



# THE JOHNS HOPKINS *Cutting* Edge



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## High-Stakes Surgery Pays Off

**A**t 2 a.m. on August 12, 2004, after a bitter quarrel with his girlfriend, Thomas Salmon went out to buy some weed to calm his nerves. He approached a man on a corner and followed him to a secluded spot, where a dealer was waiting. Suddenly, the dealer pulled a gun and shot the middleman in the head, killing him instantly. Then he pointed the gun at

Salmon, who instinctively tried to wrestle it away. But the crazed dealer started shooting. The first bullet pierced Salmon's thigh; the next two struck his neck and chest. Then

the dealer turned around and shot Salmon again to make sure he was dead.

Miraculously, he wasn't. Salmon, now 29, will never forget the pain and fear that consumed him. "I felt like I was being electrocuted," he recalls. With all the strength he could muster, Salmon picked himself up, found his cell phone and called for help. Eventually, someone came to his aid and paramedics took him to Johns Hopkins' emergency department.

Blood pouring out of him, Salmon fought for life. The trauma team moved into high gear. The right side of Salmon's



Thomas Salmon takes a break between customers at My Spot in East Baltimore, the shop where he works as a barber.

neck and arm, thigh, trachea and esophagus competed for attention. Their first hurdle: containing the bleeding from a vein in his thigh. Then they repaired the trachea and removed the destroyed segment of the esophagus. Salmon would remain in the ICU for weeks and endure several more surgeries, not to mention intense rehab.

Eating would become the toughest adjustment for Salmon. With so much esophageal damage, he was forced to digest food through a tube connecting into the stomach. For months, nutritional drinks were all he could handle. He would pour the liquid into

his mouth, so his salivary glands could relish the taste, and the fluid would empty into an ostomy bag. Then he injected it into his stomach tube. "It was torture never having the sensation of being full," Salmon says.

Grisly as Salmon's case was, trauma chief Edward Cornwell has seen worse during his eight years at Hopkins. Indeed, gunshot wounds and stabbings account for almost 40 percent of adult trauma cases here. At least 80 percent of these adults (ages 15 and up) live within five miles of the hospital. That distresses Cornwell to no end.

Frustrated that no amount of surgical skill can prevent trauma, Cornwell has waged a

relentless campaign to take the glamour out of street violence. He regularly brings inner-city youths to the hospital to talk to victims. His upcoming video, "The Hype and the Reality," is his answer to MTV's often soft take on violence.

Meanwhile, Thomas Salmon has done his part to advance the cause. In a video made after the shooting, the two men speak candidly about Salmon's ordeal. "Sometimes you gotta go through things before you can respect them," says Salmon, "and I know that all these videos that promote violence are done by people who haven't been through it." ■

--Judy Minkove

### The Surgeon Speaks

**"The esophagus is a notoriously difficult organ to work with."**

This patient's injuries to both the trachea and esophagus required a team effort. Though trauma surgeons here perform most operations without extra help, this was a rare, complex injury that I would have been foolish to tackle alone.



The esophagus is a notoriously difficult organ to work with. Even with elective esophageal resections, there's a high leak rate (and associated high mortality). If the esophagus fell apart next to his tracheal repair, the consequences would have been disastrous. Fortunately, Joseph Califano managed the tracheal wound and former JHH surgeon Dave Mason the esophageal injury after I performed the initial exploration and tracheostomy. The trachea was repaired and the esophageal injury managed with a "spit fistula," rerouting saliva through the neck. After the ostomy was done, I created a gastrostomy tube so he could be fed through his stomach while the esophagus was diverted.

Six months later, his wounds healed, Thomas had a definitive esophageal repair by Steve Yang, and he now eats normally. The initial surgery took more than 10 hours, and ultimately his treatment required six different specialists—two otolaryngologists, two thoracic surgeons, and two gastroenterologists. This kind of team effort distinguishes a level I trauma center from other trauma centers and ensures better outcomes. In retrospect, involving the others early on was probably my greatest contribution to Thomas' care. He has a good prognosis. ■

--Glen Roseborough



From Julie Freischlag  
Director of Surgery

## The Different Shapes of Diversity

One of the interesting things I learned at the dean's retreat on diversity last November is that diversity takes many forms. There are the obvious differences among people according to race, gender and ethnicity. But we also come from different backgrounds depending on how we were raised, our childhood experiences and our family history. Did your parents' schooling go beyond high school? Does a member of your family have a mental health disease? Any of these things, visible or not, can make us feel uncomfortable in a group.

As we also discussed, diversity issues aren't limited to our faculty and staff. We need to make sure that our patients, no matter what their socio-economic status, are getting equal access to health care and that we treat them all equally.

At the end of the retreat, the dean assigned us the task of examining how diverse our departments are and asked us to formulate a strategic plan for the upcoming budget year on how to improve diversity.

As I see our department, we're a pretty diverse group. You can find men and women here from many different countries. In this issue of *Cutting Edge* alone, we highlight faculty and staff from Lebanon, Syria and Iran. Our cover patient's life was saved by the best Hopkins has to offer, despite the fact that he is not a rich man. On a trip I took to Beirut recently, it was evident that access to that kind of care in other countries is hardly a given for those without financial means.

Diversity is now part of the mission of Johns Hopkins Medicine. We have set up a committee, under the leadership of Malcolm Brock, to make certain that diversity continues its high profile. I think our already diverse population will help us retain faculty and staff—and attract an even more diverse group. ■

# Taking Time to Pause in the OR

A new checklist has expanded, formalized the “time-out” process.

**The Project:** In recent years, the Department of Surgery has worked tirelessly on teamwork and communication. Two years ago, at the same time that “time-outs” were mandated before surgery to identify the patient, procedure and site prior to operating, a series of teamwork training sessions was held for more than 700 staff members here. Teamwork and communication were named among the department's five core values (along with trust, integrity and respect).

“Teamwork and communication have been linked with safety and improved patient outcomes,” says Lisa Rowen, director of surgical nursing and chair of the teamwork team. “When people feel valued, they are more likely to speak up to address safety concerns.”

By last fall, the department decided to implement an expanded version of the time-out, which was being put forth in the safety literature and at conferences. First, it took a measure of one September day in the life of the department: 186 people took a survey on communications in the operating room. Asked 11 questions, the respondents identified a couple of problem spots. Only 58 percent strongly agreed that they could easily predict what other OR personnel would do next during the case that day. Just 40 percent said they had planned for potential problems during a preoperative discussion.

“With our survey, we learned that we still had room for improvement,” says Rowen.

To launch its briefing and debriefing, the idea for a before- and after-surgery expanded time-out was discussed in grand rounds and in e-mails sent to staff. Still, use was scattered. “We needed a tool that had everyone on the same page,” says Rowen.

Over the next eight months, the committee worked out the kinks with a new OR briefing/debriefing tool. The checklist, a pink form divided into two sections, is completed by the circulating nurse prior to every procedure and by the anesthesia



Surgeon Warren Maley (right) leads the briefing/debriefing process in the OR.

provider after surgery.

While a few of the items on the list are holdovers from the time-out process, many are new additions. During the briefing, anesthesia asks questions about antibiotics, glucose management and patient positioning. The surgeon checks on the blood supply, equipment, the time allotment for the procedure and the latest test results.

During the debriefing, which occurs before the attending surgeon leaves the room, the safety and efficiency of the case get discussed, paperwork and labeling of specimens get checked and the transition of care is talked over. According to Rowen, it takes about two minutes to complete each section.

**The Players:** Hundreds of people were involved with the development of the tool—from nurses, surgeons and anesthesiologists to risk managers. The form was approved by everyone from the OR Executive Committee to Dean/CEO Edward Miller.

“This thing circulated,” says Rowen. “It was probably revised 25 times because so many people made different suggestions.”

**The Results:** In just one example, surgeon Martin Makary has found the briefings and debriefings useful for advanced laparoscopic surgery—cases with complex instrumentation and equipment needs. Because of a debriefing discussion, he now has the types of angled scopes he prefers on hand, saving time in the OR. He also notes that an atmosphere that promotes speaking up in the OR is good for patient safety. “It's an important safety net should there be a safety hazard that someone in the OR recognizes.”

Although many surgeons have been doing their own types of briefings for years, he continues, “we're trying to make a standardized system for patient safety and teamwork. Any quality improvement system change in the hospital needs to be measurable, standardized and validated.”

Still, the briefing/debriefing tool, which has been in use since May 1, is not perfect. “We've gotten a lot of feedback now,” says Rowen. “We've rounded in the OR to observe it and gotten feedback from a focus group. It goes really well when the surgeon leads it. But the surgeon needs to show buy-in.” ■

## Let's Meet: Heitham Hassoun and Mahmoud Malas

Vascular surgeons Heitham Hassoun and Mahmoud Malas first met at a medical conference last year, just after they'd both signed on to work at Hopkins. The ebullient Hassoun, who is Lebanese, likes to point out the bond he feels with the more serious Malas, who was born in Syria. “At Hopkins, Lebanon and Syria can get along,” says Hassoun.

Hassoun has lived all over. He grew up in Portland, Ore., spent his formative years “in the desert at a big American oil company in Saudi Arabia,” went to boarding school in central Pennsylvania and was a Hopkins undergrad. Most of his medical training took place in Texas. Hassoun now splits his time between the operating room and the lab. As a surgeon, he performs endovascular procedures within the arteries using balloons, stents and catheters. In his basic research, he decreases the blood flow to the kidneys and guts of lab animals to mimic what happens in patients. The point is to study the inflammation and see how the genes respond to the insult.



Mahmoud Malas

Malas, who grew up in Damascus and went to medical school at Damascus University, came to the United States for his senior year at Baylor. He did his residency at USC and a fellowship at Albert Einstein College of Medicine. He spent his first six months here at Bayview Medical Center, where he is based, setting up a facility for endovascular surgery. “There are only a few instruments you need to do open [vascular] surgery, but with endovascular, the equipment is very diverse and the inventory is huge.” His research focus is clinical trials, such as the CREST and CAPTURE II, comparing open vs. endovascular treatment for carotid artery blockage to prevent stroke. He is also designing a trial to compare leg bypasses vs. balloon angioplasty to treat peripheral arterial occlusive disease. ■



Heitham Hassoun

# Curing CF Before Birth?

Over the past 10 years, the average life span of a person with cystic fibrosis (CF) has leaped from the mid-thirties to the mid-forties. “We’ve made a decade’s worth of difference,” says pediatric surgeon Anne Fischer, “through some very careful work on minimizing loss of pulmonary function.” But Fischer has her eyes set on an even more dramatic improvement—curing CF entirely, while the patient is still in the womb, by inserting a working copy of the gene whose malfunctioning creates such havoc.

CF is caused by the loss or mutation of a single gene, *CFTR*, which directs the manufacture of sweat, digestive juices and mucus. Most people inherit two copies of *CFTR*, but one working copy is sufficient to avert CF. It’s only when both copies fail that patients develop a raft of CF-related health problems—including bronchiectasis and end-stage lung disease necessitat-

ing lung transplantation. “Right now, we deal with the sequelae of diseases like CF,” Fischer says, “but wouldn’t it be nice if we could do it at the other end and really make a difference with a fetal intervention?”

The tricky part is inserting working copies of *CFTR* into cells, enabling the gene to express sufficient quantities of protein; only 5 percent to 10 percent of normal gene expression is needed to head off the lung disease accompanying CF, according to some studies.

Viruses have long been the preferred delivery vehicle or “vector” for gene therapy. The problem is that even when gutted—stripped of their disease-causing DNA—viruses often set off an immune response in the host organism. For that reason gene therapy has long remained a winning lottery ticket without a payoff. Despite 20 years of hard study, scientists have yet to come up with a single successful gene therapy for any disease.

Enter Fischer, a pediatric sur-

geon with a Ph.D. in immunology, who has just received a major grant from the National Institutes of Health to explore the applications of pseudotyped adenoviral-associated viruses (potentially even other vector systems such as nonviral vectors and lentiviruses) as delivery vehicles for *CFTR*. An immunobiologist, Fischer is well suited to track the perinatal response to these vectors and evaluate which is safest and most efficient. Moreover, it will be pediatric surgeons, skilled in open fetal surgery and endoscopic fetal surgery—technologies perfected over the past decade—who will be able to translate prenatal gene therapy into a clinical reality.

Surgeon scientists like Fischer are a rare breed these days. Hopkins, more than most institutions, prides itself on nurturing scientist clinicians, but even here surgeons who work at the lab bench are few and far between. Surgeons can’t simply walk away from the operating table to spend a few years doing basic research, Fischer points out, without a substantial loss of technical



Anne Fischer: “It’s an amazing time to be a human immunobiologist with all the advances in development, stem cell and gene therapy and proteomics.”

expertise and critical judgment in the surgical suite. So there is a real need for grants like the one that Fischer just received, which help carve out protected research time in the midst of a busy surgical schedule.

Despite the practical and scientific challenges that confront her, Fischer is excited by the

opportunity to contribute to the revolution in genomic medicine. “Fetal interventions may well have the broadest impact when gene therapy and stem cell therapy actually come into play,” she says. “All three interventions involve pediatric surgeons, so who knows where we will be in another decade.” ■

—Deborah Rudacille

“Wouldn’t it be nice if we could do it at the other end and really make a difference with a fetal intervention?”

## On the Job

### Roshi Etemad-Moghadam, Surgery Operations Administrator

Roshi Etemad-Moghadam grew up in Iran and came to the United States for college (Mt. Holyoke) two months before the Iranian revolution. She was a perfusionist at Hopkins for 14 years and eventually became program director for Hopkins’ perfusion school as well as the Hospital’s chief perfusionist. During that time, the tenacious Etemad-Moghadam finished both a master’s in education and an M.B.A. degree. Last September, she officially became the surgery operations administrator.

#### What do you oversee in your new role?

I oversee support services for the OR, primarily supplies and equipment. Because I have a clinical background, this job was expanded to include oversight of the perfusionists and the cardiac physician assistants. In addition, I oversee any construction in the OR and I’m involved in planning for the new building.

#### How do you spend your days?

A lot of time is spent in crisis management. Today, for example, a supply wasn’t available for a case because the manufacturer sold that division to another company but never told us. So our order went to the wrong



place. We had to send someone to another hospital for the item. There are also equipment challenges that make it necessary to stagger cases to use our equipment efficiently. Otherwise, I try to support my staff on their operational and staffing issues. Right now, we’re having difficulty recruiting PAs.

#### What’s the inventory here?

We have about 7,000 individual items. We’re constantly ordering because of our lack of space. I do a lot of product research, because people request things on a daily basis. I have to understand the request, find out if there are other vendors who sell that product, decide if we already have an equivalent product and then decide whether it is truly an urgent request.

#### What do you worry most about?

I want to make sure that the

people who are quiet, who don’t say very much and don’t ask for much, get what they need. And obviously I want to make sure the patients are getting the best care.

#### How do you ensure that?

One way is to get people to have a bigger picture of their job. We have the materials staff meet with the vendors to show them what the products do. They also go to the ORs to meet with the nurses who explain why nursing asks for certain things. The staff then are not just pulling a syringe off the shelf because somebody asked for it. They’re involved in patient care and realize their job is a critical function. ■

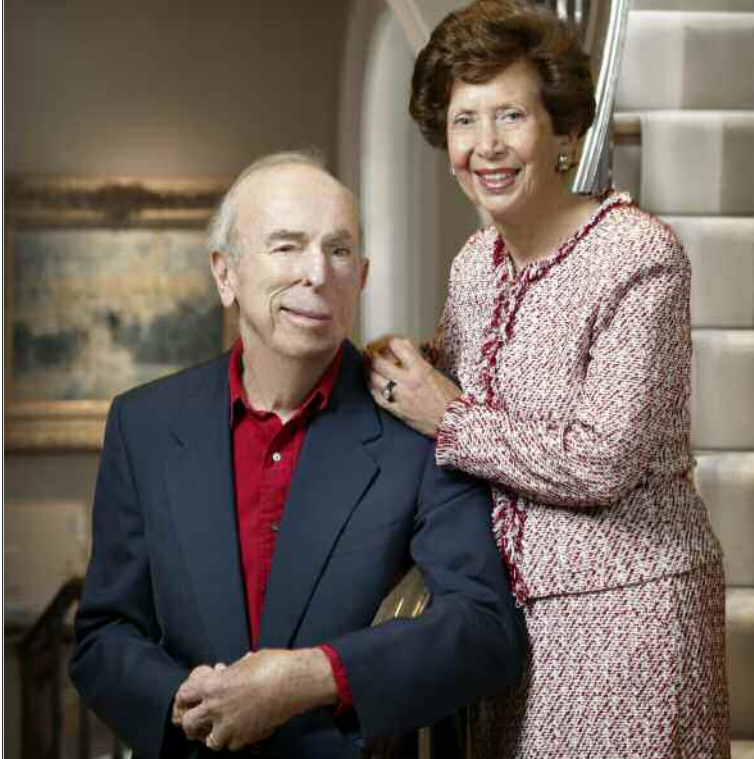
# What Lies Beneath

When the fair-skinned, blue-eyed Melvin Cohen was growing up in Alabama in the 1930s, a suntan was a sign of health. Six decades later, Cohen found himself paying the price for the many years he spent in the sun: he was diagnosed with skin cancer.

Cohen, who resides in Bethesda and is chairman of a digital and film processing company, had been coming to Johns Hopkins to get annual physicals. He regularly visited a dermatologist in Washington, D.C., who had successfully treated him for basal cell carcinoma, a slow-growing skin tumor.

In 1999, Cohen developed an innocent-looking blemish on his left cheek that wouldn't go away. His dermatologist closely watched the lesion for a year, but then Cohen's wife, Ryna, insisted that her husband come to Hopkins to have it checked.

Cohen saw a specialist in Mohs micrographic surgery, a procedure in which thin layers of the skin are removed and checked one at a time until the last layer appears cancer-free. "Much to my chagrin and the doctor's surprise,



Melvin and Ryna Cohen at home in Bethesda.

they discovered an underlying growth called squamous cell cancer, a malignant tumor which was 8 centimeters long and six layers down," says Cohen.

In addition to having radiation therapy around the edges of the wound, Cohen required a series of corrective procedures "to put my face back in order," he says. That was his introduction to Paul Manson, Craig Vander Kolk and Anthony Tufaro in the Division of Plastic and Reconstructive Surgery.

Cohen found himself with a skin graft from his arm which formed a flap on his face and "was quite disfiguring in the early months. It caused my left eyelid to pull down as well."

"Much to my chagrin, and the doctor's surprise, they discovered an underlying growth called squamous cell cancer."

Five years after his procedures, there is just a modest change in his appearance and no recurrence. "I have much to be grateful for," says Cohen.

To demonstrate their gratitude, the Cohens are making annual donations to the three plastic surgeons. Manson uses his funds to bring visiting professors to campus. Vander Kolk has been able to restore his camp for children with facial differences. Tufaro uses his portion for research using bovine collagen material on reconstruction patients who have had resection of tumors.

"We're great fans of Johns Hopkins," says Cohen. ■

*To make a gift to the Department of Surgery, contact Boi Carpenter-Mellady at 410-516-5483 or bmellady@jhmi.edu. To no longer receive information about supporting the department, contact her using the information above.*

## FACULTY NEWS

Surgical oncologist **Charles Balch**, a past president of the Society of Surgical Oncology, received the group's prestigious Heritage Award for his contributions to the society. He was the founding editor in chief of the society's journal, *Annals of Surgical Oncology* ■ **Brigitte Reeb**, administrative director of the Comprehensive Transplant Center, was awarded special recognition for two of her abstracts submitted at the UNOS (United Network for Organ Sharing) Transplant Management Forum held in San Francisco. Her abstracts, titled "Organ Acquisition Rates: A National Comparison," and "The Coordinated and Productive Management of the Donor Billing Process," were among only nine cited for superior quality ■ Breast cancer survivor and patient advocate **Lillie Shockney** has been awarded the Susan G. Komen Foundation's Professor of Survivorship Award. Shockney, who was recently named an instructor of surgery and is administrative director of the Johns Hopkins Avon Foundation's Breast Center, is the first nonphysician to receive the award. It is accompanied by a \$20,000 gift to help cancer survivors and is given annually to leading researchers and clinicians to support work that increases understanding of the complex issues related to surviving breast cancer. She also recently received the Avon Foundation's Spirit of Friends Award for her support of the foundation. Finally, she is publishing two new books: *Navigating Breast Cancer*, a guide for the newly diagnosed, and *Stealing Second Base*, about her personal experiences with breast reconstruction.

## NURSES RATE FIRST

A study led by surgeon **Martin Makary** based on a survey measuring attitudes toward the work environment in the OR reveals that surgeons exhibit the lowest level of teamwork and nurses the highest. Called the Safety Attitudes Questionnaire (SAQ), the survey was adapted from an airline industry questionnaire by a Hopkins team of health professionals. It was administered in 60 hospitals in 16 states during July and August 2004. Results appear in the May issues of the *Annals of Surgery* and the *Journal of the American College of Surgeons*.

The SAQ contains 65 questions in six areas related to safety, including teamwork climate, safety climate, job satisfaction, perceptions of management, stress recognition and working conditions. Sixty-five percent of OR personnel thought surgeons exhibited a high or very high level of teamwork. In contrast, 83.5 percent of respondents believed surgical nurses exhibit a high or very high level of teamwork and 85 percent rated certified registered nurse anesthetists high or very high.

"The bottom line is, you wouldn't want to fly with a pilot or co-pilot who wasn't happy with his working environment and the same applies to the OR," says Makary. Some 700 hospitals are already using the survey. Other authors of the study include Surgery Chief **Julie Freischlag** and **Lisa Rowen**, surgical nursing director. ■

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