# In Utero Surgery Performed On Boy 12 Weeks Before Birth

Little Colby Boudreaux is moving his legs and feet. While this is something most parents take for granted, for Colby it's remarkable. He underwent a life-changing surgery at Ochsner Medical Center in New Orleans to correct the myelomeningocele birth defect, the most serious form of spina bifida… 12 weeks before he was born. During a groundbreaking surgery, Ochsner Medical Center's fetal surgery team of 18 physicians and nurses operated on the 23-week-old fetus while still in his mother's uterus, a procedure that fewer than 10 hospitals in the United States are able to perform.

Myelomeningocele (MMC) is one of the most serious forms of spina bifida and affects approximately one in every 1000 babies born in the United States each year. MMC occurs when the spinal cord is exposed through an opening in the spine, leaving nerves exposed and vulnerable to injury from amniotic fluid. It can lead to hydrocephalus (a buildup of spinal fluid in the brain which can cause neurological disabilities), problems with movement of the lower limbs, sensation impairment and bladder and bowel issues for the rest of the child's life.

Traditionally, surgeons wait to repair the defect until after a baby is born. But, the landmark 2011 Management of Myelomeningocele Study (MOMS) found that babies who received the surgery prenatally were half as likely to need a ventricular shunt (a plastic tube placed inside the brain to reduce pressure), twice as likely to walk independently at two years of age and had better motor function than those who had surgery after birth.

"When the fetus is just 12 to 14 weeks, we can detect the MMC malformation. As the pregnancy continues, we can see the nerve damage occurring," said Clifton Moore, MD, a maternal fetal medicine specialist on the fetal surgery team at Ochsner Medical Center. "That's why fetal surgery is one of the most exciting developments in the treatment of spina bifida, with unparalleled results for the baby."

Kaci and Anthony Boudreaux live in nearby Thibodaux, Louisiana and are the parents of a two-year-old daughter. They learned of their son's birth defect during a routine ultrasound at a Terrebonne General outreach clinic and were referred to Ochsner's maternal fetal medicine (MFM) team who advised them of their options.

"Anything that would help or benefit the baby, we wanted to do," said Kaci of choosing to have the extremely serious surgery.

During the delicate two hour operation, Ochsner's fetal surgery team worked together to repair the hole in Colby's back. Kaci's uterus was opened by the maternal fetal medicine physicians and the fetus was lifted and held just slightly out

of his mother's womb where the MMC defect in his spine was closed by the pediatric neurosurgeon. After a plastic surgeon closed his skin incision, he was placed back into the uterus and the MFM doctors then closed the uterus tightly. During the procedure, two pediatric cardiologists and two obstetric anesthesiologists monitored Colby and his mother to make sure they remained stable. A neonatology team stood by in case of an emergent delivery. At the time of surgery, little Colby weighed just over one pound.

When he was born 12 weeks later, Colby weighed 4 pounds, 12 ounces. His physicians are thrilled with his prognosis, saying it is the best result they could have hoped for. Colby left the hospital with excellent leg movements, functioning bowel and bladder and no evidence of hydrocephalus.

"To be able to intervene early enough so that a child will be able to walk, that's huge," said Cuong Bui, MD, the pediatric neurosurgeon on the fetal surgery team at Ochsner Medical Center. "To save a child from a lifelong dependency on a shunt is remarkable. It doesn't only impact the baby, but it impacts the entire family. This is a landmark procedure for Ochsner, and also for the state and the region."

"It means a lot to have a hospital near my family because we're all really close," said Kaci. "It would be very difficult to travel to another state and spend more time away from my daughter. Being at Ochsner makes it easier and more comfortable than going somewhere else to have the surgery."

Since the first successful in utero spina bifida repair in 1997, only a small handful of hospitals in the country have performed the surgery because it involves specialists from numerous high-end departments including maternal fetal medicine, pediatric neurosurgery, pediatric cardiology, plastic surgery, general surgery, pediatrics, ICU, NICU and anesthesia. Historically, most patients have been referred to programs in California, Tennessee or Pennsylvania for the procedure, where they may have to remain for up to eight weeks for follow-up care.

"We knew we had everything necessary to offer this surgery, from the doctors and nurses to the equipment to the after care for both mom and baby, and we knew we could provide quality care equal to the hospitals that pioneered the procedure," said Bui. "We spent a full year planning, preparing and practicing before we were willing to perform it."

"I really appreciate everything the doctors have done because it has made a big difference for me and for Colby," said Kaci. "I hope he can run around and play, and not have too many concerns of what he can and can't do. I think if we hadn't come to Ochsner, he wouldn't have had such a great outcome."

"It makes me happy to see how well Kaci and the baby are doing," said Moore. "That's the best part of my job – to take care of a patient and give them something wonderful in the end."

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