Smaller Tidal Volumes Improve ARDS

Tidal Volume Lower Than 6 mL/kg Enhances Lung Protection: Role of Extracorporeal Carbon Dioxide Removal.

Terragni P, Del Sorbo L, et al:

Anesthesiology 2009; 111 (October): 826-835

In patients with acute respiratory distress syndrome, large tidal volumes can induce lung injury.

Background: ARDSnet data reaffirm the practice of limiting tidal volume in patients with lung injury to 6 to 8 mL/kg of predicted body weight and limiting plateau pressures to avoid additional lung injury and excess mortality.
Objective: To determine whether tidal volume <6 mL/kg is protective to the lungs and whether consequent respiratory acidosis can be managed by extracorporeal carbon dioxide removal (ECCOR).
Design: Prospective, clinical trial.
Participants: Adult patients with acute respiratory distress syndrome (ARDS).
Methods: After 3 days of mechanical ventilation administered using the ARDSnet criteria; if the plateau pressure was between 25 and 28 cm of H_2O, the ARDSnet strategy was continued. If the plateau pressure was between 28 and 30 cm H_2O, a stepwise reduction in tidal volume was performed until plateau pressures were between 25 and 28 cm H_2O. Respiratory rate was increased and bicarbonate was infused. Extracorporeal carbon dioxide removal was utilized if a pH <7.25 occurred. CT scans of the lungs were performed before and after the study period. Bronchoalveolar lavage was performed before and after the study period to determine levels of a number of inflammatory mediators.
Results: The average age of the patients was the mid 60s and most were men. Pneumonia, sepsis, and trauma were the causes of lung injury. The group with the higher plateau pressures required higher positive end-expiratory pressures, higher minute ventilation, and lower ratios of partial arterial oxygen tension to inspired O_2 fraction (PaO_2/FiO_2) than the lower plateau pressure group. Tidal volume in the higher plateau pressure group was reduced to approximately 4.5 mL/kg to achieve the desired lower plateau pressure. Significantly higher arterial carbon dioxide partial pressure ($PaCO_2$) and lower pH resulted despite bicarbonate infusion and a higher respiratory rate. All patients in the reduced tidal volume group met pH criteria for ECCOR. Within 2 hours of initiation of ECCOR, $PaCO_2$ and pH were significantly improved and were nearly normal at the conclusion of the 72-hour study period. The reduction in tidal volume was associated with improvement in aeration patterns on CT scans and a reduction in calculated lung weight. Inflammatory cytokine levels were lower in the lower plateau pressure group, and the reduction in tidal volume produced a reduction in the cytokine levels compared with the higher plateau pressure levels. No significant complications occurred from the use of ECCOR.
Conclusions: Further reduction in tidal volume minimizes hyperinflation and attenuates pulmonary inflammation in patients with ARDS who have plateau pressures between 28 and 30 cm H_2O when ventilated with ARDSnet ventilation protocol.
Reviewer's Comments: Whether the respiratory acidosis from the low tidal volume ventilation needs to be treated at all is one question that needs to be addressed in further studies. It appears that lower tidal volumes than those associated with the ARDSnet strategy can be tolerated and may be beneficial in the setting of acute lung injury. (Reviewer-Allen Miranda, MD).

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Keywords: Respiratory Acidosis, Extracorporeal Carbon Dioxide Removal

Print Tag: Refer to original journal article

Labor Doesn't Have to Be Painful

Epidural Analgesia in the Latent Phase of Labor and the Risk of Cesarean Delivery: A Five-Year Randomized Controlled Trial.

Wang F, Shen X, et al:

Anesthesiology 2009; 111 (October): 871-880

Early initiation of labor analgesia does not appear to increase the risk of Cesarean section.

Background: Initiation of labor epidural analgesia has traditionally been withheld until the *active* phase of labor. Traditional practice has suggested that this begins at approximately 4 cm of cervical dilation, but recent guidelines have suggested that epidural analgesia can be considered at 2 cm of dilation.
Objective: To determine whether patient-controlled epidural analgesia given at ≥1 cm of cervical dilation increases the risk of prolonged labor or Cesarean delivery.
Design: Prospective, randomized controlled trial.
Participants: Almost 13,000 nulliparous women were included. Exclusion criteria included a history of use of centrally acting drugs, chronic pain, age <18 or >45 years, nonvertex presentation, diabetes or pregnancy-induced hypertension, or twin gestation.
Methods: Patients were evaluated on admission, and if the cervix was <1 cm dilated, meperidine was used for analgesia. Once the cervix was dilated at least 1 cm, the subjects were randomly assigned to receive epidural analgesia immediately or when the cervix reached 4 cm of dilation. Meperidine was used again for analgesia in the group with delayed epidural analgesia. A standard mixture of ropivacaine and sufentanil was used and was administered by bolus dosing without background infusion. Visual analog scores (VAS) were used to assess analgesic efficacy and satisfaction with analgesia. The primary outcome was the rate of Cesarean section.
Results: No demographic or maternal vital sign differences were demonstrated between the 2 groups. The rate of Cesarean delivery was approximately 20% overall. There was no significant difference between the 2 groups in terms of Cesarean-section rate. No differences were noted between the 2 groups in duration of the latent or active phases of stage-1 labor. Stage-2 labor times were also similar. Interestingly, the average VAS scores were similar between the 2 groups for the latent and active stages of labor. Oxytocin use after analgesia was not different between the 2 groups. Nausea and vomiting were less frequent in the group with early initiation of epidural analgesia, and epidural analgesia duration was longer in the latent-phase group. No serious maternal or fetal side effects were demonstrated in either group. Breast-feeding was more successful in the group that had active-phase initiation of labor analgesia. Neonatal variables were similar between the 2 groups. Variables that predicted a higher rate of Cesarean section included increasing age, weight, and height of the patient; and higher doses of oxytocin.
Conclusions: Epidural analgesia in the latent phase of first-stage labor does not prolong the progression of labor or increase the rate of Cesarean section compared with active-phase analgesia.
Reviewer's Comments: A nicely done, large study that should help ease the concerns about providing epidural analgesia too early in labor. Epidural analgesia should be considered when the patient requests it. (Reviewer-Allen Miranda, MD).

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Keywords: Epidural Analgesia, Cesarean

Print Tag: Refer to original journal article

Propofol Sedation Is Dreamy

Propofol Dose And Incidence of Dreaming During Sedation.

Eer AS, Padmanabhan U, Leslie K:

Eur J Anaesthesiol 2009; 26 (October): 833-836

Dreaming may be more frequent when higher doses of propofol and lower bispectral-index values are used during sedation.

Background: Dreaming is a relatively common occurrence during sedation with propofol. The factors that predict the occurrence of dreaming under sedation are not well known.
Objective: To determine the incidence of dreaming and bispectral index (BIS) values in colonoscopy patients sedated with combinations of propofol, fentanyl, and midazolam.
Design: Prospective, randomized study.
Participants: 200 adult patients undergoing outpatient colonoscopy.
Methods: Patients were randomly assigned to receive propofol alone, or propofol in combination with midazolam and/or fentanyl at the anesthesiologist's discretion. BIS monitoring was used during the procedure, but the anesthesiologist was blinded to the BIS value. A depth of sedation that produced responses to verbal commands was targeted. A quality-of-recovery (QoR) questionnaire was used before and after the procedure. A modification of the Brice questionnaire was used to determine whether there was any dreaming or potentially any recall of the procedure. Times to recovery and discharge were also measured.
Results: The overall incidence of dreaming was approximately 20%. Almost 50% of the patients received propofol alone. Patients who experienced dreaming tended to be younger and were more likely to report dreaming when they were at home. There was no gender difference in the occurrence of dreaming. A lower QoR score preoperatively was more likely to be associated with dreaming. Dreamers received significantly more propofol and had lower BIS values than those who did not dream. The median BIS value in patients who dreamed was approximately 55. A total dose of propofol >300 mg was more likely to be associated with dreaming. The use of fentanyl or midazolam did not significantly impact the incidence of dreaming. Dreamers tended to recover more quickly than nondreamers despite the higher dose of propofol and lower BIS values. Only one of the dreams was suggestive of procedural recall; the remainder were typically pleasant dreams about everyday life. Discharge times were similar between the 2 groups.
Conclusions: Dreaming during propofol sedation is associated with higher propofol doses and lower bispectral-index values.
Reviewer's Comments: Since dreaming occurs during REM sleep, it appears to make sense that deeper sedation would make dreaming more likely. Why these patients recovered faster is unclear. The possibility that dreaming is more easily remembered the faster you wake up is also a potential influence on this and other studies. (Reviewer-Allen Miranda, MD).

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Keywords: Propofol, BIS, Dreaming

Print Tag: Refer to original journal article

Noninflatable Supraglottic Airway Device Reduces Complications

A Comparison of Postoperative Throat and Neck Complaints After the Use of the i-gel® and the La Premiere® Disposable Laryngeal Mask: A Double-Blinded, Randomized, Controlled Trial.

Keijzer C, Buitelaar DR, et al:

Anesth Analg 2009; 109 (October): 1092-1094

The i-gel is a supraglottic airway that is noninflatable.

Background: Use of supraglottic airways for anesthetic administration and airway support is increasing. In the United States, the LMA brand is the dominant device used. In Europe, other supraglottic airways have been developed and are in frequent use. One of the devices, the i-gel laryngeal mask (LM) airway, does not have an inflatable cuff.
Objective: To determine whether the use of the i-gel would produce fewer postoperative throat and neck complaints compared with a standard disposable laryngeal mask.
Design: Prospective, randomized double-blind study.
Participants: 244 adults undergoing elective nonthoracic, nonabdominal surgery under general anesthesia.
Methods: Patients were randomly assigned to either the i-gel or a La Premiere disposable LM. A standardized induction was performed; and after the loss of eyelash reflex and the onset of apnea, the supraglottic device was inserted. The device size used was determined by patient weight. Insertion time was defined as the period from the start of moving the head to the correct insertion of the device. The cuff of the La Premiere device was inflated with a maximum volume of 20 mL of air. Up to 3 insertion attempts could be made per patient. Successful insertion was defined as a square capnogram on the monitor without evidence of leakage around the device. A flexible bronchoscope was used through the LM to visualize the larynx and grade the fiberoptic view. Patients were interviewed at 1, 24, and 48 hours postoperatively about 6 specific complaints.
Results: No demographic differences were noted between the 2 groups. A majority of the patients were women. No significant differences were demonstrated in number of attempts at insertion or insertion failure. The i-gel was associated with shorter insertion times, a higher leak pressure, and a better fiberoptic view than the La Premiere LM. Insertion was rated as easier with the i-gel device. The i-gel was associated with significantly fewer complaints and less severity of sore throat and dysphagia than the inflatable cuff device at all time periods after surgery. Neck pain was more frequent in the La Premiere group 1 and 2 days after surgery. No significant differences were noted in incidence of dysphonia, numbness of the tongue or other complaints.
Conclusions: The i-gel supraglottic device resulted in a lower incidence of throat and neck complaints than the La Premiere laryngeal mask airway.
Reviewer's Comments: Attempts at creating a noninflatable laryngeal airway have been made in the United States: none with success, to the best of my knowledge. The i-gel also appeared to be easier to use and was a better sealer of the airway than the inflatable device. The i-gel has a port for inserting a gastric tube, also. (Reviewer-Allen Miranda, MD).

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Keywords: i-gel, LMA, Supraglottic Airway

Print Tag: Refer to original journal article

Phenylephrine May Be Safer Than Ephedrine for Cesarean Section

Placental Transfer and Fetal Metabolic Effects of Phenylephrine and Ephedrine During Spinal Anesthesia for Cesarean Delivery.

Ngan Kee WD, Khaw KS, et al:

Anesth Analg 2009; 111 (September): 506-512

Ephedrine administration during Cesarean section with spinal anesthesia is associated with decreased fetal pH and base excess and increased lactate, glucose, and catecholamines compared with phenylephrine.

Background: Traditionally, ephedrine has been the drug of choice during Cesarean sections with spinal anesthesia, due to a concern that phenylephrine might decrease uteroplacental blood flow and thereby decrease oxygen delivery to the fetus.
Objective: To determine the extent of placental transfer of ephedrine and phenylephrine and the magnitude of changes in biochemical markers of metabolism in mother and fetus during Cesarean section with spinal anesthesia.
Design/Participants: This randomized double-blind study enrolled 104 healthy women with singleton pregnancy scheduled for elective Cesarean section.
Methods: All patients received spinal anesthesia with 10 mg of bupivacaine and 15 µg of fentanyl. Hypotension was treated either with infusion of phenylephrine (100 µg/mL) or infusion of ephedrine (8 mg/mL). Additional boluses with 100 µg of phenylephrine were administered for systolic blood pressure <80% of baseline for all patients. Maternal arterial, umbilical venous, and umbilical arterial blood were sampled at the time of delivery. Blood gas, lactate, glucose, concentration of epinephrine and norepinephrine, and concentration of ephedrine and phenylephrine were measured. Blood pressure, heart rate, volume of infused fluids, nausea, and vomiting were recorded.
Results: pH and base excess were significantly lower in the ephedrine group. Levels of lactate, glucose, epinephrine, and norepinephrine were significantly higher in the ephedrine group. Umbilical arterial partial pressure of carbon dioxide and umbilical venous partial pressure of oxygen were higher in the ephedrine group. Placental transfer of ephedrine was also higher. Patients treated with phenylephrine had better blood pressure control, lower heart rate, and less nausea and vomiting. **Conclusions**: Ephedrine crosses the placenta to a greater extent than phenylephrine. The results support the hypothesis that ephedrine increases fetal metabolism and may cause an unfavorable shift of the oxygen supply/demand ratio, thus causing a decrease in fetal pH and base excess and an increase in glucose, lactate, and concentration of epinephrine and norepinephrine. The phenylephrine group achieved better control of hypotension and less nausea and vomiting.
Reviewer's Comments: The exclusive use of ephedrine in obstetric anesthesia has been questioned in recent years. The widespread use of ephedrine has been based on studies in sheep that showed a decrease in uteroplacental blood flow induced by phenylephrine. There have been several studies in the past 15 years that have demonstrated safer and more effective treatment of spinal-anesthesia–induced hypotension with phenylephrine. The present study further supports studies that show a safe profile for phenylephrine in obstetric anesthesia, which may cause smaller changes in fetal metabolism than ephedrine. Based on current knowledge, however, it remains uncertain whether increased metabolic changes caused by ephedrine may lead to worse clinical outcomes. (Reviewer-Mojca Remskar Konia, MD).

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Keywords: Cesarean, Phenylephrine, Ephedrine

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Malignant Hyperthermia Affects Mostly Men

Prevalence of Malignant Hyperthermia Due to Anesthesia in New York State, 2001-2005.

Brady JE, Sun LS, et al:

Anesth Analg 2009; 109 (October): 1162-1166

The prevalence of malignant hyperthermia in surgical patients in New York State is 1 in 100,000.

Background: Malignant hyperthermia is a pharmacogenetic disorder with absent phenotype. That means that the patient won't be recognized as MH sensitive until the first exposure to a triggering agent. The prevalence of malignant hyperthermia is not well reported in the United States.
Objective: To study the prevalence of malignant hyperthermia in New York State hospitals.
Methods/Patients: Healthcare Cost and Utilization State Independent Database files from 2001 to 2005 were used. The files contain inpatient discharge records for acute care hospitals. The study included 12,749,125 patients. The diagnosis of malignant hyperthermia was determined by ICD-9-CM diagnosis code 995.86.
Results: Of the 12,749,125 patients, 73 had diagnosis of malignant hyperthermia, giving a prevalence of 0.57 per 100,000 for all hospitalizations, 0.96 per 100,000 for a surgical-diagnosis–related group, 1.08 per 100,000 for recorded indication of any exposure to anesthesia, and 4.39 for nonsurgical therapeutic procedures. Prevalence was 2.5 to 4.5 times higher for male patients.
Conclusions: The prevalence of malignant hyperthermia among surgical patients in New York State is approximately 1 per 100,000. Males have a significantly higher risk of development of malignant hyperthermia during surgery.
Reviewer's Comments: Epidemiologic studies have several limitations, including limited data availability, potential miscoding of the condition in the data sets, and misdiagnosis of the condition. The authors themselves point out that the study unit in this study was hospitalization, not an individual patient. Individual patients might have had several hospitalizations. In spite of these limitations, however, the study shows that we have existing data sets to help us with epidemiologic studies of rare conditions. (Reviewer-Mojca Remskar Konia, MD).

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Keywords: Malignant Hyperthermia

Print Tag: Refer to original journal article

LSB Reduces Pain in Children With CRPS

Lumbar Sympathetic Blockade in Children With Complex Regional Pain Syndromes: A Double Blind Placebo-Controlled Crossover Trial.

Meier PM, Zurakowski D, et al:

Anesthesiology 2009; 111 (August): 372-380

Lidocaine delivered by lumbar sympathetic block relieves pain in patients with complex regional pain syndromes.

Background: Complex regional pain syndromes (CRPS) are more commonly recognized in adults than children. Whereas in adults lumbar sympathetic block (LSB) helps to decrease sympathetic overdrive, its use is yet to be studied in children.
Objective: To study the efficacy of lidocaine by LSB versus the IV route for pain control in children with CRPS.
Design: This was a randomized, placebo-controlled, double-blind crossover study conducted from June 2002 to August 2004.
Participants: 25 children were included who had a single lower limb affected and had a failed 6-week trial of physical, behavioral, and pharmacological treatment. The mean duration of CRPS was 9 months in all patients.
Methods: On day 1, patients had an epidural catheter placed in the lateral position under general anesthesia. After 24 hours they were randomly assigned to one of 2 groups. Group 1 received epidural lidocaine 1.0% and saline 0.9% IV, and group 2 receive epidural saline 0.9% and lidocaine 1.0% IV. The total volume of lidocaine did not exceed 6.0 mL. Pain was assessed by a 4-point verbal score. Brush allodynia and pinprick allodynia were elicited; temporal summation was seen by applying 5 pinpricks at 3-second intervals. Skin temperature was recorded on both feet.
Results: Two of the patients were excluded due to severe intolerance to light brush. LSB lidocaine significantly decreased brush allodynia and temporal summation without any effects on pinprick. Verbal pain scores also improved significantly with LSB. IV lidocaine provided no significant change in pain or hemodynamics. Lidocaine had slight side effects of lightheadedness, blurred vision, nausea, and headache lasting for 5 to 10 minutes, mostly in the IV group. **Discussion:** In adults with CRPS, lidocaine has been routinely used in LSB. In this study in children, lidocaine in LSB showed signs of improvement in brush allodynia, temporal summation, and verbal pain scores; whereas IV lidocaine did not produce significant changes. Lidocaine both IV and LSB produced minor side effects that passed in 5 to 10 minutes. The amelioration of pain was lower in children compared with studies of adults receiving LSB. Thermal changes were lower than in adult studies. One limitation of this study was the low dose of lidocaine, resulting in a lower success rate of LSB compared to adults. The time frame was 24 hours; therefore, catheter migration could have occurred. The pain also could be more sympathetically dependent, explaining the decreased response.
Conclusions: Lidocaine via lumbar sympathetic block reduces pain significantly better compared with intravenous lidocaine in children with complex regional pain syndromes.
Reviewer's Comments: This is an interesting study, which highlights that the pain is mediated by abnormal sympathetic activity and that lidocaine by the LSB route provides pain relief even in children. The LSB route is preferred over the IV route with lidocaine. (Reviewer-Sunita Goel, MD).

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Keywords: Lumbar Sympathetic Block, Complex Regional Pain Syndromes

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Alveolar Recruitment Maneuver Minimizes Laparoscopic Complications

Restoration of Pulmonary Compliance After Laparoscopic Surgery Using a Simple Alveolar Recruitment Maneuver.

Cakmakkaya OS, Kaya G, et al:

J Clin Anesth 2009; 21 (September): 422-426

An alveolar recruitment maneuver helps restore pulmonary compliance after laparoscopic surgery.

Background: Minimal access surgery has gained popularity, allowing early ambulation, shorter hospital stay, decreased pain, and rapid recovery. This surgery usually involves the insufflation of carbon dioxide (CO_2), which results in cardiorespiratory compromise and early closure of basal alveoli, leading to atelectasis and decreased lung compliance.
Objective: To evaluate the return of lung compliance following a simple pulmonary recruitment maneuver.
Participants: 20 ASA I and II patients were recruited who were undergoing laparoscopic radical nephrectomy with no underlying cardiopulmonary pathology.
Methods: All patients were premedicated with midazolam. Anesthesia was induced with propofol and morphine and maintained on sevoflurane and remifentanyl. All routine monitors were applied. Fraction of inspired oxygen (FiO_2) of 50%, tidal volume of 10 mg/kg, and respiratory rate of 12 were kept and adjusted to maintain the end-tidal CO_2 between 35 and 45 mm Hg. CO_2 was insufflated to maintain intra-abdominal pressure of 14 mm Hg. Peak inspiratory pressure, airway resistance, and compliance were measured at induction, in the lateral position, at 10 and 120 minutes of insufflation, at desufflation, and after the recruitment maneuver. This maneuver involved directly inflating the lungs for 10 seconds to 40 cm H_2O and then ventilating normally with a positive end-expiratory pressure (PEEP) of 5 cm H_2O.
Results: There was an inverse relationship between peak inspiratory pressure and compliance. Initial compliance was 63.5 mL/cm H_2O, which decreased to 52.6 in the lateral position and further to 31.1 mL/cm H_2O on insufflation and returned to 54.4 after desufflation and 64.5 mL/cm H_2O after the recruitment maneuver. The partial pressure of arterial oxygen was not significantly altered at change of position and insufflation but fared better after the recruitment maneuver than after desufflation. **Discussion:** A lot of changes take place in the respiratory dynamics during laparoscopic surgery; these get further accentuated in obese patients. The associated decrease in lung compliance can lead to basal alveolar collapse and further to atelectasis, which can be prevented to some extent by the use of PEEP. The respiratory recruitment maneuver helps to open these atelectatic alveoli. Various studies show that airway pressure of 40 cm H_2O for 7 to 8 seconds opens the atelectatic lung. Further, studies have shown that a change of compliance during laparoscopic surgery of 10 mL/cm H_2O can increase the chances of hypoxia and atelectasis. This study showed that a simple maneuver restored the compliance back to baseline values.
Conclusions: This simple maneuver when used during laparoscopic surgeries can help avoid postoperative pulmonary complications and atelectasis and restore compliance and is easy to use.
Reviewer's Comments: This simple maneuver for alveolar recruitment is a useful and easy maneuver and does help restore compliance and improve oxygenation. It can be used after laparoscopy to minimize respiratory complications, especially after a prolonged duration of insufflation. (Reviewer-Sunita Goel, MD).

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Keywords: Alveolar Recruitment, Atelectasis, Laparoscopy

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Ropivacaine Vs Lidocaine in IVRA

Comparison of Ropivacaine 0.2% and 0.25% With Lidocaine 0.5% for Intravenous Regional Anesthesia.

Asik I, Kocum AI, et al:

J Clin Anesth 2009; 6 (September): 401-407

Ropivacaine 0.25% is comparable to lidocaine 0.50% in intravenous regional anesthesia.

Background: Lidocaine 0.50% has been established for use in intravenous regional anesthesia (IVRA). Ropivacaine, a new amide local anesthetic, is structurally similar to bupivacaine but has decreased cardiotoxicity and CNS side effects.
Objective: To compare ropivacaine with lidocaine using 2 different concentrations of 0.20% and 0.25% ropivacaine versus 0.50% lidocaine.
Participants/Methods: 66 ASA I and II patients who were undergoing elective forearm surgery were randomly assigned to 3 groups; one receiving 0.20% ropivacaine, one receiving 0.25% ropivacaine, and the third receiving 0.50% lidocaine, in a double-blind manner. Routine monitoring was performed with electrocardiogram, pulse oximetry, and noninvasive blood pressure measurement. Fluid was started on the nonoperative forearm. Local anesthetic was given as a 40-mL bolus over 1 minute. Hemodynamics were assessed at every 5-minute interval until the end of surgery. At the end of surgery, the tourniquet was deflated and the patient was monitored for arrhythmias and CNS side effects. The sensory pain score was recorded, and verbal pain scores from 0 to 4 were noted. If pain was more than 2, pethidine was given IV in the first 2 hours, with oral analgesics after that for 24 hours.
Results: Demographic data were comparable among the patients. Tolerance time for the distal tourniquet was greater for ropivacaine 0.25% than ropivacaine 0.20% and 0.50% lidocaine. The sensory pain score was lower in 0.20% and 0.25% ropivacaine than 0.50% lidocaine. The time to first analgesic was longer in the ropivacaine group than the lidocaine group. Total analgesics were lower in the 0.25% ropivacaine group. Eight patients receiving lidocaine, 3 in the 0.25% ropivacaine group, and 2 in the 0.20% ropivacaine group had light-headedness, tinnitus, and metallic taste. No patient had any cardiotoxic event. **Discussion:** This study showed that the time to first analgesic was prolonged and total analgesics were reduced in the 0.25% ropivacaine group. This was consistent with other studies showing that a higher concentration of ropivacaine produced prolonged analgesia. The prolonged post-tourniquet sensory block could be due to complete binding and lipid solubility of ropivacaine, leading to slow release into the circulation, which could also result in decreased CNS side effects. No tourniquet failure was noted in any patient. The limitation of this study was that no recommended dose or potency ratio of ropivacaine versus lidocaine has been established. C**onclusions:** Ropivacaine 0.25% can be used as an alternative to lidocaine 0.50% for intravenous regional anesthesia; benefits include ropivacaine's prolonged analgesic properties, decreased analgesic requirements, and reduced side effects.
Reviewer's Comments: This is an interesting study and does show ropivacaine as an alternative for lidocaine with fewer side effects and prolonged analgesic times for IVRA. (Reviewer-Sunita Goel, MD).

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Keywords: IVRA, Lidocaine, Ropivacaine

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Attempt to Stop Postoperative Urinary Retention Fails

Unilateral Anesthesia Does Not Affect the Incidence of Urinary Retention After Low-Dose Spinal Anesthesia for Knee Surgery.

Voelckel WG, Kirchmair L, et al:

Anesth Analg 2009; 109 (September): 986-987

Use of a unilateral spinal anesthetic technique for knee surgery does not diminish the incidence of urinary retention.

Background: Urinary retention is common after spinal anesthesia and can result in delayed discharge after ambulatory lower extremity procedures.
Objective: To determine whether unilateral spinal anesthetic technique that would result in anesthesia of only the operative side would result in a lower incidence of urinary retention.
Design: Randomized, open-label clinical study.
Participants: 40 ASA I patients scheduled to undergo elective knee arthroscopy under spinal anesthesia were enrolled.
Methods/Interventions: Each patient received spinal anesthesia with 6 mg of hyperbaric 0.5% bupivacaine. Twenty of the patients (50%) received the spinal injection with the operative side in the dependent position, with the needle bevel directed toward the dependent side in an effort to obtain a unilateral spinal block. In the other 20 subjects, the needle bevel was directed cranially, and the patients were immediately turned supine to obtain a bilateral block. Patients in whom a unilateral block was desired were maintained in the lateral decubitus position for 20 minutes before being prepped for surgery. The adequacy of the blocks was assessed using a modified Bromage scale. Urinary volume was assessed with a bladder scan at the end of surgery and 60 minutes thereafter until the patient was able to void spontaneously or the bladder exceeded 500 mL in volume. Urinary catheterization was performed if the patient could not void spontaneously at that point.
Results: The incidence of urinary retention and subsequent catheterization was the same in the unilateral group (30%) as the bilateral group (30%). The times to first voiding were also not different between the groups (approximately 3.5 hours). All patients whose bladder volume exceeded 500 mL required catheterization. Also, all patients whose bladder volumes were >300 mL at the end of surgery required bladder catheterization.
Conclusions: Urinary retention following spinal anesthesia is not prevented by use of a unilateral technique.
Reviewer's Comments: I am disappointed that unilateral spinal anesthesia for knee surgery does not prevent urinary retention, for it is a big problem if you want to use spinal anesthesia for outpatient surgery. Perhaps a short-acting agent such as 2-chloroprocaine, when it eventually is approved for spinal use, will prevent this complication. Chloroprocaine has been approved in Sweden for spinal use. (Reviewer-David S. Beebe, MD).

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Keywords: Spinal Anesthesia, Urinary Retention

Print Tag: Refer to original journal article

Anesthesiologists Recover From Substance Abuse

Anesthesiologists With Substance Use Disorders: A 5-Year Outcome Study From 16 State Physician Health Programs.

Skipper GE, Campbell MD:

Anesth Analg 2009; 109 (September): 891-896

Anesthesiologists do not have to leave the profession if they develop a substance abuse problem.

Background: Anesthesiologists have had a higher rate of substance abuse than other physicians, particularly with narcotics. There is controversy as to whether an anesthesiologist identified as a substance abuser can resume practice, even with close monitoring.
Objective: To determine whether anesthesiologists undergoing treatment in a physician health program that remain in anesthesiology practice have a worse outcome than other physicians and whether patients are harmed as a result.
Design: Longitudinal cohort study of 904 physicians consecutively admitted to 1 of 16 state physician health programs over a 5-year period (1995-2001).
Methods: The physicians who were anesthesiologists were identified and compared to other physicians. The two groups were compared for the relapse rate, return to anesthesiology practice, disciplinary actions, physician death, and patient harm.
Results: Anesthesiologists were significantly less likely to be enrolled in a physician health program for alcohol abuse than other physicians and significantly more likely to have opioid use. Anesthesiologists had a higher rate of intravenous drug abuse of any type than other physicians (41% vs 10%; P <0.001). Anesthesiologists had more drug tests during their monitoring periods than other physicians (101 vs 82; P =0.02) but were less likely to fail at least one drug test during monitoring (11% vs 23%, P =0.02). There were no differences among anesthesiologists and other physicians in the number of physicians that died (6% vs 3%), number that had their licenses revoked (7% vs 11%), rate of program completion (71% vs 64%), or rate of continuing to practice medicine (76% vs 73%). There also was no evidence of patient harm associated with relapse in any patient cared for by the anesthesiologists in the study.
Conclusions: Anesthesiologists have similar success rates in undergoing treatment for substance abuse compared with other physicians.
Reviewer's Comments: This study suggests that like other physicians, most practicing anesthesiologists can successfully undergo treatment for substance abuse; even though they are more likely to use narcotics or other intravenous drugs rather than alcohol. However, there is a significant failure rate in both groups that likely results in significant personal loss. There should be more study on how to prevent substance abuse in the first place in all types of physicians. (Reviewer-David S. Beebe, MD).

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Keywords: Substance Abuse, Anesthesiologists

Print Tag: Refer to original journal article

Dose Rocuronium for Ideal Weight in Obese Patients

Should Dosing of Rocuronium in Obese Patients Be Based on Ideal or Corrected Body Weight?

Meyhoff CS, Lund J, et al:

Anesth Analg 2009; 109 (September): 787-792

In obese patients, rocuronium based on ideal body weight provided similar intubation and surgical conditions and shorter duration of action compared with larger dosing.

Objective: To compare duration of action and tracheal intubation conditions in 3 groups of morbidly obese patients in which rocuronium intubation doses were based on 3 different weight corrections.
Design/Participants: Prospective, randomized, blind clinical study including 51 adult patients scheduled for laparoscopic gastric bypass or gastric banding.
Methods: Patients were randomly allocated to one of 3 study groups (n=17 each) to receive rocuronium (0.6 mg/kg) according to calculated ideal body weight (IBW) or one of 2 measures of corrected body weight (CBW): ideal weight plus 20% of excess weight (CBW20%) or ideal weight plus 40% of excess (CBW40%). IBW in kg was calculated as height in cm –106 for women or 102 for men. CBW20% = IBW +20% x (total body weight – IBW), and CBW40% = IBW + 40% x (total body weight –IBW). Neuromuscular monitoring was achieved via 2 surface electrodes over the right ulnar nerve and an acceleration transducer attached to the right thumb. Laryngoscopy conditions were evaluated by an anesthesiologist blinded to the group allocation. The primary end point was rocuronium duration of action, defined as the time from beginning of rocuronium injection to reappearance of T4. The secondary end point was onset time, defined as time from start of injection to 95% depression of T1. Surgical conditions and complications were also recorded.
Results: Onset time and intubation conditions were similar in all 3 study groups. Tracheal intubation was successful at the first attempt in all but 3 patients: 2 in the IBW and one in the CBW40% group, in whom a second or a third attempt was necessary. Time to reappearance of T4 was significantly longer in the CBW40% group than in the IBW group (P =0.001). Anesthesiologists and surgeons were able to correctly identify 16 of the 51 patients' allocations.
Conclusions: When used in obese patients, rocuronium should be calculated according to the ideal body weight, providing a shorter duration of action without significant prolongation of onset time or compromise of intubation and surgical conditions.
Reviewer's Comments: Not a surprising outcome, providing that rocuronium has the pharmacokinetics of drugs with low lipophilicity. The observed conditions for tracheal intubation cannot be automatically applied in inducing obese patients in other settings and using drugs other than propofol and remifentanyl. (Reviewer-K. George Bojanov, MD).

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Keywords: Rocuronium Dosing, Obese Patients

Print Tag: Refer to original journal article

Techniques for Nasogastric Tube Insertion in Anesthetized Patients

Nasogastric Tube Insertion Using Different Techniques in Anesthetized Patients: A Prospective, Randomized Study.

Appukutty J, Shroff PP:

Anesth Analg 2009; 109 (September): 832-835

The time needed to insert a nasogastric tube was shortest using head flexion with lateral pressure.

Objective: To investigate and compare 3 techniques of nasogastric (NG) tube insertion in anesthetized patients.
Design/Participants: Prospective, clinical study, involving 200 adult patients requiring general anesthesia for various surgical procedures.
Methods: Participants were randomly allocated into 4 study groups (n=50 each). The control group (group C) received a lubricated NG tube inserted through a nostril with the head in neutral position. The guidewire group (group W) patients received an NG tube with a ureteral guidewire performed in a manner similar to that used for the control group. In the slit–tracheal-tube group (group S), the NG tube was inserted through a nostril and taken out through the mouth. It was then passed though a longitudinally cut 7.0-mm tracheal tube that was inserted blindly into the oral cavity as an introducer, after which the NG tube was advanced further. In the neck-flexion-with-lateral-pressure group (group F), a lubricated NG tube was inserted through a nostril to a depth of 10 cm. The patient's neck was then flexed, lateral neck pressure was applied, and the NG tube was advanced. Success rate, number of attempts, duration of insertion, and complications were all recorded.
Results: Group C's success rate in NG tube insertion was 72%. The success rates in NG tube insertion were greater in groups W, S, and F: 92% for each group. The NG tube was placed successfully on the first attempt in 34% of group-C patients, 66% of group-W patients, 82% of group S, and 82% of group-F patients. Total NG tube insertion time was 56 ± 36 seconds in group C, significantly longer in group S, significantly shorter in group F, and not statistically different in group W. Kinking was the most often observed complication in group C (10 patients). Eleven patients from group S had development of bleeding. One case in group W was complicated by knotting, and 4 cases from group F were complicated by kinking.
Conclusions: Using a ureteral guidewire as a stylet or a slit tracheal tube as an introducer, or keeping the head flexed while applying lateral neck pressure can all increase the success rate of nasogastric tube insertion.
Reviewer's Comments: Head flexion is a maneuver used often by gastroenterologists in facilitating pharyngo-esophageal passage of gastroscopes and NG tubes. Together with lateral neck pressure, head flexion keeps the NG tube along the lateral and posterior pharyngeal wall and smooth esophageal passage. (Reviewer-K. George Bojanov, MD).

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Keywords: Nasogastric Tube Insertion

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Skin Traction Helps Ultrasound-Guided IJV Catheterization in Infants

A Novel Skin-Traction Method Is Effective for Real-Time Ultrasound-Guided Internal Jugular Vein Catheterization in Infants and Neonates Weighing Less Than 5 Kilograms.

Morita M, Sasano H, et al:

Anesth Analg 2009; 109 (September): 754-759

A novel skin-traction method significantly shortened the time to internal jugular vein catheter insertion in infants.

Objective: To evaluate a new skin-traction method (STM) in aiding real-time ultrasound-guided internal jugular vein (IJV) catheterization by increasing the cross-sectional area and diameter of the IJV in infants and neonates with congenital heart disease weighing <5 kg.
Design/Participants: Prospective, randomized clinical study, involving 28 consecutive infants and neonates scheduled for congenital heart disease surgery.
Methods: Study subjects were randomly assigned to a group in which STM was performed (STM group) or a group in which STM was not performed (non-STM group, n=14 each). STM was performed by lifting the skin over the right IJV (RIJV) with several pieces of 2.6-cm-wide surgical tape in cephalad and caudad directions. Three pieces of tape placed cephalad to the RIJV stretched the skin in the cephalad direction, while three pieces of tape stretched the skin in the caudal direction. The other ends of the tape were attached to the operating table. Skin over the RIJV was stretched until a circle drawn on the skin was changed elliptically approximately 1.5 times. Size of the RIJV was measured with both applying and not applying STM in a flat position and then in the Trendelenburg position. The efficacy of STM for real-time 2-dimensional ultrasound images was evaluated by an operator blind to group assignment and recorded.
Results: STM significantly increased the cross-section of the RIJV in the flat and Trendelenburg positions. STM significantly decreased the transverse diameter of the RIJV in the Trendelenburg position and did not change it in the flat position. Total catheter time was significantly shorter in the STM group than in the non-STM group. Pure catheter and guidewire times were also significantly shorter in the STM group. The degree of RIJV collapse was less in the STM group. Eleven of 14 patients had the IJV obliterated in the non-STM group.
Conclusions: The skin-traction method shortened the time for real-time ultrasound-guided internal jugular vein catheterization significantly by increasing the cross-section and the anteroposterior diameter and preventing the vein from collapse.
Reviewer's Comments: Even though taping requires time, the authors claim that a skillful operator may achieve it in less than a minute. The decrease of the transverse diameter in Trendelenburg position when applying STM is of an unknown clinical significance, as is the skin redness after tape removal. (Reviewer-K. George Bojanov, MD).

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Keywords: Jugular Vein Catheterization, Infants, Neonates

Print Tag: Refer to original journal article

Nasogastric Tubes Don’t Reduce PONV

Routine Use of Nasogastric Tubes Does Not Reduce Postoperative Nausea and Vomiting.

Kerger KH, Mascha E, et al:

Anesth Analg 2009; 109 (September): 768-773

A nasogastric tube used perioperatively or intraoperatively did not reduce the incidence of postoperative nausea and vomiting.

Objective: To test the hypothesis that routine intraoperative or perioperative use of a nasogastric tube (NG tube) would not affect the incidence of postoperative nausea and vomiting (PONV).
Design/Participants: Comparative study of data from the previously published International Multicenter Protocol to Assess the Single and Combined Benefits of Antiemetic Strategies in a Controlled Clinical Trial of Factorial Design (IMPACT), including 4055 adult patients.
Methods: In the IMPACT study, patients were randomized in double-blind fashion. Insertion of the NG tube was not randomized and was left to the discretion of the anesthesiologist. After surgery, in the postanesthesia care unit, the time, severity, and characteristics of PONV were recorded. Association between NG tube use and nausea, emesis, and overall PONV was studied using propensity score analysis. In the first stage, available baseline factors were used in a model to predict NG tube use and the probability of each patient having an NG tube assigned (yes/no groups). In the second stage, the matched NG-tube groups were compared on the outcome of interest, using logistic regression analyses.
Results: Among the study population, 2743 patients did not receive an NG tube, 1185 received an NG tube intraoperatively only, and 127 received one intraoperatively that was left in postoperatively for 24 hours (perioperative group). Intraoperative use of the NG tube was not associated with a reduction in nausea or PONV. PONV incidence over 24 hours was 44.4% in patients with intraoperative NG tubes versus 41.5% in controls. No evidence showed that perioperative NG tube use was associated with reduction in nausea, emesis, or overall PONV. The 24-hour PONV incidence was 27.8% in patients with a perioperative NG tube versus 31.3% in controls. **Conclusion:** The study results provide strong evidence that the routine use of a nasogastric tube perioperatively or intraoperatively does not reduce postoperative nausea and vomiting.
Reviewer's Comments: Even though the study includes a very large patient population, there is a serious study limitation: NG tube use was not randomized. Also, we do not know how many were on suction. A randomized study could be done with one group having their NG tubes on suction and the others just placed with no suction. (Reviewer-K. George Bojanov, MD).

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Keywords: Nasogastric Tubes, PONV

Print Tag: Refer to original journal article

Dexmedetomidine Vs Propofol for MRI in Children

A Comparison of Dexmedetomidine With Propofol for Magnetic Resonance Imaging Sleep Studies in Children.

Mahmoud M, Gunter J, et al:

Anesth Analg 2009; 109 (September): 745-753

Artificial airway placement or special positioning was required in a significantly smaller proportion of children sedated with dexmedetomidine than with propofol.

Objective: To compare dexmedetomidine as a primary sedative to propofol in children with obstructive sleep apnea (OSA) for magnetic resonance imaging (MRI) sleep studies.
Design: Retrospective medical records review of the charts of 82 consecutive children with OSA, receiving either dexmedetomidine (n=52) or propofol (n=30) for MRI sleep studies.
Methods: General anesthesia was induced by a bolus dose of either dexmedetomidine or propofol, followed by an infusion of dexmedetomidine or propofol, respectively. All patients were allowed to breathe spontaneously and positioned supine. A nasal cannula with a sample port for end-tidal carbon dioxide was applied to each participant. If a child moved during the study, a bolus dose of dexmedetomidine or propofol was administered and infusion adjusted at the discretion of the attending anesthesiologist. Insertion of an artificial airway, placement of a shoulder roll, or taping the chin to relieve airway obstruction and/or oxygen desaturation was also left to the discretion of the attending anesthesiologist. The primary outcome was successful completion of the MRI study with or without an artificial airway or other airway intervention.
Results: Groups were demographically similar. Median infusion rates were 2 µg/kg per hour for dexmedetomidine and 200 µg/kg per minute for propofol groups. Twelve percent of dexmedetomidine-group patients received atropine, compared with 4% of the propofol group. Children from the propofol group were more likely to require an artificial airway during the scan compared with those from the dexmedetomidine group (P =0.04). Significantly more children with severe OSA from the propofol group required an artificial airway compared to dexmedetomidine children. Children receiving dexmedetomidine experienced a significant reduction in heart rate, whereas children in the propofol group experienced significant reduction in both systolic and diastolic blood pressure. Two patients in the dexmedetomidine group received additional bolus doses because of movement, whereas none of the children in the propofol group required either a bolus or an increase in the infusion rate.
Conclusions: MRI sleep studies were completed without artificial airways in a larger proportion of children with obstructive sleep apnea receiving dexmedetomidine than propofol.
Reviewer's Comments: There are a few study limitations, including the retrospective character, lack of specifically defined thresholds for rescue airway and hemodynamic interventions, and the fact that it is a single-center study involving highly specialized and uncommon imaging. (Reviewer-K. George Bojanov, MD).

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Keywords: Dexmedetomidine, Propofol, MRI, Sleep, Children

Print Tag: Refer to original journal article

Ultrasound Reduces Hemiparesis in Interscalene Blocks

Ultrasound-Guided Low-Dose Interscalene Brachial Plexus Block Reduces the Incidence of Hemidiaphragmatic Paresis.

Renes SH, Rettig HC, et al:

Reg Anesth Pain Med 2009; 34 (September/October): 498-502

Ultrasound-guided interscalene block decreases incidence of hemidiaphragmatic paresis compared with nerve-stimulation guidance.

Background: Interscalene block (ISB) is a commonly used peripheral nerve block with a 100% incidence of hemidiaphragmatic paresis. This is secondary to the high incidence of phrenic nerve block as a result of rostral spread to the C4 root. Ultrasound (US)-guided blocks help delineate the nerve root and spread of local anesthetic to the C4 root.
Objective: To compare US-guided ISB with nerve-stimulated (NS) ISB in incidence of hemidiaphragmatic paresis.
Methods: 30 ASA I to III patients between 18 and 75 years of age were divided into 2 groups: US-guided and NS ISB. After routine premedication and standard monitoring, ISB was given with a nerve stimulator in the supine position and with US in the semi-sitting position. Ten mL of 0.75% ropivacaine was injected into the block. General anesthesia was given 45 minutes after the block. Diaphragmatic movement was assessed. Movement <75% or paradoxical movement was considered paretic, between 25% and 75% was partial paresis, and <25% was no paresis. Bedside spirometry was performed, and forced expiratory volume at 1 second, forced vital capacity, and peak expiratory flow were measured and recorded. The sensory block was evaluated with pinprick as full sensation, decreased sensation, or no sensation. A successful block was analgesia between the C5 and C6 dermatomes.
Results: In the US group, 2 patients had complete hemidiaphragmatic paresis, and 12 in the NS group had complete and 2 had partial paresis. Only one patient had no paresis. The 2 patients with paresis in the US group had complete recovery in 180 minutes; the 12 patients in NS group took 360 minutes. Ventilatory functions were significantly reduced in the NS group. Sensory analgesia was complete for all patients with C5-dermatome analgesia; only 1 patient in the C6 dermatome group did not have analgesia. Two patients in the US group and 1 in the NS group required morphine. Horner’s syndrome occurred in 2 patients in the US group and 1 in the NS group. **Discussion**: This study showed that blocks performed with US had reduced incidence of hemidiaphragmatic paresis. Here, the C4 root was spared, and the rostral spread of local anesthetic was reduced to the C4 root. The limitation of this study was that it wasn't a blind study. The C7 root that was located with US was not confirmed by nerve stimulation. Complications of injury to the vertebral artery and epidural space, and cervical root compression can occur, but none were seen in this study. No patient had respiratory distress.
Conclusions: Ultrasound-guidance of interscalene blocks results in a much lower incidence of hemidiaphragmatic paralysis compared with nerve-stimulation guidance and may be helpful when conducting blocks on patients with decreased ventilatory function.
Reviewer's Comments: This is an interesting study showing that hemidiaphragmatic paresis was much less with ultrasound-guided technique, thus decreasing complications associated with interscalene block. (Reviewer-Sunita Goel, MD).

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Keywords: Interscalene Block, Ultrasound

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Diabetes Mellitus Affects Supraclavicular Block

Diabetes Mellitus, Independent of Body Mass Index, Is Associated With a "Higher Success" Rate for Supraclavicular Brachial Plexus Block.

Gebhard RE, Nielson KC, et al:

Reg Anesth Pain Med 2009; 34 (September/October): 404-407

Diabetic patients have a higher success rate with supraclavicular blocks than patients without diabetes.

Background: The problem of obesity has increased fivefold in the last decade, and problems associated with obesity, such as diabetes mellitus (DM) and metabolic syndrome, are on the rise exponentially. Diabetic patients have a varying response to peripheral nerve blocks and have a higher sensitivity to local anesthesia.
Objective: This study aimed at evaluating the effects of DM, body mass index (BMI), age, and sex on the success rate of supraclavicular blocks (SCBs).
Methods: Records of 1858 patients receiving supraclavicular blocks were assessed. The patients were divided into 2 groups: diabetic (n=262) and nondiabetic (n=1596). The success of the block was defined by no additional anesthesia technique besides sedation, and no additional requirement of local anesthesia or narcotics or ketamine. After routine monitoring, SCB was given by standard technique with a dose of 3 mg/kg of 2% mepivacaine with no adjuncts.
Results: Demographic data were comparable in both groups. Diabetic patients were older and more likely to be women. Of 1858 procedures performed, 90% were successful. Statistically, diabetic patients were 3 times more likely to have a successful block. This factor was independent of the BMI of the patients. Sixty-three percent of diabetic subjects and 69% in the nondiabetic group received the block for orthopedic procedures; the others were for vascular surgeries. There was no difference in the block success based on insulin dependence. Four patients had pneumothorax. No other side effects were noted. **Discussion:** This study was the first of its kind to relate diabetes and BMI to the success of SCB. The reasons postulated behind the higher success rates were higher sensitivity to local anesthesia due to microvascular damage resulting from diabetes or due to diabetic neuropathy, resulting in decreased sensation in the surgical area and leading to higher tolerance of surgical stimulation compared with nondiabetic patients. No patient in this study had any nerve damage. In this study, BMI was an independent factor and made no difference to the success of the block. This being a retrospective study, the demographic data were not identical between the groups; there were more women and older patients in the diabetic group.
Conclusions: Diabetes does influence the success rate of peripheral nerve block; the attending anesthesiologist needs to evaluate these patients carefully. The authors also suggest that prospective clinical research needs to be carried out to determine the exact relationship between diabetes and peripheral nerve blocks.
Reviewer's Comments: Interesting findings in this study. Careful evaluation by the anesthetist for diabetic patients is stressed, as well as the need for further clinical studies to establish a definitive theory for these patients. (Reviewer-Sunita Goel, MD).

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Keywords: Supraclavicular Block, Diabetes Mellitus

Print Tag: Refer to original journal article

US-Guided Axillary Brachial Plexus Block Reduces LA Need

Ultrasound-Guided Axillary Brachial Plexus Block With 20 Milliliters Local Anesthetic Mixture Versus General Anesthesia for Upper Limb Trauma Surgery: An Observer-Blinded, Prospective, Randomized, Controlled Trial.

O'Donnell BD, Ryan H, et al:

Anesth Analg 2009; 109 (July): 279-283

Ultrasound-guidance for axillary brachial plexus block allows a marked reduction in the volume and dose of local anesthetic needed to achieve a successful block in every patient.

Objective: To compare the efficacy and advantages of low-dose ultrasound (US)-guided axillary brachial plexus block to those of general anesthesia (GA).
Design: This was an observer-blinded, prospective controlled trial where patients for upper-limb trauma surgery were randomized to US-guided axillary block using 20 mL of local anesthetic (LA) or GA. Up to 5 mL of LA (1.00% lidocaine and 0.25% bupivacaine, 1/100,000 epinephrine and 7.5 mg/mL clonidine) was injected around each nerve: median, ulnar, radial, and musculocutaneous. GA consisted of propofol (1-2 mg/kg) and 1 µg/kg of fentanyl for induction and nitrous oxide and sevoflurane for maintenance. Morphine increments of 0.05 mg/kg were administered as needed during the surgery. Major assessments were pain scores in the recovery room (PACU) and at 2, 6, 24, and 48 hours and 7 days after surgery; ability to bypass the PACU; and time to achieve hospital discharge criteria.
Results: Satisfactory anesthesia was obtained in both groups; however, the US-guided axillary block group had lower pain scores in the PACU and at 2 and 6 hours. All US-guided axillary block patients bypassed the recovery room and were discharged earlier (30 vs 120 minutes). Morphine use was also significantly higher in the GA group.
Conclusions: Even with the use of low-dose local anesthesia, the ultrasound-guided axillary block was superior to general anesthesia in reducing opiate use, achieving better postoperative analgesia, and significantly shortening time to hospital discharge.
Reviewer's Comments: The advantages regional anesthesia offers over general anesthesia have been documented in a number of surgical settings and are especially important in ambulatory surgery. This study confirms that regional anesthesia provides significant advantages in terms of better pain control in both the immediate and late stages of recovery and, consequently, facilitates much earlier discharge from the hospital. This should result in increased efficiency of outpatient resources and should improve patient satisfaction. This study also demonstrated that US-guided axillary block permits a marked reduction in the LA dose needed to achieve a successful block in every patient. Lower LA doses are an important variable in reducing the incidence of systemic LA toxicity due to extensive absorption. At the same time, US-guided needle placement significantly reduces the risk of inadvertent intravascular LA injection and its accompanying serious central nervous system and cardiovascular complications. Thus, this study adds further support to the feasibility of obtaining a satisfactory regional anesthetic with a reduced LA dose when employing US to guide needle tip placement next to the individual nerves in the axilla. (Reviewer-Douglas E. Koehntop, MD).

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Keywords: Ultrasound-Guided Axillary Plexus Block

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Raj Approach Places Sciatic Nerve Catheters Quickly

Sciatic Nerve Catheter Placement: Success With Using the Raj Approach.

Robards C, Wang RD, et al:

Anesth Analg 2009; 109 (September): 972-975

The readily identifiable bony landmarks make is easy to place sciatic nerve catheter using the Raj approach.

Objective: To determine the reliability, feasibility, and success rate of sciatic catheters placed using the Raj approach.
Design/Participants: Prospective clinical study involving 20 adult patients, ASA I to III, scheduled for unilateral knee arthroplasty or ankle surgery.
Methods: The greater trochanter and ischial tuberosity were identified and marked on each patient. The needle was inserted at the midpoint of a line joining the greater trochanter and ischial tuberosity at the level of the gluteal crease. An 18-gauge, 4-inch insulated Tuohy needle was used for each block. A closed-tip polyamide-nylon catheter was advanced after successful nerve stimulation, 2 to 4 cm past the needle tip. Total number of skin punctures, number of redirections, lowest current causing stimulation, difficulty during catheter insertion, distance from skin to sciatic nerve, depth of catheter, presence of blood, fentanyl dose, time to block completion, and sensory and motor block success were recorded.
Results: The average time for catheter placement was 2.8 minutes, and 75% of the patients required one needle puncture site. Catheter advancement was difficult in 10% of the patients and was easily managed with saline injection through the needle. Average distance of the sciatic nerve from the skin was 5.9 cm. In 16 patients, nerve stimulation elicited tibial nerve response; 4 patients experienced peroneal nerve response. At 20 minutes, 16 patients had significant weakness in both of the terminal nerve distributions, and 4 patients had significant weakness in only peroneal distribution.
Conclusions: A sciatic nerve catheter can be easily placed using the Raj approach, providing a high degree of block success.
Reviewer's Comments: First I would like to underline that this is a pilot study including no obese or morbidly obese patients. There is no comparison of the Raj approach used in the study to the classical Labat approach in success rates and complications. (Reviewer-K. George Bojanov, MD).

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Keywords: Sciatic Nerve, Catheter Placement, Raj Approach.

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