can Anaesth Soc J*. 1984;31:503-508.
78. Reddy SV, Maderdrut JL, Yaksh TL. Spinal cord pharmacology of adrenergic agonist-mediated antinociception. *J Pharmacol Exp Ther*. 1980;213:525-533.
79. Moore JM, Liu SS, Pollock JE, et al. The effect of epinephrine on small-dose hyperbaric bupivacaine spinal anesthesia: clinical implications for ambulatory surgery. *Anesth Analg*. 1998;86:973-977.
80. Kito K, Kato H, Shibata M, et al. The effect of varied doses of epinephrine on duration of lidocaine spinal anesthesia in the thoracic and lumbosacral dermatomes. *Anesth Analg*. 1998;86:1018-1022.
81. Chiu AA, Liu S, Carpenter RL, et al. The effects of epinephrine on lidocaine spinal anesthesia: a cross-over study. *Anesth Analg*. 1995;80:735-739.
82. Neal JM. Effects of epinephrine in local anesthetics on the central and peripheral nervous systems: neurotoxicity and neural blood flow. *Reg Anesth Pain Med*. 2003;28(2):124-134.
83. Liu SS, Hodgson PS. Local anesthetics. In: Barash PG, Cullen BF, Stoelting RF, eds. *Clinical Anesthesia*. Philadelphia, PA: Lippincott-Raven; 2001:449-472.
84. Sharrock N, Go G, Mineo R. Effect of i.v. low-dose adrenaline and phenylephrine infusions on plasma concentrations of bupivacaine after lumbar extradural anaesthesia in elderly patients. *Br J Anaesth*. 1991;67:694-698.
85. Bernards CM, Shen DD, Sterling ES, et al. Epidural, cerebrospinal fluid, and plasma pharmacokinetics of epidural opioids (part 2): effect of epinephrine. *Anesthesiology*. 2003;99(2):466-475.
86. Seybold VS. Distribution of histaminergic, muscarinic and serotonergic binding sites in cat spinal cord with emphasis on the region surrounding the central canal. *Brain Res*. 1985;342:219-296.
87. Yaksh TL, Dirksen R, Harty GJ. Antinociceptive effects of intrathecally injected cholinomimetic drugs in the rat and cat. *Eur J Pharmacol*. 1985;117:81-88.
88. Bartolini A, Ghelardini C, Fantetti L, et al. Role of muscarinic receptor subtypes in central antinociception. *Br J Pharmacol*. 1992;105:77-82.
89. Chiari A, Eisenach JC. Spinal anesthesia: mechanisms, agents, methods, and safety. *Reg Anesth Pain Med*. 1998;23(4):357-362.
90. Hood DD, Eisenach JC, Tuttle R. Phase I safety assessment of intrathecal neostigmine methylsulfate in humans. *Anesthesiology*. 1995;82:331-343.
91. Krukowski JA, Hood DD, Eisenach JC, et al. Intrathecal neostigmine for post-cesarean section analgesia: dose response. *Anesth Analg*. 1997;84:1269-1275.
92. Yegin A, Yilmaz M, Karsli B, et al. Analgesic effects of intrathecal neostigmine in perianal surgery. *Eur J Anaesthesiol*. 2003;20(5):404-408.
93. Liu SS, Hodgson PS, Moore JM, et al. Dose-response effects of spinal neostigmine added to bupivacaine spinal anesthesia in volunteers. *Anesthesiology*. 1999;90(3):710-717.
94. Pan HL, Song HK, Eisenach JC. Intrathecal cholinergic agonists lessen bupivacaine spinal-block-induced hypotension in rats. *Anesth Analg*. 1994;79(1):112-116.
95. Lauretti GR, Reis MP. Subarachnoid neostigmine does not affect blood pressure or heart rate during bupivacaine spinal anesthesia. *Reg Anesth*. 1996;21(6):586-591.
96. Lauretti GR, de Oliveira R, Reis MP, et al. Study of three different doses of epidural neostigmine coadministered with lidocaine for postoperative analgesia. *Anesthesiology*. 1999;90(6):1534-1538.
97. Lauretti GR, de Oliveira R, Perez MV, et al. Postoperative analgesia by intraarticular and epidural neostigmine following knee surgery. *J Clin Anesth*. 2000;12(6):444-448.
98. Kirdemir P, Ozkocak I, Demir T, et al. Comparison of postoperative analgesic effects of preemptively used epidural ketamine and neostigmine. *J Clin Anesth*. 2000;12(7):543-548.
99. Nakayama M, Ichinose H, Nakabayashi K, et al. Analgesic effect of epidural neostigmine after abdominal hysterectomy. *J Clin Anesth*. 2001;13(2):86-89.
100. Omais M, Lauretti GR, Paccola CA. Epidural morphine and neostigmine for postoperative analgesia after orthopedic surgery. *Anesth Analg*. 2002;95(6):1698-1701.
101. Kaya FN, Sahin S, Owen MD, et al. Epidural neostigmine produces analgesia but also sedation in women after cesarean delivery. *Anesthesiology*. 2004;100(2):381-385.

102. Roelants F, Lavand'homme PM. Epidural neostigmine combined with sufentanil provides balanced and selective analgesia in early labor. *Anesthesiology*. 2004;101(2):439-444.
103. Wong K, Strichartz GR, Raymond SA. On the mechanisms of potentiation of local anesthetics by bicarbonate buffer: drug structure-activity studies on isolated peripheral nerve. *Anesth Analg*. 1993;76(1):131-143.
104. Capogna G, Celleno D, Laudano D, et al. Alkalinization of local anesthetics. Which block, which local anesthetic? *Reg Anesth*. 1995;20(5):369-377.
105. Curatolo M, Petersen-Felix S, Arendt-Nielsen L, et al. Adding sodium bicarbonate to lidocaine enhances the depth of epidural blockade. *Anesth Analg*. 1998;86(2):341-347.
106. Difazio CA, Carron H, Grosslight KR, et al. Comparison of pH-adjusted lidocaine solutions for epidural anesthesia. *Anesth Analg*. 1986;65:760-764.
107. Fernando R, Jones HM. Comparison of plain and alkalinized local anaesthetic mixtures of lignocaine and bupivacaine for elective extradural caesarean section. *Br J Anaesth*. 1991;67(6):699-703.
108. Benzon HT, Toleikis JR, Dixit P, et al. Onset, intensity of blockade and somatosensory evoked potential changes of the lumbosacral dermatomes after epidural anesthesia with alkalinized lidocaine. *Anesth Analg*. 1993;76(2):328-332.
109. Arakawa M, Aoyama Y, Ohe Y. Block of the sacral segments in lumbar epidural anaesthesia. *Br J Anaesth*. 2003;90(2):173-178.
110. McMorland GH, Douglas MJ, Jeffery WK, et al. Effect of pH-adjustment of bupivacaine on onset and duration of epidural analgesia in parturients. *Can Anaesth Soc J*. 1986;33(5):537-541.
111. McMorland GH, Douglas MJ, Axelson JE, et al. The effect of pH adjustment of bupivacaine on onset and duration of epidural anaesthesia for caesarean section. *Can J Anaesth*. 1998;35(5):457-461.
112. Capogna G, Celleno D, Tagariello V. The effect of pH adjustment of 2% mepivacaine on epidural anesthesia. *Reg Anesth*. 1989;14(3):121-123.
113. Capogna G, Celleno D, Varrassi G, et al. Epidural mepivacaine for cesarean section: effects of a pH-adjusted solution. *J Clin Anesth*. 1991;3(3):211-214.
114. Stevens RA, Chester WL, Schubert A, et al. pH adjustment of 2-chloroprocaine quickens the onset of epidural anaesthesia. *Can J Anaesth*. 1989;36(5):515-518.
115. Ackerman WE, Denson DD, Juneja MM, et al. Alkalinization of chloroprocaine for epidural anesthesia: effects of pCO₂ at constant pH. *Reg Anesth*. 1990;15(2):89-93.
116. Ramos G, Pereira E, Simonetti MP. Does alkalinization of 0.75% ropivacaine promote a lumbar peridural block of higher quality? *Reg Anesth Pain Med*. 2001;26(4):357-362.
117. Gosteli P, Van Gessel E, Gamulin Z. Effects of pH adjustment and carbonation of lidocaine during epidural anesthesia for foot or ankle surgery. *Anesth Analg*. 1995;81(1):104-109.
118. Siler JN, Rosenberg H. Lidocaine hydrochloride versus lidocaine bicarbonate for epidural anesthesia in outpatients undergoing arthroscopic surgery. *J Clin Anesth*. 1990;2(5):296-300.
119. Curatolo M, Scaramozzino P, Venuti FS, et al. Factors associated with hypotension and bradycardia after epidural blockade. *Anesth Analg*. 1996;83(5):1033-1040.
120. Cohen E. Distribution of local anesthetic agents in the neuraxis of the dog. *Anesthesiology*. 1968;29:1002-1005.
121. Boswell MV, Iacono RP, Guthkelch AN. Sites of action of subarachnoid lidocaine and tetracaine: observations with evoked potential monitoring during spinal cord stimulator implantation. *Reg Anesth*. 1992;17:37-42.
122. Lang E, Krainick JU, Gerbershagen HU. Spinal cord transmission of impulses during high spinal anesthesia as measured by cortical evoked potentials. *Anesth Analg*. 1989;69:15-20.
123. Cusick JF, Myklebust JB, Abram SE. Differential neural effects of epidural anesthetics. *Anesthesiology*. 1980;53:299-306.
124. Zaric D, Hallgren S, Leissner L, et al. Evaluation of epidural sensory block by thermal stimulation, laser stimulation, and recording of somatosensory evoked potentials. *Reg Anesth*. 1996;21:124-138.
125. Gentili M, Huu PC, Enel D, et al. Sedation depends on the level of sensory block induced by spinal anaesthesia. *Br J Anaesth*. 1998;81:970-971.
126. Antognini JF, Jinks SL, Atherley R, et al. Spinal anaesthesia indirectly depresses cortical activity associated with electrical stimulation of the reticular formation. *Br J Anaesth*. 2003;91:233-238.
127. Ben-David B, Vaida S, Gaitini L. The influence of high spinal anesthesia on sensitivity to midazolam sedation. *Anesth Analg*. 1995;81:525-528.
128. Tverskoy M, Fleishman G, Bachrak L, et al. Effect of bupivacaine-induced spinal block on the hypnotic requirement of propofol. *Anaesthesia*. 1996;51:652-653.
129. Morley AP, Derrick J, Seed PT, et al. Isoflurane dosage for equivalent intraoperative electroencephalographic suppression in patients with and without epidural blockade. *Anesth Analg*. 2002;95:1412-1418.
130. Casati L, Fernandez-Galinski S, Barrera E, et al. Isoflurane requirements during combined general/epidural anesthesia for major abdominal surgery. *Anesth Analg*. 2002;94:1331-1337.
131. Salinas FV, Sueda LA, Liu SS. Physiology of spinal anaesthesia and practical suggestions for successful spinal anaesthesia. *Best Pract Res Clin Anaesthesiol*. 2003;17:289-303.
132. Yamakage M, Kamada Y, Toriyabe M, et al. Changes in respiratory pattern and arterial blood gases during sedation with propofol or midazolam in spinal anesthesia. *J Clin Anesth*. 1999;11:375-379.
133. Steinbrook RA, Concepcion M. Respiratory effects of spinal anesthesia: resting ventilation and single-breath CO₂ response. *Anesth Analg*. 1991;72:182-186.
134. Egbert LD, Tamersoy K, Deas TC. Pulmonary function during spinal anesthesia: the mechanism of cough depression. *Anesthesiology*. 1961;22:822.
135. Hasrrop-Griffiths AW, Ravalia A, Browne DA, et al. Regional anesthesia and cough effectiveness. *Anaesthesia*. 1991;46:11-13.
136. Steinbrook RA, Concepcion M, Topulos GP. Ventilatory responses to hypercapnia during bupivacaine spinal anesthesia. *Anesth Analg*. 1988;67:247-252.
137. Auroy Y, Benhamou D, Barges L, et al. Major complications of regional anesthesia in France: the SOS Regional Anesthesia Hotline Service. *Anesthesiology*. 2002;97:1274-1280.
138. Kopp SL, Horlocker TT, Warner ME, et al. Cardiac arrest during neuraxial anesthesia: frequency and predisposing factors associated with survival. *Anesth Analg*. 2005;100:855-865.
139. Defalque RJ. Compared effects of spinal and extradural anesthesia upon the blood pressure. *Anesthesiology*. 1962;23:627-630.

140. Rooke GA, Freund PR, Jacobson AF. Hemodynamic response and change in organ blood volume during spinal anesthesia in elderly men with cardiac disease. *Anesth Analg.* 1997;85:99-105.
141. Kimura T, Komatsu T, Hirabayashi A, et al. Autonomic imbalance of the heart during total spinal anesthesia evaluated by spectral analysis of heart rate variability. *Anesthesiology.* 1994;80:694-698.
142. Introna R, Yodlowski E, Pruett J, et al. Sympathovagal effects of spinal anesthesia assessed by heart rate variability analysis. *Anesth Analg.* 1995;80:315-321.
143. Gratadour P, Viale JP, Parlow J, et al. Sympathovagal effects of spinal anesthesia assessed by the spontaneous cardiac baroreflex. *Anesthesiology.* 1997;87:1359-1367.
144. Campagna JA, Carter C. Clinical relevance of the Bezold-Jarisch reflex. *Anesthesiology.* 2003;98:1250-1260.
145. Kinsella SM, Tuckey JP. Perioperative bradycardia and asystole: relationship to vasovagal syncope and the Bezold-Jarisch reflex. *Br J Anaesth.* 2001;86:859-868.
146. Pollard JB. Cardiac arrest during spinal anesthesia: common mechanisms and strategies for prevention. *Anesth Analg.* 2001;92:252-256.
147. Hanss R, Bein B, Ledowski T, et al. Heart rate variability predicts severe hypotension after spinal anesthesia for elective cesarean delivery. *Anesthesiology.* 2005;102:1086-1093.
148. Chamchad D, Arkoosh VA, Horrow JC, et al. Using heart rate variability to stratify risk of obstetric patients undergoing spinal anesthesia. *Anesth Analg.* 2004;99:1818-1821.
149. Coe AJ, Revanas B. Is crystalloid preloading useful in spinal anaesthesia in the elderly? *Anaesthesia.* 1990;45:241-243.
150. Rout CC, Rocke DA, Levin J, et al. A reevaluation of the role of crystalloid preload in the prevention of hypotension associated with spinal anesthesia for elective cesarean section. *Anesthesiology.* 1993;79:262-269.
151. Arndt JO, Bomer W, Krauth J, et al. Incidence and time course of cardiovascular side effects during spinal anesthesia after prophylactic administration of intravenous fluids or vasoconstrictors. *Anesth Analg.* 1998;87:347-354.
152. Mojica JL, Melendez HJ, Bautista LE. The timing of intravenous crystalloid administration and incidence of cardiovascular side effects during spinal anesthesia: the results from a randomized controlled trial. *Anesth Analg.* 2002;94:432-437.
153. Svensen C, Hahn RG. Volume kinetics of ringer solution, dextran 70, and hypertonic saline in male volunteers. *Anesthesiology.* 1997;87:204-212.
154. Marhofer P, Faryniac B, Oismuller C, et al. Cardiovascular effects of 6% hetastarch and lactated Ringer's solution during spinal anesthesia. *Reg Anesth Pain Med.* 1999;24:399-404.
155. Sharma SK, Gajraj NM, Sidawi JE. Prevention of hypotension during spinal anesthesia: a comparison of intravascular administration of hetastarch versus lactated Ringer's solution. *Anesth Analg.* 1997;84:111-114.
156. Drobin D, Hahn RG. Volume kinetics of Ringer's solution in hypovolemic volunteers. *Anesthesiology.* 1999;90:81-91.
157. Casati A, Fanelli G, Aldegheri G, et al. Frequency of hypotension during conventional or asymmetric hyperbaric spinal block. *Reg Anesth Pain Med.* 1999;24:214-219.
158. Critchley LA, Conway F. Hypotension during subarachnoid anaesthesia: haemodynamic effects of colloid and metaraminol. *Br J Anaesth.* 1996;76:734-736.
159. Lee LA, Posner KL, Domino KB, et al. Injuries associated with regional anesthesia in the 1980s and 1990s: a closed claims analysis. *Anesthesiology.* 2004;101:143-152.
160. Liguori GA, Sharrock NE. Asystole and severe bradycardia during epidural anesthesia in orthopedic patients. *Anesthesiology.* 1997;86:250-257.
161. Ward RJ, Bonica JJ, Freund FG, et al. Epidural and subarachnoid anesthesia. Cardiovascular and respiratory effects. *JAMA.* 1965;25:275.
162. Bonica JJ, Akamatsu TJ, Berges PU, et al. Circulatory effects of epidural block: II. Effects of epinephrine. *Anesthesiology.* 1971;34:514.
163. Greene NM, Brull SJ. Hepatic function. In: Greene NM, Brull SJ, eds. *Physiology of Spinal Anesthesia.* 4th ed. Baltimore, MD: Williams & Wilkins; 1993:233-262.
164. Greene NM, Brull SJ. Renal function. In: Greene NM, Brull SJ, eds. *Physiology of Spinal Anesthesia.* 4th ed. Baltimore, MD: Williams & Wilkins; 1993:263-280.
165. Keita H, Diouf E, Tubach F, et al. Predictive factors of early postoperative urinary retention in the postanesthesia care unit. *Anesth Analg.* 2005;101:592-596.
166. Kamphuis ET, Ionescu TI, Kuipers PWG, et al. Recovery of storage and emptying functions of the urinary bladder after spinal anesthesia with lidocaine and with bupivacaine in men. *Anesthesiology.* 1998;88:310-316.
167. Axelsson K, Mollefors K, Olsson JO, et al. Bladder function in spinal anaesthesia. *Acta Anaesthesiol Scand.* 1985;29:315-321.
168. Pavlin DJ, Rapp SE, Polissar NI, et al. Factors affecting discharge time in adult outpatients. *Anesth Analg.* 1998;87:816-826.
169. Mulroy MF, Larkin KL, Hodgson PH, et al. A comparison of spinal, epidural, and general anesthesia for outpatient knee arthroscopy. *Anesth Analg.* 2000;91:860-864.
170. Mulroy MF, Salinas FV, Larkin KL, et al. Ambulatory surgery patients may be discharged before voiding after short-acting spinal and epidural anesthesia. *Anesthesiology.* 2002;97:315-319.
171. Barker P. Headache after dural puncture. *Anaesthesia.* 1989;44:696-697.
172. Lambert DH, Hurley RJ, Hertwig L, et al. Role of needle gauge and tip configuration in the production of lumbar puncture headache. *Reg Anesth.* 1997;22:66-72.
173. Reina MA, de Leon-Casasola OA, Lopez A, et al. An in vitro study of dural lesions produced by 25-gauge Quincke and Whitacre needles evaluated by scanning electron microscopy. *Reg Anesth Pain Med.* 2000;25:393-403.
174. Hannerz J, Ericson K, Bro Skejo HP. MR imaging with gadolinium in patients with and without post-lumbar puncture headache. *Acta Radiol.* 1999;40:135-141.
175. Liu SS. Why are postdural puncture headaches still a problem? *Reg Anesth Pain Med.* 2000;25:347-349.
176. Lybecker H, Moller JT, May O, et al. Incidence and prediction of postdural puncture headache. A prospective study of 1021 spinal anesthetics. *Anesth Analg.* 1990;70:389-394.
177. Halpern S, Preston R. Postdural puncture headache and spinal needle design: meta-analyses. *Anesthesiology.* 1994;81:1376-1383.
178. Safa-Tisseront V, Thormann F, Malassiné P, et al. Effectiveness of epidural blood patch in the management of post-dural puncture headache. *Anesthesiology.* 2001;95(2):334-339.

179. Cheek TG, Banner R, Sauter J, et al. Prophylactic extradural blood patch is effective: a preliminary communication. *Br J Anaesth*. 1988;61:340-342.
180. Harrington BE. Postdural puncture headache and the development of the epidural blood patch. *Reg Anesth Pain Med*. 2004;29(2):136-163.
181. Scavone BM, Wong CA, Sullivan JT, et al. Efficacy of a prophylactic epidural blood patch in preventing post dural puncture headache in parturients after inadvertent dural puncture. *Anesthesiology*. 2004;101(6):1422-1427.
182. Bart AJ, Wheeler AS. Comparison of epidural saline placement and epidural blood placement in the treatment of post-lumbar-puncture headache. *Anesthesiology*. 1978;48:221-223.
183. Souron V, Hamza J. Treatment of postdural puncture headaches with colloid solutions: an alternative to epidural blood patch. *Anesth Analg*. 1999;89:1333-1334.
184. Crul BJ, Gerritse BM, van Dongen RT, et al. Epidural fibrin glue injection stops persistent postdural puncture headache. *Anesthesiology*. 1999;91:576-577.
185. Patel MR, Caruso PA, Yousuf N, Rachlin J. CT-guided percutaneous fibrin glue therapy of cerebrospinal fluid leaks in the spine after surgery. *AJR Am J Roentgenol*. 2000;175:443-446.
186. Hebl JR. The importance and implications of aseptic techniques during regional anesthesia. *Reg Anesth Pain Med*. 2006;31(4):311-323.
187. Practice advisory for the prevention, diagnosis, and management of infectious complications associated with neuraxial techniques: a report by the American Society of Anesthesiologists Task Force on infectious complications associated with neuraxial techniques. American Society of Anesthesiologists Task Force on infectious complications associated with neuraxial techniques. *Anesthesiology*. 2010;112(3):530-545.
188. Moen V, Dahlgren N, Irestedt L. Severe neurological complications after central neuraxial blockades in Sweden 1990-1999. *Anesthesiology*. 2004;101:950-959.
189. Carp H, Bailey S. The association between meningitis and dural puncture in bacteremic rats. *Anesthesiology*. 1992;76:739-742.
190. Steffen P, Seeling W, Essig A, et al. Bacterial contamination of epidural catheters: microbiological examination of 502 epidural catheters used for postoperative analgesia. *J Clin Anesth*. 2004;16:92-97.
191. Wang LP, Hauerberg J, Schmidt JF. Incidence of spinal epidural abscess after epidural analgesia: a national 1-year survey. *Anesthesiology*. 1999;91(6):1928-1936.
192. Du Pen SL, Peterson DG, Williams A, et al. Infection during chronic epidural catheterization: diagnosis and treatment. *Anesthesiology*. 1990;73:905-909.
193. Horlocker TT, Wedel DJ, Rowlingson JC, et al. Regional anesthesia in the patient receiving antithrombotic or thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Third Edition). *Reg Anesth Pain Med*. 2010;35(1):64-101.
194. Moen V, Dahlgren N, Irestedt L. Severe neurological complications after central neuraxial blockades in Sweden 1990-1999. *Anesthesiology*. 2004;101(4):950-959.
195. Vandermeulen EP, Van Aken H, Vermeylen J. Anticoagulants and spinal-epidural anesthesia. *Anesth Analg*. 1994;79:1165-1177.
196. Kane RE. Neurologic deficits following epidural or spinal anesthesia. *Anesth Analg*. 1981;60:150-161.
197. Pong RP, Gmelch BS, Bernards CM. Does a paresthesia during spinal needle insertion indicate intrathecal needle placement? *Reg Anesth Pain Med*. 2009;34(1):29-32.
198. Horlocker TT, McGregor DG, Matsushige DK, Schroeder DR, Besse JA. A retrospective review of 4767 consecutive spinal anesthetics: central nervous system complications. *Anesth Analg*. 1997;84:578-584.
199. Giebler RM, Scherer RU, Peters J. Incidence of neurologic complications related to thoracic epidural catheterization. *Anesthesiology*. 1997;86:55-63.
200. Biboulet P, Capdevila X, Aubas P, et al. Causes and prediction of maldistribution during continuous spinal anesthesia with isobaric or hyperbaric bupivacaine. *Anesthesiology*. 1998;88:487-494.
201. Gerancher JC. Cauda equine syndrome following single spinal administration of 5% hyperbaric lidocaine through a 25-gauge Whitacre needle. *Anesthesiology*. 1997;87:687-689.
202. Hodgson PS, Neal JM, Pollock JE, et al. The neurotoxicity of drugs given intrathecally (spinal). *Anesth Analg*. 1999;88:797-809.
203. Drasner, K. Local anesthetic neurotoxicity: clinical injury and strategies that may minimize risk. *Reg Anesth Pain Med*. 2002;27:576-580.
204. Schneider M, Ettlin T, Kaufmann M, et al. Transient neurologic toxicity after hyperbaric subarachnoid anesthesia with 5% lidocaine. *Anesth Analg*. 1993;76:1154-1157.
205. Zaric D, Christiansen C, Pace NL. Transient neurologic symptoms after spinal anesthesia with lidocaine versus other local anesthetics: a systematic review of randomized, controlled trials. *Anesth Analg*. 2005;100:1811-1816.
206. Pollock JE, Burkhead D, Neal JM, et al. Spinal nerve function in five volunteers experiencing neurologic symptoms after lidocaine subarachnoid anesthesia. *Anesth Analg*. 2000;90:658-665.
207. Neal JM, Bernards CM, Butterworth JF, et al. ASRA practice advisory on local anesthetic systemic toxicity. *Reg Anesth Pain Med*. 2010;35(2):152-161.
208. Mulroy MF, Norris MC, Liu SS. Safety steps for epidural injection of local anesthetics: review of the literature and recommendations. *Anesth Analg*. 1997;85:1346-1356.
209. Mulroy MF, Hejtmanek MR. Prevention of local anesthetic systemic toxicity. *Reg Anesth Pain Med*. 2010;35(2):177-180.
210. Colonna-Romano P, Padolina R, Lingaraju N, et al. Diagnostic accuracy of an intrathecal test dose in epidural analgesia. *Can J Anaesth*. 1994;41:572-574.
211. Di Gregorio G, Neal JM, Rosenquist RW, Weinberg GL. Clinical presentation of local anesthetic systemic toxicity: a review of published cases, 1979 to 2009. *Reg Anesth Pain Med*. 2010;35(2):181-187.
212. Owen MD, Gautier P, Hood DD. Can ropivacaine and levobupivacaine be used as test doses during regional anesthesia? *Anesthesiology*. 2004;100:922-925.
213. Moore JM, Liu SS, Neal JM. Premedication with fentanyl and midazolam decreases the reliability of intravenous lidocaine test dose. *Anesth Analg*. 1998;86:1015-1017.
214. Takahashi S, Tanaka M, Toyooka H. The efficacy of hemodynamic and T-wave criteria for detecting intravascular injection of epinephrine test dose in propofol-anesthetized adults. *Anesth Analg*. 2002;94:717-722.

215. Tanaka M, Nishikawa T. Aging reduces the efficacy of the simulated epidural test dose in anesthetized adults. *Anesth Analg*. 2000;91:657-661.
216. Liu SS, Stevens RA, Vasquez J, et al. The efficacy of epinephrine test doses during spinal anesthesia in volunteers: implications for combined spinal-epidural anesthesia. *Anesth Analg*. 1997;84:780-783.
217. Weinberg GL. Treatment of local anesthetic systemic toxicity (LAST). *Reg Anesth Pain Med*. 2010;35(2):188-193.
218. Arkoosh VA, Palmer CM, Yun EM, et al. A randomized, double-masked, multicenter comparison of the safety of continuous intrathecal labor analgesia using a 28-gauge catheter versus continuous epidural labor analgesia. *Anesthesiology*. 2008;108(2):286-298.
219. Wong CA, Scavone BM, Slavenas JP, et al. Efficacy and side effect profile of varying doses of intrathecal fentanyl added to bupivacaine for labor analgesia. *Int J Obstet Anesth*. 2004;13:19-24.
220. Wong CA, Scavone BM, Loffredi M, Wang WY, Peaceman AM, Ganchiff JN. The dose response of intrathecal sufentanil added to bupivacaine for labor analgesia. *Anesthesiology*. 2000;92:1553-1558.
221. Davies J, Fernando R, McLeod A, et al. Postural stability following ambulatory regional analgesia for labor. *Anesthesiology*. 2002;97:1576-1581.
222. Calimaran AL, Strauss-Hoder TP, Wang WY, et al. The effect of epidural test dose on motor function after a combined spinal-epidural technique for labor analgesia. *Anesth Analg*. 2003;96:1167-1172.
223. Eisenach JC. Combined spinal-epidural analgesia in obstetrics. *Anesthesiology*. 1999;91:299-302.
224. Norris MC, Fogel ST, Conway-Long C. Combined spinal-epidural versus epidural labor analgesia. *Anesthesiology*. 2001;95:913-920.
225. Wong CA, Scavone BM, Peaceman AM, et al. The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. *N Engl J Med*. 2005;352:655-665.
226. Nageotte MP, Larson D, Rumney PJ, et al. Epidural analgesia compared with combined spinal-epidural analgesia during labor in nulliparous women. *N Engl J Med*. 1997;337:1715-1719.
227. Davies SJ, Paech MJ, Welch H, Evans S, Pavy TJG. Maternal experience during epidural or combined spinal-epidural anesthesia for caesarean section: a prospective, randomized trial. *Anesth Analg*. 1997;85:607-613.
228. Karaman S, Akercan F, Akarsu T, et al. Comparison of the maternal and neonatal effects of epidural block and of combined spinal-epidural block for cesarean section. *Eur J Obstet Gynecol Reprod Biol*. 2005;121:18-23.
229. Lew E, Yeo SW, Thomas E. Combined spinal-epidural anesthesia using epidural volume extension leads to faster motor recovery after elective cesarean delivery: a prospective, randomized, double-blind study. *Anesth Analg*. 2004;98:810-814.
230. Beale N, Evans B, Plaat F, et al. Effect of epidural volume extension on dose requirement of intrathecal hyperbaric bupivacaine at caesarean section. *Br J Anaesth*. 2005;95:500-503.
231. Choi DH, Park NK, Cho HS, et al. Effects of epidural injection on spinal block during combined spinal and epidural anesthesia for cesarean delivery. *Reg Anesth Pain Med*. 2000;25:591-595.
232. McAndrew CR, Harms P. Paraesthesiae during needle-through-needle combined spinal-epidural versus single-shot spinal for elective caesarean section. *Anaesth Intensive Care*. 2003;31:514-517.
233. Urmev WF, Stanton J, Peterson M, et al. Combined spinal-epidural anesthesia for outpatient surgery. Dose-response characteristics of intrathecal isobaric lidocaine using a 27-gauge Whitacre spinal needle. *Anesthesiology*. 1995;83:528-534.
234. Zayas VM, Liguori GA, Chisholm MF, et al. Dose response relationships for isobaric spinal mepivacaine using the combined spinal-epidural technique. *Anesth Analg*. 1999;89:1167-1171.
235. Browne IM, Birnbach DJ, Stein DJ, et al. A comparison of Espocan and Tuohy needles for the combined spinal-epidural technique for labor analgesia. *Anesth Analg*. 2005;101:535-540.
236. Eldor J. The evolution of combined spinal-epidural anesthesia needles. *Reg Anesth*. 1997;22:294-296.
237. Eldor J, Guedj P. Aseptic meningitis due to metallic particles in the needle-through-needle technique. *Reg Anesth*. 1995;20:360.
238. Holst D, Molmann M, Schymroszczyk B, et al. No risk of metal toxicity in combined spinal-epidural anesthesia. *Anesth Analg*. 1999;88:393-397.
239. Rawal N, Van Zundert A, Holmstrom B, et al. Combined spinal-epidural technique. *Reg Anesth*. 1997;22:406-423.
240. Ahn HJ, Choi DH, Kim CS. Paraesthesia during the needle-through-needle and the double segment technique for combined spinal epidural anaesthesia. *Anaesthesia*. 2006;61(7):634-638.
241. Casati A, D'Ambrosio A, De Negri P, et al. A clinical comparison between needle-through-needle and double-segment techniques for combined spinal and epidural anesthesia. *Reg Anesth Pain Med*. 1998;23:390-394.
242. Backe SK, Sheikh Z, Wilson R, et al. Combined epidural/spinal anaesthesia: needle-through-needle or separate spaces? *Eur J Anaesthesiol*. 2004;21:854-857.
243. Hoffmann VL, Vercauteran MP, Buczkowski, et al. A new combined spinal-epidural apparatus: measurement of the distance to the epidural and subarachnoid spaces. *Anaesthesia*. 1997;52:350-355.
244. Stienstra R, Dilrosun-Alhadi BZR, Dahan A, van Kleef JW, Veering BT, Burm AGL. The epidural "top-up" in combined spinal-epidural anesthesia: the effect of volume versus dose. *Anesth Analg*. 1999;88:810-814.
245. Angle PJ, Kronberg JE, Thompson DE, et al. Epidural catheter penetration of human dural tissue: in vitro investigation. *Anesthesiology*. 2004;100:1491-1496.
246. Kamiya Y, Kikuchi T, Inagawa G, et al. Lidocaine concentration in cerebrospinal fluid after epidural administration: a comparison between epidural and combined spinal-epidural anesthesia. *Anesthesiology*. 2009;110(5):1127-1132.
247. Swenson JD, Wisniewski M, McJames S, et al. The effect of prior dural puncture on cisternal cerebrospinal fluid morphine concentrations in sheep after administration of lumbar epidural morphine. *Anesth Analg*. 1996;83:523-525.
248. Bernards CM, Kopacz DJ, Michel MZ. Effect of needle puncture on morphine and lidocaine flux through the spinal meninges of the monkey in vitro. Implications for combined spinal-epidural anesthesia. *Anesthesiology*. 1994;80:853-858.
249. Takiguchi T, Okano T, Egawa H, et al. The effect of epidural saline injection on analgesic level during combined spinal and epidural anesthesia assessed clinically and myelographically. *Anesth Analg*. 1997;85:1097-1100.

250. Goy RW, Sia AT. Sensorimotor anesthesia and hypotension after subarachnoid block: combined spinal–epidural versus single-shot spinal technique. *Anesth Analg*. 2004;98:491-496.
251. Goy RW, Chee-Seng Y, Sia AT, et al. The median effective dose of intrathecal hyperbaric bupivacaine is larger in the single-shot spinal as compared with the combined spinal–epidural technique. *Anesth Analg*. 2005;100:1499-1502.
252. Leeda M, Stienstra R, Arbous MS, et al. The epidural “top-up”: predictors of increase of sensory blockade. *Anesthesiology*. 2002;96:1310-1314.
253. Trautman WJ, Liu SS, Kopacz DJ. Comparison of lidocaine and saline for epidural top-up during combined spinal–epidural anesthesia in volunteers. *Anesth Analg*. 1997;84:574-577.