

This newsletter was produced during the initial aftermath of Hurricane Katrina. For up-to-date information, please refer to the ASA (www.asahq.org) and SOAP (www.soap.org) websites for current meeting information.

Newsletter
Newsletter



Society for Obstetric Anesthesia and Perinatology

www.soap.org

Fall 2005



William R. Camann, MD

President's Message

Greetings to all, and best wishes that everyone is enjoying a terrific summer. It was great to see all of you at the Annual Meeting in Palm Desert, and I look forward to even greater attendance and excitement at our next meeting in Miami. As I assume the presidency of this organization, I wish to thank the membership for electing me, and the other members of the Board of Directors and various committees for their support, encouragement and hard work. It is truly all of you who make SOAP, and obstetric anesthesia, a great society and specialty.

"...we as obstetric anesthesiologists are on the dawn of the most exciting years in our existence."

My message for this edition of the newsletter will be to develop the theme that obstetric anesthesia, and our society in particular, has matured to a level of distinction and respect unforeseeable even in recent years. In my opinion, and I will support this opinion with examples, we as obstetric anesthesiologists are on the dawn of the most exciting years in our existence. One of the most encouraging aspects of SOAP now is our active outreach to other societies, and, at least if not more encouraging, is the outreach of other societies towards us.

Most of us are well aware of the fantastic efforts of our new International Outreach Committee, ably chaired by Medge Owen, from Wake Forest University. Medge and the other committee members' work have brought the message of safe obstetric pain relief to cultures around the world where, until now, such concepts were unheard of. For example, the introduction of regional anesthesia for labor and cesarean delivery last year in Turkey, spearheaded by Dr. Owen's work, made front-page headlines in Turkish national newspapers and was featured on Turkish national TV news programs. For those members interested in these and other international outreach activities, I encourage participation in this committee, as well as the organization, Kybele, Inc. For additional details, see the article on page 7 of this issue about the International Outreach Committee.

We are solidifying strong bonds with our obstetric and medical colleagues. A session was held at the Annual Meeting of the Society of Maternal-Fetal Medicine (SMFM) earlier this year on "Medical Complications in Pregnancy." This day-long session was attended by over 500 participants, and was jointly sponsored by SMFM and the North American Society of Obstetric Medicine (NASOM). I was invited to give several lectures at this session, and the warm welcome I received was heartening. It is quite clear that the members of these other societies are hungry to hear of the concerns of obstetric anesthesiologists and to share our respective concerns regarding the clinical situations we jointly encounter in our practices. Many SOAP members had ravingly positive reviews for the inaugural "What's New in Obstetric Medicine" lecture at our own meeting this past year, delivered in spectacular fashion by NASOM President,

Ray Powrie, MD. The overwhelmingly positive reception for this lecture has ensured that we will have more lectures of this type at our future annual meetings, and even more active interactions between SOAP, NASOM, SMFM, and ACOG at future meetings of all of our respective societies. Stay tuned for more details of this!

Even within our own specialty of anesthesiology, the respect for SOAP continues to blossom. We are now well over five years into our affiliation as one of only two component societies listing *Anesthesiology* as our official journal. The support and exposure that this affiliation affords us is remarkable. The support we receive from ASA is also noteworthy. As many of you know, obstetric anesthesia was chosen last year as one of only two (the other being intensive care) societies to have begun the "track" system for organization of our educational offerings at the annual meeting of

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the ASA - effectively allowing SOAP to entirely plan and coordinate all obstetric sessions at the ASA. This track system, largely due to the success that we demonstrated in execution, has now been expanded to neuro and cardiac, and eventually will be expanded to all of the major specialties in anesthesiology. Moreover, at the 2005 ASA meeting in Atlanta, there will be the second (the first was in 2003) jointly sponsored SOAP/ASA and *Anesthesiology* "special session," featuring oral presentations and discussion of the best abstracts submitted to the meeting. This prestigious coverage could not have been accomplished without the support of the ASA, the journal, and in particular, journal editor-in-chief, Mike Todd, who has always been an unwavering advocate for our specialty and our society.

A recent personal anecdote is warranted here. A few weeks ago, I attended a lecture given by a prominent obstetrician (Ben Sachs, MD, from Beth Israel in Boston) to an audience of several hundred other obstetricians. It was a prestigious eponymous lecture given annually in Boston. The topic was about patient safety in obstetrics. Naturally, there was much discussion of the current legal climate, the rising cesarean rate, and the associated problems faced by the obstetric community. Much of the lecture emphasized that the obstetric community still has a long way to go to ensure safe care. Most notably to me, (as I was one of only two or three anesthesiologists in the audience), was that this lecturer mentioned anesthesiology, and in particular obstetric anesthesiology, as a model specialty that has done its due diligence and largely succeeded in the promotion of safety in our practice. The clear message to this large group of obstetricians was the need for them to look at and learn from what anesthesiology has done in order to provide similar safeguards in their own field. I wanted to stand up and cheer!

“Obstetric anesthesiologists have a very unique and important opportunity to act as role models for our colleagues.”

Obstetric anesthesiologists have a very unique and important opportunity to act as role models for our colleagues. Very few, if any, surgical specialties have as pivotal a partnership as that which exists between obstetricians and obstetric anesthesiologists. No other specialty of anesthesiology attracts as much patient and media attention as pain relief during childbirth. Pregnant women hear more information (often conflicting!) about pain relief options from books, magazines, childbirth classes, the internet, and other assorted sources, than virtually any other group of patients about to receive care from an anesthesiologist. For the most part, our patients, during labor or cesarean delivery, are not under the effects of sedatives or hypnotics, thus these patients are keen observers of what we do and say. This presents unique challenges, as well as opportunities. Labor and delivery nurses can influence our patient interactions and practice in powerful ways, both positive and negative, more acutely than virtually any nurse in the general operating room. Our daily practice is observed under an intense microscope unlike any other area of anesthetics. This is a rich opportunity for us to demonstrate a style of professionalism that others in the birthing arena and medical community will look up to and strive to emulate. My personal observations are that we as obstetric anesthesiologists are succeeding beyond all expectations in being recognized by our colleagues and patients as the professionals we claim to be. My challenge to all of the SOAP community is to continue to make obstetric anesthesiologists the leaders, the beacons, and the role models for excellence in safety, patient advocacy, and professionalism.

OAPEF Contributions November 1, 2004 – April 22, 2005

Donors <\$50

Martinez, Carlos
Owen, Medge
Sampathi, Venkata
Volpe, Lorraine
Winter, Clara

Silver Level

Donors \$50-99

Alleyne, Audrey
Brown, Jr., Walter
Bucklin, Brenda
Crone, Lesley-Ann
Currier, David
Dailey, Patricia
Dalby, Patricia
Devore, Jay S.
Diaz, Salvador F.
Duffy, Michael
Elder, Paul
Fineman, Sheldon
Fogel, Steven
Fragneto, Regina
Frosth, Maria
Gilbertson, Lesley
Gomeri-Gascon, Perla
Greider, Philip
Hawkins, Joy
Hershey, Charles
Holliday, J.Scott
Holtmann, Barbel
Kassa, Allan
Kenepf, Nancy
Lee, Jeffrey
Li, Yunping
Loftus, John
Macarthur, Alison
Macaraeg, Emmanuel
McKellar, Sally
O'Connor, Terence
Plumer, Michael
Pue, Alex
Ranasinghe, Jayanthi
Soskin, Vitaly
Steinberg, Paul
Strobel, Alan
Trojanowski, Andrezej
Vadhera, Rakesh B.
Webb, Pamela
Weeks, Sally

Gold Level

Donors \$100-249

Arkoosh, Valerie
Bartholomew, Edward
Birnbach, David
Camann, William
Carlin, James
Clark, Richard (in honor
of Gerald Burger)
Cohen, Sheila
Douglas, M. Joanne
Gutsche, Brett
Hoyt, McCallum
Hranac, Joseph
Hughes, James
Hughes, Samuel
Joyce, III, Thomas
Koffel, Bettylou
Kotelko, Dennis
Palmer, Craig
Palmer, Susan
Penning, Donald
Pue, Alex
Santos, Divina
Schwalbe, Steven S.
Smiley, Richard
Wassill, Valerie
Wong, Cynthia

Gertie Marx Patron Level Donors \$250+

Arkoosh, Valerie
Bogard, Terrence
Gambling, David
Hicks, James
Hustead, Robert
Kenepf, Nancy
McKay, Robert
Minnich, Marie
Molina-Lamas, Edward
Norman, Patricia
Santos, Alan C.
Wissler, Richard

Please look to the ASA (www.asahq.org)
and SOAP (www.soap.org) websites for
up-to-date information regarding
the ASA 2005 Annual Meeting.

Treasurer's Report

For over a year now, we on the Board have been talking about the generous gifts Dr. Marx bestowed on the Society with her passing - but we have not mentioned any figures. The reason is because we have been waiting for the estate to be settled so that we would have a solid grasp of the amounts involved. I can now report on what Dr. Marx contributed to SOAP.

Dr. Marx named SOAP the beneficiary to two accounts. The first was her IRA to which SOAP was named the sole beneficiary. The amount disbursed was \$98,914 and the Board had it placed into the OAPEF account as we believed this would honor Dr. Marx's intent and best serve the mission of the Society. The second gift was to be named as one of four beneficiaries to a Trust. Under the terms of the Will, each of the beneficiaries will receive 25% of the interest generated by the Trust on an annual basis. What that means for us is the following. Although we may not touch the principle, that amount must be reported on our balance sheet. So for those of you who like to follow the numbers, you would have seen a large increase in our assets over last year because of this. Yet, in real figures, what that means for our financial well-being is that we should receive about \$45,000 a year in interest from our portion of the principle. The first payment should be received sometime this Fall as settlement of Dr. Marx's estate is completed.

At the annual business meeting, the Board put forth the following plan outlining how the money should be managed. The goal is to establish an endowment, which the Board set at \$2,000,000. By working with our investment company and running financial simulations, we determined that we are more than 90% likely to achieve that goal within 10 years. However, the following should occur. The two OAPEF accounts we currently have will be rolled into one. The annual interest from the Trust will be placed into the OAPEF account. The Financial Committee will budget an amount to be used for research grants and education that will come from some of the interest generated from the account with any extra interest remaining in OAPEF. So that members can apply for funding in a reasonable manner, a new committee is being formed called the Disbursement Committee. The role of this committee will be to accept and review applications for funding and grant amounts as appropriate while working within the budgeted amount as set by the Finance Committee. This gives a defined mechanism by which programs and research can be funded instead of what occurs now. The members present at the May business meeting voted to accept the plan.

As for the Disbursement Committee itself, the Board declared that the members should include the Treasurer, the Education Committee Chair, currently Dr. Linda Polley, the Research Committee Chair, currently Dr. Robert D'Angelo, and four long-standing SOAP members who have exhibited a commitment to the growth and well-being of the Society. Dr. Camann identified and approached his four first choices who have all agreed to serve. They are Drs. Gerald Bassell, Joy Hawkins, Samuel Hughes and Alan Santos. The committee will have its first meeting at the ASA at which time I expect the Chair will be selected and the committee will further define itself.

Now, what do the numbers say?

REVENUE

The majority of the Society's revenue still comes from the annual meeting, membership dues, and investment income as defined by dividend income and any realized and unrealized gains/(losses) from our investments. The following table summarizes the past two fiscal years. Please note that the three categories listed will not add to the "TOTAL" because there are other smaller contributions included.

	FY2004	FY2003
Dues	\$124,193	\$106,770
Annual Meeting	\$225,383	\$253,488
Investment Income	\$52,922	\$82,487
TOTAL	\$504,429	\$457,862

Included in the FY04 TOTAL is the \$98,914 placed into the OAPEF account from Dr. Marx's IRA. It is classified as a contribution and not as investment income so it significantly inflates the sum. I will further expand on the Annual Meeting and our investments below.

ANNUAL MEETING

Although our revenue from the annual meeting has dropped over the past couple of years, our expenses have dropped even more so, and this year has been no different. The net result has been a profit. The following table reports the two most recent meetings.

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Treasurer's Report – *continued*

ANNUAL MEETING	FY2004	FY2003
Revenue	\$225,383	\$253,488
Expenses	\$160,833	\$232,393
Gain/(Loss)	\$64,550	\$21,095

Although it is too early to report accurate expense numbers for our 2005 annual meeting, our revenue is greater than our expenses to date, signaling another profitable meeting. This year we were wiser in estimating our revenue and have come very close to the budgeted amount. The surprise has come from the much lower expenses than anticipated so the net appears to be a more profitable meeting than last year. We are still waiting to complete some expenses so I will not discuss figures at this time.

SOAP INVESTMENTS

The value of our investments continues to grow thanks in large part to our investment management firm, Independence Advisors. Our investment income for this fiscal year is well above the budgeted amount of \$25,000, despite some losses early on. The market value of our investments and associated income for the previous two fiscal years was as follows:

INVESTMENTS	FY2004	FY2003
Market Value (as of 9/30)	\$668,252	\$523,881
Investment Income	\$52,922	\$82,487

OPERATING EXPENSES

We continue to benefit from our association with IARS. The FY03 numbers are the last year with Ruggles and the difference in our expenses is dramatic. The total management fees paid to Ruggles included a fee for the annual meeting as well as a base monthly fee. Also, a line item of concern with Ruggles was the ballooning cost of the website, so I have noted the change below.

OPERATING EXPENSES	FY2004	FY2003
Management Fees	\$48,000	\$47,933*
Website	\$3,503	\$13,743
TOTAL	\$77,389	\$96,712

* Does not include the management fee assessed for the annual meeting

To underscore the difference in our expenses, the total amount we paid Ruggles for management in FY03 was \$81,073. The contract with IARS includes the management of the annual meeting as a part of their monthly fee and produced a substantial savings. We were also being charged for website management and maintenance costs under Ruggles that are now included in the fee we pay to IARS, with a few small exceptions. As you can see, the savings are significant.

EDUCATION AND RESEARCH

As I discussed at the beginning of this report, SOAP will be building an endowment for the purpose of creating a large enough principle to support our mission and better manage our funding. While we grow the endowment, it should be noted that we anticipate that adequate monies will remain available to fund current research and education requests. In FY03, we spent \$22,000 for this purpose and \$24,000 in FY04. In both years, \$20,000 was given to FAER, and this year has been no different. With the creation of the Disbursement Committee, a defined manner by which to seek funding will exist and thus, we hope, will encourage requests.

The bottom line is that SOAP is financially healthy. With the creation of an endowment, we should be able to more than adequately fund projects and support our mission for the life of the Society.

Respectfully Submitted,
McCallum R. Hoyt, MD, MBA
SOAP Treasurer

SOAP 37th Annual Meeting Program Review

Mark I. Zakowski, MD – 2005 Meeting Host

The 37th Annual Meeting of the Society for Obstetric Anesthesia and Perinatology (SOAP) was held May 4-7, 2005 at the JW Marriott Desert Springs Resort & Spa, Palm Desert, California. Over 480 attendees from 17 countries attended the meeting - a 20% increase from last year.

The SOAP program committee fulfilled and surpassed its mission: to provide anesthesiologists, obstetricians, and other physicians and allied health specialties with the knowledge that will reinforce past learning as well as disseminate new concepts, practices, and skills involving anesthesia and analgesia for the pregnant woman. The 4-day meeting featured scientific presentations in the oral and poster formats, the Gertie Marx and Zuspan Award symposia, Best Paper Presentations, "What's New In Obstetric Medicine," The Fred Hehre Lecture, Distinguished Service Award, "Breakfast with the Experts" and panel discussions. The scientific program committee reviewed 173 abstracts, of which 151 were accepted.

On the first day, a preconference workshop on Neonatal Resuscitation and certification was filled to capacity. The day concluded with the SOAP Opening Reception, hosted in a stunning outdoor venue.

The second day started with the opening of the regular sessions and the Gertie Marx Symposia, which honors Gertie Marx, who dedicated her life to OB anesthesia and teaching. The six best abstracts submitted by a resident or fellow competed for the award. The results of the Gertie Marx Symposia are: first place, KJ Ashpole (Wake Forest University, Winston-Salem NC) "Maternal Cardiac Output Changes Occurring with Phenylephrine and Ephedrine Infusions after Spinal Anesthesia for Elective Cesarean Section," second place, M Fang (Johns Hopkins University, Baltimore, MD), "Prostaglandin E2 Receptors Regulate Endothelial nitric Oxide Synthase Expression: Clinical Implication in Modulation of Uterine Tone for Human Pregnancy" and third place, B Clyne, MD (Wake Forest University, Winston-Salem, NC), "Expression of Calcitonin Gene-Related Peptide (CGRP) and Somatostatin (SST) in Neurons Innervating the Uterine Cervix."

The Distinguished Service Award was then presented to Frederick Zuspan for his contributions to the Society and the specialty of obstetric anesthesia. The first oral scientific presentations were delivered. The Fred Hehre Lecture was given by James Eisenach on "Pain and Delivery - Why, What and When?" Pain is a sensorimotional experience with a large degree of inter-individual differences. Afferent innervation of the cervix not only forms the neural basis of labor pain, but also these nerve fibers become spontaneously active and increase their response to distension when exposed to estrogen. These nerves may play a role in cervical ripening. The sensitization of these nerves may also play a role in chronic pelvic pain after delivery.

Following lunch, the "What's New in Obstetrics?" lecture was delivered

by Errol Norwitz. Maternal and prenatal morbidity and mortality issues were addressed. Fetal fibronectin and salivary estriol are useful in identifying women at risk for preterm birth. However, intensive prenatal care, bed rest, and broad-spectrum antibiotics were of no benefit in preventing preterm birth while screening for lower genital tract infection and tocolytic agents beyond 48 hours were of limited benefit. The use of progesterone has proven helpful and may prevent preterm birth by 1) interfering with oxytocin binding and action 2) differentially regulating PR-A and -B, 3) interfering with CRH regulation of placental gene expression and 4) inhibiting decidual prostaglandin release. In addition, the risks of post-term pregnancy were discussed, with increased risks of stillbirth, macrosomia, meconium, fetal distress, uteroplacental insufficiency, and encephalopathy. Then, the Zuspan Award Symposium occurred, consisting of four presenters whose studies had participation by an obstetrician. The winner was M Siddiqui (Mount Sinai Hospital and University of Toronto, Toronto ON Canada) for "Complications of Exteriorized versus In Situ Uterine Repair at Cesarean Section Under Spinal Anesthesia."

The day concluded with the Annual Business Meeting. The officers elected were: Linda Polley, second vice president, Andrew Harris as ASA Delegate, Rakesh Vadhera, Director At Large. The 41st Annual Meeting will be held in Washington, DC in 2009. The SOAP Research in Education Award was presented to M. Panni (Duke University, Durham, NC), for "Current State of Academic OB Anesthesia: What Experiences are Anesthesiology Trainees Receiving?"

Friday morning started with the Annual SOAP Fun Run, set in a beautiful and refreshing locale - around the Marriott resort! Sunrise over the beautiful desert mountains - gorgeous. The Winners are: Men's First place Steve Contage 21:23, second place A. Malan 22:13, and third place John Thomas 22:27 Women's first place Joan Spiegel 22:53, Eileen Pue 24:27 and third place Deborah Qualey 26:02.

The third day opened with Oral Presentation #2, with four scientific presentations. A new lecture this year was "What's New in Obstetric Medicine?" from Raymond Powrie, of the North American Society of Obstetric Medicine (NASOM). NASOM is an organization of internal medicine physicians specializing in the medical care of obstetric patients. An increasing percentage of maternal deaths are due to 'medical' causes, with cardiac disease the commonest single category of maternal mortality in the UK. A strong case was made for preventing maternal death from pulmonary embolism by: 1) using ASA, stocking and intermittent compression devices and 2) targeted heparin prophylaxis for women with risk factors (routine heparin use not warranted). Meanwhile, the use of heparin to treat maternal thrombophilias has dramatically increased, in order to reduce the risk of late pregnancy loss. Preventing maternal deaths from pre-eclampsia may be accomplished by treating severe hypertension and avoiding fluid overload. Recent data suggests that nifedipine in patients receiving magnesium caused no higher rate of hypotension than placebo. Except to see more NASOM - SOAP interactions in the future.

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Meeting Program Review – *continued*

The first Poster Review covered 35 scientific presentations. A Panel Discussion on the International Aspects of Obstetric Anesthesia included panelists from Barbados, Brazil, Kuwait, and a report from trips to educate physicians in the countries of Turkey, Croatia, Ghana, and Georgia. The challenges faced by physicians in other countries and opportunities to improve maternal and neonatal care were highlighted.

The annual SOAP Golf Tournament teed off to a great start in picture perfect weather. The Winning Foursome, finishing at 5 under par, are Jim Hartwell, Barbara Hartwell, Pat Garahan and William Wright. Other awards: Men's Closest to the Pin by Pat Garahan, Men's Longest Drive G. Hudson, Women's Closest to the Pin Alison Macarthur, and Women's Longest Drive Deb Qualey.

The Tennis Tournament was a smash! The top scores were: Hector Lacassie 26, Wade Yoshii, 20, Wlodzimierz Grodecki 18, Rachel Lacassie 18, Hector Lacassie Sr. and Deb Maji tied at 15 points.

The scientific program on the fourth day began with Breakfast with the Experts, where participants discussed cases in a problem based learning format. Brenda Bucklin delivered "The Gerard Ostheimer Lecture: What's New in OB Anesthesia?" where almost 1000 references were reviewed and the best and most pertinent papers were highlighted. The second Poster Review of 35 papers was then conducted. A Pro/Con Debate: Is Cell Salvage a Safe Technique for the Obstetric Patient? was then conducted by Drs. Jonathan Waters and Paula Santrach. Common areas of agreement included the use of leukocyte reduction filters and the need for an increased dose of Rhogam if cell salvage techniques are used. Disagreement occurred over the risk of amniotic fluid embolism and overall safety of cell salvage during cesarean sections.

Following lunch, the Poster Case Reports: "You did What? The Best Case Reports of the Year!" reviewed 54 intriguing cases. The Best Paper Presentations by the top 6 papers of the meeting followed. The Best Paper was awarded to R. Landau (University Hospital of Geneva, Geneva Switzerland), for "Polymorphism of Mu-Opioid Receptor (A118G) Affects Intrathecal Fentanyl ED50 for Labor Analgesia." The A118G variant showed an ED50 of 16 mcg compared to ED50 of 26 mcg IT fentanyl for labor analgesia ($p < 0.0009$). The Research Hour covered new techniques and approaches in obstetric anesthesia research, along with understanding the pros and cons of different statistical techniques. The annual SOAP Banquet, complete with slide show, presentation of social awards, a comedian/magician and Country Western band provided a wonderful conclusion to the day and to the meeting.

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SOAP Media Award

The Publications Committee is soliciting nominations for the SOAP Media Award. The award will be given to that piece from the print or broadcast media that best represents the specialty of obstetric anesthesia to the general public. This award will be presented at the Annual Meeting. Please send your nominations via email to soaphq@soap.org.

The abstract submission site will be available in November.
The submission deadline is January 6, 2006.
Again this year, abstracts for Case Reports will be accepted.
Visit www.soap.org for details.

Please submit your nominations for the SOAP 2010 Annual Meeting Site/Host. The nomination deadline is November 1, 2005. Nominations can be emailed to soaphq@soap.org or faxed to (216) 642-1127.

SOAP at the ASA!

Special Research Session and other activities

The Annual Meeting of the ASA this year in Atlanta will feature a number of exciting obstetric anesthesia sessions. In particular, this year will feature the second special research session jointly sponsored by SOAP and *Anesthesiology*. This special session, first held in 2003, will feature the best and most innovative obstetric anesthesia research submitted to the ASA this year. Six abstracts have been selected based on scores assigned by the Obstetric Anesthesia Annual Meeting Research Committee. The format will be oral presentations of ten minutes duration, followed by a five-minute discussion of each abstract. Moderators for this session will be William Camann, James Eisenach, and Robert D'Angelo.

In addition, the obstetric anesthesia "track" planning committee has organized many refresher courses, poster review sessions, and panel discussions with topics of interest to our members. We hope to see many SOAPers in Atlanta in October!

Future Meetings

SOAP 38th Annual Meeting
The Diplomat Westin
Resort & Spa
(note new hotel)
Hollywood, FL
April 26-30, 2006

SOAP 39th Annual Meeting
Fairmont Banff Springs
"Castle in the Rockies"
Alberta, Canada
May 16-19, 2007

SOAP International Outreach: Full Steam Ahead

The SOAP International Outreach Committee is barely a year old and is already flourishing with projects to improve obstetric anesthesia care in several countries.

Mongolia: On September 10-19, 2005, a group of SOAP members led by Gary Vasdev will accompany a multidisciplinary delegation to Mongolia. In route to Mongolia, the group will stop in Beijing, China for sightseeing and to lecture in Tongren Hospital. In Mongolia, a 2-day medical conference on Maternal and Child Care will be conducted in Ulaanbaatar, the capital city. The SOAP members will also tour the maternity hospital to learn, first hand, the unique challenges that face Mongolian anesthesiologists in caring for pregnant patients. We hope to lend support, share knowledge and experience and discuss future collaboration. The adventurous will take an excursion on horseback and overnight in a traditional Mongolian Ger camp complete with fermented mare's milk to quench the thirst after a long day of riding over rugged terrain!

Croatia: With no time for rest, another group will arrive in Croatia on September 20 - October 2, 2005. The 14-member outreach team sponsored by Kybele, Inc. will include anesthesiologists from Australia, Belgium, England, Scotland, Canada, and the US, as well as, a midwife and a member of NASOM (North American Society for Obstetric Medicine). The country is rebuilding from a devastating war in the 1990's and is considered "the next Riviera" due to its affordability, friendly people, magnificent food and beautiful beaches. Dr. Dragica Kopic (the Croatian host), Marge Sedensky and Medge Owen have organized a program aimed at making significant countrywide improvement in obstetric anesthesia care. You may

remember Dr. Kopic from the 36th Annual SOAP meeting in Ft. Myers, Florida. She presented a poster presentation on Obstetric Anesthesia Practices in Croatia. In the year since her return to Croatia, she has made monumental changes in obstetric practice at her home institution. As she wrote in a letter to Dr. Owen, "Our biggest support are the women that have had regional anesthesia and passed on their experience to other women." Her work has spawned a country-wide interest in learning basic principles of obstetric analgesia and anesthesia.

We will conduct the first Croatian Obstetric Anesthesia conference in the beautiful coastal city of Bol which will draw a national audience. Team members will then disperse to hospitals country-wide offering one-on-one bedside teaching in over one third of the country's maternity hospitals! This will be a labor intensive week and each guest doctor will have their brain drained of any and all information related to obstetric anesthesia. In anticipation of this, Dr. Terry Breen, a member of last year's successful outreach program to Turkey, archived an extensive set of prepared presentations, which he solicited from the SOAP membership. The lectures are now available to the outreach team on a single CD to help with "spur of the moment" lecture preparation.

The outreach trips are wonderful ways to meet colleagues from around the world and to learn about other cultures in a hospitable setting. For those of you interested in future trips to Ghana (January 2006) or the Republic of Georgia (September 2006), please contact Medge Owen, Chair, SOAP International Outreach Committee at mowen@wfumc.edu.

Marge Sedensky, University Hospitals of Cleveland
Medge Owen, Wake Forest University

PRO / CON Debate: Is Cell Salvage a Safe Technique for the Obstetric Patient?

PRO

Jonathan H. Waters, MD
Visiting Associate Professor
Department of Anesthesia
Magee Women's Hospital
Pittsburgh, PA

One of the leading causes of death during childbirth is hemorrhage.^{1,2} When hemorrhage occurs it can be massive. The use of cell salvage would naturally be attractive in this setting. Use of cell salvage in obstetrics is classically contraindicated; however, little data are available to substantiate this contraindication. In fact, significant data exists which supports the use of cell salvage in obstetrics. This contraindication arises from a fear that shed blood can be contaminated with amniotic fluid, and readministration may lead to an iatrogenic amniotic fluid embolism. Fortunately, or unfortunately, the incidence of amniotic fluid embolism is so rare a study to demonstrate

safety of cell salvage use would require a study incorporating 1.7 million patients. Since this sample size is unrealistic, an evaluation of what we do know about cell salvage use along with an evaluation of the alternative therapy, allogeneic transfusion, is warranted.

Support for the use of cell salvage in obstetric hemorrhage now encompasses 390 reported cases where blood contaminated with amniotic fluid has been washed and readministered without filtration.^{3,4,5} None of these cases were complicated by amniotic fluid embolism. Only one adverse report has been made. In this letter to the editor, a 22 y.o. Jehovah's Witness patient at 30 weeks gestation with preeclampsia and HELLP syndrome is described.⁶ Her presenting laboratory values were a Hgb of 7.1 g/dl; platelet count of 48,000; AST of 194 u/L; and an ALT of 330 u/L. A Continuous Auto Transfusion System (CATS, Fresenius) was utilized to scavenge 600 mL of blood/amniotic fluid which was subsequently processed to 200 mL. It is important to note that no leukocyte depletion filter was used. Ten minutes after starting the reinfusion, the patient became dyspnoeic, hypoxic (O₂ Sat = 85%) then arrested. A clinical diagnosis of amniotic fluid embolism was followed by a pathologic diagnosis which "Did not reveal any other cause..."

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This report is highly suspect as to whether cell salvage was responsible for the death of the patient. First, the patient was severely ill when presenting to the labor suite and may have succumbed from a number of different mechanisms. Secondly, little description is made of how the blood was processed other than that a CATS machine was used. This is important because cell salvage can be associated with the "cell salvage syndrome" which is a coagulopathy due to the readministration of a partially washed product and is typically due to a lack of knowledge of the parameters necessary for a quality wash. Lastly, the volume of reinfused blood can be questioned as being adequate to cause an amniotic fluid embolism. Tio⁷ demonstrated a therapeutic effect of amniotic fluid when he infused amniotic fluid into 27 peripartum women with prolonged coagulation times. Volumes ranged from 5-500 mL and resulted in resolution of the clotting abnormalities. He then proceeded to administer amniotic fluid to 73 patients of all ages without effect.⁸ Thus, it seems unlikely that any remnant amniotic fluid in the 200 mL of cell salvaged blood could be responsible for the demise of the aforementioned patient.

In a pig model, clear amniotic fluid (meconium free) injected into the pig in quantities up to 10 ml/kg caused only minor effects.⁹ However, when meconium stained amniotic fluid was infused at volumes of 3 ml/kg, a severe coagulopathy and cardiorespiratory abnormalities ensued. This would suggest that the particulate matter of amniotic fluid is important to remove. Durand and colleagues¹⁰ showed cell washing alone did not remove fetal squamous cells. Waters et al. demonstrated that leukocyte depletion filters along with cell washing will remove fetal squamous cells to an extent comparable to the concentration of these cells in a maternal blood sample following placental separation.¹¹ From this study it was concluded that the combination of cell salvage washing and filtration produces a blood product comparable to circulating maternal blood with the exception of the fetal hemoglobin contamination.

All of this discussion may be irrelevant because recent articles^{13, 14, 15} have suggested that amniotic fluid embolus is, in fact, not an embolic disease but rather an anaphylactic reaction. This would imply that it would occur with or without cell salvage since amniotic fluid is routinely entrained during delivery. Thus, any debate regarding remnant amniotic fluid in cell salvage blood may be irrelevant.

Risks of Allogeneic Blood Transfusion

Since most medical therapies encompass some degree of risk, an analysis of the risks associated with the alternative to cell salvage use is necessary. The primary alternative would be the use of allogeneic blood. There are many risks associated with allogeneic transfusion. This author believes that these risks outweigh any theoretical risk of cell salvage.

The risk of infectious complications is foremost on most people's minds when they think about allogeneic transfusion. Modern blood banking and screening have markedly reduced the risk of disease transmission to a level where the risk is extremely small.

The leading cause of death following allogeneic transfusion involves clerical error and hemolytic transfusion reaction. Hemolytic transfusion reaction occurs at rates ranging from 1:12,000 to 1:21,000

units transfused and has a mortality of 20-40%. More recently, Transfusion Related Acute Lung Injury (TRALI) has been recognized to be a significant cause of morbidity. TRALI occurs within 1-2 hours following transfusion and results in severe hypoxemia, bilateral pulmonary edema, hypotension and fever and is indistinguishable from ARDS. The incidence remains unknown but has been estimated to occur somewhere between 1:300-5000 transfusions.

The risk of immunosuppression following allogeneic blood transfusion is less often mentioned but is of greater importance to short and long-term patient outcome than are the risks of viral transmission.¹⁷ An increased incidence of postoperative infection and cancer recurrence is thought to occur from immunosuppression following allogeneic blood. The immunosuppression following transfusion was first observed in renal transplant patients who had higher graft survival rates when they received allogeneic transfusion.¹⁸ Thus, this practice became the standard of care for a period of time. This standard changed when potent immunosuppressive drugs were developed. Thus, this immunosuppressive effect has been manipulated to some patient's benefit. Conversely, this immunosuppression can be detrimental for most surgical patients. Studies evaluating postoperative infection rate following allogeneic transfusions have demonstrated as much as a 10-fold greater rate of infection in patients receiving allogeneic blood.^{19, 20, 21} In obstetrics, post-cesarean infection rates range from 5-25%^{22,23} Thus, increases in infection rate due to immunosuppression offers a profound effect on patient outcome.

In addition to being associated with the risks of immunomodulation and viral exposure, blood is altered by storage. The most significant of these storage injuries being decreased levels of 2,3-diphosphoglycerate (2,3 DPG) in red blood cells. Decreased levels of 2,3 DPG shift the oxyhemoglobin dissociation curve to the left, making it more difficult for oxygen to bind with hemoglobin as its carrier. Restoration of normal levels of 2,3-DPG can take up to a day to occur following reinfusion of stored blood which means that the oxygen delivery of transfused blood is not initially comparable to in vivo blood. This storage defect applies to both allogeneic and stored autologous blood but does not apply to cell salvaged blood. In recent studies, there has been a suggestion that the reduction in 2,3-DPG along with an associated red cell shape change may lead to a worsening of tissue oxygen levels despite an increase in blood oxygen content.²⁴

Lastly, an interest has arisen over the possibility of transmission of disease-producing genes via blood transfusion. Studies concerning the risk of this transmission in humans are limited to an increased risk of non-Hodgkins lymphoma in patients who have received a blood transfusion. Nevertheless, it is interesting to speculate on the ramifications of such a finding and it is another good reason to avoid allogeneic blood.

Conclusion

The practice of medicine frequently requires evaluation of risks when applying different treatment strategies. In this debate, we have the purely theoretical risk of cell salvage use in obstetrics being compared to allogeneic blood which has multiple, known adverse consequences. Until proven otherwise, the use of cell salvaged blood would appear to offer the safer treatment modality for the hemorrhaging obstetric patient.

CON

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The use of autologous blood for transfusion became common practice in the 1980's and continues today. The main reasons for establishing an autologous blood program are improved transfusion safety and better patient outcome due to avoidance of the adverse effects of allogeneic transfusion. Although transfusion-transmitted infection (hepatitis and human immunodeficiency virus) was the main driver for autologous blood programs, current risks for these infections are very low (~1:2,000,000) and concern has shifted to more the more common risks, such as hemolysis, transfusion related acute lung injury, and mis-transfusion. Autologous blood programs can also augment the local blood supply allowing the allogeneic units to be reserved for patients who either cannot provide autologous blood or who don't have enough to meet their needs.

Perioperative salvage of autologous blood is a mainstay of these programs and is utilized in those procedures where substantial blood loss is expected (e.g., cardiac, vascular, spinal, and liver transplant surgery). One of the current controversies is the use of blood salvage in obstetric procedures, particularly high risk caesarean section. The concern centers on the potential risk for amniotic fluid embolism which is difficult to assess due to its unclear etiology and very low incidence. Thus, a "safe" salvaged blood product is hard to define and can only be proven through a very large clinical trial. The concern is potentially real since salvage instruments can only remove a certain percentage of supernatant material; although the removal is typically >90-95%, heavy initial contamination may still produce clinically important residual supernatant material. Furthermore, cellular contamination will not be removed during the routine processing of the salvaged blood. Strategies to minimize these risks involve avoidance of amniotic fluid aspiration into the collection reservoir; delay of salvage until after removal of the fetus, placenta, and amniotic fluid; and the use of leukocyte reduction filters to removal cellular contaminants such as fetal squamous cells. The question remains: Is this good enough?

A few in vitro studies (Int J Obstet Anesth 8:79, 1999; Transfusion 31:22S, 1991; Obstet Gynecol 93:968, 1999; Anesthesiology 92:1531, 2000) have demonstrated that amniotic fluid concentration can be markedly decreased through the salvaged blood process, particularly when direct aspiration of amniotic fluid into the reservoir is avoided. Fetal squamous cells can also be significantly reduced with leukocyte reduction filters, but not completely eliminated. However, maternal alloimmunization may occur from the fetal red blood cells in the salvaged product. Not specific to obstetrics, reinfusion of salvaged blood can result in adverse reactions such as non-immune hemolysis due to instrument malfunction or inappropriate wash solutions, circulatory overload, or sepsis. In 1994, the New York Department of Health reported an error rate of 1 in 6,000 blood salvage procedures; events included fatal air embolism, transfusion to the wrong patient, and hemolysis (Transfusion 34:28S, 1994).

In obstetrics, significant hemorrhage that would benefit from blood salvage is not a common occurrence. However, when it does occur, a rapid response from in-house personnel is required. Because of the low rate of blood salvage procedures, ongoing operator competency may be an issue and the risk for error is increased.

Five published reports document the clinical use of salvaged blood in obstetrics in 239 patients (Transfusion 33:181, 1993; Br J Anaesth 80:195, 1998; Am J Obstet Gynecol 179:715, 1998; Anesthesiology 90:619, 1999; Anesth Analg 97:1808, 2003). The amount reinfused ranged from 125 to 11,250 mL with 200-500 mL most commonly reported. No adverse effects were reported. One case report of an obstetrical patient death after salvaged blood reinfusion exists (Int J Obstet Anesth 9:143, 2000). A 22 year old primipara at 30 weeks gestation underwent a caesarean section for early preeclampsia with HELLP syndrome. Ten minutes after starting the reinfusion of 200 mL of washed salvaged blood, the patient became restless, dyspneic, and hypoxic; she subsequently died of cardiac arrest. Clinically, her course was consistent with amniotic fluid embolism and an autopsy could identify no other cause.

Is blood salvage a safe technique for the obstetric patient? We really don't know. Supernatant material can be very effectively removed, but cellular elements cannot. The risks of an adverse reaction and error are not insignificant. The logistics of providing this infrequent service are challenging and may contribute to the risk of error. The number of patients studied to date is not sufficient to detect adverse events. Other improvement in patient outcome is not clear. Given the low frequency and small amounts of autologous blood recovered, the augmentation of the local blood supply is minimal.

Should autologous blood salvage be used routinely in obstetrical patients? No.

Should autologous blood salvage be used in obstetrical patients with life-threatening hemorrhage? The benefit to the patient may outweigh the potential risk.

Use of SOAP Mailing List for Surveys/Research

Because of an increasing number of requests for the SOAP mailing list, the Board of Directors has established a protocol for requesting the official mailing list. As a benefit of SOAP membership, those conducting surveys or research studies may request the SOAP mailing list. Requirements are:

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Post Partum Headache

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Postpartum headache is a common complaint. There are many causes of headache that are unrelated to neuraxial anesthesia (i.e., post-dural puncture headache). One of the responsibilities of a perioperative consultant is the evaluation of common post-operative complaints. The evaluation of headache requires a history, physical examination, laboratory studies if indicated, and occasionally consultation with another specialist.

The differential diagnosis of headache is rather large, including nonspecific headache, migraine, preeclampsia, incipient eclampsia, and PDPH (Table 1). Headache occurs in about 40% of women in the first week after delivery.¹ Risk factors for nonspecific headache include history of migraine, depression, stress and caffeine abstinence.

Tension headache typically lasts 30 minutes to seven days and has at least two of the following characteristics: pressing or tightening (non-pulsating) character, mild or moderate intensity, bilateral location, and are not aggravated by physical exertion. Nausea and photophobia are notably absent.² Treatment is with simple analgesics.

Migraine headache occurs in 15-20% of women. Migraines typically occur for the first time prior to pregnancy, are related to hormonal fluctuations, and improve with pregnancy in 66% of women. However, migraines frequently return postpartum.³ Migraine headaches typically last 4-72 hours and have two of the following: unilateral location, pulsating character, moderate to severe intensity, and are aggravated by physical activity. Nausea, vomiting, or photophobia are also present. Prodromal symptoms may occur in 15% of patients, with visual changes being the most common. Treatment includes ergotamine tartrate, higher dose aspirin, NSAIDs, or a 5-HT₁-receptor agonist such as sumatriptan.⁴

Hypertension/Preeclampsia/Eclampsia: Severe hypertension may produce headaches. Preeclampsia can cause headache, occasionally accompanied by visual changes, nausea and vomiting. Postpartum preeclampsia or eclampsia may first manifest as a complaint of headache.⁵

Brain Tumor: Headache associated with brain tumor is usually intermittent, dull, aching in quality, and relieved by simple analgesics. Symptoms may overlap with migraine or tension headache. In clinics specializing in headache, the incidence of brain tumor is less than 1%.²

Cortical vein thrombosis occurs in 1:6,000 parturients, probably secondary to the hypercoagulable state typical of pregnancy.⁶ In the United Kingdom, cortical vein thrombosis occurred in 1:3,000 deliveries with a 25% mortality rate (1988-90 Report on Confidential Enquires). The superior longitudinal sinus or the cortical veins may thrombose, impeding venous drainage. The increased venous pressure reduces CSF absorption from the arachnoid villi and increases ICP. In

severe cases, venous stasis can produce arterial stasis and thus focal cerebral infarction.

The onset of symptoms may occur before or after delivery and include severe headache, nausea, focal neurologic signs, seizures, and altered mental status.⁷ Diagnosis is made by CT scan, MRI, or cerebral angiogram. Treatment consists of seizure prophylaxis and ICP control via mechanical hyperventilation or corticosteroids. Anticoagulation may be used, but may increase the risk of intracerebral hemorrhage.^{7,8}

Subdural Hematoma: Any size dural puncture can result in a subdural hematoma.⁹ Therapeutic anticoagulation increases the risk.^{10,11} CSF leakage decreases ICP and thus dilates the cerebral vessels. In the upright position, downward movement of the brain may disrupt cerebral vessel causing a subdural hematoma. This headache is non-positional and constant, occasionally associated with nausea, vomiting, confusion or altered mental status. Focal neurologic signs may be present. A non-contrast CT or MRI will demonstrate the hematoma. Surgical drainage is often required.

Subarachnoid hemorrhage is associated with symptoms including severe headache, nausea, vomiting, neck stiffness, and altered mental status. Focal neurologic deficits may occur. A non-contrast CT or MRI is indicated. Surgery may be required. Nimodipine, a selective cerebrovascular calcium channel blocker may help prevent cerebral vasospasm. Intracerebral hemorrhage has also been reported in the postpartum period with a complaint of headache that progressed to hemiparesis.¹⁸

Meningitis, whether septic or aseptic, is rare after regional anesthesia.¹² Bacterial meningitis as a consequence of endocarditis occurred in 1:8000 deliveries.¹² Symptoms may include severe headache, fever, stiff neck, Kernig and Brudzinski signs, decreased mental status, vomiting and seizures. Aseptic meningitis presents similarly to bacterial meningitis, but with no organisms found in the CSF. Chemical irritation may be the cause.¹³ Symptoms typically occur 6-24 hours after spinal anesthesia.

Pneumocephalus

Air may enter the subarachnoid space during spinal or epidural administration.^{14,15} Intracranial air may cause sudden severe headache. In one series of 3700 epidurals, the use of loss of resistance to air resulted in significantly more headaches compared to saline (32 vs. 5). This occurred despite an equal number of inadvertent dural punctures. Air was seen in the ventricles and cisterns in the air group only.¹⁶ Air will reabsorb over hours to days. Breathing 100% oxygen will accelerate reabsorption due to denitrogenation of the air bubble.

Caffeine withdrawal

Caffeine consumption is higher than ever. Patients with moderate caffeine intake (2.5 cups = 234 mg caffeine) can develop caffeine withdrawal headache. Even lower consumption of caffeine may lead to withdrawal symptoms such as headache (52%) or depression and anxiety (10%).¹⁷

Lactation Headache

The hormonal changes of lactation may produce headaches.¹⁸

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Post Partum Headache

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Tatrogenic/Medications

Medications may also cause headaches. MgSO₄ commonly produces flushing, nausea and headaches. Allergies to food or flowers may cause headaches. Hypoglycemia may cause headache and tachycardia. Electrolyte disturbances may also cause headache.

Table 1 Differential Diagnosis of Headache

Nonspecific headache, stress
Migraine
Post-dural Puncture Headache
HTN/preeclampsia/incipient eclampsia
Caffeine withdrawal
Lactation headache
Allergies/Sinusitis
Drugs (e.g. MgSO₄)
Hypoglycemia
Meningitis
Subdural hematoma
Subarachnoid hemorrhage
Cortical vein thrombosis
Brain tumor

Modified from Zakowski MI, Postoperative Complications Associated with Regional Anesthesia in the Parturient, in *Obstetric Anesthesia*, 2nd edition, Norris M Ed, Lippincott Williams & Wilkins, Philadelphia 1999.

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