



TOP DOCS 2006
+ 7 MEDICAL
MIRACLES

MEDICAL MIRACLE #1
ADDICTION MEDICINE
ALLERGY & IMMUNOLOGY
ALZHEIMER'S
ANESTHESIOLOGY
BURN TREATMENT
CARDIOLOGY
CARDIOVASCULAR SURGERY
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her to move between different departments, but one unnerved her more than any — the neonatal intensive-care ward. “It wasn’t something I wanted to think about,” she says. “Having a baby in a place like that.”

Life has a way of confounding our expectations, and it wasn’t long before McClellan had to confront hers. An exploratory ultrasound showed her male fetus had a large growth in his chest. It was a pulmonary sequestration, a benign but giant mass in his left chest, which was preventing his left lung from growing and crowding his right, along with his heart. Not many years ago, this condition would have certainly been fatal. But fetal surgery, using a variety of new techniques, saved the life of McClellan’s baby, Malachi Maddox, now 6 months old.

Malachi had what’s known as an EXIT procedure, or ex-utero interpartum treatment — surgery performed outside the uterus but before birth. McClellan was put under deep general anesthesia, her abdomen opened surgically by Dr. Clark Nugent, and Malachi pulled halfway from her womb. Still attached to the placenta, his chest was then opened, so that pediatric surgeon Dr. George Mychaliska could remove the obstruction. It wasn’t until after the surgery was complete that Malachi’s umbilical cord was cut and he was officially born — five weeks before his due date.

The technique is compromise — and cooperation — with nature. While doctors have operated on fetuses before, technology is a poor substitute for a mother’s womb. With the right medication and bed rest, a surgically penetrated pregnant uterus can maintain a precarious hold of its cargo, but there’s no repairing the amniotic sac. Malachi’s compromised lungs meant he couldn’t have endured surgery immediately after birth, because he couldn’t have been intubated for a ventilator or taken oxygen through another method. Staying attached to the placenta — which meant he wouldn’t have to breathe, even partially delivered — was vital to his survival.

“Premature labor is the Achilles heel of fetal surgery,” Nugent says. Many now take place using laparoscopic instruments and tiny incisions. But that wasn’t going to work for Malachi, who needed far more than could be done laparoscopically.

Such a complicated procedure, with two patients undergoing two surgeries simultaneously, made for a crowded operating room. It’s easy to see why Mychaliska gives so much credit to the multidisciplinary teamwork necessary to make the procedure a success. “We were able to gather the team in a couple of hours and work together in an urgent situation,” Mychaliska says. “And this was easily the most extensive procedure we’ve ever done.”

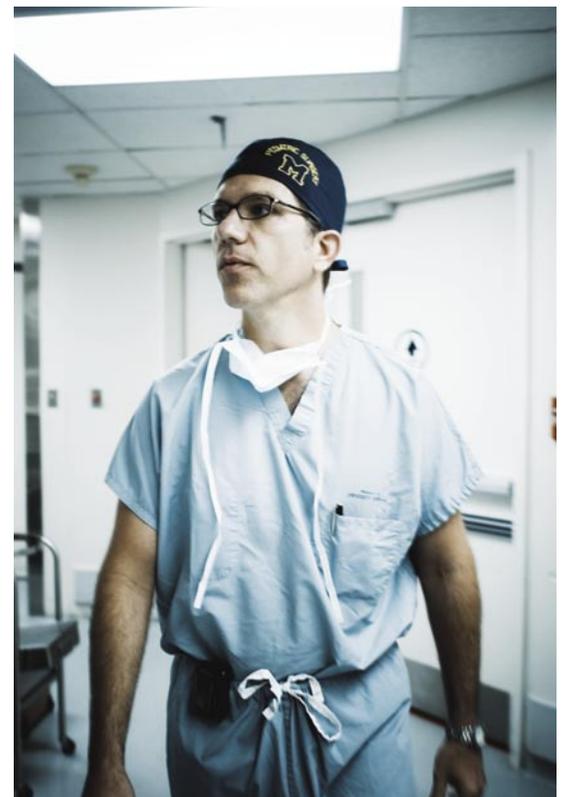
Doctors at the U. of M. hospital have been doing EXIT procedures for a while, but never one like this. McClellan recalls awakening to a baby she feared would not make it through his first night. “He was so pale,” she says. And he was certainly still a developmental work in progress; doctors had attached him to

THE GIFT OF LIFE

WHEN ANGELIQUE MCCLELLAN’S BABY DEVELOPED A LARGE GROWTH IN HIS CHEST, DR. CLARK NUGENT AND DR. GEORGE MYCHALISKA SAVED THE CHILD — BEFORE HE WAS EVEN BORN.

BY NANCY NALL DERRINGER

ngelique McClellan was doing clerical work at the University of Michigan Hospital in Ann Arbor while pregnant with her third child. The job required



> FETAL SURGERY Dr. Clark Nugent operated on little Malachi — before the baby was even born.

an ECMO (extracorporeal membrane oxygenation) machine, which oxygenated his blood and reinfused it, while his tiny lungs recovered from the trauma.

Time was all Malachi needed. Within two weeks, he was breathing on his own, and he went home from the hospital in May. Today he takes medication and oxygen through a nasal tube, but that will be gone by his first birthday. A bright-eyed, engaging baby, only his small size and the hissing of the oxygen machine in McClellan’s living room indicate he’s anything other than perfectly normal.

“His development appears totally normal,” Mychaliska says. “He’ll catch up with his growth. It’s remarkable that he’s doing so great.”

“They say he won’t be running in the Olympics, but he’ll otherwise have a normal life,” says McClellan, who lives in Ypsilanti Township. The growth robbed him of most of his left lung, but his right is doing the work for both. “We have been so blessed. God has been watching over him.” +



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BRAVE NEW WORLD

A MASSIVE BLOCKAGE IN A CORONARY ARTERY COULD HAVE MEANT BYPASS OR OPEN-HEART SURGERY FOR ROGER RICCI, BUT DR. STEVEN HARRINGTON HAD A CUTTING-EDGE SOLUTION.

BY NANCY NALL DERRINGER

If Roger Ricci believed in omens, he could hardly have summoned one worse than the one he had last winter. While awaiting a doctor's call for the results of his cardiac CT scan, he took a friend to a Red Wings game. His friend became short of breath walking back to the car; he was having a heart attack.

As it turned out, Ricci, a Grosse Pointe Woods mortgage banker, was a time bomb of sorts himself. With a strong family history of heart disease and high blood pressure, he'd been taking annual stress tests faithfully since his late 50s, and at 68, he seemed to be doing fine. The most recent test, in January, had turned up normal. But his cardiologist had a hunch all was not well. He suggested the CT scan, which Ricci had to pay \$700, out of pocket. If his friend's heart attack hadn't unnerved him enough, then came the bombshell: He had 95-percent blockage in his left coronary artery. "That's the big one," he says. "That's the one that kills you."

The doctor said he had three options — traditional cardiac bypass, or open-heart surgery; catheterization; or a new procedure, using a surgical robot at St. John Hospital. The latter would be less invasive and easier to recover from, he was told. For Ricci, still wrapping his mind around the idea of how close he was to cardiac arrest, the answer was obvious: Fire up the robot.

In a world grown accustomed to miraculous medical technology, the robotic surgeon is still capable of dropping a jaw or two. Ricci's surgeon, Dr. Steven Harrington, was 20 feet away from his patient, sitting at a machine that some say resembles a video game. Ricci, with heart-lung bypass tubes in his leg, lay under general anesthesia, with five pencil-size holes drilled in his chest cavity, admitting two cameras and three separate instruments. His face pressed to a

viewfinder, Harrington operated the machine's cameras (which provided three-dimensional views of the chest cavity) and instruments.

The machine "takes the surgeon's hand, miniaturizes it and allows us to put it in the body cavity," Harrington says. Every motion he would make in traditional surgery can be mirrored in the robot's instruments. Which means that, in Ricci's case, he was able to remove a segment of the left internal mammary artery from his chest wall, seal it with cauterization, transfer it to Ricci's heart and stitch it in place — all without touching him, all without opening the chest.

Instead of a zipper of a scar, Ricci has only the five small depressions where the instruments went in. He left the hospital five days after surgery, instead of the usual six to 10 days, and Harrington expects that to drop to two to three days as the technique is refined. "Within two weeks it's like nothing ever happened," he says. The next goal will be to perform the surgery without stopping the heart, which will further reduce trauma and recovery time.

Ricci had his surgery on a Friday, but took no pain medication after the following Tuesday; he didn't need it. He went through a course of cardiac rehabilitation and refined his exercise routine, lost a little weight and today "feels great," he says. "My blood pressure is the lowest it's been in 15 years." He plans to retire next year and start "chasing my grandchildren around" full time.

As for the surgical robot, its possibilities have only begun to be explored. It was originally developed for the military, Harrington says; with satellite telemetry, the machine would allow surgeons to operate on wounded soldiers from remote locations. That plan didn't pan out immediately, but Harrington says the possibility remains strong for the future. Which means that, someday, could patients like Ricci enjoy the work of the world's top surgeons without leaving their hometown hospitals? Harrington says yes.

He also believes the best is yet to come, when the generation of people raised on video games get their medical degrees and take their own places at the controls: "They'll have a great advantage over old guys like me. They already know how to do this." +

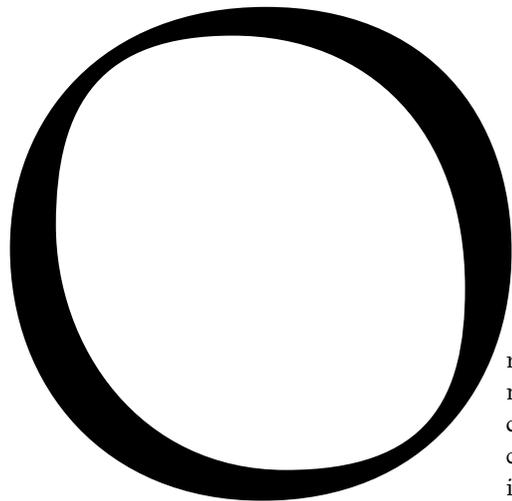
> **I, ROBOT** Robotic surgery aided Dr. Steven Harrington when operating on Roger Ricci.





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now doesn't even make the news roundups. But before you get too lah-di-dah about the idea, consider the lungs.

Unlike the heart, a tough chunk of muscle, the lungs are two crinkly bags of delicate, elastic tissue. With every breath, they're exposed to the slings and arrows of our imperfect atmosphere. They're highly perishable; a lung removed for transplantation must be reperfused — back on a blood supply — within six hours. The surgery is more difficult, the hospitals that offer it rarer. Because there's a fine line between "not sick enough to need one immediately" and "too sick to survive the surgery," the whole business is much harder to coordinate successfully. So you can see, perhaps, why Brandon Laethem's double-lung transplant at Henry Ford Hospital last winter was hardly routine surgery.

Laethem has lived his whole life with cystic fibrosis, a disease that causes thick mucus to build up in his lungs, obstructing their function. Not that he's let it slow him down too much. Now 22, for most of his life he coped with twice-daily breathing treatments and use of a special vest that "shakes" his lungs and knocks the mucus loose. He "played basketball, went snowboarding, did other things kids my age do," he says. But CF is a time bomb, worsening with age. Modern treatments have lengthened life spans dramatically, but adulthood frequently brings a downturn, and Laethem's came last year.

A lung infection took hold and rapidly progressed. Soon he was in the hospital, steadily increasing his reliance on an oxygen tank, steadily losing lung func-

tion. "I was just so sick," he says. "All I could do was lie in bed."

tion. "I was just so sick," he says. "All I could do was lie in bed."

And even that was precarious. "He was down to 9 percent of his lung capacity," says Dr. Alan Betensley, one of Laethem's pulmonologists. Death was, if not just outside the door, certainly in the building.

Betensley and Dr. Lisa Allenspach, another pulmonologist, added Laethem to the lung transplant waiting list. In the past, the organs were offered strictly on a first-come-first-served basis; there was no ranking for the urgency of one's need. That system changed in 2005, which catapulted Laethem to the highest priority. He was taking a shower in his hospital room when the call came that a possible donor had been found.

Later that night, he became the youngest double-lung transplant ever at Henry Ford. The surgery was performed by Dr. Alvise Bernabei. When Laethem's woke up, he was on a ventilator, where he stayed for three days, until his new lungs could take over. Two days after that, he was off supplemental oxygen, up and walking around with the help of a physical therapist. And two weeks later, he was discharged, just in time for Super Bowl Sunday.

His doctors credit his optimism and conscientious self-care, as well as the teamwork at Henry Ford.

"The lung-transplant team is well established, and lung transplants really are a team effort," Allenspach says. Every stage of the process, from final examination of the donor lungs, to excision from the donor's body, to reimplantation and recovery, requires the cooperation of doctors, nurses and others.

But "the credit ultimately comes down to the patient himself," says Betensley.

Laethem is adjusting well to his new lungs. He's back at work, and plans to be back at Macomb Community College this fall. He takes a handful of immunosuppressant drugs every day, and will for the rest of his life. Because cystic fibrosis also affects the pancreas, and because people with CF are prone to diabetes, he follows a strict diabetic diet, and gets plenty of exercise. He is reminded of his good fortune, literally, with every breath he takes.

"I'm pretty grateful," he says. "I work out, play tennis. It's unbelievable what my life is like with these new lungs." +

BREATHING EASY

BRANDON LAETHEM'S LUNGS WERE FAILING QUICKLY. HE WAS SAVED WITH THE HELP OF DR. ALAN BETENSLEY AND DR. LISA ALLENSPACH.
BY NANCY NALL DERRINGER

> **TEAM EFFORT** Drs. Alan Betensley and Lisa Allenspach were on the double-lung transplant team.

