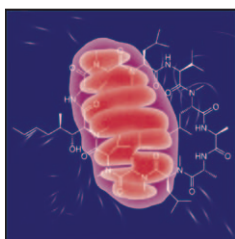




239 Comparison of Three Techniques for Ultrasound-guided Femoral Nerve Catheter Insertion: A Randomized, Blinded Trial

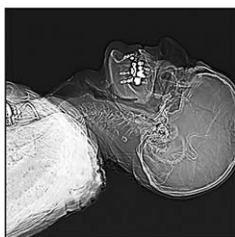
While nerve stimulation is the classical method for confirming appropriate femoral perineural catheter placement to provide continuous analgesia after total knee arthroplasty, ultrasound guidance improves positioning success. Four hundred thirty-seven patients scheduled for arthroplasty under general or neuraxial anesthesia were randomly assigned to have catheter insertion by one of three techniques. Verbal response scale pain scores and opioid consumption were recorded for 48 h after surgery. Ultrasound guidance alone produced pain scores and opioid requirements that were comparable to those produced by ultrasound with electrical stimulation through the needle and by ultrasound with electrical

stimulation through the needle and catheter and was faster and less expensive. (Summary: M.J. Avram. Photo illustration: J.P. Rathmell and A. Johnson/Vivo Visuals.)



232 Cyclosporine Protects the Heart during Aortic Valve Surgery

Cross clamping–unclamping the aorta during surgery involving cardiopulmonary bypass induces a global ischemia–reperfusion sequence that can cause irreversible myocardial damage, possibly through opening the mitochondrial permeability transition pore, a nonspecific channel situated in the inner mitochondrial membrane that is inhibited by cyclosporine. Sixty-one patients undergoing aortic valve surgery under total intravenous anesthesia (to avoid postconditioning effects of volatile anesthetics) were randomly assigned to receive cyclosporine or an equivalent volume of normal saline less than 10 min before aortic unclamping. Cyclosporine administration was well tolerated and associated with a significant reduction in postoperative cardiac troponin I release. See the accompanying Editorial View on [page 212](#). (Summary: M.J. Avram. Illustration: J.P. Rathmell.)



260 Intubation Biomechanics: Laryngoscope Force and Cervical Spine Motion during Intubation with Macintosh and Airtraq Laryngoscopes

Fourteen patients were intubated twice before undergoing surgery, once with each of two laryngoscopes (Macintosh and Airtraq) in a random order, to determine the relationship between laryngoscope force and cervical spine motion. Whereas cervical spine motion was affected by the amount of force applied by the laryngoscope, force/motion relationships were nonlinear and differed between laryngoscopes. Intubation with the Airtraq required 20% of the force of the Macintosh, but resulted in 67% as much motion from occiput to the fifth cervical vertebrae. Laryngoscope-specific factors contributing to the force/motion relationships of intubation include both cervical extension and airway

tissue deformation needed for intubation as well as cervical spine and airway soft tissue viscoelastic properties. (Summary: M.J. Avram. Image: J.P. Rathmell.)



219 Prospective External Validation of a Predictive Score for Postoperative Pulmonary Complications

The Assess Respiratory Risk in Surgical Patients in Catalonia (ARISCAT) study developed a clinically practical seven-factor scoring system to assess the risk of developing postoperative pulmonary complications (PPC). The accuracy of ARISCAT score predictions of PPCs was tested in a new cohort of patients from 63 centers in 21 European countries. PPCs were recorded in 404 of the 5,099 surgical patients receiving general, neuraxial, or plexus block anesthesia. The ARISCAT score showed good discrimination between patients with PPCs and those without in the overall external validation sample. Discrimination was best in the Western European subsample but only

moderately good in the Eastern European subsample. See the accompanying Editorial View on [page 209](#). (Summary: M.J. Avram. Illustration: ©Thinkstock.)



383 Postoperative Brachial Plexopathy Associated with Infraclavicular Brachial Plexus Blockade: Localizing Postoperative Nerve Injury (Case Scenario)

Electromyography and magnetic resonance imaging (MRI) can be useful in confirming postoperative nerve injury (PNI) and defining its extent and severity. A case of postoperative brachial plexopathy following microvascular toe segment transfer surgery in which continuous infraclavicular blockade was used is presented. The challenges in precisely localizing the site of injury to determine the etiology of PNI are illustrated by electromyographic abnormalities and MRI imaging characteristics that

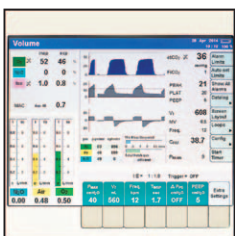
were not definitive in localizing the nerve injury because the presence of a proximal brachial plexopathy superimposed on an old neurogenic process made interpretation difficult. (Summary: M.J. Avram. Image: J.P. Rathmell.)



328 Decreased Functional Connectivity and Disturbed Directionality of Information Flow in the Electroencephalography of Intensive Care Unit Patients with Delirium after Cardiac Surgery

In the electroencephalogram (EEG) of healthy subjects, the anterior-to-posterior functional connectivity gradient is lost in the alpha band during loss of consciousness and regained after recovery. The functional network characteristics of 25 patients who developed delirium shortly after cardiac surgery were compared with those of 24 who did not. The EEG showed decreased functional connectivity combined with a decreased normalized path length in the alpha frequency band and increased delta band connectivity directed to frontal regions in patients who developed delirium. These changes are consistent with altered functional connectivity and network topology in other diseases affecting cognitive functioning and are similar to observations during loss of consciousness. See the accompanying Editorial View on page 214. (Summary: M.J. Avram. Illustration: J.P. Rathmell.)

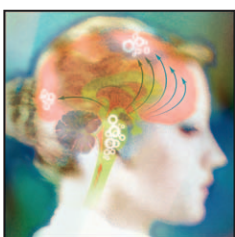
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400 Perioperative Positive Pressure Ventilation: An Integrated Approach to Improve Pulmonary Care (Clinical Concepts and Commentary)

Mechanical ventilation can initiate lung damage in patients with healthy lungs. Lung-protective ventilation is used in patients with acute respiratory distress syndrome and may help prevent postoperative pulmonary complications in patients with healthy lungs. The status of mechanical ventilation in the operating room and the physiology of ventilator-associated lung injury are reviewed as is evidence supporting implementation of a multifaceted bundle of prophylactic perioperative positive pressure ventilation to minimize lung volume reduction throughout the perioperative period. Early application of noninvasive

positive pressure ventilation can attenuate lung volume reduction and atelectasis formation, an effect that can be improved by applying alveolar recruitment maneuvers. (Summary: M.J. Avram. Photo: J.P. Rathmell.)



311 Electrical Stimulation of the Ventral Tegmental Area Induces Reanimation from General Anesthesia

The role of dopamine pathways in emergence from anesthesia has not been well characterized despite the ability of methylphenidate, a dopamine transport inhibitor, and a selective dopamine-1 receptor agonist to restore righting and other conscious behaviors in anesthetized rats. Male rats had electrodes implanted in the ventral tegmental area (VTA) or the substantia nigra (SN), the two major dopamine nuclei. Electrical stimulation of the VTA resulted in active emergence (reanimation) from isoflurane anesthesia, but SN stimulation did not. VTA stimulation also aroused rats from propofol anesthesia. VTA stimulation during general anesthesia produced electroencephalographic changes consistent with arousal that were similar to those induced by methylphenidate. (Summary: M.J. Avram. Illustration: J.P. Rathmell and A. Johnson/Vivo Visuals.)

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