



ON THE COVER:

In this issue of ANESTHESIOLOGY, research teams describe the results of two studies that provide important new information toward understanding the development of chronic pain after childbirth. Persistent pain after childbirth may be less common than after other types of surgery (James P. Rathmell, M.D., selected the cover image and wrote the “On the Cover” text):

- Flood and Wong: Chronic Pain Secondary to Childbirth: Does It Exist?, p. 16
- Eisenach *et al.*: Resolution of Pain after Childbirth, p. 143

◇ THIS MONTH IN ANESTHESIOLOGY

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- Chronic Pain Secondary to Childbirth: Does It Exist?** 16
Pamela Flood and Cynthia A. Wong

■ PERIOPERATIVE MEDICINE

- CME** **◆ Preoperative and Intraoperative Predictors of Postoperative Acute Respiratory Distress Syndrome in a General Surgical Population** 19
James M. Blum, Michael J Stentz, Ronald Dechert, Elizabeth Jewell, Milo Engoren, Andrew L. Rosenberg, and Pauline K. Park

Acute respiratory distress syndrome is rare after surgical procedures. After propensity analysis, risk factors for syndrome development include American Society of Anesthesiologists physical status, renal failure, chronic obstructive pulmonary disease, drive pressure, and intraoperative blood transfusion.

◇ Refers to This Month in Anesthesiology	🌐 See Supplemental Digital Content
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- ◆ **Activation of D1 Dopamine Receptors Induces Emergence from Isoflurane General Anesthesia** 30
Norman E. Taylor, Jessica J. Chemali, Emery N. Brown, and Ken Solt
 In adult rats, the D1 dopamine receptor agonist chloro-APB decreases time to emergence from isoflurane anesthesia and restores righting during continuous isoflurane anesthesia. Selective activation of D1 receptors is sufficient to induce emergence from general anesthesia.
- ◆◆ **Effects of Fibrinogen Concentrate as First-line Therapy during Major Aortic Replacement Surgery: A Randomized, Placebo-controlled Trial** 40
Niels Rahe-Meyer, Cristina Solomon, Alexander Hanke, Dirk S. Schmidt, Dietrich Knoerzer, Gerald Hochleitner, Benny Sørensen, Christian Hagl, and Maximilian Pichlmaier
 Targeted, first-line hemostatic therapy with fibrinogen concentrate significantly reduced the transfusion of allogeneic blood products in adult patients undergoing elective thoracic or thoracoabdominal aortic replacement surgery involving cardiopulmonary bypass.
- ◆ **Erythrocyte Storage Duration Is Not Associated with Increased Mortality in Noncardiac Surgical Patients: A Retrospective Analysis of 6,994 Patients** 51
Leif Saager, Alparslan Turan, Jarrod E. Dalton, Priscilla I. Figueroa, Daniel I. Sessler, and Andrea Kurz
 In this retrospective study of 6,994 noncardiac surgical patients, the authors did not find an association between erythrocyte storage duration and postoperative mortality.
- ◆🌐 **Differential Effects of Deep Sedation with Propofol on the Specific and Nonspecific Thalamocortical Systems: A Functional Magnetic Resonance Imaging Study** 59
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 Deep sedation with propofol preferentially inhibits nonspecific *versus* specific thalamocortical functional connectivity, suggesting loss of higher integration of auditory information. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*
- Influence of Epidural Mixture and Surgery on Bladder Function after Open Renal Surgery: A Randomized Clinical Trial** 70
Patrick Y. Wuethrich, Tobias Metzger, Livio Mordasini, Thomas M. Kessler, Michele Curatolo, and Fiona C. Burkhard
 Thoracic epidural analgesia with bupivacaine, with or without fentanyl and independent of surgery, leads to detrusor underactivity and clinically relevant postvoid residual.
- Development and Validation of a Perioperative Satisfaction Questionnaire in Regional Anesthesia** 78
Axel Maurice-Szamburski, Nicolas Bruder, Anderson Loundou, Xavier Capdevila, and Pascal Auquier
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- Analysis of the Posterior Ramus of the Lumbar Spinal Nerve: The Structure of the Posterior Ramus of the Spinal Nerve** 88
Toshiyuki Saito, Hanno Steinke, Takayoshi Miyaki, Shiro Nawa, Kanae Umemoto, Kunihisa Miyakawa, Norimitsu Wakao, Ken Asamoto, and Takashi Nakano
 The three-dimensional anatomy of the human posterior ramus of the spinal nerve was analyzed by classical dissection, laser scanning, and with specimens rendered transparent.
- 🌐 **Helium Induces Preconditioning in Human Endothelium *In Vivo*** 95
Kirsten F. Smit, Gezina T. M. L. Oei, Daniel Brevoord, Erik S. Stroes, Rienk Nieuwland, Wolfgang S. Schlack, Markus W. Hollmann, Nina C. Weber, and Benedikt Preckel
 Helium induces early and late preconditioning in human endothelium in a model of forearm ischemia–reperfusion using venous occlusion plethysmography in healthy volunteers. *SUPPLEMENTAL DIGITAL CONTENT IS AVAILABLE IN THE TEXT*

Coadministration of Hydrogen Gas as Part of the Carrier Gas Mixture Suppresses Neuronal Apoptosis and Subsequent Behavioral Deficits Caused by Neonatal Exposure to Sevoflurane in Mice 105

Ryuji Yonamine, Yasushi Satoh, Mitsuyoshi Kodama, Yoshiyuki Araki, and Tomiei Kazama

Although neonatal exposure to sevoflurane causes widespread neuronal apoptosis and subsequent impairments of cognitive functions in mice, coadministration of hydrogen as part of the carrier gas mixture suppresses them through an antioxidant effect.

Effects of Recruitment Maneuver and Positive End-expiratory Pressure on Respiratory Mechanics and Transpulmonary Pressure during Laparoscopic Surgery 114

Gilda Cinnella, Salvatore Grasso, Savino Spadaro, Michela Rausedo, Lucia Mirabella, Potito Salatto, Antonella De Capraris, Luigi Nappi, Pantaleo Greco, and Michele Dambrosio

Recruitment maneuver increases transpulmonary pressure, improves chest wall compliance, and induces alveolar recruitment in patients undergoing laparoscopic surgery.

■ **CRITICAL CARE MEDICINE**

The *NFKB1* Promoter Polymorphism (–94ins/delATTG) Alters Nuclear Translocation of NF-κB1 in Monocytes after Lipopolysaccharide Stimulation and Is Associated with Increased Mortality in Sepsis 123

Michael Adamzik, Simon Schäfer, Ulrich H. Frey, Arne Becker, Maximiliane Kreuzer, Sandra Winning, Stilla Frede, Jörg Steinmann, Joachim Fandrey, Kai Zacharowski, Winfried Siffert, Jürgen Peters, and Matthias Hartmann

Survival in severe sepsis may be associated with genetic variations. The *NFKB1* promoter polymorphism (–94ins/delATTG) alters nuclear translocation of NF-κB1 in monocytes after lipopolysaccharide stimulation and is associated with increased mortality in sepsis.

Regional Sympathetic Blockade Attenuates Activation of Intestinal Macrophages and Reduces Gut Barrier Failure 134

Jörn Schäper, Antje Wagner, Fabian Enigk, Bernhard Brell, Shaaban A. Mousa, Helmut Habazettl, and Michael Schäfer

Thoracic epidural anesthesia decreased endotoxin-induced epithelial permeability of the gut. This is likely due to an inhibition of intestinal macrophage infiltration with less production of nitric oxide and less nitrosative tissue injury.

■ **PAIN MEDICINE**

◆◆ **Resolution of Pain after Childbirth** 143

James C. Eisenach, Peter Pan, Richard M. Smiley, Patricia Lavand'homme, Ruth Landau, and Timothy T. Houle

Chronic pain is reported to occur in 5 to 20% of women after cesarean delivery. Predictors of pain at 2 months after childbirth and the incidence of pain at 6 and 12 months were determined by interviewing 1,228 women within 36 h of delivery, then contacting 937 of them 2 months after delivery and again at 6 and 12 months if they had pain. Only 1.8% of the women who had pain that began at the time of delivery had pain 6 months later and only 0.3% of women with pain beginning at the time of delivery had pain at 12 months. Although the degree of tissue trauma and history of chronic pain are risk factors for pain 2 months after other surgery, they were not important to pain 2 months after cesarean section or vaginal delivery.

◆ **Reversal of Peripheral Nerve Injury-induced Hypersensitivity in the Postpartum Period: Role of Spinal Oxytocin** 152

Silvia Gutierrez, Baogang Liu, Ken-ichiro Hayashida, Timothy T. Houle, and James C. Eisenach

The postpartum period rather than pregnancy protects against chronic hypersensitivity from peripheral nerve injury and this protection may reflect sustained oxytocin signaling in the central nervous system during this period.

Rufinamide Attenuates Mechanical Allodynia in a Model of Neuropathic Pain in the Mouse and Stabilizes Voltage-gated Sodium Channel Inactivated State 160

Marc R. Suter, Guylène Kirschmann, Cedric J. Laedermann, Hugues Abriel, and Isabelle Decosterd

The anti-epileptic drug rufinamide alleviates mechanical allodynia in a neuropathic pain model with less side-effect than amitriptyline, one of the first-line treatments for neuropathic pain. Rufinamide stabilizes sodium channels in their inactivated state.

- Relief of Hypersensitivity after Nerve Injury from Systemic Donepezil Involves Spinal Cholinergic and γ -Aminobutyric Acid Mechanisms** 173
Masafumi Kimura, Ken-ichiro Hayashida, James C. Eisenach, Shigeru Saito, and Hideaki Obata

Systemic donepezil reduces hypersensitivity after nerve injury in rats by increasing acetylcholine in the spinal cord, which in turn results in γ -aminobutyric acid release. Both acetylcholine and γ -aminobutyric acid contribute to the antihypersensitivity from donepezil.

■ CLASSIC PAPERS REVISITED

- The Thermoregulation Story** 181
Daniel I. Sessler

This article is a revisiting of original material published as: Sessler DI, Olofsson CI, Rubinstein EH, Beebe JJ: The thermoregulatory threshold in humans during halothane anesthesia. *Anesthesiology* 1988; 68:836-42.

■ EDUCATION

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Foad Elahi, Willis Y. Wu, Daniel Callahan, Avinash K. Bhandary, Barry C. Beutler, and Cesar A. Lassalle

- Radial Artery Pseudoaneurysm: A Rare Complication with Serious Risk to Life and Limb** 188
Angela T. Truong and Dilip R. Thakar

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Bhavani Shankar Kodali

There is an increasing awareness in the value of capnography to monitor airway integrity and ventilation outside of the operating rooms and intensive care units. Its utility in guiding chest compression during cardiopulmonary resuscitation has been recognized.

REVIEW ARTICLE

- Acquired Neuromuscular Weakness and Early Mobilization in the Intensive Care Unit** 202
Angela K. M. Lipshutz and Michael A. Gropper


The authors outline the physiological consequences of bedrest, the etiologies and pathophysiology of neuromuscular weakness in the intensive care unit, and the safety, feasibility, and benefits of early mobilization in critical illness.

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