Greetings to all SOAP members. I hope that you had a productive summer, with some opportunities for rest and relaxation. I thoroughly enjoyed the 2003 SOAP Annual Meeting in Phoenix. Congratulations to all of the registrants for contributing to a great meeting. It is not too early to plan on attending the 2004 SOAP Annual Meeting in Fort Myers, Florida, May 12-16. The 2004 Program Committee, chaired by Dr. Joanne Douglas, has been working diligently on an exciting educational offering in a very pleasant setting.

At the upcoming ASA Annual Meeting in San Francisco (October 11-15, 2003), there are a number of educational sessions related to OB anesthesia. The formats of these sessions include; Refresher Course Lectures, Problem-Based Learning Discussions, Panels, Scientific Paper Presentations and a Clinical Forum. If you are attending the 2003 ASA Annual Meeting, I urge you to attend and support two sessions in particular.

The first is the Sol M. Shnider/SOAP Breakfast Panel in OB Anesthesia entitled "The Future of Obstetric Anesthesiology", Monday, October 13, 7:30- 8:45 am., San Francisco Hilton, Grand Ballroom Salon A. Tickets will be available in the registration area of the Moscone Center for $15 each (space is limited). The speakers are all active SOAP participants with well-known expertise in their presentation topics: Dr. Lawrence Tsen, Anesthesia for Assisted Reproductive Technologies; Dr. David Birnbach, Sterile Technique for Neuraxial Labor Analgesia; and Dr. Jonathan Waters, Autotransfusion Techniques in Obstetrics.

The second session of particular interest to SOAP members is the SOAP-Anesthesiology Oral Presentation Session entitled Innovative Research in Obstetric Anesthesia. This session will be held on Tuesday, October 14, from 2:00 to 4:00 pm, in the Gateway Ballroom 102 of the Moscone Center. The eight oral presentations represent state of the art clinical and basic science research related to OB anesthesia. If at all possible, please support both of these sessions with your attendance.

Recently, the ASA began a process to change the structure of its Annual Meeting. One of the current recommendations under consideration is to reorganize portions of the ASA meeting along subspecialty "tracks". In this model, all of the educational sessions related to a given subspecialty would be clustered in a two day period within the ASA Annual Meeting. OB Anesthesia has been chosen as one of two subspecialties to begin this process with the 2004 ASA meeting. The ASA leadership has appointed the "ASA Task Force on Obstetrical Anesthesia (Annual Meeting)", chaired by Dr. David Wlody, to facilitate this process. SOAP members are an integral part of this Task Force, with the active support of the ASA leadership.

The Board of Directors are continuing their efforts to maximize administrative services and member benefits, while minimizing costs. Best wishes for a successful Fall 2003. Please contact me directly if
you have any questions or need assistance.

Richard Wissler, MD, PhD

SOAP President
Our by-laws state that the Treasurer must publish an annual report in the newsletter. I did not prepare an earlier report because I did not have access to the final audit figures until after the newsletter deadline. However, this is essentially the written equivalent of the oral presentation I made at the Annual Meeting.

Our fiscal year ends on October 31st. At that time, the accounting firm of Goodman and Co, LLP reviews our records. This is our second year with this firm and although we have been pleased with their performance, we will review our contract with them next year as required by our by-laws. In this report, I will review the audited figures for FY02 and occasionally comment on our FY03 finances to date, noting of course that these are not audited figures.

Our primary revenue sources are our membership dues and the annual meeting. However, there are other entities such as investment income and assets released from restrictions that, although important, contribute less to our revenue stream. Our expenses are the annual meeting, the operations of the Society, membership expenses, the newsletter, education in the form of grants, and Board and committee expenses.

A summary of our revenue is noted in the table below with the immediately preceding year as a reference, as is customary.

<table>
<thead>
<tr>
<th></th>
<th>FY01</th>
<th>FY02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Meeting</td>
<td>$232,346</td>
<td>261,792</td>
</tr>
<tr>
<td>Membership Dues (member #s)</td>
<td>$118,019(994)</td>
<td>$120,473(987)</td>
</tr>
<tr>
<td>Investment Income</td>
<td>$7,784</td>
<td>$2,696</td>
</tr>
<tr>
<td>List Rentals</td>
<td>$2,718</td>
<td>$3,691</td>
</tr>
<tr>
<td>Assets Released from Restrictions</td>
<td>$21,500</td>
<td>$41,103</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$382,367</td>
<td>$429,755</td>
</tr>
</tbody>
</table>

The investment income registered above is interest gained over the year, which is not much, I will admit. But looking at the entire investment picture, we are weathering a dismal market rather well. Summarizing, we have 3 investment accounts. Two are to support the mission of the Society, which is to foster education and research in obstetric anesthesia and related fields, and one is to support operational needs. The educational accounts are a combination of temporarily and permanently restricted funds and are aggressively managed. Every year, funds are released from the temporarily restricted portion and are
applied to supporting our mission. A history of where those funds have gone for FYs 01 and 02 is provided below.

<table>
<thead>
<tr>
<th></th>
<th>FY01</th>
<th>FY02</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$21,500 released from restrictions</td>
<td>$41,103 released from restrictions</td>
</tr>
<tr>
<td></td>
<td>$24,045 awarded</td>
<td>$44,586 awarded</td>
</tr>
<tr>
<td></td>
<td>$20,000 to FAER</td>
<td>$20,000 to FAER</td>
</tr>
<tr>
<td></td>
<td>$1,500 for Gertie Marx award</td>
<td>$15,000 University of Colorado grant</td>
</tr>
<tr>
<td></td>
<td>$2,545 in Grants and Zuspan award</td>
<td>$1,750 for Gertie Marx awards</td>
</tr>
<tr>
<td></td>
<td>$5,086 accreditation fee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$2,750 Zuspan and OAPEF awards</td>
<td></td>
</tr>
</tbody>
</table>

(You have no doubt noticed that the accreditation fee is included in last year's figures. This is a cyclical fee that is a necessary expense to maintain our educational mission. We don't get very far if we are not accredited.)

In total, our overall investment market worth has decreased, but then, whose has not. Distressing as it seems, there are two encouraging points to be made here. One is that our fair market loss at the end of FY02 was only about 13%. Many did far worse. The other point is that since the beginning of the calendar year, our fair market value has been increasing and we are now at almost the same market worth we were before this bear market. According to many "experts" out there, we've seen the bottom and should have a better year than last.

Turning to expenses, a summary is as follows.

<table>
<thead>
<tr>
<th></th>
<th>FY01</th>
<th>FY02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Meeting</td>
<td>$230,448</td>
<td>$237,535</td>
</tr>
<tr>
<td>Operating</td>
<td>$83,734</td>
<td>$89,359</td>
</tr>
<tr>
<td>Education &amp; Research Grants</td>
<td>$24,045</td>
<td>$44,586</td>
</tr>
<tr>
<td>Membership</td>
<td>$20,290</td>
<td>$22,166</td>
</tr>
</tbody>
</table>
Most expenses remained fairly flat from FY01. The education and research grants were explained earlier in this article, and the increase in operating expenses were due primarily to website costs. The Board is currently addressing these.

In summary, our financial health is solid. If you remove the investment profile, we had a net gain of $18,854 last year while still nearly doubling our education and research support. Although our net assets decreased from FY01 that decrease was due to the market losses on our investments, which are currently reversing themselves.

<table>
<thead>
<tr>
<th></th>
<th>Revenue</th>
<th>Expenses</th>
<th>Gain/(Loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Meeting</td>
<td>$261,792</td>
<td>$237,535</td>
<td>$24,257</td>
</tr>
<tr>
<td>Operations</td>
<td>$172,963</td>
<td>$178,366</td>
<td>($5,403)</td>
</tr>
<tr>
<td>Overall</td>
<td>$434,755</td>
<td>$415,901</td>
<td>$18,854</td>
</tr>
</tbody>
</table>

Finally, although the figures are not all in, it appears that we had a positive bottom line from the annual meeting, again. Thank-you to all who attended. Now, I expect you all to recruit some more members to support our dues income!

Respectfully submitted by,

McCallum R. Hoyt, MD, MBA  
SOAP Treasurer
In many states, it should be no news to anyone that there is a medical malpractice insurance crisis. In 2002, premiums for anesthesiologists increased nationally by an average of 28%, with no end to these increases in sight. Although the number of lawsuits filed has increased only moderately, the median jury award has risen dramatically over the last few years (in Maryland it increased from $500,000 to $1,000,000 between 1997 and 2000). Since premium rates are based on actuarial expectations, such rapid increases necessarily have to result in large premium increases if no steps are taken to limit future increases in jury awards. With federal relief action stalled in procedural motions in the US Senate, there is little hope of tackling this issue nationally in the near future, at least before the 2004 elections. Therefore, action to ameliorate the situation will have to be taken at the state level, and we all have to get involved.

As physicians, we have to take the necessary steps to help achieve tort reform in our own states. These steps include:

1. Understanding the various aspects of tort law and the crisis, and how they apply to medicine
2. Appreciating the magnitude of the problem in our own state as well as other states
3. Educating our patients about how the crisis affects their health care, and
4. Interacting with our state societies and elected officials to get results.

There are several aspects of tort law that need to be understood before reform is attempted. For instance, it must be appreciated that only about 2% of negligent actions result in litigation - therefore, the use of the current tort system to achieve true fairness to those injured is not occurring, an outcome that is further exacerbated by the fact that only a very small percentage of awards actually go to the injured party. Thus, one aspect of reform should seek fair awards, and direct a larger percent of that award to the injured party, reducing the "lottery" aspect of the current system. For instance, a cap on non-economic ("pain and suffering") damage is frequently part of tort reform - it serves to fairly compensate for true costs, without inflating awards on an emotional level. Likewise, following the lead of California with their landmark MICRA reforms (passed in 1975 during the last malpractice crisis), many states now seek to limit plaintiffs' attorney contingency fees by creating a "sliding scale" schedule that would reduce the jackpot-like nature of the usual 40% contingency fee, returning more money to the injured party. Likewise, huge lump-sum payments make no sense for life-long care (in the instance of injured newborns, for example). Periodic payments make more sense, and are fair to all involved. Finally, allowing double recovery (for costs already covered, or those to be covered by insurance) makes no sense, and only serves to increase health care costs and create a larger windfall for plaintiffs' attorneys.

If this crisis has hit your state, you're not alone. Anesthesiologists in 11 states and the District of Columbia have average premiums of greater than $20,000, and 6 states (Florida, Nevada, Michigan,
Ohio, Pennsylvania, and West Virginia) had premium increases of more than 50% in 2003. In many states, national and local carriers have simply abandoned the medical professional liability insurance market, compounding the problem, especially for part-time practitioners (the remaining companies tend to charge only full-time premiums).

In order to be successful, we have to involve our patients in reform efforts. We should talk to them, if the opportunity arises, about how the current tort system is increasing their medical costs, and limiting their access to care and to their choice of providers. For instance, if you know part-time physicians who have retired because of the inability to afford a full-time premium, or if you know of obstetricians who have left the state or retired early because of the crisis, mention it to your patients. After all, their physician could be the next to retire or leave the state!

The most important thing to do is to get involved with your state society and your elected officials. Here in Maryland, our state medical society is going to propose tort reform legislation, and has scheduled a rally for physicians in the state capital. Each anesthesiology group should try to send physicians and their families to these rallies (post-call days couldn't be better spent!) -they really do have an impact on legislators.

And while you're in the capital, visit your representatives, look them in the eye, and let them know that this is a CRISIS, and that you expect them to do something to help, before physicians start leaving the profession or the state. That's the aspect of the crisis most worrisome to legislators - people (i.e. voters) get upset if their doctors leave, or if they can't find a doctor, or if they have to wait months for an appointment! (A very interesting study released in July by the Agency for Healthcare Research and Quality demonstrated that the implementation of a cap on non-economic damages clearly results in a higher number of physicians in a given state.) You should also mention that the cost of these premium increases will have to be passed on by hospitals and providers - and the cost of health care is already breaking the budgets of many states.

There are many sources available to educate yourself more about this crisis. The AMA website is a very good place to start, as well as the hcla.org web site, an outstanding site which has a wealth of downloadable documents that can be shared with patients and colleagues. These include studies and fact sheets that deal with many aspects of the crisis, including some of the myths being spread by the trial lawyers' lobby. For instance, you may hear that poor investment performance in the bear market led to the insurers having to raise their premiums. The fact is that 90% of reserves of professional liability insurers are in bonds, and we know that these were good, solid investment performers over the last few years! Likewise, you will hear that it is the need for insurance company "profits" that is driving up the cost of malpractice coverage, but in Maryland the largest insurer is a mutual insurance company (a non-profit, as it is in many states), which has just announced a 28% premium increase for next year! Armed with these kinds of facts, we can help fight the battle for tort reform.

Andrew Harris, MD, MHS
SOAP Representative, ASA House of Delegates
Minority Whip, Maryland State Senate
Another spring has come and gone, and already the Annual Meeting Planning Committee is hard at work ensuring that our meeting next May in Florida will be a great one. Before we move on, though, let's take a look back at SOAP 2003. As the saying goes, a picture is worth a thousand words - I'm sure most of you would rather take a pictorial look than wade through my prose anyway! These pictures are work of Divina Santos, MD, Alex Pue, MD, and Barry Corke, MB.

The meeting began on Wednesday evening with the traditional opening reception, a gathering of old friends and a chance to meet new ones.
Long a leader in the field of Obstetric Anesthesia as well as an outstanding educator, Brett Gutsche, MD, has been a ubiquitous presence at SOAP's annual meetings for as long as most of us can remember, as well as a subtle and influential guide for the Society. This year, it was the Society's turn to repay Dr. Gutsche by presenting him with the Distinguished Service Award, reserved for those who have made major and lasting contributions to SOAP.

Marc Van de Velde, MD, PhD, of Katholieke Universiteit in Leuven, Belgium, moderates one of the Oral Presentation sessions. Jane Huffnagle, DO, from Thomas Jefferson University Hospital in Philadelphia also presided over an Oral Presentation session.

The Zuspan Award is given each year to further new knowledge in the field of women's reproductive health and to enhance the interaction between obstetricians and anesthesiologists in developing joint research and scholarly pursuits. This year's investigations concerned maternal mortality (Elizabeth Bell -
U.N.C.; decision to delivery intervals (C. Holcraft, et al - Johns Hopkins); fetal effects of regional analgesia (N. Patel, et al - Royal Free Hospital, London); and preeclampsia (Anthony Maratea - M.G.H., Boston). Here Dr. Maratea accepts the award from the awards sponsor, Fred Zuspan, MD, Editor-in-Chief of *American Journal of Obstetrics and Gynecology* for his presentation "Altered vasoactivity as a marker for preeclampsia".

Ruth Landau, MD, of the University Hospital of Geneva, Switzerland presents one of two papers she co-authored in the "Best papers of the Meeting" session. Dr. Landau won the award for the paper "Genotype of the beta-2 adrenergic receptor determines the response to tocolysis", an investigation conducted in collaboration with colleagues from Columbia University in New York.

Raymond Glassenberg, MD (right, Northwestern University) won the "Research in Education" Award for his presentation of "The Virtual Spine". He is shown here with his father and co-author S. Glassenberg, MD.
The "Gerard W. Ostheimer Anesthesia Lecture: What's New in Obstetric Anesthesia" is always one of the highlights of the meeting. This year, Audrey S. Alleyne, MD, of the University of Rochester Medical Center in New York, delivered the review. Dr. Alleyne is shown here with current First-Vice President William Camann, MD, a former student of Dr. Ostheimer's, who provided the introduction for the session, as well as giving a refresher course lecture during the split session Thursday afternoon on "Regional anesthesia and the outcome of labor".

A panel discussion on Education focused on the current challenges facing those involved in training the next generation of Obstetric anesthesiologists. Moderated by Linda Polley, MD, of the University of Michigan (far left), panel members included (left-to-right) long-time SOAP member, Nancy Oriol, MD, currently Dean of Students at Harvard Medical School in Boston; Craig Leicht, MD from Western Pennsylvania Hospital in Pittsburgh; Rita Patel, MD of the University of Pittsburgh; and Medge Owen, MD from Wake Forest University in North Carolina.
Each year, AstraZeneca honors a member of SOAP for their career-long contributions to the field of Obstetric Anesthesia with the Nils Lofgren Award, named after the developer of lidocaine. This year the award was presented to Sivam Ramanathan, MD from the University of Pittsburgh, shown here with his wife and SOAPer's Mark Zakowski, MD of Los Angeles, and Board Member Divina Santos, MD.

In the turbulent world where medicine and politics intersect, it is good to know that anesthesiologists in general and obstetric Anesthesiologists in particular are well represented by our leaders. This year's meeting included a panel discussion on "Politics, Anesthesia and Obstetrics". Moderated by SOAP representative to the ASA House of Delegates (and a State Representative in Maryland) Andrew Harris, MD (the tall one!), the panel included (left to right) David Birnbach, MD (Chair, ASA Committee on Obstetric Anesthesia), Thomas Purdon, MD (Immediate Past President of ACOG), and James Cottrell, MD (ASA President). Much of the discussion focused on areas of mutual concern to the specialties of Obstetrics and Anesthesiology.
The Annual Business Meeting is also the time for the official changing of the guard. Here, incoming President Richard Wissler, MD (University of Rochester) presents a ceremonial gavel to out-going President Joy Hawkins, MD, (University of Colorado). On behalf of the whole Society, thanks for all the hard work, Joy.

Several positions on the Board of Directors were voted on. Andrew Harris, MD was reappointed to another term as SOAP representative to the ASA House of Delegates. McCallum Hoyt, MD, was also re-elected by acclamation to another term as Treasurer.

Four sites were proposed for the 39th Annual Meeting in 2007 - Toronto, Chicago, Albuquerque, and Banff, British Columbia. In what is perennially the most hotly contested election, Banff got the nod. The beauty of the scenery and the favorable exchange rate (for those of us south of the border) should make for a great meeting.

In a closely contested election during the annual business meeting of the society, sitting newsletter editor, David J. Wlody, MD, from the Downstate Medical Center of the State University of New York (Brooklyn), was elected to Second Vice-President of the Society, narrowly edging David Campbell, MD and Richard Smiley, MD. One of the great strengths of the Society is that there is never a shortage of highly qualified individuals ready and willing to assume the tasks and responsibilities of leadership.

The "What's New in Obstetrics?" session serves to remind us that we do not practice in a vacuum, that our concerns (and those of our patients) are intimately involved with those of our Obstetric colleagues. Kathy Reed, MD, of the University of Arizona in Tucson updated us on issues ranging from prematurity and hypertension, to antibiotics and VBAC. Her overarching theme came down to this: "Communication between our specialties is what is most important."
In the second of three poster review sessions, Michael Paech, FANZA, of King Edward Memorial Hospital for Women in Perth, Australia, reviewed some of the more than 100 abstracts presented.

While many of our concerns end with delivery, Kevin Coulter, MD, from U.C. Davis Medical Center in Sacramento, delivered the "What's New in Neonatology" address pointing out that for our neonatology and pediatric colleagues, the work is just beginning. His talk focused on the perinatal complications of maternal drug abuse, both short- and long-term.

Scott Segal, MD, led a lively session at the "Breakfast with the Experts" on Saturday morning. A special thank you to all the "experts" who helped make this session such a success.

John Thomas, MD, of Wake Forest University School of Medicine oversaw the last of the poster review sessions.
The Fred Hehre Lecture honors one of the pioneers of obstetric anesthesia. It allows an individual who has made significant contributions to our field free rein to discuss his or her work, or any issue they feel of import to our members. This year, medical historian Donald Caton, MD, from the University of Florida in Gainesville spoke on the relationship between social forces and the development of our specialty. His book "What a Blessing She had Chloroform" should be on every resident's (and attending's!) reading list.

This year the Annual Banquet, a western-themed cookout, was the final event of the meeting. In addition to one last chance for some fun with good friends and colleagues, it is also the forum for the presentation of many of the prestigious awards the Society bestows on presenters. Here President Dick Wissler presents the awards from the Gertie Marx Symposium for the best presentation of research by a resident physician. Third place went to Brendan Carvalho, MB (Stanford University), for "Ultra-light PCEA techniques in labor: minimizing physician workload while optimizing outcome". Second place went to Johanna Bray, MD (Royal Free Hospital, London) for "Suprasternal Doppler estimation of cardiac output: standard vs. sequential CSE epidural anesthesia for cesarean section." First prize in the Symposium went to Rebecca McClaine, MD (Duke University) for her presentation "Effects of maternal
general anesthesia on fetal physiology." Dr. Landau received the award for the "Best Paper of the Meeting".

As my last (semi-) official act as Meeting Host, I'd like to thank all of the people who made the meeting such a success - the Faculty, the presenters, the attendees, the sponsors, and the management team at Ruggles.
Peripartum Cardiomyopathy: A Current Review

Epidemiology and Definition

Peripartum cardiomyopathy is a relatively rare but life-threatening disease. A wide variation in incidence rates ranging from 1 per 1485 to 1 per 15,000 live births has been reported although the currently accepted incidence is approximately 1 per 3000 to 1 per 4000 live births. Surprisingly, a recent analysis of maternal mortality in North Carolina reported at the 2003 Annual SOAP meeting found cardiomyopathy to be the leading cause of maternal death in that state. It is unclear, however, if all these cases met the definition of peripartum cardiomyopathy or if some were related to preexisting heart disease. Identified risk factors for peripartum cardiomyopathy include advanced maternal age, multiparity, obesity, multiple gestation, preeclampsia, chronic hypertension, and black race.

Based on a recent report from the National Heart, Lung, and Blood Institute, peripartum cardiomyopathy is defined by the presence of four criteria. These include: (1) development of cardiac failure in the last month of pregnancy or within five months of delivery; (2) absence of an identifiable cause for cardiac failure; (3) absence of recognizable heart disease prior to the last month of pregnancy; and (4) left ventricular systolic dysfunction demonstrated by echocardiographic criteria such as depressed ejection fraction.

Etiology

The etiology of peripartum cardiomyopathy remains unknown despite much investigation that has focused on identifying a cause. Proposed causes include myocarditis, abnormal immune response to pregnancy, and maladaptive response to the hemodynamic stresses of pregnancy. There is more evidence to support myocarditis or an autoimmune process as the cause of the disease than for other proposed etiologies. Endomyocardial biopsies in women with peripartum cardiomyopathy have demonstrated myocarditis in many patients but biopsy results differ markedly among studies. The highest incidence of myocarditis reported was 76% but one of the most recent series found myocarditis in only 8.8% of patients.

Diagnosis and Presentation

Patients with peripartum cardiomyopathy present with the typical signs and symptoms of left ventricular failure. The majority of cases occur after delivery and the immediate postpartum period. However, when the disease develops during the last month of pregnancy the diagnosis of cardiac failure is difficult to make by signs and symptoms alone since some of those symptoms, such as fatigue, orthopnea, and pedal edema, are common among normal parturients during late pregnancy. Further testing is required to establish the presence of cardiac failure. A chest x-ray consistently demonstrates cardiomegaly and
pulmonary edema. Echocardiography confirms ventricular failure with increased left ventricular end-diastolic dimensions and decreased ejection fraction. Once cardiac failure is identified, peripartum cardiomyopathy must be differentiated from other disease processes that lead to heart failure, such as valvular heart disease.

**Prognosis**

Maternal mortality from peripartum cardiomyopathy in the United States has been reported to be 25-50%. Thromboembolism accounts for approximately 30% of these deaths. Patients who survive the disease have a significantly higher ejection fraction and smaller left ventricular end-diastolic diameter at the time of diagnosis compared with patients who succumb. Normalization of heart size and resolution of congestive heart failure within 6 months after delivery is also a good prognostic sign with mortality rare among these patients. The incidence of resolution is unclear, however. An early series reported that 50% of patients experienced resolution but a more recent study reported only a 7% incidence of disease regression. The majority of patients in this recent series died, required cardiac transplantation, or experienced continued cardiac impairment.

Patients with peripartum cardiomyopathy require counseling concerning the risks of subsequent pregnancy. Patients without resolution of their cardiomyopathy are at significant risk for death or exacerbation of the disease and should be advised to avoid pregnancy. There is no consensus on how to advise women whose cardiomyopathy has resolved. One of the earliest studies found that 25% of these patients experienced transient exacerbation during subsequent pregnancy. An echocardiographic study found normal left ventricular function during and after pregnancy in patients who had previously recovered from peripartum cardiomyopathy. However, in a more recent study, patients who had a return to normal left ventricular function after peripartum cardiomyopathy still demonstrated impaired contractile reserve during a dobutamine challenge test. Therefore, should these patients become pregnant, they should be cared for in collaboration with a high-risk obstetric center.

**Medical and Obstetric Management**

Medical treatment of peripartum cardiomyopathy is similar to that for other dilated cardiomyopathies. Management goals include preload optimization, afterload reduction, and increased contractility. Anticoagulation is also considered in many patients because of the significant risk of thromboembolism. When the patient develops cardiac failure before delivery, some treatment modifications are required. Angiotensin-converting enzyme inhibitors are routinely used for afterload reduction in congestive heart failure. However, these drugs are contraindicated during pregnancy because of adverse fetal effects. Alternative treatments for afterload reduction during pregnancy include amlodipine or a combination of hydralazine and nitroglycerin.

In addition to treatment of the cardiac failure, an obstetric plan of care must be developed when the disease occurs during pregnancy. Collaboration among the obstetrician, cardiologist, and anesthesiologist is essential to optimize care. If the parturient's cardiac status can be stabilized with medical therapy,
Induction of labor is usually recommended with cesarean section reserved for obstetric indications. However, in parturients who experience acute cardiac decompensation, cesarean delivery may be required because of an inability of the mother to tolerate the prolonged stresses of labor.

**Anesthetic Management**

Parturients with peripartum cardiomyopathy require special anesthetic care during labor and delivery. Invasive monitoring, including an arterial line and pulmonary artery catheter, should be utilized to assess the patient's hemodynamic status and guide management. The cardiovascular stress of labor and delivery may lead to cardiac decompensation. When that situation occurs, the anesthesiologist may need to infuse vasoactive agents, such as nitroglycerin or nitroprusside for preload and afterload reduction and dopamine, dobutamine or milrinone for inotropic support. Data from the pulmonary artery catheter is essential to determine the appropriate pharmacologic therapy for each patient.

Early administration of labor analgesia to minimize further cardiac stress associated with pain is paramount in the anesthetic management of these patients. Various analgesic techniques provide unique advantages in the hemodynamic management of the parturient while also providing excellent analgesia. By using invasive monitoring data to guide fluid management and titration of vasoactive drugs, the slow induction of epidural analgesia is a safe and effective analgesic technique in parturients with peripartum cardiomyopathy. In fact, the sympathectomy-induced afterload reduction that occurs with epidural anesthesia can contribute to an improvement in myocardial performance in these patients. Combined spinal-epidural analgesia is another excellent analgesic option. Because the initial analgesia can be accomplished with spinal opioids, hemodynamic stability may be more easily maintained compared to epidural analgesia since sympathetic blockade is avoided. When injection of epidural local anesthetics is required later in labor, slow titration of the drug can provide the benefits of afterload reduction while avoiding sudden drops in blood pressure that would be deleterious. In the most fragile patients, continuous spinal analgesia is an attractive alternative. A continuous spinal catheter technique permits intermittent intrathecal opioid injection for analgesia throughout the first stage of labor. Supplementation with a small dose of intrathecal local anesthetic is sometimes needed to provide adequate analgesia for the second stage of labor and delivery. A significant advantage of this technique is that hemodynamic stability is more easily achieved because a local anesthetic-induced sympathectomy is avoided for the majority or all of the labor process.

If a cesarean delivery is required, a continuous epidural or spinal anesthetic is usually the best anesthetic option. The patient's hemodynamic status is carefully followed and fluid management is guided by data from the invasive monitors while the anesthesia level is slowly raised. A single-shot spinal technique is not recommended because the rapid hemodynamic changes associated with this technique may not be well tolerated in these fragile patients. General anesthesia is sometimes required when cesarean section is required because of nonreassuring fetal status or acute maternal decompensation. Anesthetic drugs with myocardial depressant effects should be avoided. Induction and maintenance with a high-dose opioid technique is often preferred. If this technique is used, remifentanil is a good choice because its short half-life can minimize depressant effects on the neonate. Trained personnel must be available to manage neonatal depression whenever a high-dose opioid anesthetic is utilized.
References


