



## ON THE COVER:

Perioperative ischemic optic neuropathy (ION) can cause visual loss during spinal surgery. In this issue of *ANESTHESIOLOGY*, Rubin *et al.* employ a large nationwide administrative hospital database to assess trends and risk factors for ION and demonstrate that perioperative ION in spinal fusion is decreasing. In an accompanying Editorial View, Todd discusses why the rate of ION might be on the decline.

- Rubin *et al.*: Perioperative Visual Loss in Spine Fusion Surgery: Ischemic Optic Neuropathy in the United States from 1998 to 2012 in the Nationwide Inpatient Sample, p. 457
- Todd: Good News: But Why Is the Incidence of Postoperative Ischemic Optic Neuropathy Falling?, p. 445

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## ◆ EDITORIAL VIEWS

### Good News: But Why Is the Incidence of Postoperative Ischemic Optic Neuropathy Falling?

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*M. M. Todd*

### Oxygen Therapy: When Is Too Much Too Much?

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*S. Shaefi, D. S. Talmor, and B. Subramaniam*

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*M. Harvey and G. Cave*

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*M. B. Jacobs and S. P. Cohen*

## ■ PERIOPERATIVE MEDICINE

## CLINICAL SCIENCE

### ◆◆ Perioperative Visual Loss in Spine Fusion Surgery: Ischemic Optic Neuropathy in the United States from 1998 to 2012 in the Nationwide Inpatient Sample

457



*D. S. Rubin, I. Parakati, L. A. Lee, H. E. Moss, C. E. Joslin, and S. Roth*

In the Nationwide Inpatient Sample for 1998 to 2012, procedure codes for spine surgery and diagnostic codes for ischemic optic neuropathy were identified. It was found that perioperative ischemic optic neuropathy in spinal fusion significantly decreased from 1998 to 2012 by about 2.7-fold. Aging, male sex, transfusion, and obesity significantly increased the risk.

◆ Refers to This Month in Anesthesiology

◆ Refers to Editorial Views



This article has an Audio Podcast



This is a Healthcare Redesign article



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CME Article



This article has a Video Abstract

- ◆◆ **A Multicenter, Randomized, Controlled Phase IIb Trial of Avoidance of Hyperoxemia during Cardiopulmonary Bypass** 465  
*S. P. McGuinness, R. L. Parke, K. Drummond, T. Willcox, and M. Bailey, on behalf of the SO-COOL investigators*  
 The authors provide the first multicenter, randomized control trial to address the potential of organ injury from perioperative hyperoxemia during cardiopulmonary bypass. The authors show that avoiding hyperoxemia during cardiopulmonary bypass was safe but failed to demonstrate a difference in organ damage.
- ◆◆🌐 **Effect of Intralipid® on the Dose of Ropivacaine or Levobupivacaine Tolerated by Volunteers: A Clinical and Pharmacokinetic Study** 474  
*P. Dureau, B. Charbit, N. Nicolas, D. Benhamou, and J.-X. Mazoit*  
 In a crossover study conducted in 16 volunteers, a lipid emulsion infusion begun 2 min after initiating an infusion of ropivacaine or levobupivacaine did not affect the times to early signs of central nervous system toxicity. Peak local anesthetic concentrations at the end of the local anesthetic infusions decreased by 26 to 30% due to an increase in the central volume of a multicompartmental pharmacokinetic model. Pharmacokinetic simulations suggest that a lipid emulsion might prevent the rapid increase of local anesthetic concentrations after extravascular administration.
- ◆🌐 **Electronically Mediated Time-out Initiative to Reduce the Incidence of Wrong Surgery: An Interventional Observational Study** 484  
*B. S. Rothman, M. S. Shotwell, R. Beebe, J. P. Wanderer, J. M. Ehrenfeld, N. Patel, and W. S. Sandberg*  
 Implementation of a mandatory, electronic time-out process before incision is feasible and inexpensive and has minimal impact on operating room efficiency. Given the rarity of wrong surgery, there is substantial uncertainty about whether true performance improvements occur with this approach.
- 🌐 **Methodologic Considerations for Collecting Patient-reported Outcomes from Unselected Surgical Patients** 495  
*D. L. Helsten, A. Ben Abdallah, M. S. Avidan, T. S. Wildes, A. Winter, S. McKinnon, M. Bollini, P. Candelario, B. A. Burnside, and A. Sharma*  
 A process for including rigorous preoperative health information, tracking patients' perioperative courses, and obtaining postoperative patient-reported outcomes 30 days and 1-yr after hospital discharge can be successfully assimilated in the organizational workflow of a busy academic hospital. Patient engagement, informed consent, strong support from leadership, and buy-in from frontline clinicians are helpful in sustaining such programs. In addition to electronic surveys, paper surveys and telephone interviews are essential to capturing a large surgical sample.
- ◆ **Single-dose Antibiotic Prophylaxis in Regional Anesthesia: A Retrospective Registry Analysis** 505  
*H. Bomberg, D. Krotten, C. Kubulus, S. Wagenpfeil, P. Kessler, T. Steinfeldt, T. Standl, A. Gottschalk, J. Stork, W. Meissner, J. Birnbaum, T. Koch, D. I. Sessler, T. Volk, and A. Raddatz*  
 In the German Network for Regional Anesthesia database, 11,307 patients receiving epidural or perineural catheters and single-shot antibiotics were propensity matched with the same number of individuals who did not receive antibiotics. The adjusted odds ratio for infection, primarily defined as the presence of at least two of the symptoms redness, edema, or pressure/pain leading to catheter removal, was 2.02 (95% CI, 1.4 to 2.8) for peripheral catheters and 1.94 (95% CI, 1.6 to 2.4) for nonobstetrical epidural catheters.
- 📺◆ **Combined Spinal Epidural Technique for Labor Analgesia Does Not Delay Recognition of Epidural Catheter Failures: A Single-center Retrospective Cohort Survival Analysis** 516  
*J. M. Booth, J. C. Pan, V. H. Ross, G. B. Russell, L. C. Harris, and P. H. Pan*  
 Since combined spinal epidural catheters are not fully tested initially, there is concern that recognition of epidural catheter failures may be delayed. Combined spinal epidural does not delay recognition of epidural catheter failures *versus* epidural.
- ◆📺 **Effects of Depth of Propofol and Sevoflurane Anesthesia on Upper Airway Collapsibility, Respiratory Genioglossus Activation, and Breathing in Healthy Volunteers** 525  
*J. C. P. Simons, E. Pierce, D. Diaz-Gil, S. A. Malviya, M. J. Meyer, F. P. Timm, J. B. Stokholm, C. E. Rosow, R. M. Kacmarek, and M. Eikermann*  
 This randomized controlled crossover study in healthy human volunteers first examined effects of equivalent anesthesia doses of sevoflurane and propofol on pharyngeal airway dilating muscle activity and upper airway collapsibility. Propofol and sevoflurane anesthesia increased upper airway closing pressure in a dose-dependent fashion with no difference at equivalent anesthetic concentrations, possibly mediated by a dose-dependent reduction of genioglossus muscle activation.

## BASIC SCIENCE

 **$\alpha_2$ -Adrenergic Receptor and Isoflurane Modulation of Presynaptic  $\text{Ca}^{2+}$  Influx and Exocytosis in Hippocampal Neurons**

535

*M. Hara, Z.-Y. Zhou, and H. C. Hemmings, Jr.*

Using quantitative imaging of fluorescent biosensors of action potential-evoked synaptic vesicle exocytosis (synaptophysin-pHluorin) and  $\text{Ca}^{2+}$  influx (GCaMP6) in cultured rat hippocampal neurons, it was found that synaptic vesicle exocytosis was inhibited by both dexmedetomidine and clonidine in proportion to reduced  $\text{Ca}^{2+}$  entry. These effects were specifically due to activation of  $\alpha_{2A}$ -adrenoceptors and were additive with inhibition of release by isoflurane.

## ■ CRITICAL CARE MEDICINE

## BASIC SCIENCE

**Adenosine Receptor Adora2b Plays a Mechanistic Role in the Protective Effect of the Volatile Anesthetic Sevoflurane during Liver Ischemia/Reperfusion**

547

*T. F. Granja, D. Köhler, J. Schad, C. B. de Oliveira Franz, F. Konrad, M. Hoch-Gutbrod, A. Streifßenberger, P. Rosenberger, and A. Straub*

Sevoflurane inhibited platelet activation and platelet–neutrophil conjugate formation in human blood *ex vivo* and reduced systemic inflammation, platelet–neutrophil conjugate formation, and organ damage in a mouse model of liver ischemia/reperfusion injury. The organ-protective and antiinflammatory effects of sevoflurane are reduced in genetically modified mice not expressing adenosine 2B receptors, indicating a critical role for this signaling pathway.

## ■ PAIN MEDICINE

## CLINICAL SCIENCE

**◆◆ Duloxetine and Subacute Pain after Knee Arthroplasty when Added to a Multimodal Analgesic Regimen: A Randomized, Placebo-controlled, Triple-blinded Trial**

561

*J. T. YaDeau, C. M. Brummett, D. J. Mayman, Y. Lin, E. A. Goytizolo, D. E. Padgett, M. M. Alexiades, R. L. Kahn, K. M. Jules-Elysee, K. G. Fields, A. K. Goon, Y. Gadulov, and G. Westrich*

In a triple-blinded, randomized control trial of duloxetine, 60 mg/day for 14 days begun on the day of total knee arthroplasty *versus* placebo in 106 patients, duloxetine failed to reduce pain with ambulation on postoperative day 14, the primary outcome.

## BASIC SCIENCE

**Microglial Inhibition Influences XCL1/XCR1 Expression and Causes Analgesic Effects in a Mouse Model of Diabetic Neuropathy**

573

*M. Zychowska, E. Rojewska, A. Piotrowska, G. Kreiner, and J. Mika*

Using the mice streptozotocin model of diabetic neuropathy, it was observed that chemokine-C-motif ligand 1 was up-regulated in microglial cells, while chemokine-C-motif receptor 1 was found to be expressed on spinal neurons. The administration of the glial inhibitor minocycline or anti-chemokine-C-motif ligand 1 antibodies reduced tactile allodynia and thermal hyperalgesia.

## ■ CLASSIC PAPERS REVISITED

**From Bench to Bedside and Back Again: A Personal Journey with Dexmedetomidine**

590

*M. Maze*

This article is a revisiting of original material published as: Segal IS, Vickery RG, Walton JK, Doze VA, Maze M: Dexmedetomidine diminishes halothane anesthetic requirements in rats through a postsynaptic alpha 2 adrenergic receptor. *ANESTHESIOLOGY* 1988; 69:818–23.

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