The Society For Obstetric Anesthesia And Perinatology was founded in 1968 to provide a forum for discussion of problems unique to the peripartum period. SOAP is comprised of anesthesiologists, obstetricians, pediatricians, and basic scientists who share an interest in the care of the pregnant patient and the newborn.

The mission of the Society is to promote excellence in research and practice of obstetric anesthesiology and perinatology. Through the
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newslette, Internet site, and annual meetings, this Society allows practitioners of several specialties to meet and discuss clinical practice, basic and clinical research, and practical professional concerns.

A membership in SOAP is an opportunity to meet people who share your interests, and to stimulate improvements in health care for pregnant patients.

Editor
Gerald Burger, M.D.

Edited for the Internet
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The Evolution of Obstetric Pain Relief

Part I: Labor Pain, Inhalational Analgesia, Parenteral Analgesia

Pain is one of the primary components of the normal process of childbirth, in humans as well as in many animal species. In a comparison of the severity associated with several painful syndromes including herpes and cancer, labor pain emerged as the most intense! And as evidenced by drawings and statues of primitive peoples, suffering accompanying childbirth has been with us since antiquity and has no bearing on modern culture and civilization. The facial expression of the Mexican goddess Tlazolteotl during the expulsion of her baby is ample proof of her plight.

It is therefore not surprising that attempts at easing labor pain have been made since ancient times. Early Chinese writings described the use of opiates and soporifics as well as the inhalation of hemp. In the middle ages, European parturients kept wine or spirits at their bedside or inhaled mixtures of boiled pharmacologic agents. North American Indians employed drinks made out of roots or leaves of various plants and certain tribes used whiskey in addition.

Labor, in addition, is stressful, physiologically and psychologically. Every effective uterine contraction leads to an increase in cardiac output and left ventricular work and elevations in arterial and central venous pressures. Oxygen consumption and aerobic and anaerobic carbohydrate metabolism increase steadily. There is a tendency to excessive hyperventilation and to increased release of stress hormones, i.e., catecholamines, cortisol and cortisone. These responses not only tax the mother's reserves but may adversely affect the fetus as well as the progress of labor. Excessive hyperventilation is hazardous because the pregnancy-induced increase in oxygen cost of breathing leads to maternal oxygen debt, while the resultant alkalemia shifts the oxyhemoglobin dissociation curve to the left, thereby retarding the release of oxygen from hemoglobin and decreasing the oxygen supply to the fetus. Four minutes of voluntary hyperventilation by healthy parturients in early labor was sufficient to produce a significant (p<0.01) fall in fetal scalp capillary blood oxygen tension. Increased maternal plasma catecholamine levels cause dysfunctional labor as well as uteroplacental vasoconstriction; in fact, a significant inverse relationship has been demonstrated in pregnant sheep between circulating plasma norepinephrine levels and uterine blood flow. Appropriate pain relief, however, will alleviate or even abolish such undesirable reactions. Thus, pain relief during labor accomplishes more than providing comfort for the parturient.

Modern obstetric pain relief began three months after the first successful surgical anesthesia. It was on October 16, 1846, that the dentist William Morton administered ether narcosis at the Massachusetts General Hospital for extirpation of a large vascular tumor on the neck of a young man, and the surgeon John C. Warren exclaimed the famous words: "Gentlemen, this is no humbug!" A letter describing
the details of this event was mailed to England where it arrived on December 17. Two days later, ether anesthesia was employed for a tooth extraction, and two days thereafter for a leg amputation; both operations with complete analgesia and amnesia. When the professor of Midwifery at the University of Edinburgh, James Young Simpson, heard about this "miracle," he immediately set out to employ it in his practice. He was a sensitive, compassionate gentleman who had seriously considered changing his specialty because he could not bear the parturients' suffering. On January 19, 1847, he used ether during a difficult vaginal delivery and, in February, he reported on the success of this and two subsequent cases. He had found the solution for the problems for both his patients and himself.16 In the United States, ether was introduced into childbirth on April 7 of the same year when Professor Walter Channing, the founder of the Boston Women's Clinic, had the physician-dentist N.C. Keep use ether narcosis for the third confinement of Fanny Longfellow, wife of poet Henry Wadsworth Longellow, both of whom declared this to be a "gift from God."17,18 Channing became so impressed with the effect of ether administration that he collected 581 cases of its use in vaginal deliveries which he published under the title "A Treatise on Etherization in Childbirth."19

In the meantime, Simpson observed some disadvantages with ether such as nausea and vomiting and started to test on himself and his family various other volatile agents. In the fall, he found chloroform. At a dinner party in his house, the hosts and their guests inhaled chloroform following the meal. However, instead of experience exhilaration, as expected, they all lost consciousness. Four days later, on November 8, Simpson tried the new agent at a delivery and was so satisfied that, at the end of the month, he had accomplished more than 30 painless births with chloroform which he discussed at a session of the Medical-Chirurgical Society in Edinburgh.20

However, the church and many physicians protested to the use of pain relief for childbirth. In turn, the religious objections were dealt with by reference to the bible, for Genesis 2;21 states that the Lord caused a deep sleep to fall upon Adam while he created Eve out of the man's ribs.

The moral objections were laid to rest by the satisfaction of the recipients of labor analgesia. One of the women was Queen Victoria who, on the advice of her consort, Prince Albert, permitted pain relief for her eighth and ninth confinements. John Snow administered chloroform "a la reine" for the birth of Prince Leopold in 1853 and for Princess Beatrice in 1857. In gratitude and acknowledgment of their achievements, Queen Victoria knighted both Simpson, the compassionate obstetrician and Snow, the first professional anesthesiologist.

Next in the development of obstetric analgesia was the introduction of nitrous oxide by the Polish-Russian physician Stanislav Klikovich.21,22 Following 2 preliminary reports in the 1880 St. Petersburg Medical Journal he published 2 detailed descriptions of his experiences with inhalation of nitrous oxide in 25 parturients. Klikovich manufactured the nitrous oxide himself by heating ammonium nitrate to 240 degrees. He then added oxygen to produce a mixture of 80% N₂O - 20% O₂. This gas mixture was transferred into small vessels, humidified with water vapor before use, and inhaled by the parturient via a mouthpiece made out of wood or hard rubber. Klikovich soon realized that the effect was optimal when the inhalation of the gas began 1/2-1 minute prior to the anticipated contraction and that 2-5 breaths
Evolution

usually sufficed for adequate pain relief. The parturients learned rapidly to manage mouthpiece and inhalation on their own. Klikovich then studied the effect of his gas mixture on the palpation and the use of a tocodynamometer, and observed that nitrous oxide, in contrast to chloroform, does not reduce uterine activity. (Table 1).

Since then, all inhalation agents used for surgical anesthesia had their try-out in obstetrics. Methoxyflurane appeared to be a desirable substitute for nitrous oxide as it could be administered with a very high oxygen fraction, but its adverse renal effects decided otherwise.

Parenterally administered analgesics had their "lifespan" in obstetrics too. Morphine, isolated from opium in 1805, was used for the first time at a confinement in 1837. The obstetrician, a Dr. Washington, pricked the skin of the woman's lower back several times and rubbed the drug inside. Following the invention of the syringe in 1845, morphine injections became rather popular until the placental passage of the drug with its neonatal depressant sequelae were recognized. Yet, morphine's appeal returned in 1902-1906, when it was combined with scopolamine, by two physicians in different countries, Von Steinpuche\textsuperscript{23} in Austria and Gauss\textsuperscript{24} in Germany. The first injection contained both drugs, the subsequent ones only scopolamine. This so-called twilight sleep was employed until the end of world war II despite maternal and neonatal disadvantages. The mothers, although screaming with every contraction, were unaware of their plight as were their husbands who were banned from the Labor Delivery Suite. I shall never forget the young lady who climbed over the bedrail and pushed the baby out on the floor and did not realize for the following 24 hours that she was a parent.

Submitted by:

Gertie Marx, M.D.
Einstein Medical College
(Part 1 of a two part series)

References


Part II: Regional Techniques

The introduction of regional analgesia-anesthesia into obstetric practice took place at the turn of the century, one year after the German surgeon August Bier described six lower extremity operations rendered painless by means of "cocainization of the spinal cord". Impressed with these results, and even more so with those of the Parisian surgeon Tuffier whose 63 surgical procedures included lower abdominal operations, Oskar Kreis, a young obstetrician at the Women's Clinic in Basel, Switzerland, began to employ the surgeon's technique in parturients. He injected 0.01 gram of cocaine intrathecally at the L4-5 interspace and observed complete pain relief within 5-10 minutes. He related his experiences with the first six women in a publication entitled "Regarding Medullary Narcosis in Parturients" and concluded as follows: "The impression gained from the medullary narcosis in parturients is remarkable. Loss of sensation to pain with maintained mobility and unclouded sensorium is most unusual." Like Bier and Tuffier, he observed no serious complications; vomiting and headache, however, occurred frequently.

The first cesarean section under spinal block was performed in Paris by the obstetrician Doleris who spoke in "glowing terms of its usefulness in such cases because of the prompt and vigorous uterine contractions." In the US, S.R. Hopkins from Springfield, Illinois, reported in 1902 on the "superiority of spinal anesthesia over ether or chloroform in cases of cesarean section, because of the relaxed uterine muscles likely to be obtained with the patient anesthetized with either of the two latter methods." He injected "one-third grain of cocaine hydrochloride," dissolved in spinal fluid, and believed that this method accounted for the rarity of the usual post-anesthetic complaints of headache and vomiting.

In 1905, novocaine (procaine) was introduced into clinical practice by the German surgeon Braun and rapidly replaced cocaine as the local anesthetic employed, not only for spinal block but for all existing and subsequent techniques.

Then, in 1928, two American obstetricians, Pitkin and McCormack, presented a method for "controllable" spinal block for labor and vaginal delivery. Rendering the anesthetic solution hyperbaric by using a 40% instead of 10% Novocaine solution with the addition of glucose, they produced a "limited" blockade allowing the parturient to repose in a semi-reclining position throughout delivery. This so-called "saddle" block completely anesthetized cervix, vagina, perineum and sphincters while leaving sensation of the uterus unimpaired. For many years thereafter, despite introduction of newer regional techniques, saddle block remained the anesthetic par excellence for vaginal births and regular spinal block for abdominal deliveries.
In 1909, the German obstetrician Stockel reported on his experience in parturients with caudal anesthesia, a technique he had learned from a French urologist. He injected 30-50 milliliters of novocaine-adrenaline solution into the sacral canal and found the effect to surpass his expectations. "The pain of contractions disappeared while their strength remained unchanged; exit of the fetus was so painfree that the parturient did not notice it." Sixteen years later, paracervical block was evaluated in 30 deliveries by the gynecologist Gellert who found the method successful. The block interrupts the fibers that carry the pain of the uterine contractions and the stretching of the cervix. Although technically easy, the method has lost favor, as the proximity of the site of injection to the fetoplacental unit increases the risk of fetal distress due to uterine vasoconstriction and/or high fetal blood levels of local anesthetic. One year later, paravertebral block was described by two Italian physicians, Dellepiane and Badino, who had observed relief of labor pain following infiltration of the sympathetic chain at the level of the third lumbar vertebra. This technique did not become popular, most likely because it entails two rather uncomfortable needlesticks. However, it induced the American physiologist John Cleland to undertake experiments on female dogs and cats, the results of which were later confirmed in laboring women. He observed two components to be responsible for the discomfort of labor: fibers of the 11th and 12th thoracic segments for the pain of contractions and as yet undetermined sacral nerves for the pain of cervical dilation. He therefore recommended the combination of paravertebral and caudal block. It was John J. Bonica who, during a sabbatical leave in Mexico City, examined more than a thousand healthy women in labor and reported on the actual nerve distribution, namely T 10-L 1 for the first stage and S 2-4 for the second stage.

Lumbar extradural block was the last important regional anesthetic method introduced into obstetrics. The technique was first employed by the Italian surgeon Dogliotti who published his experience with combined lumbar and thoracic extradural anesthesia for abdominal procedures in 1931. Seven years later, Graffagnino and Seyler, gynecologists in New Orleans, reported their results with lumbar extradural analgesia in parturients. They used a spinal needle connected with a small glass container half filled with sterile water which was "sucked up" by the negative pressure in the extradural space - the initial "loss of resistance" test!

The 1940's saw the development of continuous regional analgesia-anesthesia, developed in the same order as the original single-injection method, first spinal (1940), then caudal (1942) and lastly lumbar extradural block (1949). Continuous caudal block, introduced by the anesthesiologist Hingson, rapidly became very popular. Early on malleable needles were used and later rubber catheters. The malleable needles, made of nickel alloy, were bent up over the sacrum before taping. They caused no discomfort as the hub was no wider than the shaft, but this tended to favor a breakage between the two parts, occasionally necessitating surgical removal under fluroscopy - of course without charge. Malpractice suits did not ensue as the women were too happy with their painfree childbirth to worry about a small scar on the lower back. Then, in the late 1950's to early 1960's, lumbar extradural block took over as the preferred technique. Lumbar extradural block offers various advantages over caudal analgesia. First, performance of the lumbar block is more comfortable than the caudal approach. Second, the lumbar technique allows for separate blockade of the segments involved in the pain of the first stage of labor and those of the second stage, thereby reducing the dose of local anesthetic as well as the extent of motor and sympathetic
blockade. Third, the lumbar block can be employed for cesarean section anesthesia, both de novo or with cephalad extension of labor analgesia.

With the increasing use of lumbar extradural blockade, spinal anesthesia fell into disfavor because of the possibility of a postdural headache - despite its advantages of reliability of technique, rapid onset of action, low dose of anesthetic and, consequently, low fetal drug levels. However, since the onset of extradural anesthesia is slow, it became the edict of the 1970s that emergency cesarean sections demanded the administration of general anesthesia. This, in turn, led to an unacceptable increase in maternal morbidity and mortality due to intubation difficulty and/or pulmonary aspiration of gastric contents. Fortunately, two scientific reports published in 1984 demonstrated advantages of spinal anesthesia for both mother and fetus. Brownridge (Flint University, Adelaide, Australia) reviewed 442 cases of subarachnoid block in gravid women and concluded that "spinal block was particularly valuable when anaesthesia was required urgently in the labour and delivery suite, and may even be regarded as the anaesthetic of choice in such circumstances." Marx and her associates (Albert Einstein College of Medicine, The Bronx, New York) compared preoperative fetal scalp blood and umbilical artery blood pH data in 126 emergency cesarean sections undertaken for fetal distress. The scalp blood samples were obtained within 20 minutes before the onset of surgery and the umbilical artery bloods prior to the infant's first breath. General anesthesia was chosen by 71 mothers, spinal block by 33, and in the remaining 22 women an existing extradural block was extended cephalad. There was no significant difference in scalp capillary blood pH values between general and regional anesthesia cases. Nor were there significant differences in skin incision-to-delivery or uterine incision-to-delivery intervals in the two groups. Yet, umbilical artery blood pH values were higher than the last scalp blood pH data in significantly more regional than general anesthesia cases (80% vs 60%, p<0.01), and the one-minute Apgar scores were significantly (p<0.01) better in the former group. Most likely, the lower maternal catecholamine blood levels following regional blockade accounted for the better fetal/neonatal conditions, for the lower the maternal noradrenaline levels are, the higher is the placental blood flow.

Spinal block has also had a rebirth in the management of labor and vaginal delivery, particularly since the new pencil-tip spinal needles have decreased the incidence of post-dural puncture headaches and the use of local anesthetic and/or narcotic has reduced the magnitude of motor and sympathetic block.

Most recently, combined spinal-extradural analgesia has been introduced for labor and vaginal delivery and combined spinal-extradural anesthesia for cesarean section. The advantage lies in the rapidity of action and the possibility of maintaining prolonged pain relief. On the negative side is the early onset of sympathetic blockade and the difficulty in evaluating the extradural "test-dose."

In conclusion, availability of different anesthetic techniques and different anesthetic and narcotic drugs has helped to reduce anesthesia-related maternal morbidity and anesthesia-induced fetal effects. There remains no doubt that a regional technique, whenever medically feasible, is superior to general anesthesia, not only because of its greater safety but also because it permits mother and father to enjoy the birth of their baby.

Gertie Marx, M.D.
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With access and usage of the Internet continuing its explosive growth, more and more of our patients will be seeking information about pain relief in childbirth from world wide web resources. In a recent cursory search of the Internet I found more than ten website references for labor analgesia documents in addition to the SOAP Home Page. In reviewing these sites I was amazed at the misinformation and distorted image many of these sites paint about epidural and spinal analgesia for labor & delivery. These websites, authored by childbirth educators, doulas, and midwives concentrate on the complications of regional analgesia reported through case reports from the medical literature, non-medical journal reviews and hearsay reporting. All complications associated with regional analgesia for childbirth are given equal weight without any mention of denominator (i.e. fetal or maternal death occurs as often as hypotension). Very little is mentioned of the benefits and efficacy of regional analgesia for labor or its safety. I was initially tempted to challenge these sites through discussion group comments and e-mail, but after further thought I decided that the best way to fight this misinformation would be with our own educational website directed to our patients, obstetric care providers and our non-anesthesiologist colleagues. Your Board of Directors have agreed to support a SOAP-sponsored web presence featuring:

- descriptions of the techniques available for analgesia for childbirth contrasting the advantages & disadvantages of each,
- a frank discussion of the benefits & risks of modern regional analgesia techniques for labor & delivery,
- electronic links to other informational resources for childbirth,
- educational materials (handouts, pamphlet templates, slide presentations) to be used by community anesthesiologists, childbirth educators, and non-anesthesiologist health care providers to educate their patients,
- a forum for fielding questions & concerns about labor analgesia.

Development of this website will be a combined effort of the Education Committee and The Publications & Public Relations Committee. SOAP members are encouraged to send me any patient information they presently distribute. From your contributions we will gain a sense of what you think is important to communicate to our patients.

We plan on establishing the site during 1997 to coincide with the 150th Anniversary of Obstetric Anesthesia and if all goes as planned showcasing the site at the ASA in San Diego to compliment the ASA’s recognition of OB Anesthesia & SOAP.

Thanks ahead for your assistance and support of this exciting project! Remember, we need your patient
Anesthesia for Emergency Deliveries

As Chair of the ASA Committee on Obstetrical Anesthesia and the current liaison to ACOG, I am asked frequently by colleagues to help resolve questions about policies for emergency general anesthetics. I hope the following ACOG Committee Opinion, Anesthesia for Emergency Deliveries, will help you in your dealings with your obstetric colleagues.

Joy Hawkins, M.D.
Chair, ASA Committee on Obstetrical Anesthesia

Anesthesia for Emergency Deliveries

Failed intubation and pulmonary aspiration of gastric contents continue to be leading causes of maternal morbidity and mortality from anesthesia. The risk of these complications can be reduced by careful antepartum assessment to identify patients at risk, greater use of regional anesthesia when possible, and appropriate selection and preparation of patients who require general anesthesia for delivery.

ANTEPARTUM RISK ASSESSMENT

The obstetric care team should be alert to the presence of risk factors that place the parturient at increased risk for complications from emergency general or regional anesthesia. These factors include, but are not limited to, marked obesity, severe facial and neck edema, extremely short stature, a short neck, difficulty opening the mouth, a small mandible, protuberant teeth, arthritis of the neck, anatomic abnormalities of the face or mouth, a large thyroid, asthma, serious medical or obstetric complications, and a history of problems with anesthetics.

When such risk factors are identified, a physician who is credentialed to provide general and regional anesthesia should be consulted in the antepartum period to allow for joint development of a plan of management including optimal location for delivery. Strategies thereby can be developed to minimize the need for emergency induction of general anesthesia in women for whom this would be especially hazardous. For those patients at risk, consideration should be given to the planned placement in early labor of an intravenous line and an epidural or spinal catheter, with confirmation that the catheter is functional. If a patient at unusual risk of complications from anesthesia is identified (eg, prior failed intubation), strong consideration should be given to antepartum referral of the patient to allow for delivery at a hospital which can manage such anesthesia on a 24-hour basis.

EMERGENCY ANESTHESIA
The need for expeditious abdominal delivery cannot always be anticipated. When preparing for the rapid initiation of anesthesia, the maternal as well as the fetal status must be considered. Oral nonparticulate antacids should be administered immediately prior to the induction of general or major regional anesthesia to decrease the mother’s risk of developing aspiration pneumonitis.

Although there are some situations in which general anesthesia is preferable to regional anesthesia, the risk of general anesthesia must be weighed against the benefit for those patients who have a greater potential for complications. Examples of circumstances in which a rapid induction of general anesthesia may be indicated include prolapsed umbilical cord with severe fetal bradycardia and active hemorrhage in a hemodynamically unstable mother.

In some cases, a nonreassuring fetal heart rate pattern is diagnosed as "fetal distress," and delivery is performed immediately. The term "fetal distress" is imprecise, nonspecific, and has little positive predictive value. The severity of the fetal heart rate abnormality should be considered when the urgency of the delivery and the type of anesthesia to be administered are determined. Cesarean deliveries that are performed for a nonreassuring fetal heart rate pattern do not necessarily preclude the use of regional anesthesia.

Return to Newsletter Highlights
Physician Alert

The following "Alert" appeared in a bulletin from United Healthcare to their members. It is included in its entirety along with a letter from Dr. Sheila Cohen, SOAP President.

Epidural Analgesia/Anesthesia Guidelines

History

In September 1990, the U.S. Department of Health and Human Services issued a document known as "Health People 2000: National Health Promotion and Disease Prevention Objectives."

Among its many projections for improving the health of the nation was the recommendation that Cesarean delivery rates be reduced to no more than 15 percent.

In 1995, MetraHealth evaluated its Cesarean section rate of its members and found it to be more than the stated goal of the National Health Promotion and Disease Prevention Objectives. To reduce our C-section rate, we examined the variables that may have contributed to the incidence of Cesarean section. The goal was to modify those variables to produce better practices and reduce the need for this procedure.

The Variable Identified:

Epidural use was the variable we studied.

The Epidural Analgesia/Anesthesia Population Study

In October 1995, MetraHealth Care plan of California completed the "Epidural Use and Delivery Outcomes" study. Although epidural analgesia/anesthesia has been proven to safely relieve labor pain, studies suggest that epidural analgesia/anesthesia use prolongs labor and increase the incidence of Cesarean Section, especially if it is administered before five centimeter cervical dilation (Thorpe, et.al., 1993). Other authorities, (i.e., Chestnut, et.al. 1994) have shown information to the contrary.

Our study concluded that epidural anesthesia was associated with significantly higher C-section rates in a primiparous population.

Consensus Panel

After reviewing the Metra Health study, "Epidural Use and Delivery Outcomes"; reviewing literature outlined in the report, and other articles available to panel participants; and participant’s personal experience, an evidence-based guideline was developed.

The recommendation was graded in accordance with the Canadian Task Force on Periodic Health Examinations, CMAJ April 1, 1986 pp. 722-723. The grading recognizes the quality of evidence and the classification of the recommendation.

**Epidural Analgesia/Anesthesia Guideline**

Epidural is safe and may be a superior labor analgesic when compared with narcotics; however, patients should be informed that epidural analgesia may increase the risk of Cesarean birth in first labors."

**Guideline:**

Delay placement of epidural until five centimeters of cervical dilation has occurred to reduce the risk of Cesarean section.

The consensus panel recommendation was reviewed and approved at the April 1996 MetraHealth of California Medical Advisory Committee meeting.

**Guideline Application**

All MetraHealth contracted obstetricians and gynecologists, primary care physicians and medical directors of IPAs and Medical Groups will receive this guideline. They are asked to implement the guideline with anesthesiologists who administer epidural analgesia/anesthesia. The suggested implementation date is Aug. 1, 1996.

In October 1996, obstetricians will be surveyed to determine if they and anesthesiologists are observing the guideline.

**Guideline Follow Up**

A rate based analysis of deliveries between Sept. 1 1996 and Feb. 28, 1997 will be conducted in May 1997 to determine if application of the guideline resulted in a decrease in Cesarean section rates from 1995 and 1996.

**Questions and Comments**

Comments about the guideline are encouraged. Please contact the Southern California market
Dr. Cohen's Response to Dr. Charney

Dear Dr. Charney,

The attached United Healthcare Epidural Analgesia/Anesthesia Guidelines were forwarded to me by one of the members of the Society for Obstetric Anesthesia and Perinatology, of which I am currently the president. I am writing in response to your request for comments.

Of the many factors which might affect the cesarean section rate, I am disappointed that your company chose to focus only on epidural use as the studied variable. You appear to have selectively accepted Thorp’s studies, and ignored the excellent studies by Chestnut, which prospectively assigned women to early versus late epidural and found no difference whatsoever in the cesarean rate. Of note in Chestnut’s studies was the significant difference in the cesarean section rate between women in spontaneous labor and those in induced or augmented labor, suggesting that it is the dysfunctional (and more painful) labor which necessitates both the epidural and the cesarean section. Thus, there is an association, rather than a causal relationship between epidural analgesia and cesarean section.

Furthermore, you have not chosen to study the other important variables which have been shown to affect the cesarean rate or delivery outcome, e.g., obstetric management, patient population, maternal age, and concentration of drugs used in the epidural analgesic. Epidural analgesia is not a generic product. The drugs and regimens used in Dr. Thorp’s practice differ markedly from those used by me and many of our society’s members. In my own institution (Stanford University Hospital) we use minimal doses of local anesthetics with epidural opioids, allowing "light" analgesia that allows patients to "push" well during the second stage of labor. Patients can often walk to the bathroom with these blocks. Also, to maximize the chance of a spontaneous delivery, arbitrary time limits are not placed on the second stage of labor. The mother is allowed to experience a longer second stage providing mother and baby are doing well and progress is being made. With such techniques and a 70% epidural rate, our cesarean section rate is approximately 16%. This is very low, considering the proportion of high risk cases we have as a Level III Perinatal Center. All healthcare providers at our institution, i.e., obstetricians, anesthesiologists,
nurses and midwives expect that the mother will deliver normally with her epidural, unless she has other complications that themselves merit intervention.

Your company’s action perpetuates the opposition to pain relief for women in labor that at times has had religious and moral overlay. There is no other situation in the "civilized world" that raises debate as to whether or not to relieve severe human suffering. Many women experience excruciating pain in early labor. Indeed, those who rate their pain as the most severe are those who (independent of anesthesia) are likely to have the most dysfunctional labors (Wuitchik M, et al. Obstet Gynecol 73:35-42) and therefore need a cesarean section.

In China, where no pain relief is available for childbirth and women have only one child, the cesarean section rate approaches 30-40% in the large cities. What part does convenience and unrelieved pain play in the decision to perform a cesarean in these probably long, difficult, nulliparous labors? Several North American studies also have shown that rates for vaginal birth after previous cesarean (VBAC) increase when women are offered epidural analgesia during a difficult second labor. Properly performed regional anesthesia with appropriate obstetric management should cause little, if any, effect on delivery outcome.

Why not focus on educational programs to optimize your obstetricians’ and anesthesiologists’ management of labor and analgesia rather than sentencing women to hours of severe pain? Currently available narcotics provide inadequate analgesia for many women and predispose to maternal sedation and maternal and neonatal respiratory depression.

I am enclosing a handout from a recent lecture I gave at a California Society of Anesthesiologists meeting. It contains several important references. I urge you to broaden the scope of your attack on the cesarean section rate, rather than focusing only on epidural analgesia. I would be happy to participate in any educational efforts your company might undertake. I hope that if the cesarean section rate does not fall substantially next year as a result of your new policy, you will revoke it and once again offer your female plan members appropriate and timely analgesia. Regardless of the outcome, our society would welcome receiving a copy of your results.

You can reach me at Stanford at (415) 723 5439 if you would like to discuss this further.

Yours sincerely,

Sheila E. Cohen, M.B.
President, Society for Obstetric Anesthesia and Perinatology
The Society for Obstetric Anesthesia And Perinatology was founded in 1968 to provide a forum for discussion of problems unique to the peripartum period. SOAP is comprised of anesthesiologists, obstetricians, pediatricians, and basic scientists who share an interest in the care of the pregnant patient and the newborn.

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A membership in SOAP is an opportunity to meet people who share your interests, and to stimulate improvements in health care for pregnant patients.

Our Website is a Resource for Anesthesiologists, Obstetricians, Mothers of the Future and their Families...

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Celebrating Over 150 Years of Obstetric Anesthesia

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To the Editor:

October 25, 1996

I think that we can all appreciate Dr. Thorp’s contribution to the Clinical Forum on the effects of epidural analgesia on labor outcome (SOAP Newsletter, Fall 1996), even if we disagree with his conclusions. At the same time, it is our duty to confront several of his comments that can only be described as outrageous. I refer specifically to his suggestion that "health care providers (read ‘obstetric anesthesiologists’), in the interests of promoting a new subspecialty in medicine, have been less than forthcoming than they should be with consumers about disclosing evidence that epidural analgesia may have important adverse effects." In its simplest form, this insinuates that obstetric anesthesiologists are uniformly willing to underestimate the risks of epidural labor analgesia for the sole purpose of self-advancement, either financial or academic. I find this accusation reprehensible and personally offensive. Dr. Thorp owes our Society an apology.

By the way—does Dr. Thorp disclose evidence to consumers that epidural analgesia may have important beneficial effects? Or does he assume that this data has been fabricated in order to promote a new subspecialty in medicine?

Sincerely yours,

David Wlody, M.D.
Clinical Associate Professor of Anesthesiology
State University of New York Health Science Center at Brooklyn

Editor's Note: This is Dr. Thorp’s response to the previous letters from Drs. Camann and Chestnut, and Drs. Hepner, Gaiser, Cheek and Gutsche. I think you’ll find it interesting!

To the Editor:

I would like to thank Dr. Valerie Arkoosh for the invitation to write the article entitled "Epidural Analgesia In Labor" for the last SOAP Newsletter. I would also like to thank Dr. David Birnbach and the rest of the Society for the invitation to the SOAP National Meeting in Bermuda this April. I look forward to seeing some old acquaintances and making some new ones. I am impressed with your hospitality and also with your willingness to allow me to express some of my views on this particularly controversial
topic, both in this Newsletter and at the meeting. Epidural is the most effective method of pain relief during labor and we (OB & Anesthesia) have a common mission: as care providers we must work together to limit its adverse effects. The strong potential influence that epidural has on labor and delivery is multifactorial; it is related to numerous anesthetic and obstetrical variables. In the last 15 years we (OB & Anesthesia) have made great strides in our knowledge regarding optimal obstetrical practice and epidural technique that limit these consequences. The optimal technique and obstetrical management can only result from continued interaction, communication and joint research. Dr. William Camann and Dr. David Chestnut took the two references from my letter out of context. It is really quite irrelevant who gets credit for either of these eloquent quotations. Since I could not claim credit, I referenced both of them. These quotations were simply mentioned in my letter in order to demonstrate two very legitimate but contrasting viewpoints. Many of our patients may relate to one of these viewpoints more than the other and we as care providers should respect this.

The comments from Drs. Hepner, Gaiser, Cheek and Gutsche are appreciated. Most experts would not equate hyperventilation and/or hypocarbia with morbidity. Painful labor does result in elevated catecholamine levels and this alone does not cause fetal hypoxia, fetal distress or other morbidity. Dr. Chalmers in his LANCET communications states that obstetric anesthesiologists are not as forthcoming as they should be with consumers about the risks of epidural.1 Dr. Chalmers' conclusion probably results from some anesthesiologists who categorically reject the large amount of published data and maintain that epidural has never influenced labor and delivery. I completely agree with Drs. Hepner, Gaiser, Cheek and Gutsche in that great strides have been made as a result of important research. Indeed, there have been dramatic modifications in the epidural technique which have undoubtedly limited some adverse effects. These researchers (including Dr. David Chestnut and Dr. William Camman) should be commended in this regard. Drs. Hepner, Gaiser, Cheek and Gutsche ask about a difference between parturients in Iowa City and Kansas City. Using a nearly identical epidural technique, the CS for dystocia rate was actually similar in the Iowa City study (17/97, 18%) compared to the Kansas City study (8/48, 17%).2 Finally I wholeheartedly agree that prospective trials randomizing patients to epidural and non-epidural groups should be pursued.

I would like to thank members of this Society and their leaders for allowing me the opportunity to express my opinions in your letter and also at your Annual Meeting.

James A. Thorp, M.D.
Associate Director, St. Lukes Perinatal Center
Associate Professor, University of Missouri at Kansas City

References:


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Two of the greatest challenges facing budding researchers today are: 1) restricting investigative focus and 2) determining an appropriate sample size. These two concepts are interrelated. More simply, determining the number of patients to examine in a study designed to investigate multiple aspects of a particular area of interest is not an easy task. In this era of limited research time, the rush to get as much out of a particular study as possible may be counter productive. Complex, multifaceted studies are difficult to design, perform, analyze, write up and ultimately to understand. This short column is written to give some guidance to young or troubled investigators regarding research focus and population size selection.

Without a hypothesis, an investigator can often lose sight of the premise of his or her research. Moreover, this hypothesis is crucial to the design of a study. By restricting the focus from a plan for a life's worth of work (e.g., regional anesthesia and neurological injury) to a smaller, more confined area that can be performed in a reasonable time period (e.g., transient radicular irritation in patients receiving spinal lidocaine 5% vs. spinal bupivacaine 0.75%), one's success in research can be enhanced. Many good ideas never get out of the laboratory or investigators are not able to recruit enough patients because of a complicated design resulting from a complex multifaceted hypothesis. This does not, however, imply that a restricted hypothesis should confine one's observations during the performance of a study. Side effects, benefits, disadvantages, etc. that were not anticipated may surface and should be analyzed and presented. However, it is the all important hypothesis that allows one to control his or her ideas, design his or her study and calculate the population size to be studied; our next topic.

"How many patients do we need to study to show whether drug A is better than drug B in treating condition X?" How often have you asked yourself this question? If you have not, has your IRB? Most IRBs (institutional review boards) will require that you establish and justify a population size for any study you propose. They do this to protect patients from dangerous and frivolous research. Establishing a sample size helps an IRB to make its assessment of safety in one of two ways. One is by determination of the sample size from prior studies using similar techniques and/or design with demonstrated safety. The other is through restricting patient numbers in pilot or preliminary studies. If no prior data exist on which to make a population size determination, then data must be obtained. These studies are limited to small numbers, generally 10-15 patients per group to find the data necessary to decide. After these data are obtained, the IRB will require the investigator to resubmit a population size determination to continue a study to completion.

So how do you make this determination? Let us use an example: Your hypothesis is that administration of intraspinal sufentanil decreases the incidence of post dural puncture headaches (PDPH) in parturients. Your examination of the literature reveals an incidence of 8% with a 25-gauge Whitacre needle in this population. Work in non-pregnant populations with spinal morphine reveals a 75% reduction in the incidence of PDPH. If these data are extrapolated to this study, an incidence of < 2% could be hypothesized in the pregnant population when sufentanil is used. To determine the number of patients
you would need to assess statistical significance to a particular level (e.g., $p < 0.05$) and power (e.g., 0.80) you have several options. There are tables in statistical texts (e.g., Fleiss JF, Statistical Methods for Rates and Proportions, 2nd ed., New York: John Wiley & Sons, 1981) to figure out population size using proportions (for our example, 2% vs. 8%). An easier method is now available using proprietary software such as SigmaStat (Jandel Scientific Software, San Rafael, CA) or nQuery Advisor (Statistical Solutions, Boston, MA). For our example, 239 parturients would be required in each group to establish significance at the $p < 0.05$ level and a power of 0.80 to detect a difference of 2% versus 8%. These software packages also make sample size determination easy when pilot study results are obtained. Sample size menus, for either package, allow the user to select the type of statistical analysis they will wish to perform (e.g., t-test) and then after entering the means, standard deviations, desired level and power, calculate the required sample size.

The purpose of this short description of hypothesis restriction and population size is to enhance the abilities of the members of our society to publish in a peer reviewed journal. This discussion in no way supercedes a good understanding of statistical method and experimental design. Individuals without such background can obtain statistical advice from colleagues or statistical consultants. SOAP has a statistical consultant available for members to answer these and other types of statistical questions.

Norm Herman, M.D.
San Antonio, TX

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Welcome New SOAP Members!

**December - March 1997**

Susan M. Anderson, BM, Brightwood, VA  
Pamela A. Atkinson, MD, Voorhees, NJ  
James N. Bates, MD, PhD, Iowa City, IA  
Gordon A. Beardwood, MD, Boston, MA  
Bruce W. Beauchamp, DO, Elkins, WV  
Glenn A. Becker, MD, New York, NY  
Julie Bedard, MD, Sillery, Qu, Canada  
Ellis J. Berzon, MD, Arlington, VA  
Frances Boyette, MD, Montgomery, AL  
Anthony L. Braida, MD, Monclova, OH  
Paul C. Chalmers, MD, Ballston Lake, NY  
Young Kyun Chung, MD, Geong-Sang Namdo, Korea  
Gregory Collins, MD, Edwardsville, IL  
Robert J. Corba, DO, Philadelphia, PA  
Stephen B. Corn, MD, Sharon, MA  
Owen G. Ellis, MD, San Diego, CA  
Skina H. Fadel, MD, PC, Augusta, GA  
Meredith L. Fisher, MD, Boston, MA  
Cathryn A. Fogel, MD, Bolton, CT  
Mihai A. Galea, MD, Brooklyn, NY  
Elizabeth A. Gamble, MD, Cumberland, RI  
Margaret B. Garahan, MD, South Burlington, VT  
Philippe Gautier, MD, Brussels, Belgium  
Scott E. Glaser, MD, Hinsdale, IL  
Edward P. Grimes, MD, Chicago, IL  
Margaret J. Haig, MD, Montreal West, PQ, Canada  
Joe M. Haskins, MD, Chatta, TN  
Paul J. Heller, MD, Baltimore, MD  
Amy Beth R. Hilton, MD, Durham, NC  
Scott S. Johnson, MD, Wichita, KS  
Dae M. Kang, MD, Salt Lake City, UT  
J. J. Kazalski, DO, Lebanon, NH  
Lance J. Kekoler, DO, Herndon, VA  
Gardner T. Kenny, MD, Carbondale, IL  
Dong Hyun Kim, MD, Ogden, UT  
Victor F. Kubit, MD, Pittsburgh, PA  
Sumedha V. Kulkarni, MD, Englewood Cliffs, NJ
New SOAP Members

Oswaldo E. Lastres, MD, LaGrange, IL
Scott W. Lauer, MD, Seattle, WA
Ellen M. Lockhart, MD, St. Louis, MO
Karen D. Lucas, CRNA, Barnhart, MO
Ted MacKinnon, MD, FRCP(c), London, On, Canada
Roger J. Mah, MD, Piedmont, CA
Emil J. Menk, MD, Charlotte, NC
William L. Millman, MD, London, On, Canada
Lakshmi Murthy, MD, Horsham, PA
Ned F. Nasr, MD, Chicago, IL
Michael A. Natale, MD, Boston, MA
Kenneth E. Nelson, MD, Winston-Salem, NC
Kateel N. Pai, MD, Crawfordsville, IN
Carol L. Pattee, MD, Kingston, On, Canada
M. Brett Pillow, MD, Denver, CO
Rhonda A. Press, MD, New York, NY
Michael R. Sanchez, MD, Somerville, MA
Thomas Schares, MD, Linz, Austria
Rod D. Schultz, MD, Saskatoon, Canada
Poonam Sehgal, MD, Boston, MA
Michael J. Sendak, MD, Baltimore, MD
Mukesh K. Shah, MBBS, Singapore, Singapore
Junita E. Sidawi, MD, Dallas, TX
Paul T. Slavchenko, MD, Whitby, On, Canada
Lecia E. Spriggs, MD, Jackson, MS
Halina M. Stavin, MD, Rexford, NY
Scott A. Stewart, MD, Needham, MA
Leslie A. Stuart, MD, Davis, CA
Laurence S. Susser, M.D., New York, NY
Michael A. Swanson, MD, Davenport, IA
Jordan Tarshis, MD, Boston, MA
Gloria B. Valdez, MD, Oakland Gardens, NY
Thomas K. Via, MD, Columbus, OH
Tracey M. Vogel, MD, Foster City, CA
Helen A. Vosu, MD, Toronto, On, Canada
Gilles Wattrisse, MD, Roubaix, France
Ellen B. Whalen, MD, Ghent, NY
Olive C. Wilkin, MD, Columbus, OH
Andrea R. Williams, MD, Folly Beach, SC
Gary R. Wright, DO, Carmel, IN
Kimberly J. Yamanouchi, MD, Dallas, TX
Charles I. Yang, MD, Washington, DC
New SOAP Members

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SOAP 30th Annual Meeting
Hyatt Regency Vancouver
Vancouver, British Columbia
April 29 - May 2, 1998

SOAP 31st Annual Meeting
Denver Marriott City Center
Denver, Colorado
May 19 - 22, 1999

SOAP 32nd Annual Meeting
Queen Elizabeth Hotel
Montreal, Quebec, Canada
May 31-June 3, 2000

For information contact:

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FAX: (804) 282-0090
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Obstetric Anaesthetists Association (OAA)

December 1-3, 1997
Course on obstetric anaesthesia and Analgesia, London

May 7-8, 1998
OAA Annual Meeting, Harrogate
April 22-23, 1999
OAA Annual Meeting, Liverpool

For information contact:

OAA Registrations
P.O. Box 3219
London SW13 9XR
United Kingdom
PH: (011) 44 181 741-1311
FAX: (011) 44 181 741 0611

2nd World Congress on "Labor and Delivery"

The 2nd World Congress on "Labor and Delivery" will be held May 6-9, 1997 in Rome, Italy. The congress is open to Perinatologists, Obstetricians-Gynecologists, Pediatricians-Neonatologists, Anesthesiologists, Midwives, Nurses, Physiotherapists, Allied Specialists and all those involved in research, teaching and care of our women and babies in the delivery room. Registration and Abstract deadline is April 15, 1997.

For more information contact Secretariat, Mrs. Paola Chiacchietta, Mrs Carla Belloni, 2nd Institute of Gynecology and Obstetrics University "La Sapienza", Viale Regina Elena, 324, I-00161 Rome ITALY; Ph: +39 (6) 446.04.84; Fax: + 39 (6) 446.91.28; Email: perinat@flashnet.it

Yale University School of Medicine

The Department of Anesthesiology has an opening for a board eligible/board certified Obstetric Anesthesiologist. All interested candidates must have fellowship (CA-4) training in obstetric anesthesia and be eligible for Connecticut licensure. Yale University is an Equal Opportunity/Affirmative Action Employer with a strong institutional commitment to achievement among its faculty and staff. The Department encourages applications from all suitable candidates and is interested in receiving names of three (3) references to Ferne Sevarino, M.D., Section Chief, Department of Anesthesiology, 333 Cedar Street, P.O. Box 208051, New Haven, CT 06520-8051. Applications will be accepted through May 31, 1997.

Obstetric Anesthesia Fellows and Training Program
Illinois
University of Chicago
Michael F. Roizen, M.D.
Department of Anesthesia and Critical Care
5841 S. Maryland Ave., MC 4028
Chicago, IL 60637
Current Fellow: Michele E. Freind, D.O.

University of Chicago CA-4 Fellowship

The Department of Anesthesia and Critical Care at the University of Chicago is offering a one year (CA-4) Fellowship position in Obstetric Anesthesia beginning July, 1997. We have 3,000 deliveries per year and serve as a high risk referral center for both obstetrics and neonatology. Fellows will have opportunities to attend all didactic conferences in one of the best residency training programs in the country, to educate residents in both didactic and clinical settings, to actively participate in clinical research activities, and to develop an independent research project. Inquiries should be submitted to Theresa Cumming, Residency Coordinator, University of Chicago, Department of Anesthesia and Critical Care, 5841 S. Maryland Ave, MC4028, Chicago, IL 60637; (773) 702-6842.

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