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Society for Obstetric Anesthesia and Perinatology

SOAP Newsletter Highlights

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President's Message

It gives me great pleasure to announce that Mike Finster will be the recipient of this year's Society for Obstetric Anesthesia and Perinatology Distinguished Service Award. Mike has had a long and illustrious career in obstetrical anesthesiology and still maintains a high level of commitment and dedication to SOAP. Mike's career, as detailed in this Newsletter by Hilda Pedersen, his long time colleague at Presbyterian, is an inspiration to us all. I hope that everyone will join together in San Diego to celebrate Mike's career at the annual banquet to be held in Sea World.



*Alan C. Santos,
MD, MPH*

In my last President's Message, I discussed the potential harmful effects that the American College of Obstetricians and Gynecologists (ACOG) document "Evaluation of Cesarean Delivery" could have on a woman's access to safe and effective analgesia for labor and delivery. Thanks to a joint effort by SOAP and the ASA, the ACOG Committee on Obstetric Practice has agreed to issue a Committee Opinion on pain relief during labor. We will be represented in this forum by David Birnbach, the current chairman of the ASA Committee on Obstetric Anesthesia.

We had a very positive site visit from the American Council for Continuing Medical Education (ACCME) in conjunction with our application for full accreditation of the annual meeting. Hopefully I will have more conclusive information for you by the annual business meeting in San Diego.

I would also like to report to you on some of the actions taken by the Board of Directors (BOD) at their Fall meeting. As I advised the membership in an earlier Newsletter, it was agreed by the Board that the Society should contract with a financial advisor in order to more aggressively manage its monetary funds. At our Fall meeting, the BOD heard the report from an Ad Hoc committee created to study this issue. Proposals were entertained from two financial advising companies, Wheat First Union and Independence Advisors. While both companies appeared competent to handle our investments, the recommendation of the Ad Hoc Committee and Executive Committee to contract with Independence Advisors was upheld by the full Board. Independence Advisors is a relatively small firm, based in Philadelphia, and already manages another major anesthesia subspecialty society's funds. The perceived advantage of Independence Advisors is that we would receive personal attention by one of its founders, Charles Boinske, at very competitive rates. The strategy that we hope to pursue is to manage the SOAP Operations Fund in a conservative money market account whereas the two endowment funds, the OAPEF and Gertie Marx funds, which do not require regular disbursements, would be managed for growth.

The financial outlook of the Society continues to be good. However, the Board has taken several actions in order to preserve our financial stability in the future. The annual meeting continues to have a very important impact on our revenues and expenses. Rather than increase registration fees, the BOD elected

to manage the costs associated with two of the most expensive items in the annual meeting budget, "food and beverage" and "audio-visual services". Publication and postage expenses associated with this Newsletter are also substantial. Beginning in this fiscal year, the Society will publish a hard copy, abridged version of the Newsletter, limited to eight pages, three times a year. The complete Newsletter will be made available to members on the SOAP Website at www.SOAP.org.

Our Society, and its members, have an important role in enhancing maternal and perinatal care in the developing world. Rather than reinvent the wheel, the Board thought it best to initially work through established programs, such as the ASA Overseas Training Program (OTP), in order to accomplish this important function. The SOAP Education Committee is already collaborating with the OTP to develop a basic neonatal resuscitation program which will be launched in sub-saharan Africa. A special thanks to Linda Polley, the members of the Education Committee, and Valerie Arkoosh for undertaking this important project. Negotiations are underway with the ASA to formalize this relationship and we are also looking into partnering with other obstetric anesthesia societies, such as the OAA, who are also interested in improving women's health around the world.

Our future, and that of our specialty, depends in great part on the ability of our teachers to motivate residents and medical students to choose obstetric anesthesiology as a career. In more formal recognition of teachers, the BOD has created the SOAP Teaching Award to begin with the 2002 annual meeting. Criteria for the award will be published in an upcoming Newsletter.

The recently concluded joint SOAP-ASRA Steamboat Springs meeting was a success with 120 registrants. Likewise, the 33rd Annual Meeting in San Diego promises to be one of the best ever. Alex Pue and Val Arkoosh have put together a great meeting in a perfect location, guaranteed weather, and a creative and innovative program. I hope to see you all there!

This is likely to be the last President's Message that I will write for the Newsletter before Val Arkoosh ably takes charge in May. As I said at the beginning of my tenure as President, I am deeply humbled by the trust that you have placed in me this year, grateful for the opportunity to serve the Society, and reassured that SOAP will continue to grow and meet the new opportunities and challenges that lie ahead.

Alan C. Santos, MD, MPH
President



The Blue Line: Editor's Update

Welcome to the Winter 2001 edition of the SOAP newsletter. When this reaches your mailboxes, the annual meeting will be approaching rapidly. For me, this has always been a high point of the year, and I know that many of you feel the same way. I am sure that our time in San Diego will be a great success.

I would like to address an issue that Alan Santos mentioned in his president's message. Effective this fiscal year, the newsletter will be published three rather than four times annually. As postage and printing costs are a major expense for the Society, this change will lead to considerable cost savings. This will not lead to any decrease in the ability of SOAP to communicate with you, however, as the SOAP website will continue to play a large and growing role in the dissemination of information to our membership. We welcome your comments and contributions. Ultimately it is you, the members of SOAP, who make the newsletter a success.

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RESEARCH COLUMN

The Research Committee of SOAP, in an effort to assist members in conducting and evaluating research in obstetric anesthesia, presents this column. If you have ideas, suggestions, or questions for future topics, please write, phone, fax, or E-mail me:

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Meta-Analysis

Meta-analysis uses statistical methods to combine results from independent studies to obtain an estimate of treatment effect. This type of analysis is relatively new in the anesthesia literature although it has been used in other disciplines for many years. When used in combination with a systematic review of the literature for all relevant studies, meta-analysis can be a powerful tool that adds precision to the estimate of how effective an experimental treatment is compared to a standard treatment or control (no treatment). Conversely, if inappropriate studies, or studies of poor quality are included, the estimate of effect size may be biased. Like a clinical trial, the best meta-analyses start with a primary question and use a structured protocol to arrive at the answer. In this brief overview, I will review the main steps in producing a meta-analysis.

Identifying relevant articles

A meta-analysis can give a biased result if the reviewer finds only a small number of studies available on the topic. In obstetrical anesthesia, for example, a broad Medline search strategy failed to recover 35% of the randomized trials compared to a hand search of commonly available journals (1). Further, there are many medical journals that are not found in Medline. Therefore other strategies such as retrieval from other databases (e.g., Embase, Cochrane Library), hand searching and retrieval from bibliographies of reviews and book chapters, need to be considered. Often, relevant material can be retrieved from your own personal files or those of a colleague. When writing a meta-analysis, it is important to include the strategies used to obtain the studies.

Inclusion criteria

It is also important to define inclusion criteria for the meta-analysis. For example it is common to include

only randomized trials and discard other study designs (this might not be practical if, for example, it is impossible for ethical or other reasons to conduct such trials). Further, the population should be restricted to the population of interest e.g., adults, parturients, etc. At least two people should be involved in deciding whether or not a study is eligible in order to avoid bias. If differences exist, a third person should arbitrate.

At this point, the meta-analyst might want to consider whether or not to include poor studies or unpublished data (e.g., personal

communications, data presented in abstract form at professional meetings). A meta-analysis is only as good as the data in the original studies. Poor studies (inappropriately randomized, poorly blinded, etc.) may be biased in favor of the experimental treatment (2). However, unless a clear bias can be demonstrated, it is probably best to include these, but also do a separate analysis on only high quality studies. Since it is often impossible to judge the quality of unpublished data, this is a controversial area.

Data abstraction

The data from each study identified as satisfying the inclusion criteria should be abstracted using a reliable, structured, pretested abstraction form. It is always best to have at least two people abstracting the data. If differences result, they can be resolved by consensus.

Statistical Analysis

This step includes combining the data in order to arrive at a summary statistic of the best estimate of the effect size, a measure of its variance and confidence intervals (95% or 99%). A test for heterogeneity should also be included since it may not be appropriate to statistically combine heterogeneous data, particularly if it is due to differences in populations, initial disease rates or different study designs. If heterogeneity does exist, it must be explained.

There are many statistical software packages that will perform meta-analysis. Revman 4.xx has the advantage of helping to structure the rest of the review. One can use the various screens to input the references, create tables for comparison and actually write the article. It can be downloaded from the Cochrane Collaboration site (<http://www.updatesoftware.com/ccweb/>).

Summary

In this overview, I have outlined the steps in developing a meta-analysis. Clearly, the results are heavily dependent on the quality of the studies and the inclusion criteria used. At the outset, the research team should clearly formulate the question and ensure the studies are similar enough to combine. It is important to minimize bias when deciding which studies to include. Finally, it should be possible to justify the conclusions of the analysis on a clinical basis as well as statistically.

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External Cephalic Version Under Epidural Anesthesia

PRO

Several recent studies have demonstrated that epidural anesthesia significantly increases the success of external cephalic version (ECV). In a retrospective review, Carlan et al. found that the use of an epidural increased the success of ECV from 24% to 59% (1). Two prospective, randomized trials demonstrated similar results, with success rates of 59% (3) and 69% (2) in the epidural groups compared to only 33% and 32% in controls. Finally, up to 56% of women who have failed ECV without anesthesia may subsequently have successful version with an epidural (4,11). It is clear that the use of epidural anesthesia dramatically increases the success of ECV and decreases the cesarean section rate for breech presentation. What remains to be debated is whether these benefits outweigh the costs and potential risks of the epidural. I will argue that, based on cost savings, safety, and increased acceptance of and comfort during the procedure, epidural for external cephalic version is warranted.

Each successful version generates estimated savings of \$2,462 (5). Since the use of epidural anesthesia adds approximately 30 successful versions for every 100 attempts (i.e. from 25-30% success rate up to 55-60%), we can attribute 30% of this cost saving, or \$738.60, directly to the epidural. This is more than enough to offset the cost of the epidural itself. Even if an epidural had only half the reported effect on the success of ECV, or an additional 15 successful versions per 100 attempts, the cost saving per epidural would be \$369.30, which would probably still offset the cost of the epidural under current reimbursement schemes. Further, since many physicians plan delivery immediately after attempted ECV, the epidural could be used for labor analgesia if the version is successful or for the cesarean section if it is unsuccessful. This would limit any additional cost of the epidural attributable to the version, particularly those related to nursing or hospital charges. This makes the cost-benefit analysis even more favorable.

The second compelling reason to use an epidural during ECV is increased safety to the mother and the fetus. Ironically, safety has been argued as a reason *not* to use anesthesia during ECV. Several early reports on the use of *general* anesthesia for ECV raised concerns about the use of excessive force leading to an increased incidence of placental abruption, Rh isoimmunization, uterine rupture, cord prolapse, and other potentially catastrophic events (1). Indeed, fetal death was reported in up to 1% of women undergoing ECV under general anesthesia (7). In addition, mothers were at risk for aspiration of gastric contents during this procedure. The relevance of these data to current practice must be questioned. The use of b-mimetic drugs for uterine relaxation, continuous fetal monitoring and real time ultrasound has become routine during ECV, allowing the practitioner to closely monitor mother and baby, and greatly decrease the

risk of these catastrophic events. To date, epidural anesthesia during ECV has been reported in 205

women (1-4,11). Maternal and fetal complication rates were quite low, with only a single study demonstrating a non-significant increase in the incidence of fetal bradycardia in the epidural group and no difference in neonatal outcome (1). Based on available data utilizing modern methods of fetal monitoring during ECV, the use of epidural anesthesia is not associated with an increase in maternal or fetal complications.

Conversely, epidural anesthesia may actually improve the safety of ECV. Major complications necessitating emergent delivery can occur during ECV. If the version is attempted under epidural anesthesia raised to a T-6 level (as has been reported), surgical delivery of the fetus can occur literally within one or two minutes after identifying a complication. The induction of general anesthesia, requiring pre-oxygenation, the onset of loss of consciousness and paralysis, and airway control, might take substantially longer. This additional time could be detrimental to a fetus in distress. In addition, general anesthesia is associated with a nearly 17-fold increase in anesthesia related maternal mortality (10). Carlan found that none of the women who had emergent C/S after ECV with an epidural required general anesthesia, while all such women in the control group did (1).

Of course, when addressing safety, one must consider the risks of the epidural itself. This anesthetic technique has been used in obstetrics for literally millions of deliveries, and its safety record has stood the test of time. However, complications can occur, ranging from back pain, to post-dural-puncture headache, to the extremely rare complications of nerve injury, epidural hematoma or abscess, and paralysis. However, as in the cost analysis, if one plans delivery immediately after attempted version, either by induction of labor or C/S, then most women would request or require regional anesthesia and the additional risk of the epidural attributable to the ECV is negligible. Thus, the use of epidural for ECV may decrease the risk to both baby and mother by facilitating immediate operative delivery and decreasing the likelihood of general anesthesia.

An increase in physician and maternal acceptance may be another reason to argue for the use of epidural anesthesia during ECV. Breech presentation occurs in 3-4% of all pregnancies (9). It accounts for nearly 20% of primary cesarean sections and this number is rising dramatically (6). Approximately 85% of all breech presentations are delivered by cesarean section (8). Although ECV could help to decrease this number, clearly it is not routinely employed. In one large series, only 203 of 1016 women (5) with non-cephalic presentation even attempted ECV. While medical contraindications to ECV do exist, other factors may limit the use of ECV. Physicians may hesitate to offer this modality because of a perception that it is not effective. Mothers may be hesitant to accept ECV because of the fear of pain. Epidural anesthesia would address both of these concerns. Whatever the reasons, it is clear that ECV does not currently play nearly a large enough role in the management of breech presentation. The use of epidural as an adjunct to ECV might reverse this state of affairs.

Treating maternal pain is the final and perhaps most compelling reason to use an epidural during ECV. Pain is the most frequent indication for termination of attempted ECV. While many obstetricians believe that pain is a useful marker to prevent the use of excessive force, this has never been proven. I can think of no other clinical scenario in which intolerable pain is an expected endpoint of a medical procedure. Alleviating maternal pain is the very foundation of obstetric anesthesia. To force women with breech

presentation to choose between the pain of surgery and a painful version procedure when a safe, effective, readily available alternative exists is contrary to the heritage of obstetric anesthesia.

In conclusion, the use of epidural anesthesia increases the success of external cephalic version and decreases the cesarean section rate due to breech presentation. Epidural use would lead to annual savings of thousands of dollars in a busy obstetric unit, would make cesarean delivery safer and more rapidly available in an emergency, might increase the use of ECV, and would minimize the pain associated with this procedure. These are compelling reasons for its use.

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Current Review: Neurologic Complications of Regional Anesthesia in Obstetrics

Introduction

For both parturients and anesthesiologists the most feared complication of regional anesthesia is a neurologic deficit. Fortunately, neurologic deficits are very rare, especially in obstetric patients. Most neurological injuries are due to obstetrical, not anesthetic causes. A focused history, physical examination, and laboratory tests are needed to ensure proper diagnosis and treatment. The obstetric and anesthetic causes of neurological deficits will be reviewed.

History/physical examination/laboratory tests

A proper history should focus on the exact onset, location, and radiation of symptoms. Was there pain during needle insertion or injection of local anesthetic? Was there a period of full recovery or was the anesthetic block prolonged? Do the symptoms follow a dermatomal or peripheral nerve pattern? Items to inquire about specifically related to OB include: leg position (especially during second stage of labor), duration and degree of hyperflexion of the hips, length of second stage and the use of forceps.

On physical exam, a detailed neurologic assessment must be performed. Careful mapping of symptoms and findings may reveal a pattern consistent with nerve injury involving a single dermatome or peripheral nerve. Areas to check include: sensory and motor tone of the paraspinal muscles (innervated by posterior rami of the nerve root), tenderness to deep palpation of the spinous processes (transmits pressure to epidural space, suggestive of intrapinal mass), sacroiliac joint tenderness or localized areas of erythema or purulence. Detailed documentation in the chart is very important for good patient care and may serve in your future defense.¹

Peripheral nerve injuries may occur. The common peroneal nerve is prone to compression at the fibular head during positioning in stirrups. Symptoms include lateral calf paresthesia, dorsal sensory loss between the 1st and 2nd toes, along with foot drop and inversion. Pressure on the lateral femoral cutaneous nerve as it passes under the inguinal ligament produces numbness along the lateral aspect of the thigh. This usually recovers spontaneously within 6 weeks. The femoral nerve may be compressed by the inguinal ligament during flexion of the hip. Symptoms include quadriceps weakness and hyperalgesia in the thigh and calf. The lumbosacral trunk may be injured within the pelvis by the fetal head (especially with forceps or occiput postero-lateral position). Symptoms may be unilateral (75%) or bilateral (25%) and may affect the quadriceps, hip adduction and cause foot drop.^{2,3}

The preliminary differential diagnosis will suggest which tests are needed. If fever accompanies back pain or headache, a white blood cell count and CSF evaluation (septic meningitis) are needed. If symptoms are isolated to a single nerve root, CT or MRI will be helpful. History of a recent regional

anesthetic does not prove causation. An occult herniated disc may become symptomatic after positioning and pushing during delivery. Any bilateral symptoms or deficits warrant a CT or MRI scan to determine compression by an intraspinal mass (e.g. blood or abscess). CT scan is superior to MRI for detection of intracranial blood, especially subarachnoid hemorrhage, and for defining cortical bone structure. MRI is superior for intracranial and intraspinal soft tissue lesions. Gadolinium enhanced MRI increases detection of neoplastic and inflammatory lesions (e.g. abscess).⁴

Electrophysiologic testing may also be helpful. EMG can help document the time and location of injury. After denervation, muscle fibers begin to discharge spontaneously, but changes are not seen until 2-3 weeks after injury. Thus, an abnormal EMG obtained within the first week following a regional anesthetic is useful for determining preexisting disease. If an interval change occurs 4-6 weeks later, then the injury occurred around the time of delivery. Injury at the level of the nerve root should affect both the anterior and the posterior rami. If the paraspinous area (supplied by the posterior ramus) is not affected, then the level of nerve injury is distal to the nerve root and not caused by central neuraxial anesthesia. Nerve conduction-velocity studies can provide immediate information about both motor and sensory nerves. Lesions proximal to the dorsal root ganglia do not affect the sensory potential and thus help to distinguish radicular from peripheral nerve disease. Somatosensory evoked potentials (SSEPs) monitor the dorsal column of the spinal cord and are a key, objective test of sensory function. SSEPs are sensitive to spinal cord damage produced by compression, mechanical distraction and ischemia. Motor evoked potentials (MEPs) measure the descending motor pathways in the anterior spinal cord. A magnetic field is used to stimulate the motor cortex with responses measured in the peripheral muscles. Although not widely available, MEPs are a superb, objective test to assess motor pathways.⁵

Obstetric related neurological deficits

Neurologic injury related to labor and delivery occurs more commonly than anesthetic related deficits. Parturients who do not receive regional or general anesthesia may experience compression nerve injury, or rarely, an ischemic spinal cord injury. The incidence of permanent neurological deficits is as high as 1/2,100 (1.6-4.8/10,000).^{2,6,7} Past obstetric practice allowed protracted labor and the frequent use of forceps, which contributed to lumbosacral plexus injury. The fetal head may also compress and injure the lumbosacral plexus as it crosses the ala of the sacrum or the posterior brim of the pelvis. This injury is more common in nulliparous women with platypelloid pelvises, large babies, cephalopelvic disproportion, vertex presentation and forceps delivery.^{2,3} Compressive nerve injuries of this type may involve multiple root levels and appear as injuries to the femoral or obturator nerves with sensory impairment in the 4th and 5th lumbar dermatomes.

Femoral nerve injury decreases sensation over the anterior thigh and medial calf and impairs quadriceps strength, hip flexion and patellar reflex. Proximal lesions at the level of the lumbosacral plexus also may decrease hip flexion due to iliopsoas weakness.

The obturator nerve can be compressed against the lateral pelvic wall or during its course in the obturator canal. This results in decreased sensation over the medial thigh, weakness of the hip adductors and

decreased ability to internally rotate.

Ischemic injury may also produce neurologic deficits. The spinal cord may become ischemic during periods of hypotension or by compression of its blood supply. The anterior part of the lower spinal cord is supplied by either the artery of Adamkiewicz (85%) or a branch of the iliac artery (15%).⁸ The feeder vessels from the iliac artery may be compressed as they cross the lumbosacral trunk. The artery of Adamkiewicz supplies the anterior 2/3rds of the spinal cord and injury results in the loss of motor function (anterior horn), as well as pain and temperature (spinothalamic tract). This is known as anterior spinal artery syndrome. The dorsal column, which carries vibration and joint sensation, is supplied by the vertebral arteries and are therefore spared. Arteriovenous malformation within the spinal cord may also rarely cause paraplegia. The mechanism of injury is increased spinal venous pressure, which predisposes to arterial stasis during periods of moderate hypotension or compression.

Anesthesia related neurologic deficits

Serious neurological complications related to regional anesthesia are fortunately very rare. Neurological complications may be due to direct nerve trauma, severe hypotension, cardiac arrest, equipment problems, adverse drug effect, administration of the wrong drug and wrong site of administration.

Direct trauma to nervous tissue may occur at the level of the spinal cord, nerve root, or peripheral nerve. Two thirds of anesthesia related neurological complications are associated with either paresthesia (direct nerve trauma) or pain during injection (intraneuronal location).⁹ Epidural needle insertion is most likely to contact a nerve root.

Spinal needles may touch nerve roots, or directly injure the spinal cord. If the patient reports localized pain with insertion of an epidural or spinal needle or catheter, stop immediately! Transient paresthesia with threading an epidural catheter is common. Anatomic variation may alter landmarks and place nervous tissue at risk for injury. The spinal cord usually terminates at the 1st lumbar vertebrae (60%) but may go as low as the L2-3 space (10%). In addition, the superior iliac crest is usually at the L4 spinous process or L4-5 interspace (79%), however, it may be as high as the L3-4 interspace (4%).¹⁰

Auroy et al. prospectively monitored neurologic complications in more than 103,000 regional anesthetics.⁹ All deficits were present within 48 hours after anesthesia. Most (29/34) were transient, with recovery occurring between 2 days and 3 months. Spinal anesthesia was significantly more likely to result in both neurologic injury (5.9 vs. 2/10,000) and radiculopathy (4.7 vs. 1.7/10,000), compared to epidural anesthesia. All radiculopathies resolved except one (spinal). Of the patients who developed deficits without paresthesia, 12/13 occurred following spinal anesthesia, most with lidocaine 5%. In this series only one patient (who was elderly and experienced prolonged hypotension) became paraplegic.⁹

Scott et al monitored 505,000 epidural blocks in parturients, finding only 38 single root neuropathies (0.75/10,000). All deficits resolved by 3 months except for one.¹¹ In a similar study involving 123,000 regional anesthetics in parturients, 46 cases of single nerve root neuropathy were reported (3.7/10,000),

with complete recovery in all patients by 3 months.¹²

Cardiac arrest occurred significantly more commonly following spinal anesthesia compared to epidural (6.4 vs. 1/10,000). While fatal cardiac arrest occurred in elderly patients undergoing hip arthroplasty (5/6), most recovered without sequelae (25).⁹ In obstetric patients, there were 3 cardiac arrests in 505,000 epidurals (0.06/10,000). Two patients recovered without sequelae and one had brain damage after severe hypotension following a 'top-up'.¹² Intravascular administration of bupivacaine will result in cardiac arrest. Bupivacaine binds avidly to the sodium channel in a 'fast in - slow out' manner. Thus, cardiac resuscitation is extremely difficult and often requires cardio-pulmonary bypass until the bupivacaine dissociates from the sodium channel and is metabolized. Bretylium has been suggested for resuscitation during bupivacaine-induced cardiac arrest.

Epidural catheters may rarely break or shear. Catheters are never to be withdrawn through the needle. If part of a catheter is left in a patient, the patient should be informed. However, no surgery or attempts to retrieve the catheter are warranted unless there are persistent neurologic symptoms.

The epidural space is remarkably tolerant to chemical contamination. However, the subarachnoid space is not. Drugs that have been accidentally injected into the epidural space without sequelae include thiopental, magnesium and TPN. Only undiluted KCL produced permanent paraplegia following epidural administration.

Epidural hematoma is another feared, but rarely seen complication of regional anesthesia (1/150,000-250,000) in healthy patients.¹³ Most epidural hematomas following regional anesthesia occurred in patients with hemostatic abnormalities, particularly those on anticoagulants. Low molecular weight heparins have been responsible for over 35 epidural hematomas following regional anesthesia and should be considered a strong relative contraindication. The symptoms of epidural hematoma are bilateral leg weakness, urinary incontinence and loss of rectal sphincter tone. These severe neurologic deficits may be preceded by sharp pain in the back or legs with progression over a few hours. Prolonged motor paralysis without regression of block should raise suspicion. Stat CT or MRI is indicated. Symptomatic epidural hematoma must be decompressed surgically within 6 hours for the best chance of full recovery.

Epidural abscess is rare, accounting for 0.2-1.2/10,000 tertiary hospital admissions. Epidural abscess is usually due to infection in the body seeding the epidural space. In one review, epidural anesthesia was associated with only 1 in 39 epidural abscesses.¹⁴ while epidural anesthesia was unrelated to 35 abscesses in another review. Symptoms of epidural abscess usually develop a few days to a few weeks after delivery. In a series of over 500,000 epidurals, only one patient (diabetic) developed an abscess, albeit 11 months after delivery.¹¹ Symptoms include fever, malaise, and headache and back pain at the level of the infection. Pain will be found on deep palpation over the site. White blood cell count will be elevated. Progression of symptoms to nerve root pain usually takes 1-3 days. Neurologic deficits will progress as the spinal cord is compressed including: lower extremity pain, weakness, bowel and bladder dysfunction and paraplegia. Surgical treatment is necessary.

Conclusion

In summary, neurologic complications due to regional anesthesia are very rare in obstetric patients. Although it is more likely that neurologic complaints are due to factors associated with labor and delivery (1.6-4.8/10,000), it is imperative to explore the possible deficits related to regional anesthetic techniques (0-1.2/10,000). A careful history, physical exam, laboratory testing and use of imaging techniques will help to ensure an accurate diagnosis and good outcome.

Dr. Mark Zakowski will present more details of this topic at the SOAP annual meeting in a refresher course lecture. For more details on this topic including tables and figures, refer to *Obstetric Anesthesia*, Norris ed, Chapter 39 "Postoperative Complications Associated with Regional Anesthesia in the Parturient" by Dr. Zakowski.

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Obstetric Anesthesia Board Review Questions

1. A 30-year old parturient with severe preeclampsia is being treated with intravenous magnesium. She delivers a live, but severely depressed, male infant. No meconium is noted at delivery. Following drying the infant and placing the infant under a warmer, the infant remains depressed. The next most appropriate step is:

- A. Initiate chest compressions
- B. intubation
- C. intravenous calcium chloride
- D. bag-mask ventilation with 100% oxygen
- E. slap the infants buttocks

Answer: D

According to the protocol established by the American Heart Association and the American Academy of Pediatrics, the first step in the resuscitation of the newborn is to minimize heat loss. The infant is placed under a radiant heater and dried thoroughly. The wet linen is removed. If within 30 seconds of birth, positive pressure ventilation (PPV) is initiated if the infant is gasping or apneic. Cardiac compressions are started after 15-30 seconds of PPV and the heart rate is below 60 bpm or between 60 and 80 bpm and not increasing.

American Heart Association/American Academy of Pediatrics. Textbook of Neonatal Resuscitation. Dallas, Texas, American Heart Association, 1994.

2. A 22-year old G1 P0 parturient at 4-cm cervical dilation requests epidural analgesia. During epidural placement using the loss-of-resistance to air technique, accidental meningeal puncture occurs. The patient complains of an immediate headache. The most likely etiology of this headache is:

- A. Loss of cerebrospinal fluid.
- B. Intrathecal air.
- C. Dilation of intracranial vessels.
- D. Low cerebrospinal fluid pressure.
- E. Intrathecal blood.

Onset of headache following accidental dural puncture with the loss-of-resistance to air (LORA) technique is short. When accidental dural puncture occurs using the LORA technique, intrathecal air bubbles are detected on brain computed tomography in both the deep supraspinal structures such as the ventricles, Sylvian fissures and cisterns, and the superficial subarachnoid space. As a result, air bubbles

may directly stimulate the central nervous system structures to produce a headache immediately after the block.

Aida S, Taga K, Yamakura T, et al. Headache after attempted epidural block: The role of intrathecal air. *Anesthesiology* 1998; 88: 76-81.

3. During the induction of general anesthesia for urgent cesarean section, the parturient is witnessed to have aspirated gastric contents. During the cesarean section, there are difficulties with the patient's oxygen saturation. The most effective treatment is:

- A. lavage with saline.
- B. Intravenous steroids.
- C. Prophylactic antibiotics.
- D. Positive end-expiratory pressure.
- E. Prostaglandin E1.

Due to the rapid absorption of fluid by the lungs, aspiration of gastric contents causes damage before lavage can be performed. Steroid therapy does not alter the course. Prophylactic antibiotics are not efficacious. Positive end-expiratory pressure improves oxygenation by restoring functional residual capacity, reducing pulmonary shunting, and reversing hypoxemia.

Guyton TS, Gibbs CP. *Aspiration: Risk, prophylaxis, and treatment in Obstetric Anesthesia: Principles and Practice, 2nd ed.*, Chestnut DH (Ed), Mosby, St. Louis, 1999.

Bob Gaiser
University of Pennsylvania

Journal Update

American Journal of Obstetrics & Gynecology

June-December, 2000

Pre-eclampsia

Levine RJ, Ewell MG, Hauth JC. Should the definition of preeclampsia include a rise in diastolic blood pressure of greater than or equal to 15 mm Hg to a level < 90 mm Hg in association with proteinuria? *Am J Obstet Gynecol* 183:787-792, 2000.

In 1996, ACOG removed a rise in systolic BP of greater than 30 mm Hg and a rise in diastolic BP of greater than 15 mm Hg from the criteria for diagnosis of hypertension in pregnancy. This was done in recognition of the fact that such increases are not uncommon in normal pregnancy. It is not known, however, whether such increases are normal when seen in conjunction with proteinuria. In this study, a secondary analysis of data from the Calcium for Preeclampsia Prevention trial was performed. Aside from a two-fold increase in the rate of abdominal delivery, there was no evidence of any increase in adverse pregnancy outcomes, lending support to the removal of the 30/15 mm Hg criterion. The etiology for the increased C/S rate remains unknown. Isn't this an adverse pregnancy outcome?

Heyborne KD. Preeclampsia prevention: Lessons from the low-dose aspirin therapy trials. *Am J Obstet Gynecol* 183:523-528, 2000.

The initial enthusiasm for aspirin's potential to prevent pre-eclampsia has faded as multiple studies have failed to demonstrate any such effect, perhaps most notably the National Institute of Child Health and Human Development Network trial (*New Engl J Med* 338:701-705, 1998). In this paper, Heyborne analyzes 19 randomized, placebo-controlled trials that addressed the use of aspirin for the prevention of pre-eclampsia. He characterizes each trial by the groups studied: low risk nulliparas, high-risk nulliparas, high risk patients with underlying medical conditions, high-risk patients with poor obstetric histories, and high-risk patients with multiple gestations. This approach reveals clear differences in the efficacy of aspirin therapy depending on the patient's risk group, with a clear beneficial effect seen in women with poor obstetric histories, and also in high-risk nulliparas, depending on the screening tool used. The author suggests that the disease called pre-eclampsia may actually consist of several distinct entities, which respond to aspirin differently based on underlying differences in arachidonic acid metabolism.

O'Brien JM, Milligan DA, Barton JR. Impact of high-dose corticosteroid therapy for patients with HELLP syndrome. *Am J Obstet Gynecol* 183:921-924, 2000.

Several studies have suggested that corticosteroid therapy can reverse the laboratory abnormalities seen in HELLP syndrome. In this retrospective study, a control group was compared with a group of patients receiving standard corticosteroid therapy to promote lung maturation (betamethasone or dexamethasone 24 mg/day) and a high-dose group

(dexamethasone >24mg/day). The improvement in platelet count and LFTs was greater in the high dose group. The authors suggest that such an improvement might make the use of regional anesthesia more likely. Would SOAP members be comfortable providing a regional anesthetic to a patient whose platelet count rose from 75,000 to 103,000, as it did in these patients?

Fetus and Newborn

Grether JK, Hoogstrate J, Walsh-Greene E, Nelson KB. Magnesium sulfate for tocolysis and risk of spastic cerebral palsy in premature children born to women without preeclampsia. *Am J Obstet Gynecol* 183:717-725, 2000.

In 1995, these authors published a study suggesting that maternal treatment with magnesium sulfate for tocolysis might be protective against cerebral palsy in very low birth weight infants (*Pediatrics* 95:263-269, 1995). In this larger study, 170 children with CP and 288 controls were compared. Unlike the earlier study, similar proportions of mothers in each group received magnesium tocolysis. The authors suggest that an as yet undetermined change in obstetric practice since the earlier study may account for the different results. Several randomized prospective studies that are in progress may clarify this situation.

Progress of Labor

Segal S, Su M, Gilbert P. The effect of a rapid change in availability of epidural analgesia on the cesarean delivery rate: A meta-analysis. *Am J Obstet Gynecol* 183:974-978, 2000.

The limitations of studies investigating the effects of epidural analgesia on cesarean section rates are well known. Retrospective studies are plagued by selection bias, and the results of prospective studies are frequently muddled by crossover between groups. A sentinel event study that investigates the change in cesarean section rates after a rapid change in the availability of epidural analgesia avoids those difficulties. In this paper, presented in part at SOAP 1999, Scott Segal and colleagues performed a meta-analysis of nine sentinel event studies that looked at over 37,000 patients. Their analysis demonstrated that a sudden change in the availability of epidural analgesia had no effect on C/S rates. While sentinel event studies have problems of their own, the consistent results obtained in nine very heterogeneous studies support what most of us have been saying: obstetric factors play a far greater role in the C/S rate than the use of epidural analgesia does.

Main DM, Main EK, Moore DH. The relationship between maternal age and uterine dysfunction: A continuous effect throughout reproductive life. *Am J Obstet Gynecol* 182:1312-1320, 2000.

A fascinating study that demonstrates a progressive decrease in uterine contractile function in patients from ages 20 to 40. There was a progressive increase in the rates of cesarean section, operative vaginal delivery, use of oxytocin, and duration of the second stage. Considerable attention is paid to the fact that the use of epidural analgesia also increased progressively with maternal age, and that the use of epidural analgesia is one factor that the parturient can control to help decrease her risk of cesarean delivery.

Needless to say, neither the timing of epidural placement, the level of sensory block obtained, nor the local anesthetic solution utilized is described, nor is it suggested that the factors leading an elderly nullipara to request an epidural might predispose her to a dysfunctional labor and cesarean section.

Case Reports

Maehama T, Izena H, Kanazawa K. Management of autonomic hyperreflexia with magnesium sulfate during labor in a woman with spinal cord injury. *Am J Obstet Gynecol* 183:492-493, 2000.

Epidural analgesia has been described as an effective means of controlling autonomic hyperreflexia during labor in patients with spinal cord injury (see Owen MD, *Reg Anesth* 19:415-17, 1994). Because of the difficulties in determining the level of block in these patients, however, an unrecognized misplaced epidural may allow severe hypertension to develop with potentially disastrous results. This report describes the use of magnesium sulfate during three pregnancies in the same spinal cord-injured parturient. It was effective on one occasion by itself, and also during two other labors when epidural analgesia had failed to prevent autonomic hyperreflexia. The mechanism by which magnesium acts in this setting is unknown, but the authors suggest that its vasodilating effects may be the key to its usefulness.

Hsieh Y-Y, Chang C-C, Li P-C. Successful application of extracorporeal membrane oxygenation and intra-aortic balloon counterpulsation as lifesaving therapy for a patient with amniotic fluid embolism. *Am J Obstet Gynecol* 183:496-497, 2000.

In the absence of a specific treatment, the management of amniotic fluid embolism (AFE) is frequently described as primarily supportive. The authors of this case report certainly took this to heart, initiating massive supportive measures in a patient with AFE who did not respond to conventional cardiopulmonary resuscitation. Left femoral artery-femoral vein extracorporeal membrane oxygenation (ECMO) and right femoral artery intra-aortic balloon counterpulsation (IABP) were maintained for 40 hours after delivery, with subsequent full recovery. This is not a modality that is likely to be available to many of us, nor is it certain that if it were available it could be initiated rapidly enough to change the ultimate outcome. Nevertheless, it may prove to be lifesaving.

Cole RE. Obstetric management of a protracted labor. *Am J Obstet Gynecol* 182:1306-1311, 2000.

This report describes the management of a G₃P₀ with arrest of descent after a labor that had lasted

greater than 18 hours. Because of the patient's inability to cooperate with the proposed obstetric interventions, anesthesia was induced with intramuscular ketamine 5 mg/kg and subsequently maintained with isoflurane. Upon examination, the cervix was found to be fully dilated, but uterine activity had become minimal. Oxytocin augmentation was initiated. After 90 minutes, the fetal vertex had descended to the perineum, and a vacuum extraction was performed, resulting in the birth of a 2540 gm female. Apgar scores were not described, but because of absent respirations ventilatory support was required. After 45 minutes the

infant was extubated and subsequently did well. One could argue with certain aspects of the anesthetic management of this patient if not for the fact that she was a 10-year-old Western lowland gorilla at the Woodland Park Zoo in Seattle. And I thought I had an interesting day on labor and delivery.

Vaginal Birth after Cesarean

Ravasia DJ, Wood SL, Pollard JK. Uterine rupture during induced trial of labor among women with previous cesarean delivery. *Am J Obstet Gynecol* 183:1176-1179.

Esposito MA, Menihan CA, Malee MP. Association of interpregnancy interval with uterine scar failure in labor: a case control study. *Am J Obstet Gynecol* 183:1180-1183.

Zelop CM, Shipp TD, Repke JT et al. Effect of a previous vaginal delivery on the risk of uterine rupture during a subsequent trial of labor. *Am J Obstet Gynecol* 183:1184-1186.

A major component of the effort to decrease cesarean section rates over the past two decades has been the aggressive promotion of trial of labor after previous cesarean section. While the risk of uterine rupture after a previous lower segment incision is low, it is clearly not zero. These three studies attempt to more precisely define the risk of uterine rupture during attempted VBAC. Ravasia et al. demonstrated that uterine rupture occurred in 1.4% of induced labors, versus 0.45% in spontaneous labor. The rate of rupture was even higher (2.9%) in women who received prostaglandin E₂ gel for cervical ripening. Esposito et al. demonstrated that patients with uterine scar failure (rupture or dehiscence) during attempted VBAC were more likely than controls to have an interpregnancy interval of six months or less; they suggest that such a shortened interval might interfere with normal uterine . scar formation. Zelop et al. showed that in women with a previous cesarean section, those with at least one vaginal delivery had one fifth the risk of uterine rupture during VBAC compared to those without a history of vaginal delivery. While the concept of VBAC remains valid, these studies and others suggest that selection of appropriate candidates can be further refined.

David Wlody, MD
Newsletter Editor

THE SOAP BOX

Letters from Members

The views and opinions expressed in this column are those of the authors, and do not necessarily reflect the views or opinions of The Society for Obstetric Anesthesia and Perinatology, its Board of Directors, or the Editor.

We welcome comments expressing opposing viewpoints.
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Epidural Analgesia

To The Editor —

I read with great dismay the letter from Dr. Nishman (Fall 2000 newsletter) regarding his feelings that epidural analgesia during labor is a privilege. While I do not take issue with him that we need to spend time assuring that there is appropriate funding of health care services, I take great issue with his idea that we should provide services only to those that can pay. There are a great many reasons why patients may not have health insurance. These may include anything from poor job benefits to just irresponsible behavior. However, to exclude patients from services because they cannot pay goes against all that we are supposed to represent.

The idea that "women have delivered babies for centuries without an epidural for pain relief, so why shouldn't they do it now" is primitive thinking at its finest. Does Dr. Nishman believe that children should not be inoculated against polio, mumps, measles or rubella if their parents can't pay for it? Surely billions of children have survived without the vaccines. We have a responsibility to provide the best care possible to everyone. Not only is that just one of the things that puts us above the less fortunate countries, it is one of the many things that put us above restaurant owners, carpenters, lawyers and supermarket owners.

Finally, while he applauds the failure of Mrs. Clinton and her health care proposals because he feels we

are healthier and in less debt, he misses the point. Without any government intervention we are left with insurance companies to run roughshod over physicians because of the lack of regulation of these companies. Insurance companies are allowed to function without anything similar to the antitrust laws that physicians are up against. Insurance companies can artificially keep physician reimbursements down because they are allowed to divide and conquer us. The place for us to address our problems is with the state and federal governments. We should be active in changing the laws that will allow us to deal with insurance companies on an equal playing field. The patient is NOT the one that should suffer; we as physicians should be above that. We are not restaurant owners.

Paul Rein, DO
Williamsburg, Virginia

The SOAP Sol Shnider Breakfast Panel

ASA Annual Meeting, San Francisco

The SOAP Sol M. Shnider Breakfast Panel at the 2000 ASA meeting featured a packed house, proficient speakers and insight into current controversies. As moderator, SOAP president Alan Santos introduced the panelists and invited the audience to hear more about related topics at the 2001 SOAP meeting in San Diego.

Titled "Obstetric Anesthesia 2000" the panel featured four experts in areas that elicit current interest.

Mark Norris (past Professor at Washington University in St. Louis, now in private practice in Stockbridge, Ga.) spoke on "Epidural Catheters: To Test or Not to Test". He noted the primary concern is the identification of intrathecal or intravascular placement of the epidural catheter. Contrasting single-orifice and multi-orifice catheters, he pointed out that multi-orifice catheters are preferable because they are more likely to identify an intravascular catheter, that is, they have fewer false negative aspiration tests. Because of the relative rarity of unrecognized intravascular multiorifice catheters, however, a larger proportion of apparently positive test doses will actually be false positives (low specificity). He then discussed the pros and cons of the various test doses. In conclusion, he recommended use of the multi-orifice catheter, and removal and replacement versus manipulation of any intravascular catheter. He suggested skipping the air or epinephrine `test dose' but instead to make every epidural dose a test dose. This could be done, he suggested, by giving an initial 2-3 mL local anesthetic bolus to rule out intrathecal catheter placement. Further doses could then be given in no more than 5mL increments drawn up in smaller syringes (5-10 mL).

The second panelist, Joy Hawkins, Professor at the University of Colorado at Denver, spoke on how "ASA, ACOG, and AWOHNN Guidelines Effect OB Anesthesia Practice." She noted that the American College of OB/GYN and the Association of Women's Health, Obstetric and Neonatal Nurses of necessity affect our practice because we all work together. Regarding the ASA documents specific to OB practice, the "Guidelines for Regional Anesthesia in Obstetrics" and the "Practice Guidelines for Obstetrical Anesthesia", Dr. Hawkins emphasized that these are guidelines, not standards; the ASA leaves the interpretation and implementation of these guidelines up to each institution based on their specific resources. She mentioned Guideline III from the Guidelines for Regional Anesthesia, which states a physician with obstetric privileges must be "readily available" to manage any OB complications occurring secondary to a regional anesthetic. She noted that `readily available' is to be defined by each hospital based on their geographic restraints. She stated that the concept of "readily available" is not the same as the "30 minute rule" from the Guidelines for Perinatal Care handbook published by ACOG and the American Academy of Pediatrics. (This "30 minute rule" is the consensus for a reasonable response time for initiating an emergency C-Section noting that some emergencies require an even faster response.) Dr. Hawkins suggested that a hospital's definition of "readily available" might also factor in such variables as the frequency of cases, the liability carrier's input, and the availability of the

obstetrician.

Dr. Hawkins next focused on AWHONN's 1998 document on anesthesia care of the pregnant woman. In the section on nurse management of epidurals for labor and vaginal delivery, epidural dosing is described as a rebolus through a manual syringe, continuous infusion via a pump or increasing the infusion pump rate. The document states that these can all be done only by a licensed anesthesia provider. Dr. Hawkins pointed out that there is no morbidity and mortality data supporting this recommendation. In fact the document puts no such limits on epidural dosing for gynecology patients or patients with patient controlled epidural analgesia. There is also no allowance for differences in the individual nurses' level of education or experience. Unfortunately, no ASA input was solicited for the original document. AWHONN has now agreed to work with an ASA liaison, and they will seek information to provide an evidence base for their guidelines. They also plan to review their original document in the near future.

Finally, Dr. Hawkins discussed ACOG's recent statement on vaginal birth after C-section, which requires the "immediate availability" of surgical, anesthesia and operating room personnel and an operating room during the labor and delivery of all VBAC patients. ACOG has affirmed that this is a patient care issue, since as many as 1% of all VBACs end in uterine rupture. Dr. Hawkins notes that each hospital must decide how to handle VBAC cases in light of this new recommendation.

The next panelist was Valerie Arkoosh, Associate Professor and Interim Chair at Pennsylvania's Hahnemann University, discussing the topic "Is It Time to Reappraise the Use of Microspinal Catheters for Labor Analgesia?" She began with an overview of the history of spinal catheters, from their first use in labor in 1951, through the publication of Rigler's paper describing cauda equina syndrome related to the technique in 1991, to the FDA's recall of microcatheters in 1992. She described a number of substantial advantages of the continuous spinal technique, including reliability of catheter placement, rapid onset of drug effect, the benefits of opioid analgesia for labor, and the availability of the catheter for providing c/section anesthesia. She concluded by describing an ongoing study comparing continuous infusion spinal analgesia using 28g microcatheters with continuous epidural analgesia for labor. After 197 patients the preliminary results show similar findings between the two groups for rate of headaches, neurologic problems, and analgesia.

The final panelist was Linda Polley, Assistant Professor at the University of Michigan at Ann Arbor. Her talk was entitled "Will Levobupivacaine Replace the Use of Bupivacaine and Ropivacaine in Obstetrics?" She stated that levobupivacaine and ropivacaine were developed to address problems associated with the ever-popular labor analgesic bupivacaine. Of primary concern is the increased cardiotoxicity of bupivacaine compared to other local anesthetics. Dr. Polley described how potency studies suggest that ropivacaine is less potent than comparable doses of bupivacaine. Thus, the apparent safety advantage of ropivacaine disappears when equipotent rather than equimolar doses are used. As a result there may be little reason to choose ropivacaine over bupivacaine for labor analgesia.

Regarding levobupivacaine, Dr. Polley stated that studies suggest it is equipotent with bupivacaine. Thus, its decreased cardiotoxicity at equivalent milligram doses extends to equipotent doses as well. In clinical

trials, bupivacaine and levobupivacaine have the same efficacy. The question then is whether bupivacaine cardiotoxicity remains an important issue in obstetric anesthesia. Dr. Polley suggested that this is not the case, since labor analgesia can be provided with extremely small doses of local anesthetics when opioids are use concurrently, and because cesarean sections under epidural anesthesia are now typically performed using 2% lidocaine. The other factor to consider, says Dr. Polley, is cost. Cost estimates at her institution show levobupivacaine is cheaper than ropivacaine but still several times more expensive than bupivacaine. She estimated the increase in cost of switching from bupivacaine to ropivacaine at about \$23,000. Though the safety benefits might make the cost worthwhile for peripheral nerve blocks such as brachial plexus blockade, Dr. Polley stated that the benefits of levobupivacaine in OB probably do not justify the additional cost.

Kathy Zuspan, MD
SOAP Publications Committee

ACOG's 2000 Compendium of Selected Publications Guidelines for Perinatal Care

ACOG has agreed to offer SOAP members the opportunity to buy two of their publications at a significant discount. The 2000 Compendium of Selected Documents contains approximately 200 documents, including ACOG's Practice Bulletins, Educational and Technical Bulletins, and Committee Opinions, and is offered to SOAP members for \$75, plus shipping and handling. Guidelines for Perinatal Care, 4th ed., which is published by ACOG jointly with AAP, provides comprehensive recommendations for care of pregnant patients, their fetuses and newborns. It is offered to SOAP members for \$39 plus shipping and handling. To order either or both of these publications, SOAP members should call 800-762-2264, and ask for extension 159.

Marianna Crowley, MD

Past Chair, ASA Committee on Obstetric Anesthesia

Annual Meeting Elections

During the annual business meeting in San Diego, California, members will elect a Second Vice President, a Treasurer, and a Director at Large. Please send candidate suggestions to soap@societyhq.com, or fax to (804) 282-0090, no later than April 15, 2001.

Be Involved... Be a Host

In San Diego we will choose the meeting site for the year 2005. If you are interested in serving as a meeting host, here are the guidelines:

- 1) Good air service (i.e. frequent direct flights from most major U.S. cities) is important although not mandatory.
- 2) The hotel should be large enough to handle the group.
- 3) The city should be a popular draw for visitors.

Details such as checking for dates, hotel rates and availability will be handled by the SOAP office.

To nominate your city, contact Stewart Hinckley at SOAP, P.O. Box 11086, Richmond, VA 23230-1086; phone (804) 282-5051; Fax (804) 282-0090; or Email: soap@societyhq.com, before March 30, 2001.

The Executive Committee will consider all nominations prior to the business meeting. All approved hosts and sites will be presented and voted on in San Diego.

Nominations will not be accepted from the floor.

2001 Distinguished Service Award - Mieczyslaw Finster, MD



When hearing of this award, which honors the illustrious lifetime achievements of Dr. Mieczyslaw Finster, or Mike, as he is known to all of us, the first thought to occur is how superfluous introductions are. He is, and has been a familiar figure on an unusually wide stage, not only in anesthesia and obstetrical circles, but also across many generations within those fields. There is by this time almost nowhere in the world where he would not be professionally recognized and welcomed by old friends.

It was in 1967, when I came to Columbia Presbyterian Hospital that I first met Mike, and 1974 when I joined him to work in the labor room. Since then, we have maintained a long relationship, during which my trust in, and respect for his great abilities have only grown with the years.

Having both spent our early lives in Europe, we would talk at times about our experiences in the Second World War. While mine involved evacuation from home because of the danger of bombing raids, and a certain disruption of education, Mike spent a very important part of his youthful years fully immersed in a nightmare. In spite of isolation, family losses, hunger and a horrific journey, in which immediate survival was his only goal, Mike did eventually step out of one of civilization's worst atrocities. He came via a long winding road from Poland to Israel, then on to Switzerland, where he studied medicine, and at last to the United States in 1958.

One might think that such experiences would have produced an unreconstructed misanthrope, but that most certainly has not been the case. The most prominent feature of his personality has been his capacity to reach out to people to establish an exchange and effect a camaraderie which crosses cultural, language, professional and ideological lines. His office over the years has had an open-door policy; no colleague, resident or student was ever turned away. Countless generations of those within the hospital community could come in with their problems, be they related to career, academic goals, research or personal woes and be sure to receive encouragement and help or just reassurance that things could not be as bad as they seemed.

Mike's energy, exuberance, and optimism seem boundless, so I need only highlight his professional achievements. Being an Attending-in-charge of the Obstetrical Anesthesia Service at Sloan Hospital for Women since 1962, Professor of Anesthesiology, and Professor of Obstetrics and Gynecology at the College of Physicians and Surgeons of Columbia University since 1975, and 1978, respectfully, is only a beginning.

In his many years of research, publishing, editing, educating, and advising, Mike has truly evolved into something of a grandfather in his field, though like many modern-day grandfathers, he remains very young, and abreast of developments. As a lecturer he has a reputation and scope, which has moved well beyond New York City to an international audience. His polished, clearly articulated style is enhanced by his linguistic talents, which allow him to communicate fluently in several languages - with smatterings in a few more.

Mike's dedication to SOAP has been unfailing since its infancy, serving as he has on its Board of Directors from 1992-97, and as President in 1995-96. In the developing years of this new field of specialization, Mike soon came to be respected as one who could maintain his standards and hold his own, at a time when trans-disciplinary relations could be contentious, and sometimes downright volatile. His diplomatic and upbeat style was indispensable in defusing negative situations.

I believe that the fulcrum of Mike's life is his family; Lily his wife of more than forty years, a warm, charming, engaging woman, their son Victor, and daughter Evelyn both recently married; all are the spinal column on which his career has been built.

It is reassuring and in a way inspiring to see Mike, still today, active and in such good health. I would like to thank the editors for allowing me to jot down a few impressions of a very interesting and complex man - a scholar, lecturer, writer, mentor, administrator, and my friend.

Hilda Pedersen, MD

Gertie Marx Symposium

Moderator: Alan Santos, MD

**Judges: Gertie Marx, MD; GM Bassell, MD;
James R. Farina; MD; Anne May, MBBS, FRCA**

8:00 9:30 am

8:00 am	PLATELET FUNCTION IN PREECLAMPSIA: PLATELET FUNCTION ANALYZER (PFA-100)VS TEG J. Davies, R. Fernando, S. Hallworth
8:15 am	LOW DOSE LIDOCAINE CAUSES TOXIC CHANGES IN NEURONAL MORPHOLOGY P. Dadarkar, M. Johnson, C. Uhl
8:30 am	LATENT PHASE CERVICAL DILATION IS FASTER DURING EPIDURAL MEPERIDINE THAN DURING EPIDURAL BUPIVACAINE LABOR ANALGESIA IN NULLIPAROUS, INDUCED-LABOR PATIENTS M. Kiselev, J. Tornatore, B. Leighton, S. Halpern, K. Kjaer, J. Fong, F. Gadalla, S. Abramovitz, C. Flowers-Huebner, S. Chasen
8:45 am	THE ED95 OF INTRATHECAL BUPIVACAINE WITH OPIOIDS FOR CESAREAN SECTION E. Mirikitani, Y. Ginosar, D. Drover, S. Cohen, E. Riley
9:00 am	THE EFFECT OF INJECTION RATE ON HYPOTENSION DURING SPINAL ANESTHESIA FOR ELECTIVE CESAREAN SECTION M. Seltenrich, A. Kamani, V. Gunka, J. Douglas
9:15 am	OBESITY AND INCREASED RISK FOR CESAREAN DELIVERY C. Leicht, I. Velickovic, M. Velickovic, E. Nystrom

All Abstracts listed on this page are in the *Anesthesiology* Supplement.

Thursday, April 26, 2001

Oral Presentations

Moderator: Gary M.S. Vasdev, MD

11:00 am - 12:00 n

11:00 am	GENERAL ANESTHESIA FOR CESAREAN DELIVERY. THE STATUS OF CURRENT RESIDENT TRAINING AND EXPERIENCE. K. Bhavani-Shankar, W. Camann
11:15 am	VALIDATION AND APPLICATION OF NIRS TO MEASURE IN UTEROFETAL SHEEP CEREBRAL OXYGENATION DURING MATERNAL GENERAL ANESTHESIA J. Reynolds, J. Schultz, D. Amory, S. Punnahitananda, P. Benni, W. Eubanks, J. Booth
11:30 am	DOES ETHNIC ORIGIN AFFECT RELATIONSHIP OF BMI AND INCIDENCE OF CS? E. Bell, A. Olufolabi, A. Hartle
11:45 am	SPINAL IS SAFER THAN GA FOR LSCS IN ECLAMPTICS M. Razzaque, K. Rahman, R. Sashidharan

Friday, April 27, 2001

Oral Presentations

Moderator: H. Jane Huffnagle, DO

1:00 - 2:30 pm

1:00 pm	IS NORMAL LABOR NORMAL? M. Vidovich, C. Wong, T. Krejcie
1:15 pm	COMPARISON OF MINIMUM LOCAL ANALGESIC VOLUMES OF TWO CONCENTRATIONS OF EPIDURAL BUPIVACAINE. G. Lyons, H. Gorton, A. Robinson, M. Columb
1:30 pm	EPIDURAL BUPIVACAINE DECREASES PUSHING STRENGTH S. Maloney, J. Johnson, S. Hughes, M. Rosen
1:45 pm	ROPIVACAINE COMPARED WITH BUPIVACAINE FOR LABOR ANALGESIA AND ABILITY TO AMBULATE C. Swide, N. Neupane, J. Horn
2:00 pm	HAEMODYNAMIC CHANGES WITH 'MOBILE' EPIDURALS IN LABOUR: IS IT SAFE FOR WOMEN TO AMBULATE? W. Hussain for the COMET Study Group UK.
2:15 pm	ROPIVACAINE IS UNRELIABLE FOR USE AS A SPINAL TEST DOSE M. Owen, P. Gautier, D. Hood

Friday, April 27, 2001

Zuspan Papers/Awards

Moderator/Judge: Anne May, MBBS, FRCA

Judges: Robert Resnik, MD; Frederick P. Zuspan, MD;

Laurence S. Reisner, MD; Robert D'Angelo, MD

3:00 4:00 pm

3:00 pm	TEMPORAL TRENDS IN OPERATIVE OBSTETRIC DELIVERY: 1992-1999 C. DiMarco, P. Ramsey, L. Williams, G. Vasdev, K. Ramin
3:15 pm	FACTORS ASSOCIATED WITH POST-PARTUM URINARY RETENTION AFTER VAGINAL DELIVERY M. Carley, J. Carley, K. Ramin, G. Vasdev, M. Webb, R. Lee
3:30 pm	CARDIOTOCOGRAPHIC ABNORMALITIES ASSOCIATED WITH LABOR INDUCTION. J. Balintona, L. Meyer, K. Ramin, G. Vasdev, P. Ramsey
3:45 pm	PERIPARTUM ANESTHETIC AND OBSTETRICAL MANAGEMENT OF PARTURIENTS AFFLICTED WITH CHIARI I MALFORMATION A. Meath, R. Chantigian, M. Beran-Koehn, M. Warner, K. Ramin

Saturday, April 28, 2001

**Oral Presentations/Best Paper of the Meeting
Award**

Moderator/Judge: Donald H. Penning, MD, MSc, FRCPC

**Judges: Edward R. Molina-Lamas, MD, FACA; Mark C. Norris, MD;
David C. Campbell, MD, MSc, FRCPC; Hisayo O. Morishima, MD, PhD**

10:30am 12:00 n

10:30 am	POSTURAL STABILITY FOLLOWING REGIONAL ANALGESIA FOR LABOR J. Davies, R. Fernando, S. Verma, P. Found, A. McLeod
10:45 am	ALLOPREGNANOLONE PROTECTS AGAINST NMDA-INDUCED CELLULAR INJURY IN HUMAN NT2-N NEURONS E. Lockhart, R. Boustany, R. Pearlstein, D. Warner, D. Penning
11:00 am	PATIENT-CONTROLLED EPIDURAL ANALGESIA VS. CONTINUOUS INFUSION FOR LABOR PAIN. A META-ANALYSIS M. Van der Vyver, S. Halpern, G. Joseph
11:15 am	MAGNESIUM SULFATE AND HYPOXIA: EFFECTS ON PREGNANCY OUTCOME AND FETAL NEUROCHEMISTRY OF NEARTERM GUINEA PIGS S. Punnahitananda, E. Grubbs, E. Flanagan, Y. Wang, J. Reynolds
11:30 am	USE OF IUPC TO EVALUATE THE EFFECT OF CSE ON UTERINE CONTRACTION PATTERNS J. Sullivan, B. Scavone, C. Wong, M. Avram
11:45 am	ETHNIC ORIGIN, MALLAMPATI CLASSIFICATION AND LARYNGOSCOPIC VIEW AT CS E. Bell, A. Olufolabi, A. Hartle

Saturday, April 28, 2001

Oral Presentations

Moderator: Cheryl A. DeSimone, MD

2:00 3:00 pm

2:00 pm	<p>REQUIREMENT FOR AND SUCCESS OF EPIDURAL BLOOD PATCH AFTER INTRATHECAL CATHETER PLACEMENT FOR UNINTENTIONAL DURAL PUNCTURE</p> <p>J. Spiegel, L. Tsen, S. Segal</p>
2:15 pm	<p>THROMBOCYTOPENIA AND PREGNANCY: A COMPARATIVE IN VITRO STUDY</p> <p>H. Gorton, G. Lyons, E. Warren, M. Columb</p>
2:30 pm	<p>EVALUATION OF PLATELET FUNCTION IN THE PARTURIENT USING THE PLATELET FUNCTION ANALYZER (PFA-100®)</p> <p>A. Nair, I. Arnold, J. Goolie-Scindain, C. Bodian, S. Hossain, Y. Beilin</p>
2:45 pm	<p>EFFECT OF EPIDURAL ANALGESIA ON THE H-REFLEX</p> <p>M. Vidovich, C. Wong, T. Nishida</p>

Poster Review #1

Moderator: David R. Gambling, MBBS

10:00 - 11:00 am

1	<p>THE EFFECT OF SITTING AND AMBULATING ON LABOR DURATION AND MATERNAL OUTCOME M. Vallejo, L. Firestone, G. Mandell, F. Jaime, S. Makishima, S. Ramanathan</p>
2	<p>HYDROMORPHONE WITH EPIDURAL FENTANYL IN AMBULATORY PATIENTS IN EARLY LABOR R. Parker, N. Connelly, T. Lucas, U. Faheem, S. Dunn, A. Rizvi, M. El-Mansouri, N. Thakkar, R. Kamasumadram</p>
3	<p>EPIDURAL ANALGESIA AND FUNIC ACID-BASE BALANCE: A META-ANALYSIS F. Reynolds, S. Sharma, P. Seed</p>
4	<p>THE OPTIMAL EPIDURAL INFUSION FOLLOWING THE COMBINED SPINAL EPIDURAL TECHNIQUE FOR LABOR. A. Nair, I. Arnold, H. Bernstein, J. Zahn, C. Telfeyan, Y. Beilin</p>
5	<p>DO BUPIVACAINE OR THE STAGE OF LABOR ALTER THE INCIDENCE OF FETAL BRADYCARDIA ASSOCIATED WITH INTRATHECAL SUFENTANIL? S. Huffnagle, B. Grujic, H. Huffnagle, M. Norris, M. Aldea, P. Atkinson, V. Grodecki</p>
6	<p>BODY TEMPERATURE CHANGES WITH EPIDURAL ANALGESIA AND THE PATIENT'S BODY HABITUS S. Ramanathan</p>
7	<p>AN IONTOPHORETIC EPIDURAL CATHETER: THEORETICAL POSSIBILITIES R. Glassenberg</p>
8	<p>DOES A COMBINED SPINAL-EPIDURAL TECHNIQUE IMPROVE THE QUALITY OF SUBSEQUENT EPIDURAL LABOR ANALGESIA? J. Thomas, L. Harris, P. Reiker, R. D'Angelo</p>
9	<p>LABOR PCEA: 5 MIN V 15 MIN LOCKOUT INTERVAL. G. Stratmann, D. Gambling, J. Stackpole, A. Pue</p>
10	<p>EPIDURAL ROPIVACAINE VS. BUPIVACAINE: OBSTETRIC OUTCOMES T. Breen, D. Campbell, R. Nunn, J. Kronberg, S. Halpern, H. Muir, G. Fick</p>
11	<p>ANALGESIC MANAGEMENT OF INTRAUTERINE FETAL DEMISE (REVISITED) A. Con, I. McGovern, R. Sashidharan</p>

12	<p>COMPARISON OF ESPOCAN® AND TUOHY NEEDLES FOR COMBINED SPINAL-EPIDURAL (CSE) ANALGESIA I. Browne, D. Birnbach, D. Stein, D. O'Gorman, A. Santos, S. Kelly-Francis, D. Thys</p>
13	<p>CAUSES OF LABOR EPIDURAL CATHETER REPLACEMENT A. Vasudevan, P. Hess, A. Soni, M. Sarna, S. Pratt</p>
14	<p>DOES ETHNICITY INFLUENCE LABOUR ANALGESIA S. Brayshaw, C. Duke, R. Sashidharan</p>
15	<p>DOES ULTRA-LOW DOSE LABOR EPIDURAL ANALGESIA INFLUENCE EARLY BREASTFEEDING? S. Reid, D. Ly</p>
16	<p>DOES EPIDURAL NALOXONE ALLEVIATE ITCHING FROM INTRATHECAL FENTANYL IN THE LABORING PARTURIENT? K. Choi, J. Fong, F. Gadalla, E. Alnigenis</p>
17	<p>THROMBOCYTOPENIA IN PREGNANCY: PLATELET FUNCTION ANALYZER (PFA-100) VS THROMBOELASTOGRAPH (TEG) J. Davies, R. Fernando, S. Hallworth</p>
18	<p>THE EFFECTS OF PATIENT-CONTROLLED EPIDURAL ANALGESIA VS CONTINUOUS INFUSION EPIDURAL ANALGESIA ON THE COURSE OF LABOR AND DELIVERY. S. Sharma, J. Alexander, J. Wiley, K. Leveno</p>
19	<p>COMPARISON OF PCEA TO CEI ON A LABOR WARD: UTILIZATION AND TOP-UP REQUIREMENTS J. Schultz MD, E. Bell MD, F. Dexter MD/PhD, H. Muir MD, J. Reynolds PhD</p>
20	<p>EFFICACY AND COMPLICATIONS OF TWO TYPES OF EPIDURAL CATHETERS FOR OBSTETRIC ANESTHESIA R. Hayashi, J. Cross, B. Jones</p>
21	<p>SPINAL SUFENTANIL, FETAL BRADYCARDIA (FB), AND MATERNAL CATECHOLAMINES IN PARTURIENTS F. Lenkovsky, M. Garahan, E. Kristensen, I. Bernstein, J. Rathmell, A. Kaye, K. Flaherty</p>
22	<p>THE EFFECTS OF INTRATHECAL EPINEPHRINE ON CSE LABOR ANALGESIA R. D'Angelo, M. Poss, L. Harris</p>
23	<p>IS A CSE TECHNIQUE BETTER THAN A STANDARD EPIDURAL TECHNIQUE FOR PARTURIENTS WITH SCOLIOSIS? R. Farragher, L. Tsen</p>
24	<p>ANALGESIC EFFICACY OF BUTORPHANOL IN FEMALE VERSUS MALE RATS. K. Kuczkowski, B. Tsang</p>

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**PUBLISHED ABSTRACTS IN OBSTETRICAL ANESTHESIA: FULL PUBLICATION
RATES AND DATA RELIABILITY**

S. Halpern, S. Palmer, P. Angle, J. Tarshis (Listed in *Anesthesiology* Supplement under Best Papers of the Meeting)

Thursday, April 26, 2001

Poster Review #2

Moderator: Lawrence C. Tsen, MD

3:30 - 4:30 pm

25	EC80-EC95 OF BUPIV AND ROPIV PLUS FENT FOR LABOR EPIDURAL ANALGESIA D. Campbell, R. Zwack, T. Breen, R. Yip
26	RIGHT AND LEFT SHIFTS OF HEMOGLOBIN DISSOCIATION CURVES: WHY PLACENTAL OXYGEN TRANSPORT IS NOT HOKEY POKEY R. Glassenberg, S. Glassenberg
27	DESFLURANE VERSUS ISOFLURANE FOR FETAL SURGERY J. Galinkin, L. Myers, R. Gaiser
28	DO PROPHYLACTIC EPIDURAL BLOOD PATCHES DECREASE THE RATE OF THERAPEUTIC EPIDURAL BLOOD PATCHES? A. Pue
29	PSYCHIATRIC SIDE EFFECTS OF INDOMETHACIN IN PARTURIENTS M. Clunie, L. Crone, L. Klassen, R. Yip
30	DID TUOHY DESIGN THE EPIDURAL NEEDLE OR WAS IT HUBER? J. Martini, D. Martin, G. Kamath, G. Vasdev
31	EPIDURAL ANALGESIA AND OXYTOCIN USE: AUGMENTATION VS INDUCTION S. Ramanathan
32	DEVELOPMENT AND VALIDATION OF A RISK SCORE FOR BREAKTHROUGH PAIN DURING LABOR EPIDURAL ANALGESIA A. Vasudevan, S. Pratt, A. Soni, M. Sarna, P. Hess
33	LABOR EPIDURAL ANALGESIA GUIDELINES: FRIEND OR FOE? D. Ray, B. Harrison, C. Burkle, G. Vasdev

34	NALBUPHINE GIVEN DURING LABOR CAN CAUSE A TRANSIENT DECREASE IN THE BASELINE FETAL HEART RATE E. Goodman, S. Thomas, R. Stupi, K. Jaffe
35	HOW DOES AMNIOTIC FLUID EFFECT CAOGULATION? M. Harnett, S. Datta, K. Bhavani-Shankar
36	WHIRLPOOL BATHS IN LABOR. ANALGESIC ADJUNCT OR MICROBIOLOGIC HAZARD? I. Browne, D. Birnbach, D. Stein, A. Santos, S. Kelly-Francis, D. Thys, O. Murray, E. Sordillo
37	SENSORY CHANGES AFTER COMBINED SPINAL-EPIDURAL ANALGESIA AND EPIDURAL ANALGESIA IN LABOR. M. Duncan, P. Prasad, K. McKeating
38	BEGINNING LABOUR EPIDURAL ANALGESIA, USING PAIN AS THE MAIN CRITERIA C. Lobo, M. Ramon, C. Machado, T. Cardoso, F. Pedro, C. Correia
39	ASSOCIATION OF THE G-PROTEIN b-3 SUBUNIT 825C/T POLYMORPHISM AND WEIGHT GAIN IN PREGNANCY R. Smiley, R. Landau, V. Dishy, H. Xie, A. Wood, R. Kim, C. Stein
40	PHOSPHODIESTERASE (PDE5) RECEPTOR INHIBITION MODERATES THE VASOPRESSOR EFFECT OF 5-HYDROXYTRPTAMINE (5-HT) ON THE FETOPLACENTAL VASCULATURE. J. Downing, B. Minzter, R. Ramasubramanian, R. Paschall, J. York, R. Johnson
41	PHOSPHODIESTERASE (PDE5) PLACENTAL RECEPTOR INHIBITION OBTUNDS HYPOXIC FETOPLACENTAL VASOCONSTRICTION (HFPV) IN THE HUMAN PLACENTA. J. Downing, B. Minzter, R. Ramasubramanian, R. Paschall, J. York, R. Johnson
42	PRIMARY PULMONARY HYPERTENSION: SUCCESSFUL C/S USING TIVA, NO AND TEE P. DeBalli, A. Habib, H. Grocott, A. Olufolabi
43	THE USE OF NATIONAL CQI DATA TO IMPROVE HOSPITAL ANESTHESIA OUTCOMES B. Kaul, M. Vallejo, S. Ramanathan, G. Mandell
44	WHAT DO PREGNANT WOMEN KNOW ABOUT PAIN RELIEF AND EPIDURAL ANALGESIA? M. Celesia, H. Scavuzzo, C. Fernández

45	DELAYED ADRIAMYCIN-INDUCED PERIPARTUM CARDIOMYOPATHY P. Pan, C. Moore, V. Ross, G. Justis
46	POSTDURAL PUNCTURE HEADACHE: USING THE DATABASE AS A QI TOOL TO CHANGE PRACTICE A. Olufolabi, E. Bell, H. Muir
47	QUALITY IMPROVEMENT USING AN OBSERVATIONAL DATABASE: TREATMENT OF PDPH A. Olufolabi, E. Bell, H. Muir
48	PRIMARY PULMONARY HYPERTENSION: SUCCESSFUL C/S USING TIVA, NITROUS OXIDE AND TEE P. DeBalli, A. Habib, H. Grocott, A. Olufolabi

Saturday, April 28, 2001

Poster Review #3

Moderator: Laurence S. Reisner, MD

3:00 4:15 pm

49	NEONATAL RESUSCITATION AND THE ANESTHESIOLOGIST R. Gaiser, S. Lewin, T. Cheek, B. Gutsche
50	BMI PREDICTS CS IN MULTICENTER PROSPECTIVE COHORT STUDY E. Bell, A. Hartle, D. Mayer, A. Olufolabi, B. Phillips-Bute, F. Spielman
51	COMPARISON OF TRUE 15° TABLE TILT VS. FULL LATERAL POSITION AFTER INDUCTION OF SPINAL ANESTHESIA FOR CESAREAN SECTION S. Rees, J. Thurlow, I. Gardner, M. Scrutton, S. Kinsella
52	DECREASED POSTPARTUM USE OF ORAL PAIN MEDICATION AFTER A SINGLE DOSE OF EPIDURAL MORPHINE S. Goodman, A. Drachenberg, S. Johnson, S. Kim-Lo, R. Smiley
53	RAPACURONIUM FOR RAPID SEQUENCE INDUCTION IN ELECTIVE CESAREAN SECTION B. Brueckner-Schmid, I. Petzold, J. Brueckner
54	HOW FAST ARE WE? V. Gunka, M. Douglas
55	REGIONAL VS GA FOR TWIN-TWIN TRANSFUSION SYNDROME REQUIRING FETAL SURGERY L. Myers, J. Galinkin, R. Gaiser
56	MAGNESIUM SULFATE AND ANALGESIC REQUIREMENTS FOLLOWING CESAREAN SECTION A. Habib, H. Muir, E. Bell, B. Phillips-Bute, J. Reynolds

57	<p>LOW DOSE INTRATHECAL MORPHINE IS NOT USEFUL FOR ANALGESIA AFTER POSTPARTUM TUBAL LIGATION</p> <p>S. Goodman, A. Drachenberg, S. Johnson, S. Kim-Lo, R. Smiley</p>
58	<p>INTRAVENOUS CANNULA SIZE FOR OBSTETRIC HEMORRHAGE</p> <p>K. Stoehr, C. Burkle, G. Vasdev</p>
59	<p>"CODE OB": A PROTOCOL FOR PERIMORTEM CESAREAN SECTION</p> <p>L. Selman, K. Lebowitz, D. Gambling</p>
60	<p>ONDANSETRON IN THE PREVENTION OF PRURITUS DURING ELECTIVE CESAREAN SECTION UNDER SPINAL ANESTHESIA</p> <p>M. Dubuc, C. Crochetière, E. Villeneuve</p>
61	<p>ELABORATE HAIRPIECE AS A CAUSE OF UNEXPECTED DIFFICULT INTUBATION.</p> <p>K. Kuczkowski, J. Benumof</p>
62	<p>IS EPIDURAL ADMINISTRATION OF MORPHINE SAFE FOLLOWING DURAL PUNCTURE DURING COMBINED SPINAL EPIDURAL ANESTHESIA FOR C-SECTION?</p> <p>C. Patton, M. Lai, S. Ranasinghe, T. Toyama, J. Steadman</p>
64	<p>A NEW CLASSIFICATION OF EMERGENCY LSCS: DOES IT WORK?</p> <p>C. Duke, S. Brayshaw, R. Sashidharan</p>
65	<p>PERIOPERATIVE MORBIDITY IN OBSTETRIC HYSTERECTOMY: ELECTIVE VERSUS EMERGENCY</p> <p>J. Friedman, P. Ramsey, K. Ramin, G. Vasdev</p>
66	<p>IS EPIDURAL OR INTRATHECAL MORPHINE FOR POST C-SECTION ANALGESIA SAFE ON A BUSY POST-PARTUM FLOOR IN A LARGE TEACHING HOSPITAL?</p> <p>C. Patton, M. Lai, J. Steadman, T. Toyama, S. Ranasinghe</p>
67	<p>HOW USEFUL WOULD AUTOTRANSFUSION BE IN THE MANAGEMENT OF OBSTETRIC HEMORRHAGE?: A THEORETICAL ANALYSIS BASED ON HOMOLOGOUS TRANSFUSION PRACTICES DURING CESAREAN SECTION</p> <p>J. Fong, L. Kump, E. Gurewitsch</p>
68	<p>POSTOPERATIVE PAIN AFTER "MINOR" SURGERY (POSTPARTUM TUBAL LIGATION) IS NOT MINOR</p> <p>R. Marcus MD, C. Wong MD, T. Strauss-Hoder MS, J. Maly MD, C. Cummings, M. Avram PhD</p>

69	ILIOHYPOGASTRIC-ILIOINGUINAL (IHH) NERVE BLOCKS MAY OFFER NO BENEFIT AS AN ADJUNCT TO NEURAXIAL MORPHINE FOR POST CESAREAN SECTION (CS) ANALGESIA. J. Schultz, E. Bell, H. Muir, B. Phillips-Bute, J. Reynolds
70	CAN SPINAL ANESTHESIA REDEEM A FAILED EXTERNAL VERSION? G. Cherayil, B. Feinberg, J. Robinson, L. Tsen
71	CHOICE OF ANESTHETIC TECHNIQUE FOR CESAREAN SECTION IN WOMEN WITH PLACENTA PREVIA S. Rutter, A. Marfin, R. Russell, C. Grange
72	EDTA FREE 2-CHLOROPROCAINE AND EPIDURAL MORPHINE R. Gershon, D. Williams, T. Barone

SOAP 2001 Annual Meeting Exhibitors

The Society for Obstetric Anesthesia & Perinatology welcomes and thanks all representatives of industry for their support of this meeting, and for providing education through their exhibits.

Exhibit Hall Hours

Thursday, April 26, 2001 - 7:00am-3:30pm

7:00-8:00am Breakfast w/ Exhibitors
9:30-10:00am Coffee Break w/Exhibitors
12:00-1:00pm Lunch w/ Exhibitors
3:00-3:30pm Coffee Break w/Exhibitors

Friday, April 27, 2001 - 6:30am-3:00pm

6:30-8:00am Breakfast w/Exhibitors
2:30-3:00pm Coffee Break w/Exhibitors

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Anesthesiology News -- Booth #1

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Chirocaine is also indicated for post-operative pain management (continuous epidural infusion or intermittent epidural neural blockade; continuous or intermittent peripheral neural blockade or local infiltration), whereas bupivacaine does not have this indication.

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management trays. Spinal Specialties has built a solid reputatino for quality and service.

Vital Signs, Inc. -- Booth #18

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He also discusses his highlights of Callum's journey. Emmerdale star reveals future of Charity adoption story as she takes maternity leave. We spoke to Michelle Hardwick about the importance of LGBTQ+ representation, as well as what the future holds for Vanessa and Charity.Â Defining LGBT moments from soaps: From the iconic Brookside kiss to transgender leads. Noone does it quite like soapland. Pride Week Quiz: How well do you remember these groundbreaking soap LGBTQ+ storylines? Soap Making Classes & More in Long Beach, in Los Angeles County, offers DIY classes, class supplies and gift certificates: natural beginner's & advanced cold process, hot process & liquid (castile) soap making, lotion making, face/body wash making