

# SURPRIS SURPRIS

Magee has one of the nation's top fetal intervention programs.  
But hardly anyone knows it.

— By Anna Dubrovsky





Kelly Finley embracing her babies Irelynn and Cassandra

**Kelly Finley's year has been full of surprises. Last April, she was surprised to learn that she was pregnant. The New Castle, Pennsylvania, native already had a 2-year-old daughter, a 4-month-old son, and an appointment for an intrauterine contraceptive device. A couple of weeks later, she was surprised to learn that she was carrying twins.**

These were unhappy surprises; her family of four was everything she'd hoped for. "I cried the first three months," she says. "I was selfish, thinking, how am I going to do this?"

The next surprise turned her world upside down. Seventeen weeks along and increasingly uncomfortable, she paid a visit to a high-risk obstetrician in Boardman, Ohio, just across the state line from New Castle. "I was throwing up all the time, and I couldn't understand why I felt so heavy. They weighed me, and I had gained 10 pounds in two weeks." An ultrasound revealed why: twin-to-twin transfusion syndrome, which occurs when blood is transferred disproportionately from one fetus to the other. The rare complication, which only affects identical twins that share a placenta, can result in the death of both. "I had what the doctor called the worst case of twin-to-twin transfusion he had seen at 17 weeks, and he's been in practice for 30 years," Finley recalls. "He shook his head, and he hugged me, and he said you have until tomorrow morning to make a decision."

Suddenly, she was no longer terrified at the prospect of having two more children. She was terrified at the prospect that she wouldn't. She cried the whole way home.

The doctor had enumerated several options, one of which — aborting one of the fetuses — the Finleys weren't willing to consider. The deeply religious couple called their pastor before anyone else.

"He gave us really good advice," Finley says.

"He said, 'If you had two children who were drowning, would you just go after one, or would you try to save them both?' And he prayed with us." The obstetrician had also given her the option of going to the Children's Hospital of Philadelphia for laser surgery to interrupt the flow of blood from one fetus to the other. The final option was do nothing — and likely lose them both.

**"I started packing my bags," she says.**

Late that evening, distraught at the thought of leaving her two little ones, Finley asked her husband to call Dr. Kelly Palumbo, the local ob-gyn who had delivered their first two children and referred her to the high-risk specialist in Ohio. "I was really torn about going to Philadelphia, and I thought, I can't believe this isn't done around here."

Dr. Palumbo called Magee-Womens Hospital of UPMC, hoping to consult with a high-risk obstetrician there about the rare case. Stephen Emery, MD, a specialist in maternal-fetal medicine and director of Magee's Fetal Diagnosis and Treatment Center, was on call that night. Dr. Palumbo and her patient were surprised — very happily so — to learn that Dr. Emery could perform the laser surgery in Pittsburgh.

## A Little-Known Fact

Magee's fetal intervention program has a problem: Few people know it exists. "People don't know we're here yet," acknowledges Dr. Emery, who started the program after joining Magee in 2006. "We publish papers, and we talk to the media, and we visit hospitals, but it just takes time for people to realize, 'Wow, there's a fetal therapy program in Pittsburgh. We don't have to travel to Cincinnati or Philadelphia.'"

Dr. Emery can transfuse blood to fetuses. He can treat fetal posterior urethral valves (a congenital defect in males that impedes urine outflow) and congenital cystic adenomatoid malformation (abnormal lung tissue). Thanks to him, Magee is one of about 15 hospitals in North America offering in-the-womb surgery for twin-to-twin transfusion syndrome. It's one of only two performing in utero valvuloplasty for aortic stenosis, a condition in which the aortic valve is too narrow to allow adequate blood flow from the heart.

Before joining Magee, Dr. Emery spent 15 years in Cleveland. After completing an ob-gyn residency and a fellowship in maternal-fetal medicine at MetroHealth Medical Center, he was recruited to help build an obstetrics program at Cleveland Clinic. "It was an opportunity to get on the ground level

of something very significant because when the Clinic does something, they do it well," Dr. Emery says. He developed a successful fetal intervention program, pioneering an animal model for in utero valvuloplasty along the way. But in 2005 Cleveland Clinic moved obstetric services to a community hospital to make way for a new bariatric surgery program on its main campus.

Dr. Emery put himself on the job market. "I knew that my fetal therapy program was over. You can't do fetal surgery in a community hospital."

Why did he join Magee? "Because it's perfect," he says. "First of all, it's a women's hospital. The fetal therapy programs geographically nearest to us — Children's Hospital of Philadelphia, Cincinnati Children's Hospital — are in children's hospitals. They're run by pediatric surgeons. Ours is in a maternity hospital run

by maternal-fetal medicine. It has a whole different character. Secondly, we have a very robust infrastructure here. We have ultrasound, genetics, pediatric cardiology, and MRI to make the right diagnosis. We have the maternal-fetal medicine service to help care for the patients in the outpatient and inpatient settings. We have obstetric anesthesia to ensure maternal safety during the procedures. Finally, we have the largest and best NICU [neonatal intensive care unit] in the state of Pennsylvania to care for the newborns.

**"And then you combine that with the research infrastructure of Magee-Womens Research Institute — it puts us in the top tier of programs."**

## No Time to Waste

The next morning, Kelly Finley and her husband, Tom, made the hour-long drive from their home to Magee. She was no stranger to the hospital, having had a splenectomy and hernia surgery there. After a three-hour ultrasound, Dr. Emery explained that the disease had taken a toll on the female twins.

"Baby A didn't have a visible bladder," their mother recalls. "She had very, very little amniotic fluid. So she could basically pass away at any time. Baby B had too much fluid. Her heart was overworking."

Dr. Emery offered to perform the laser surgery the following day. "The Finleys came to me with advanced disease," he says. "Both fetuses were gravely ill. Laser therapy was the only option that provided hope for the survival of both babies."

Until a few years ago, the standard treatment for twin-to-twin transfusion syndrome was amnioreduction, or removal of excess amniotic fluid from around the recipient twin. Often the fluid accumulates again and again, requiring multiple procedures. "Amnioreduction took the survival rate from roughly zero to 50 percent," Dr. Emery says. "But 25 percent of those survivors had neurologic damage because we didn't address the underlying problem."



Dr. Stephen Emery

The underlying problem is irregular vascular anastomoses, or blood vessels in the placenta that connect the twins. In 2004 researchers in Europe conducted a randomized trial comparing serial amnioreduction to laser surgery targeting the offending anastomoses. The evidence was overwhelmingly in favor of the latter. "Laser photocoagulation is superior to anything else that we've tried, and it gives us survival rates approaching 85 percent," Dr. Emery says. "We're not talking about just survival, though. We're talking about intact survival — normal kids — which is the real goal."

On July 30, the day after their first meeting, Kelly Finley was in Dr. Emery's operating room. Before he could complete the procedure, bleeding within the amniotic sac obscured the view through his scope and forced him to stop.

Ten days later, he tried again, and this time, the surgery went without a hitch.

When Dr. Emery delivered the news, "he had the biggest smile on his face," Finley recalls. "He's a doctor who really cares about what he's doing. I got that feeling all along — that he actually cared about my babies, that he wanted to get them here as much as I wanted to get them here."



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— Dr. Stephen Emery

Finley had been warned that the twins’ recovery might take days or even weeks, so the results of the next morning’s ultrasound came as a huge surprise. Baby A — by then named Cassandra — already had a visible bladder. The accumulation of fluid around baby B — Irelynn — had already diminished.

## Leading the Way

The way Dr. Emery sees it, fetuses are patients, too. “That’s how I see the world,” he says. “A fetus isn’t some inanimate object inside a woman’s womb. Fetuses are people, and some of them have medical or surgical conditions that need to be managed in order to avoid death or lifelong disability. The goal of our Fetal Diagnosis and Treatment Center is to identify those conditions and manage them. Some can be managed medically. Some can be best managed after delivery. A very small percentage of them will benefit from some type of in utero intervention.”

In-the-womb surgery is a relatively new field — only about 30 years old — and Dr. Emery sees plenty of room for improvement. He also sees Magee leading the way. The clinician meets regularly with investigators from Magee-Womens Research Institute, the hospital’s across-the-street neighbor, to discuss potential areas of research. “I hope that in 20 years we look back at laser surgery for twin-twin transfusion and think, ‘You cavemen, what were you thinking?’ That’s what’s so cool about medicine: It always gets better.”

Last year, Dr. Emery and two Magee colleagues published a study showing that twin-to-twin transfusion syndrome can be diagnosed at an earlier stage if women carrying monochorionic twins (identical twins that share a placenta) undergo more frequent ultrasound screening. The paper could potentially change practice in the United States.

Dr. Emery is the principal investigator on a North American Fetal Therapy Network (NAFTNet) investigation on the natural history of stage I twin-to-twin transfusion syndrome. NAFTNet is a consortium of 20 academic centers involved in fetal

therapy. “The question at hand is what to do with stage I disease: observe or treat,” he says. “By analyzing our data, we will see what percent of stage I patients progress, how rapidly they progress, to what stage they progress, and what happened to those who were observed versus those who were treated. The answers will help define how we treat the disease.”

On the evening of November 30, at 35 weeks along, Kelly Finley went into labor. Her husband drove her to Magee through pouring rain, and in the early hours of December 1, she gave birth to Cassandra and Irelynn by repeat cesarean section. Cassandra, formerly known as the donor twin, weighed 4 pounds, 12 ounces. Her younger sister, who’d received so much blood before Dr. Emery’s laser surgery, was 5 pounds, 13 ounces.

**Here was the biggest surprise of all: There wasn’t a thing wrong with the preemies.**

When Dr. Emery came to work that morning, he was delighted to find his patients — all three of them — in the same room. “Most of the babies I deal with are not in the postpartum room with their mothers. They’re either in the NICU or they’ve been transferred to Children’s. But there they were, all bundled up with their little pink hats on, happy and healthy as could be. I thought, this is truly amazing.”

The Finleys see it as a miracle. “I have two babies that weren’t supposed to be here,” Finley says. “We had all odds against us, and they’re here, and it’s because of the surgery. I believe God brought Dr. Emery to us.” ♦ ♦

To support fetal intervention research and treatment at Magee, visit [www.mwrif.org/49](http://www.mwrif.org/49) or call 412.641.8977.