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THE JOHNS HOPKINS *Cutting* Edge



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Removing a Rib Makes Athlete Whole Again

Back in high school, Jad Vonderheid's biggest rival in the pool was a tall kid with a long torso and very large feet. At last, Jad had a growth spurt, and came in fourth against the big kid from Baltimore, whose name was Michael Phelps.

"That's the caliber swimmer he was," says his mother, Betsy Vonderheid, of Annapolis.

Jad had always been athletic—as a pitcher in Little League, a water polo player, a weight lifter. But swimming was his passion, so much so that he turned down a college scholarship at a Division III school in favor of the University of Massachusetts, a Division I school in the Atlantic 10 Conference.

The trouble began in his junior year. Jad's right arm was suddenly swollen, painful and turning blue. A physician at UMass

ordered an ultrasound that revealed two blood clots.

Jad was diagnosed with a rare disorder called "effort thrombosis," a term derived from its association with repetitive limb exertion.

Also called Paget-Schroetter syndrome, the condition involves compression and injury to the main (subclavian) vein as it passes through the thoracic outlet, the tight, triangular path between the neck and chest. The vein often gets pinched by the first rib



Photos By Karen Winger

Jad Vonderheid checks his time at his final home meet at the University of Massachusetts against Boston College in January. Although he qualified, he gave up his spot to swim for the Atlantic 10 championship title and opted for a time trial between events. He recorded his best time: 21.89 in the 50-yard freestyle.

and scalene muscle against the collarbone.

Jad's was a classic case. Just brushing his teeth caused his arm to discolor. Although surgery to remove his rib and trim the muscle was an option, the physicians his family first consulted painted a sobering picture of the results: Jad might never be able to do as much as throw a ball or lift a box, and worse yet, might lead his life in constant pain. Instead of having surgery, which sounded "barbaric" to his parents, Jad opted for blood thinners to dissolve the clots. Still, Jad's arm didn't feel better. He stopped swimming, didn't attend the championship meet with his team that year and fell into a depression. "You have no idea how dis-

couraged we were," recalls Betsy.

Shortly thereafter, Jad called his parents late one night asking for help. He wanted the operation. The Vonderheids decided to go outside their health plan to consult with vascular surgeon Julie Freischlag, chief of surgery at Johns Hopkins. "She said, I can make you whole again, you can be normal," says Betsy. "My son immediately said, Sign me up! and I started to cry."

On August 2, 2004, Freischlag cut under Jad's right arm to remove his rib and chunks of his scalene muscle. He was discharged the next day. Two weeks later, his venogram showed that his injured subclavian vein was forming a new path of collateral veins almost as big as the

original. Following physical therapy, he returned to school for his senior year and resumed training.

Slowly he built up to an hour of practice a day (one-fifth the norm) and made the conversion from distance swimmer to sprinter. At the time of his final home meet in January, he swam his lifetime best times in the 50-yard freestyle and the 100-yard butterfly while his teammates and onlookers screamed encouragement. In February, when the UMass Minutemen won their fifth consecutive A-10 title, Jad managed to shave another 0.14 seconds off his 50 free.

Now a college graduate, Jad is looking for a job in sports management. But not until one last carefree summer in Ocean City. ■

The Surgeon Speaks

"We treat very aggressively."

Jad's condition falls under a group of disorders known as thoracic outlet syndrome (TOS) that can be complex and somewhat confusing. Most cases affect the nerves that pass into the arms from the neck. A tiny percentage of cases involve arteries. Cases like Jad's, where there is obstruction of the veins, affect about 3 percent of patients.



People who get effort thrombosis are heavy-duty athletes who get very big muscles in their neck. I've helped major league and college pitchers, tennis players, football players, weight lifters, surfers.

We're very aggressive with treatment. We give tPA—tissue plasminogen activator—which dissolves the clots. Afterwards, we remove the subclavius, the scalene and the first rib. Two weeks later, we dilate the vein to make sure all the scar tissue is gone. Then we put patients on blood thinners for about a month.

Jad didn't get the tPA. When I saw him, his vein had reopened but when he raised his arm, it pinched off. His ultrasound showed it. So every time he went to swim, his arm would swell and he couldn't use it.

I consult on about 200 TOS patients a year; about 15 to 20 percent have venous problems. They come from up and down the East Coast, from New York to Georgia. I've done several cases from Israel. It's easily misdiagnosed. People come to the emergency room with a swollen arm and think a bug bit them. Many probably get no treatment, and there's a risk the clot will go somewhere else, like the lungs.

It's fun to take care of patients like Jad, who are so motivated to get better. They like to keep in touch, send pictures, tell you how they're doing.

— Julie Freischlag

Jad's was a classic case. Just brushing his teeth caused his arm to turn blue.



From Julie Freischlag
Director of Surgery

Bayview Blooming

The story (opposite) about the Hopkins Burn Center is just one example of how we are trying to integrate services at Bayview Medical Center and Johns Hopkins Hospital. Our goal is to achieve one Department of Surgery. Over the last year, we've been recruiting for a new chief of surgery at Bayview, and, as we go to press, the results of that search appear imminent. A special thank you goes to **Mark Duncan**, who served admirably as interim chairman.

We also are building Bayview's Division of Vascular Surgery and have hired new vascular surgeon **Mahmood Malas**, from Montefiore Medical Center in New York, and plan to hire another as well to help **Jennifer Heller** with an increased case load. Meanwhile, vascular surgeon **Mel Williams** has been lending a hand. Also, our vascular surgeons on both campuses have begun taking call for each other and our residents do rotations at each place as well.

In plastic surgery, **Michele Shermak** has been named Bayview's new chief, **Robert Spence** is the new chief of burn reconstruction and a new plastic surgeon, **Nancy Graf**, will start in September.

There is also a new intensive care initiative at Bayview to increase the number of anesthesiologists and surgeons to help run the intensive care units, under the direction of **Paul Freeswick**.

In general surgery, we have hired **Martin Makary**, one of our former assistant chiefs of service, who will be working with **Peter Pronovost** on safety initiatives. And we've added **Anne Lidor** to the bariatric surgery team to assist **Thomas Magnuson** and **Michael Schweitzer**.

So I guess you could say there will be lots of growth at Bayview Medical Center, and we are excited about sending surgery residents there to get experience in burns, bariatric surgery and vascular surgery. We'll keep you posted on future developments in upcoming issues of *Cutting Edge*. ■

Burn Center Spans Two Campuses

Plans are to expand beds, staff and research, for starters.

A burn injury is probably one of the worst injuries that can ever befall a person," says Stephen Milner. "Apart from the pain and disfigurement, it's a tremendous upset to the entire body. Treatment, therefore, involves almost every specialty that I can think of."

Milner, who just migrated east last month from Southern Illinois University to take over the reins of the Johns Hopkins Burn Center, has impeccable—and intriguing—credentials. His new base is at Bayview Medical Center, where adult burn patients will receive treatment; children 15 and under will be transported to the Johns Hopkins Children's Center.

"I've been given direction by the Department of Surgery to expand the service, and there's great opportunity here. We're already one of the main burn centers on the East Coast."

Milner studied dentistry, then surgery, at the University of London, then won a scholarship to Harvard Medical School in 1975, where he first became interested in burns during a rotation through Boston's Shriners Burn Hospital. On his return to London, he joined the Royal Army Medical Corps as a surgeon, serving as a lieutenant colonel during Operation Desert Storm and increasing his burn experience. Afterwards, he returned to the United States to train in plastic surgery, concentrating on burns and reconstruction. Milner landed his first academic job in 1997 at Southern Illinois, rising from assistant to full professor in six years and becoming director of the burn center.

The center grew substantially while he was in charge, partly because other specialists were welcomed. In addition to calling on specialists, Milner will be adding intensivists and other staff at Bayview and there are plans to reopen 10 step-down beds, doubling the size of the current unit by September. Milner's addition, working with surgeon Robert Spence, also makes more reconstructive surgery possible, an area where they see national and even



Stephen Milner visits a burn patient. In addition to his accomplishments in clinical care, research and teaching, Milner invented the Burn Wheel, a device that calculates fluid intake in burn patients, and created the open-access *Journal of Burns and Wounds* on the Web.

international potential.

Because one of Milner's chief research interests is wounds, he also has been named surgical director of the Johns Hopkins Wound Healing Center at Bayview. "Burns and wounds often require the same resources, and the same expertise, so it makes sense to combine the two," said Milner. He and Satyanarayan Bhat,

Ph.D., an assistant research professor who relocated with him from Southern Illinois, have also set up a laboratory to carry out various projects. Their special interests have focused principally on the pathophysiology and treatment of burn wounds, including the role of antimicrobial peptides, burn wound assessment and fluid resuscitation. ■

Let's Meet: Trauma Surgeons David Efron and Elliott Haut



Haut (left) and Efron

When the Department of Surgery added David Efron and Elliott Haut to its faculty last July, the population of surgeons in trauma and critical care shot up by 66 percent. It would be hard to mistake the two men—Efron, a former basketball player, is 7 feet tall and Haut is 5-foot-10—but otherwise they share many things in common. Both come from physician families, were undergraduates at Brown University (as was their division chief, Edward Cornwell), and were headed toward careers in orthopedics until they felt an itch to use their medical school training more broadly.

"One of the beautiful things about trauma is it's one of the few bastions of general surgery left," says Efron, who grew up in Baltimore and is married to Anne Efron, a Hopkins nurse who does TB research. "It's the absence of the mundane."

The variety in the OR appeals to Haut, a native Philadelphian, as well. "There's no 'routine' trauma case. Instead of the same operation 10 times a week, you do 10 different operations in the course of a week."

Roughly another quarter of their time is spent caring for the hospital's sickest patients on the surgical intensive care unit. "You have to continue working on your clinical game," says Efron, "and the ICU group is constantly pushing."

There, too, the surgeons need to harness a broad range of skills to oversee a mixture of complex cases. Any given patient may have received a transplant or had orthopedic or vascular surgery and, furthermore, may have an underlying condition like renal or heart failure. Efron and Haut consult with other specialists, of course, "but we have to synthesize it all, put it all together," explains Haut.

As junior faculty, the pair also squeezes in lectures about critical care and trauma to medical students, residents and nurses. On the research front, Efron is establishing a lab to investigate sepsis and inflammation as it relates to cholesterol metabolism. Haut is concentrating on clinical research, examining which variables play a factor in setting up trauma systems with the best overall outcomes. Balancing it all is hard work, they both say.

"You can't just make more time," says Haut, who has a 3-year-old daughter with his wife, Jayne Gerson, senior conservation officer at the Philadelphia Zoo. "To do more trauma, you have to give up some general surgery, and you can't be operating when you're covering in the SICU. There are a lot of different blocks, and you've got to fit them all into one big square."

"It takes a lot of self-discipline," agrees Efron. ■

The Lab Bent on Improving Transplants

The course of a career is rarely a straight line. Dan Warren's path has been no different. As a biology major at Carnegie Mellon, he thought he'd get an MBA and work in the biotech or pharmaceutical industry. Instead, exposure to real laboratory science late in college led him to a Ph.D. in genetics at Johns Hopkins. After graduating, he faced an uncertain year while waiting for his wife, Cheryl, to finish her Ph.D. here (also in genetics) and wanted to occupy it with more than coaching the Hopkins men's soccer team. As it happened, his friend, transplant surgeon Robert Montgomery, was starting up a lab and agreed to take him on for a yearlong stint. "So it started," says Warren, "very casually."

Warren, 33, now co-directs Montgomery's lab. From strictly basic science, he has branched out to applied clinical research. Most recently, his

investigations into transplantation questions look as if they may take an unusual detour into HIV research.

The lab's most well-funded project is on ischemia-reperfusion injury (IRI), a condition that occurs whenever blood flow is disrupted and then restored (as it is during heart attack, stroke or organ transplant). Although IRI is independent of the incompatibility issues that arise during organ

transplants, it most likely exacerbates the rejection response. Warren is testing gene therapy on rat livers to try to inhibit ischemic damage. "By reducing the ischemia-reperfusion injury to organs, we think we would not only increase the number of organs we could transplant, but also the life span of those organs once they are transplanted," he says.

Another project is in direct response to Hopkins' successful Incompatible Kidney Transplantation Program, which has enabled more than 100

patients to receive kidney transplants despite having antibodies against donor organs. It works by removing harmful antibodies with plasmapheresis. "We're not sure why it works, but it works really well," says Warren. Led by surgical resident Chris Simpkins, the team is developing an animal model of the process, a technically difficult task of removing antibodies from whole blood and reintroducing the antibody-depleted blood through tiny rodent blood vessels. Ultimately, says Warren, the goal is "to better understand why [the process] works, to see if we can improve it, to expand our number of patients and potentially minimize the impact on patients."

A separate study coordinated by surgical resident Chris Sonnenday compares two ways to preserve organs prior to transplant—in a static ice bath or by being pumped with fluid. Warren explains that deceased donor organs are currently classified almost entirely on donor characteristics like age and overall health. "But our guess is we're missing out on a bunch of



Working closely with transplant surgeon Bob Montgomery, Dan Warren is investigating ways to shorten the length of time that patients wait for organs.

good organs by limiting our acceptance methods," says Warren. The study has two goals with the pump. "One is as a diagnostic tool, to assure we're not discarding potentially useful organs. The second is to determine if the pump provides any benefit to ideal organs."

Lastly, the same harmful antibodies that thwart

Hopkins' "incompatible" patients may be the key to what protects people who seem immune to HIV infection despite multiple exposures. "It's a bit of a long shot, but if it's true, it would be a big step forward in our understanding," says Warren. "You never know where research will take you." ■

On the Job

Dominic Plater, Surgical Associate, SICU



Although he's just 26, Dominic Plater has worked for 10 years and there's still a lot of ambition in his eyes. In the late 1990s, he jumped ship from the fast-food restaurant he was managing when

the company started to downsize, and applied to several local hospitals. But the young man from Baltimore's west side was determined to get a job at Johns Hopkins, and he didn't stop calling human resources until he did.

After six months as a janitor in the nutrition department, he moved to the cold food line in the hospital's vast underground kitchen, and then got an offer from the surgical intensive care unit to be a support associate. The atmosphere was sobering but also invigorating, and he loved

learning the names of the many supplies under his domain, as well as the clinical duties he was assigned. Instead of applying to culinary school as he'd planned, he enrolled in the respiratory therapy program at Baltimore City Community College. He just completed his prerequisites, including anatomy and physiology, by working the evening shift (48 hours a week) while attending school during the day. His battle with precalculus, which he flunked twice, illustrates his philosophy: Always have a back-up plan.

He substituted statistics, and got an A.

The SICU's resident RT, John Castro, has watched Plater not only grow up but become a leader. Two other SAs on the unit also attend school. "They do homework together," says Castro, "and [Plater] seems to be the one helping them a lot. I'm very proud of him."

Plater is a hard worker whose name consistently pops up in the "kudos" section of the SICU newsletter. Recently, he won the Excellence in Practice Award from his peers.

Plater, an only child, also has had a hard life. His father was mostly absent and he saw his mother, an interior decorator, only on weekends because she worked so much. When Plater was 13, she was killed in a car accident.

"Anyone who tells me I can't do this or I won't amount to that, that's what I use as motivation," explains Plater, who has had friends tell him he's selling out by going to school. "I look around in the city and I see a lot of negativity, and I don't want any part of that." ■

The Persistent Patient

Dave Rutstein is as meticulous about his health as he is about his law practice. The 60-year-old Washington attorney, who practices with Venable and was general counsel of Giant Food for 22 years, jogs and practices yoga regularly, and gets a physical each spring. Four years ago, at the usual “very boring annual hour” with his internist, Rutstein asked if he should have a heart scan test, something he’d read about in *The Economist*. His doctor seemed indifferent to the idea, but Rutstein’s diligence ended up saving his life.

The test revealed a sound heart, but some of the 39 resulting pictures inadvertently captured a portion of the left lung. Something was there, but since Rutstein has never smoked, his doctors told him he was 95 percent safe. Nonetheless, Rutstein sought a second opinion, and one name recurred time after time: Stephen Yang, chief of thoracic surgery at Johns Hopkins.

When he looked at Rutstein’s pictures, Yang wasn’t as confident; he lowered the odds to about 70 percent safe. “One of the reasons I went to law school was because



Rena and Dave Rutstein contribute to thoracic surgeon Stephen Yang’s research on lung cancer. Yang performed successful surgery on Dave four years ago.

I wasn’t very good in math,” says Rutstein, “but I could understand that I had a one in three chance of cancer.”

Yang explained matter-of-factly that to push forward, whether the results were cancerous or not, Rutstein would need major surgery. There was no possibility of biopsy.

“My mindset was, if it was not cancer, then I was putting myself through needless pain and recuperation,” says Rutstein. “But if it was cancer and I waited, there could be horrendous results.”

He took Yang’s next opening and was lying on the operating table on July 5, 2001, within a week of his first appointment. Not many patients would have taken that road, Rutstein says many physicians have since told him.

On the day of surgery, a fairly relaxed group of Rutstein’s family and friends felt sure that every-

thing was fine, right up until they heard the words “lung cancer” from the surgeon. Yang had removed his left lower lobe, including a dime-size lesion, a rare form of cancer called bronchioloalveolar carcinoma often found in nonsmokers. Although it occasionally develops at multiple sites in the lungs, Rutstein’s lab results came back clear. He had no radiation or chemo, and has been healthy since.

Recently, Rutstein, an active fund raiser for decades, has added Hopkins to the list of worthwhile causes he and his wife support. “I said, Well, this man saved my life, and quite apart from the operation and his care of me, I’ve become aware of his role in lung cancer research and respect him greatly. We felt moved to support this very unique individual, so that’s what we did.” ■

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.

KIDS AT WORK?

More than 80 children descended upon the Department of Surgery on April 28 for national “Take Your Child to Work Day.” Chief surgeon **Julie Freischlag**, whose own 9-year-old son was in attendance, started off the day with a greeting, and then the kids, who ranged from first to eighth graders, were sent off to age-appropriate activities. The youngest were entertained by clowns and medical bingo by Child Life, the older children did a mock laparoscopy and the lucky middle schoolers got inside a helicopter on the helipad. In between there was lots of time for snacks, crafts and bathroom breaks. It took the committee six months to plan and 50 volunteers to carry out, and, as far as anyone could ascertain, was the biggest such event that day at Hopkins Medicine. The organizing committee deserves a round of applause for making the day so much fun for the kids. They are **Jennifer Holcomb, Shoshana Bravmann, Helen Moore, Joan Woodall, Sheryl Schneyer, Carol Kersch, Catherine Jones, Deborah Baker, Jacqueline Lofton and Karen Ritchie.**



KUDOS

Cardiac surgeon **John Conte** has received the Cuore a Cuore Award from the Society of Thoracic Surgeons for his commitment to patients with heart failure. The award was created to recognize the achievements of two specialists from Milan who perform surgical ventricular restoration on patients with congestive heart failure ■ **Edward Cornwell**, chief of adult trauma, has won the Greater Baltimore Urban League’s Whitney M. Young, Jr. Award. The GBUL aims to improve the socioeconomic conditions and quality of life for African Americans and other minorities in Baltimore ■ General surgeon **Martin Makary** has been selected to join the Jahnigen Career Development Scholars Program. It provides two-year development awards, funded by Atlantic Philanthropies and the John A. Hartford Foundation, to promote geriatric training for specialists in various fields. Each year, only 10 specialists are selected ■ Plastic surgeon **Eduardo Rodriguez** and **Jesse Taylor**, resident in plastic surgery, have won awards for best presentations from the American Society of Reconstructive Microsurgery. Rodriguez won best poster presentation; Taylor, best research paper. ■

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Johns Hopkins Department of Surgery
Richard Starr Ross Bldg.
720 Rutland Ave., Room 759
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Web site: www.hopkinsmedicine.org/surgery

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Elaine Freeman, *vice president*
Edith Nichols, *director of publications*
Mary Ellen Miller, *writer and editor*
Max Boam, *David Dilworth, designers*
Keith Weller, *photographer*

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