

HAVE TROUBLE *threading* A NEEDLE?

IMAGINE USING A LASER THE SIZE OF A PIECE OF THREAD TO PERFORM LIFESAVING SURGERY ON AN UNBORN CHILD

Every expectant parent dreams of a smooth pregnancy, an easy delivery and a healthy infant. But for 10 to 15 percent of pregnant mothers, those dreams are clouded by fear and worry. That's because they are more likely to need medical or surgical intervention due to an underlying condition in themselves or their unborn children. Although they plan and prepare like other parents, they must do it while living with the unsettling label "high risk."

"It can make for a pretty high-anxiety pregnancy," says Maternal-Fetal Medicine Specialist Jena L. Miller, MD, who provides advanced specialty care for

these mothers and babies as part of the comprehensive Maternal-Fetal Medicine Program at EVMS. "A lot of what we do is monitor and counsel patients to help them understand exactly what is happening."

When high-risk patients do need surgical intervention, time is critical. In the past, the sickest patients often had to be transported far from home to specialty centers in Maryland, Pennsylvania or Florida, increasing anxiety and potentially delaying treatment.

But thanks to a new Fetal Surgery Program that's a cooperative venture of EVMS and Sentara, many of these

patients can now get the highly advanced specialized care they need close to home.

"EVMS is already nationally recognized for expertise in prenatal ultrasound and prenatal diagnosis, so adding a fetal surgery program was a natural extension of our expertise and a natural next step for our Maternal-Fetal Medicine practice," says Alfred Z. Abuhamad, MD, Chair of Obstetrics and Gynecology.

Fetal surgery at EVMS not only allows for faster treatment when hours count, but also keeps them closer to home and family support when they need it most.

When Care Can't Wait

Fetal surgery is the last resort for babies who have run out of options. The Fetal Surgery Program at the Eastern Virginia Medical Center, a collaboration between EVMS Maternal-Fetal Medicine and Sentara Healthcare, provides cutting-edge treatments for life-threatening conditions. In addition, Pediatric Specialists from CHKD will provide medical and surgical expertise in a comprehensive model care.

"There are a handful of conditions, such as Twin-to-Twin Transfusion Syndrome (TTTS), which, if you don't address them before birth, will seriously jeopardize the life of the fetus," says Dr. Abuhamad. "Without intervention, the fetus would either die or the quality of life would be seriously altered."

A fetal surgery program addresses conditions such as TTTS using the least invasive and most advanced methods possible, says Dr. Miller, who was fellowship trained in maternal-fetal medicine at the University of Maryland Medical Center, home to the Center for Advanced Fetal Care, and has a particular interest in the challenges of complicated twin pregnancies.

"A lot of patients are actually quite shocked to learn the risks," says Dr. Miller. "They think 'Oh, we're going to have twins. It's going to be great!' I tell patients that you can't really feel relaxed until you are holding both of those babies at the end."

The Fetal Surgery Program is one of only about 20 similar programs nationwide. While it can't take away all the anxiety of a difficult pregnancy, Dr. Abuhamad says having such an advanced program close to home should be reassuring for Virginia's high-risk mothers and babies.

FETAL INTERVENTIONS

Fetal surgery is no easy task. Because of the small spaces in which doctors have to work, they often use small tools, fine needles and ultrasound or a special camera called a fetoscope for guidance. To hone her skills, Dr. Miller spent a month in the Fetal Medicine Foundation at King's College Hospital in London, England, and another month at Necker hospital de L'Enfant Malade in Paris, France, studying precision techniques like fetal endoluminal tracheal occlusion (balloon placement) for congenital diaphragmatic hernia and laser surgery for TTTS.

"It can be extremely challenging," says Dr. Miller. "The vessels are quite small and you don't always know exactly where they're located until you see the placenta. Everyone's anatomy is different. In a twin case, the fetuses are both moving, so they often get right in your way. And the mom is usually awake, so you also have her position to consider. There is a lot going on and it is easy to get disoriented without a lot of concentration and preparation."

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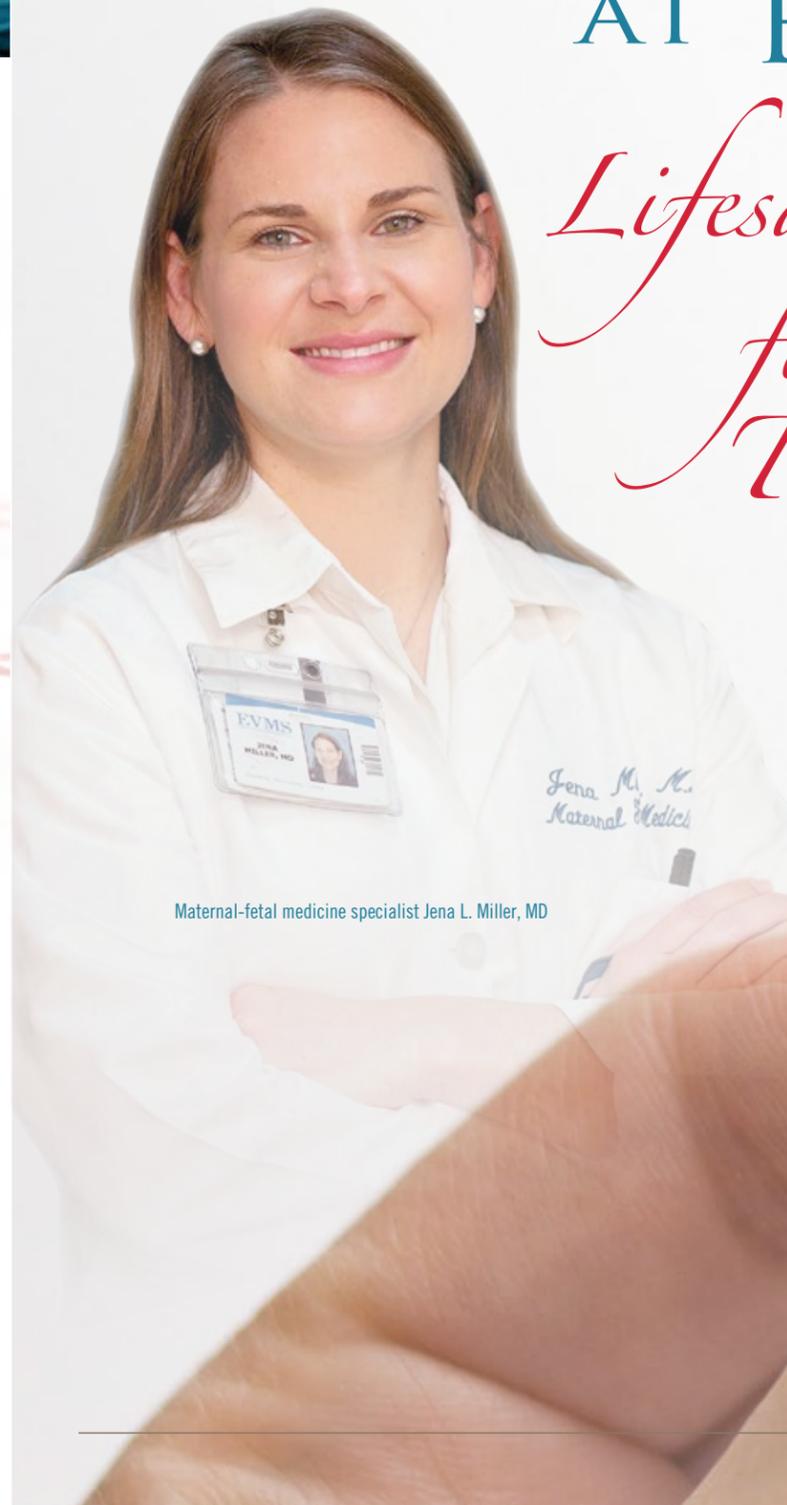
Jena L. Miller, MD, Maternal-Fetal Medicine Specialist



EVMS

FETAL SURGERY AT EVMS

*Lifesaving Care
for the
Tiniest Patients*



Maternal-fetal medicine specialist Jena L. Miller, MD

TWIN-TO-TWIN TRANSFUSION SYNDROME

TTTS is a serious complication that occurs in as many as 35 percent of all U.S. monochorionic pregnancies — in which one or more fetuses share a single placenta. In some cases, connecting blood vessels within that placenta allow blood to pass from one twin to another, leading to disproportionate blood distribution. High blood volume in one baby may strain its heart, raising the risk of heart failure, while low blood volume in the other twin can seriously stunt development.

TTTS accounts for an estimated 17 percent of all fetal deaths in twins. An advanced procedure called selective laser photocoagulation helps to distribute the blood more evenly. Performed when babies are no bigger than the size of your palm, the procedure offers many of them their best chance of survival. EVMS will begin offering the delicate procedure later this year.

FETAL ANEMIA

Caused by fetal infection or antibodies in the mother's blood, fetal anemia can lead to serious developmental problems in utero. New medications have reduced the incidence of the condition, but severe cases may still require surgery. To counter low-blood count and avoid premature birth, EVMS maternal-fetal medicine specialists offer intrauterine transfusion, a procedure during which red blood cells are given through a tiny needle placed in the umbilical cord with ultrasound guidance.

"At this point in pregnancy, the umbilical cord is about 2 mm, so you have to be extremely precise," says Dr. Miller.

BLADDER OUTLET OBSTRUCTION

Another potential high-risk complication is the development of a bladder-outlet obstruction, which occurs in approximately one in 5,000 pregnancies. Left untreated, an improperly working urinary system can cause urine to back up and cause irreversible kidney damage. In severe cases, EVMS specialists may recommend a fetal shunt to drain the urine.

FETAL PLEURAL EFFUSIONS

Abnormal fluid accumulation in the chest — called fetal pleural effusion — requires a different approach. While some cases may clear up on their own, unchecked pleural effusion compresses and damages developing lungs and even causes fetal heart failure. When cases are severe enough to need treatment, excess fluid may be drawn off with a needle guided by ultrasound.

Because it plays a role in both diagnosis and intervention, the state-of-the-art EVMS ultrasound unit is a vital part of the fetal surgery program. The unit includes eight-color doppler ultrasounds, as well as a 3D machine, and is staffed by seven full-time registered diagnostic medical sonographers with extensive expertise in high-risk obstetrical ultrasound. □

"THANKFULLY, MANY OF OUR CASES JUST REQUIRE VERY CLOSE MONITORING, BUT FOR PATIENTS WHO DO NEED A HIGHER LEVEL OF CARE, WE ARE GLAD TO BE

ABLE TO NOW OFFER POTENTIALLY
lifesaving interventions."
JENA L. MILLER, MD

EVMS Medical Group is a not-for-profit group supporting Eastern Virginia Medical School (EVMS). Over 150 physicians specialize in family and internal medicine, obstetrics, medical and surgical specialties as well as radiation oncology, laboratory and pathology services.

Our physicians are full-time teaching faculty at EVMS. Physicians in training (residents) and medical students are an extension of our practice. The integration of our practice with EVMS resident physicians and students enhances your care and provides an academic advantage unique to our group.



The knowledge
to treat you better.