

Society for Pediatric Anesthesia



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Editor's Note



Jayant K. Deshpande, MD

In this edition we are pleased to include a review of the Annual Meeting in Dallas. The program organized by Lynn Martin was a huge success as detailed in Rita Agarwal's summary. We also present "Out and About the ASA" - summaries of the sessions of interest to the pediatric anesthesiologist. I want to thank each of the reviewers for their hard work. Yet again the Point/Counterpoint section edited by Tom Mancuso highlights a topic of importance to the pediatric practitioner: "Should lumbar epidurals be placed in children under general anesthesia?" Drs. Allison Ross and Jeffrey Koh have done an excellent job of stating their positions. We have included a new human interest feature which will appear occasionally in future editions. "Letters from Africa" give us a peek into the life of a colleague - Dr. Mark Newton and his family living abroad. We are fortunate that he gave us permission to print excerpts from his letters to Rita Agarwal.

With this edition, the Newsletter also begins its transition to the electronic age and the World Wide Web. The Society through its Newsletter has aimed to provide information of academic and professional interest to its members in a timely manner. I am proud of the work the Committee has done on the Newsletter; work which has earned the praise of our readers. Our aim is to continue to do so and we seek your ideas for future editions. In order to maintain the quality and quantity of the content of this and future Newsletters in the face of increasing production and publication costs, we are trying a new format.

This printed issue contains two types of articles. In print are the full content of feature columns. In addition, we include highlights or "teasers" of other articles of interest; the full content of these articles can be found on the Society's website (<http://www.pedsanesthesia.org>). I look forward to your comments and suggestions for the Newsletter.

President's Message

Steven C. Hall, M.D.
SPA President
Children's Memorial Hospital
Northwestern University
Chicago, IL



Conversations with a border collie tend to follow a narrow path. "Hi, throw the ball" "Good to see you, Meg." "Good to see you, too. Throw the ball." "How are things going?" "Fine. Throw the ball." "What about . . ." "Throwing the ball? Good idea. Throw the ball."

Border collies are wonderful animals that love to work. If you have 100 acres and lots of sheep, everyone has work to do. If you have a small back yard and live in Evanston, the nature of work changes. It becomes incessantly retrieving tennis balls.

The nature of work is an interesting topic. It is especially germane to SPA because we are a voluntary organization and depend on the work of our members to meet the goals of our mission. It is true that much of the administrative work is done for us by the Ruggles organization. Stewart Hinckley and his crew do a great job of maintaining our framework, but the work of education and advocacy remains the purview of our membership.

Our success as an organization comes directly from the ideas, energy, and commitment of our colleagues. The innovative program for our 2000 winter meeting in Sanibel comes from the leadership of Lynn Means and the Education Committee. More importantly, the vast majority of talks and workshops come from our members. We are a society in which self-education is the basis of our success. This is an opportunity to hear what our colleagues from other institutions have learned, but also to provide an opportunity for meaningful interpersonal discussions. There has been

an expansion of methods and topics in recent years to include review or refresher courses, workshops on new topics, and lectures on an expanding series of subjects, not to mention the ever-popular audience response system. This is a testament to the creativity and hard work of the Education Committee. Just when I think that there aren't any new topics, they come up with something new.

New areas of work in education are being actively discussed. The society has done a good job of providing continuing education at our two annual meetings. Should we expand our efforts beyond this? Quentin Fisher and his Committee on International Anesthesia have talked about educational efforts in other countries, as well as the delivery of clinical care. We are planning an international meeting, probably in San Francisco in 2002, that will include our counterparts, hopefully, from Japan and Europe. Are there other venues that the society should use to promote education of our members and those outside our society? One possible area of expansion is the development of self-assessment tools that allow our members to examine their knowledge base on topics of crucial importance in the practice of pediatric anesthesiology. The basic premise of such a program would be its educational nature. The exact form that this would take is being actively discussed by the SPA Board. I will communicate more as this project takes further shape.

Another area of work is advocacy. Advocacy is a popular word these days, with lots of different applications. For instance, Dr. Juan Gutierrez from Alabama

brought an important issue to us about access to care. For many of us who care for children, a significant portion of our patient base is underserved medically. This is one of the great tragedies of the U.S. health system. Children, as a whole, are underserved. One of the reasons for this is funding. The Medicaid system is, in many places, a major source of funding for the health care of children. Although the Medicaid program does not receive the same publicity and public pressures that the Medicare program receives, it is still a crucial federal program. Unfortunately, Medicaid programs are administered at a state level; in some states, the reimbursement levels are extraordinarily low. Should the SPA be involved in a subject like reimbursement levels of Medicaid? Isn't talking about money a "dirty" subject that we are above? I don't think so. Fair reimbursement means access in this country, and without reasonable reimbursement, there is a substantial risk that subtle pressures can decrease access to care for children. This isn't true in all settings. In fact, most of us pride ourselves on caring for every child that comes through the door, whether we get paid or not. It is my personal opinion that pediatric anesthesiologists, as a whole, are much more likely to care for underserved and underfinanced patients without thinking twice. Nonetheless, access to the health system, in general, can be limited for those with low levels of financing.

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New Members

President's Message

(continued from page 3)

This issue was worked on by our Governmental Affairs Committee under the leadership of Mike Badgwell. Instead of just identifying the problem, they moved forward on it. This led to a resolution being introduced to the 1999 ASA House of Delegates by Randy Clark. The resolution directed the ASA to examine the issue of inadequate reimbursement and use its influence with the federal government to address this. Dr. Clark and other members of the society spoke to the issue and the need to improve access and care for children at the ASA Reference Committee, and the resolution passed easily. It will be interesting to see how effective the ASA can be in addressing the issue.

Partnering with larger organizations like the ASA can expand and enhance the work we do. ASA, as our parent organization, has expressed interest in learning what our concerns are and sharing in our efforts. In fact, Ron McKenzie, current President of the ASA, is speaking at our winter meeting. This is the first time in my memory that a current ASA President has addressed the Society. We should use this opportunity to make our concerns known to ASA leadership so that we can work together on common problems.

The work that has been done to date by our membership has been tremendous. It is the strength of our society. As we identify new opportunities to improve ourselves and the care delivered to all children, we will have plenty of work for everyone. Join in the fun.

- Aynsley-Green, A., MD
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Curitiba, PR, Brazil

13th Annual Meeting Review

Dallas, Texas • October 8, 1999



Lynn D. Martin, MD

The 13th Annual SPA Meeting was held at the Wyndham Anatole Hotel in Dallas on a gorgeous, sunny day. An excellent program combining basic science and clinical application was put together by Dr. Lynn Martin, Program Chair 1998-1999, and the SPA Education Committee. The morning started with a welcome address by Drs. Steve Hall, SPA President and Lynn D. Martin.

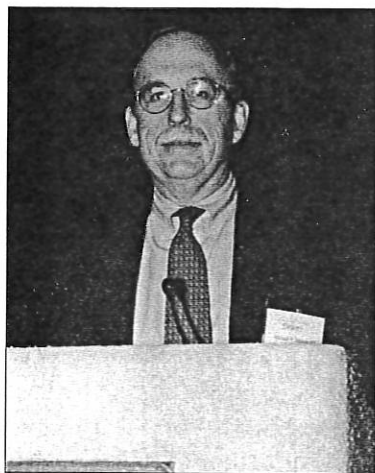


Santhanam Suresh, MD

withdrawal syndrome and may have long-term physiologic or emotional problems. The long-term effects of opioid therapy in premature and full term infants are unknown, but are likely to be different from infants exposed in-utero. He concluded the presentation with a discussion of the signs of withdrawal, patient assessment, and management. A lively Question and Answer session followed.

The first session, **Scientific Advances in the Neurobiology of the Neonate**, was moderated by Dr. Jayant K. Deshpande. Dr. Michael V. Johnston

from Johns Hopkins University School of Medicine discussed the **Plasticity of the Neonatal Brain**, and presented the latest research in brain development. The most abundant neurotransmitters in the brain are excitatory and inhibitory amino acids such as glutamate (excitatory) and GABA (inhibitory). In the immature brain excitatory amino acids are more active (no surprise to those of us with small children). Excitatory amino acids are important in the development of activity dependent plasticity. In the developing brain neuronal networks can become bonded together at a physical level as well as a physiologic and electrical level ("neurons that fire together, wire together").



Michael V. Johnston, MD

Pharmacologic, Plasticity of the Brain Opioid Tolerance by Dr. Santhanam Suresh from Children's Memorial Hospital in Chicago concentrated on the mechanism of opioid action, development of tolerance and management of tolerance and withdrawal. After a review of the general mechanism of opioid action and the development of tolerance, Dr. Suresh discussed the problems of infants born to heroine or methadone using others. Sixty to ninety percent of these infants develops opioid

After a coffee break and a chance to view the exhibits, Dr. David Polaner with the Floating Hospital for Children in Boston moderated the session on **Advances in Neonatal Care**. Dr.



David M. Polaner, MD

Claire Brett from the University of California, San Francisco discussed the **Sequelae of Prematurity in the 1990's**. Former Premature infants can have a myriad of medical problems including chronic lung disease, neurologic problems and developmental problems. Interestingly only 7-8% of surviving very low birth weight (VLBW) infants develop chronic neuro-motor impairment. These infants are at increased risk for

gastroesophageal reflux and may have a wide range of responses to sedatives, narcotics and inhaled agents. Chronic lung problems in particular can have significant consequences for the anesthesiologist and may persist into late childhood and adolescence. Surfactant therapy has had a major impact on decreasing the incidence and severity of chronic lung disease in these patients.

Dr. Peter Rothstein expanded on the previous topic by concentrating specifically on **Anesthetic Implication of Prematurity in the 1990's**. He described many scenarios

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13th Annual Meeting Review

(continued from page 5)

including the former premature infant requiring outpatient surgery and more invasive procedures. He discussed the preoperative evaluation of the patient with particular emphasis on chronic lung problems, disorders of control of breathing (apnea), risk of gastroesophageal reflux. Premature infants have a significant risk of developing apnea in the postoperative period. Controversy exists as to what age that risk becomes minimal and patients may be sent home after surgery.

The first afternoon session was **Pediatric Anesthesia in the Next Millennium** and was moderated by Dr. Peter Davis from the Children's Hospital, Pittsburgh. Dr. Gregory Hammer from Stanford started off with a discussion of **Total Intravenous Anesthesia-the only way to go**. A description of his presentation cannot do it justice; he entertained the audience with computer generated slides, graphics and video to make the point that inhalational agents were fine for monkeys and stone age man but that the future (a la 2001: A Space Odyssey) belonged to TIVA! Dr. Jerrold Lerman from Toronto Children's Hospital followed with a thoughtful measured response on why **Inhalational Anesthesia is Perfect for Every Case!** Inhalational anesthetics can be used for induction, maintenance and now rapid emergence. They're cheap, easy and safe to use. Dr. Myron Yaster concluded with a talk on **Regional Anesthesia-the ultimate anesthetic**. The advantages of regional anesthesia are: production of profound analgesia with minimal physiologic alterations, minimizing the need for inhalational or intravenous agents, hastening of awakening, shortening of recovery room stays and early ambulation. Disadvantages are few, though there are some contraindications. Regional anesthetic techniques can be carried into the postoperative period to provide excellent pain management.

The final session of the day was titled **Contemporary Management Issues** and was moderated by Dr. Jeffrey Morray (Children's Hospital and Regional Medical Center, Seattle). There were two widely differing presentations. The first was a fascinating look at **Pediatric Anesthesia for the Next Millennium: The Rest of the World** by Dr. Adrian Bosenberg from The University of the Natal, South Africa. Dr. Bosenberg discussed the realities of practicing medicine and anesthesia in

the developing world. The often, extreme shortage of trained personnel, equipment and drugs in Africa and other parts of the world limit medical care. In addition the attitudes toward illness have a different priority. Medical care may not be sought until the problem interferes with the process of living. The advice of witch doctors or "traditional healers" is sought prior to medical care. Long distances, poor or non-existent public transportation, ignorant or poorly trained medical presentation, and superstition may compound the problem. The availability of anesthetic equipment and agents is extremely variable, unpredictable and limited.

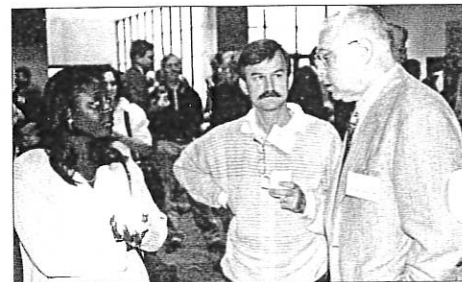
The final topic of the day, though not directly related to anesthesia, used medical investigation to reveal a possible conspiracy in the US Government. **JFK Assassination Conspiracy-Fact or Fiction?** presented by Jim Marrs, University of Texas, Arlington, explored the feasibility of the single bullet theory (i.e. a single bullet caused all the damage seen to President Kennedy and Texas Governor Jim Connelly). He presented compelling evidence to refute this and other aspects of the case against Lee Harvey Oswald.

In the evening there was fun, food and fish at the SPA Reception at the Dallas World Aquarium. Entering the Aquarium was like entering a tropical rainforest. There were large tanks on the lower levels of the rain forest that contained a multitude of fish, amphibians, reptiles and even sharks. Luckily the dinner was not sushi. A good time was had by all and everyone is (hopefully) looking forward to the AAP-SPA meeting in Fort Myers, Florida, Feb 24-27, 2000.



Rita Agarwal, MD

Rita Agarwal, MD
Associate Editor



1999 Corporate Sponsors

The Society for Pediatric Anesthesia would like to thank the following organizations for their support during 1999.

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Out and About the ASA

Notes From the 1999 Annual Meeting, Dallas, Texas

Monday Morning Poster-discussion Session - Pediatric Anesthesia: Pharmacology, postoperative pain and cardiac anesthesia

Reviewer: Jeffrey Galinkin, MD
Children's Hospital of Philadelphia

Monday Afternoon Panel on Pediatric Emergencies

Reviewer: Allison Ross, MD
Duke University Medical Center

American Academy of Pediatrics Section on Anesthesiology Breakfast Panel

Reviewer: John Algren, MD
Vanderbilt Children's Hospital

Tuesday Afternoon Panel on Pediatric Anesthesia in the Community Hospital

Reviewer: Ann E. Dickison, MD
University of Florida Medical Center, Gainesville

Wednesday Morning Poster-Discussion: Pediatric Anesthesia I

Reviewer: Jeffrey Galinkin, MD
Children's Hospital of Philadelphia

Wednesday Afternoon Poster-Discussion: Pediatric Anesthesia II

Reviewer: Mehernoor F. Watcha, MD
UT Southwestern Medical Center



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Letters from Africa

An occasional series of interesting stories from Dr. Mark W. Newton. Dr. Newton completed his undergraduate studies at Houston Baptist University and received a BS with honors in Chemistry and Biology. He attended medical school at the University of Texas in Galveston. He did his Anesthesia Residency at the University of Texas, Houston and was their Chief Resident 1990-1991. He came to Denver for a fellowship in Pediatric Anesthesia and stayed on as staff until 1997. At that time he went to Kenya to practice medicine and anesthesia with his wife Sue, who is a physical therapist, and their 2 young sons. The following are some excerpts from the letters he sends to his friends and former colleagues in Denver. They reflect both his life and the practice of medicine in Kenya.

Excerpted by Dr. Rita Agarwal

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Special Note: Dr. Barbara Brandom receives MHAUS Award

Congratulations to Dr. Barbara Brandom, Children's Hospital of Pittsburgh, on receiving the 7th Annual MH Hotline Partnership Award from the Malignant Hyperthermia Association of the United States (MHAUS). The co-recipient of the award was Dr. Delwyn McComber, Kosair Children's Hospital, Louisville, KY. The award was presented to Drs. Brandom and McComber by Dr. Henry Rosenberg on October 10, 1999, at the annual MHAUS Hotline Breakfast at the Annual meeting of the ASA. According to Dr. Rosenberg, "Dr. Brandom and Dr. McComber demonstrated great teamwork during the post-op care of a three-month old who triggered an MH episode in the OR..." The MH Hotline is available 24 hours a day to help healthcare professionals obtain immediate access to anesthesiologists who volunteer their expertise in managing MH or to answer pre, post or intraoperative anesthesia questions. The MH Hotline numbers are 1-800-MH-HYPER (1-800-644-9737) in US and Canada, and internationally 1-315-464-7079. MHAUS is a non-profit organization dedicated to reducing the morbidity and mortality of MH by: 1) improving medical care related to MH, 2) providing support information for patients, and 3) improving the scientific understanding and research related to MH and other kinds of heat-related disorders.

Literature Reviews

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Curran JL, Hall WJ, Halsall PJ, et al. *British Journal of Anaesthesia* 1999; 83:217-222.

Reviewed by: Jeffrey Galinkin, MD
Children's Hospital of Philadelphia

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Finer N, Horbar J, Carpenter MS, *Pediatrics* Vol. 104 No. 3 Sept. 1999

Reviewed by: Thomas J. Mancuso, MD, FAAP
Children's Hospital, Boston, MA

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Neil N. Finer, MD; Thomas Tarin BS; Yvonne E. Vaucher, MD, MPH, Keith Barrington, MB, ChB, MRCP, FRCP, and Raul Bejar, MD. *Pediatrics* Vol. 104 No. 4, October 1999, p. e40

Reviewed by: Karen Bender, MD
Arnold Palmer Children's Hospital, Orlando

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Marcus CL. Lutz J. Hamer A. Smith PL. Schwartz A. *Journal of Applied Physiology* 87(2):626-33, 1999 Aug.

Reviewed by: Ron S. Litman, DO
University of Rochester Medical Center, New York



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Point / Counterpoint

Should lumbar epidurals be placed in children who are under general anesthesia?

Point



Allison Kinder Ross, MD
*Duke University Medical Center
Durham, NC*

We, as pediatric anesthesiologists, must be able to feel confident in our ability to perform a lumbar epidural in an anesthetized child. The purpose of this report is not to establish the advantages of regional anesthesia. These advantages are well known and include the reduced need for perioperative narcotics, superior postoperative analgesia, and prolonged management of postoperative pain. These advantages are important in the pediatric population, but necessitate the placement of a regional block in a young group that is typically not amenable to cooperating with painful procedures. There are two basic reasons to perform lumbar epidurals in anesthetized children, and these are 1) patient safety, and 2) patient comfort.

Although the vast majority of epidurals are placed in adult patients while awake or lightly sedated, children are not simply small adults and this practice should not be applied to this younger population. For example, most anesthesiologists would probably consider it difficult to place an epidural in an awake infant as the infant is likely to respond to the procedure with crying and extreme movement. To attempt to detect a paresthesia in a child under these circumstances would be nearly impossible. Instead, an unsafe situation is produced in which there is a patient who does not cooperate and who, at less than one year of age, presents further anatomic challenge with a more caudal spinal cord and canal. A well-controlled situation, i.e. an immobile, unconscious

child, should improve success rate and safety of epidural placement. Even the well-informed school-age child is unlikely to cooperate when put in this unfamiliar and compromising situation and would probably not be able to describe a paresthesia from intraneural placement or provide a reliable symptom of intravascular injection.

Placing epidurals in anesthetized children, although a common practice, has recently been the subject of debate and controversy among practitioners of regional analgesia as recently as a year ago. Leaders in the field of regional anesthesia resorted to editorials in order to support their preferences and beliefs. Drs. Bromage and Benumof reported an unfortunate case of paraplegia after placement of a thoracic epidural in a 62-year-old woman under general anesthesia¹. The authors used this case in order to support an argument in favor of placement of epidurals only in awake or lightly sedated patients. Fortunately, the pediatric anesthesiology community was quick to respond and point out the pitfalls of this sweeping generalization and practice recommendation². There were many complicating factors in the presented case such as the facts that the patient was status post laminectomy, there were multiple failed attempts at epidural placement, and there were several episodes of intraoperative hypotension. The actual cause of her paralysis was not certain. Her paraplegia was consistent with anterior spinal artery infarct syndrome, which may occur from significant hypotensive episodes. There was also an intraspinal air bubble noted, presumably from the attempts at identifying the epidural space. Regardless of the cause, this case perfectly demonstrated several factors that are essential in performing epidurals in anesthetized patients but which were lacking.

First, patient selection is of great importance. Although it is possible to place an epidural in a child who has had a laminectomy, for example, s/he may not be the ideal candidate for an epidural, whether awake or asleep. Second, the experience of the anesthesia provider should be a factor. If one is not proficient at placing lumbar epidurals, one should not attempt them in a child, whether awake or asleep. However, if the patient is a good candidate, and the practitioner is proficient, there are ways of assuring a safe placement of a lumbar epidural 1) Start with a perfect position for catheter placement. This is easily done in an anesthetized child as the back flexes easily and the spaces separate well for easy identification of landmarks and placement of the epidural needle and catheter. Make sure that the child is secure on the bed with an assistant responsible for their safety. 2) Know the appropriate or expected depth of the epidural space

based on the age of the patient³. 3) Use saline for loss of resistance to avoid potential complications that may be associated with air injection such as spinal infarct and air embolism. 4) Carefully, slowly aspirate for blood or CSF. 5) Use an appropriate test dose with careful observation for warning signs of intravascular injection. Dose cautiously with particular attention to ST and T-wave changes^{4,5}. 6) Know when to stop.

The pediatric anesthesia reviews that have examined studies, multi institutional surveys and case reports, indicate that the risks of placing an epidural catheter under general anesthesia are extremely low⁶⁻⁹. Complications are rare and include dural puncture and intravascular injections. Conceivably, these complications would be more likely to occur in a moving child who is not under general anesthesia. As for intravascular injection, the use of epinephrine in test dosing, although not completely reliable, may still be a valuable marker when appropriate signs are examined, i.e. heart rate changes of 10 beats per minute under sevoflurane anesthesia¹⁰. If an intravascular injection should occur, general anesthesia may even be protective since an airway is established and general anesthetics increase the threshold for toxicity of local anesthetics¹¹. As Bernard Dalens has stated "In children it would be malpractice to perform such (regional) techniques on patients who were not fully anesthetized"¹².

The issues that have been presented have dealt with patient safety. Our job as pediatric anesthesiologists is not only to keep the child safe, but to establish comfort. It is difficult to keep a child comfortable and immobile during the appropriate positioning and performance of a lumbar epidural. If this were true, our hematology/oncology colleagues would not be referring more children to us for anesthesia for the performance of lumbar punctures.

Another point that may be established is that most of these children will be receiving a general anesthetic for their surgical procedure. This differs from many adults who may undergo extensive surgery by regional technique alone. It makes sense that if a general anesthetic is to be employed, use it to your advantage and place the block after the conditions are optimized. It is a common practice that is accepted by our community and should be performed in the appropriate hands and for the appropriate reasons.

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Counterpoint

Jeffrey L. Koh, MD

The efficacy of the epidural analgesia is unquestioned by most pediatric anesthesiologists and the use of epidural analgesia for the treatment of pain continues to grow. A major topic of discussion for years has been the relative safety of placing epidural catheters in an anesthetized patient. A recent case report by Bromage et al. (1) has triggered a significant number of letters and editorials in response. The question of whether a pediatric patient should be awake or anesthetized during placement of an epidural is not an easy one. Certainly an unconscious patient is more cooperative and thus decreases the chance of movement related complications. However, such a patient is not able to report paresthesias, leading some to suggest that epidural catheters should only be placed in awake patients. As with many of our clinical decisions, there are too many variables to answer the question with a simple yes or no. Such issues as age of the patient, underlying medical status, and desired location of catheter placement can all influence this decision. I will admit that my bias in the OR is to place epidurals, including thoracic epidurals, with the patient under general anesthesia. However, there are many situations where pediatric patients may have epidurals placed while awake or with sedation.

The most common situation where we may place an epidural "awake" is in the posttraumatic patient. As an example, a 14-year-old patient suffered blunt trauma to the upper abdomen with liver injury. Surgery was not indicated, but the patient was splinting

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Counterpoint

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considerably due to pain. We placed a low thoracic epidural with light sedation. The patient was allowed to ask questions and raise concerns prior to starting. She had the constant support and reassurance of the medical team throughout the procedure. She was responsive throughout and tolerated the procedure well. Granted, this patient was a relatively mature teenager. However, the importance of behavioral support and appropriate psychological preparation cannot be overemphasized. We have also had other patients in this age range who have required epidural blood patches, and have done well with light sedation combined with behavioral support.

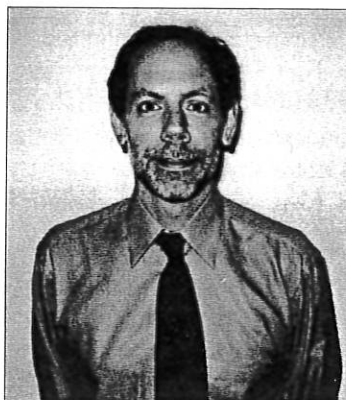
As with any procedure in children, younger children are more likely to require deeper sedation. For instance, a 5 year old who had recently undergone a thoracotomy for empyema did not have an epidural placed in the OR. In the postoperative period, the patient had significant pain and the surgeons requested placement of an epidural for pain control. The ICU attending administered ketamine and monitored the patient and a thoracic epidural was placed by a pediatric anesthesiologist. The patient tolerated the procedure well and had excellent pain relief. Certainly, this patient was not nearly as responsive as in the completely awake state and one could argue that the conditions were not much different than during general anesthesia in the OR. However, it is also debatable how much information a 5 year old in pain could give about parasthesias or other indications of intravascular injection of local anesthetic even if he were completely awake.

The variations in clinical scenarios we are confronted with are endless. I am comfortable with placing an epidural in a patient in the OR anesthetized for another procedure. However, I also believe in situations where the patient may not already have a GA planned, epidural placement can be performed with behavioral intervention combined with appropriate pharmacologic intervention if needed. This combination can be extremely effective, allowing us to perform the procedure in a calm, responsive, cooperative patient. There will always be patients where deep sedation or general anesthesia will be the only alternative, but insisting that this is the only way that we will place an epidural in our patients may limit the use of this very effective technique.

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Commentary



Thomas J. Mancuso, MD, FAAP

I agree with both commentators that in situations when a child is having a surgical procedure under general anesthesia, it is eminently sensible to place epidural catheters after the induction of general anesthesia. I follow this practice for lumbar, thoracic and for caudally placed catheters. The argument that it is safer to place an epidural into immobile, unconscious

child is compelling to me.

Although both authors make sound arguments for their respective positions, I find myself drawn to Dr. Ross' point of view. I can recall doing diagnostic lumbar punctures in children and infants which were traumatic (aka bloody) partly because the child could not be held immobile for the procedure. For placement of catheters into children who are not scheduled for surgical procedures, I feel that, with proper preparation and monitoring, having the child unconscious provides advantages that outweigh the risks of general anesthesia. I am envisioning relatively brief general anesthetic without intubation with the child breathing spontaneously. These children should meet the same criteria for safe administration of general anesthesia as those scheduled for elective surgery and the anesthesiologist placing the epidural must not be the anesthesiologist providing anesthesia to and monitoring the child. There certainly may be exceptional circumstances in which general anesthesia would not be appropriate for placement of an epidural catheter. I think that general anesthesia should be avoided in cases where a particular child is at risk for aspiration, for example.

In cases when an epidural is placed in an unconscious child but the anesthesiologist is uncertain about the position of the catheter, any dosing can be delayed until the child is recovered from anesthesia and can communicate any unusual or uncomfortable sensations during administration of medications through the catheter. Although this approach does not allow for use of the catheter intra-op during surgical procedure, it does provide the anesthesiologist additional information from the child when the test dose is given.

As Dr. Koh states, the variation in clinical situations is such that one must be flexible. With skill and proper preparation epidural catheters can be and are safely placed into children who are awake, sedated or unconscious.

Thomas J. Mancuso, MD, FAAP
Associate Editor, *Point/Counterpoint*,

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