



Children's Hospital Colorado

PRESS RELEASE

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Fetal Care Center at Children's Hospital Colorado Opens New Delivery & Fetal Surgery Suite with First-of-its-kind EXIT Procedure

Aurora, Colo. (April 18, 2013) – The [Colorado Fetal Care Center](#) at Children's Hospital Colorado conducted an historic fetal surgical intervention and delivery on a baby who would not have survived a traditional delivery, on the opening day of its new state-of-the-art delivery and fetal surgery suite in the hospital's recently constructed East Tower.

The Colorado Fetal Care Center (CFCC) offers [integrated maternal and fetal care](#) for families facing a pregnancy with a known or suspected fetal abnormality. As part of the Colorado Institute for Maternal and Fetal Health (CIMFH), the Center's team includes internationally-known experts in maternal fetal medicine, fetal surgery and the full range of pediatric subspecialties from Children's Hospital Colorado (Children's Colorado), University of Colorado Hospital and University of Colorado School of Medicine. As one of the few programs in the world offering the complete range of fetoscopic and open fetal surgery, the CFCC is an international referral center for patients with the most complex pregnancies.

Savannah Perry and Erik Hall of Lafayette, Colo., were thrilled when they discovered they were pregnant in February 2012. However, during a routine 20-week visit, Perry's maternal fetal medicine specialist in Boulder, Colo., discovered an anomaly and referred her to the CFCC at Children's Colorado on the Anschutz Medical Campus in Aurora, Colo. Further testing, including an MRI, level 2 ultrasound, and fetal echocardiogram determined the fetus had a congenital pulmonary adenomatoid malformation, or CPAM, in the baby's upper lobe of her left lung. CPAMs are usually a benign lesion or non-cancerous tumor, but they can grow and occupy space, which can prohibit normal growth. These lesions typically plateau in growth between 22-28 weeks and require close monitoring. The diagnostic testing also identified a small bronchogenic cyst, a type of fluid-filled cyst that usually does not cause a problem prenatally.

The experts from CFCC partnered with Perry's MFM specialist, who monitored mother and baby weekly to keep a close eye on the CPAM and cyst. Perry returned to the CFCC at 30 weeks, where a fetal ultrasound picked up the then smaller CPAM, as well as a marked enlargement of the bronchogenic cyst that was compressing the left mainstem bronchus. Over the next few weeks, the bronchogenic cyst continued to enlarge, completely obstructing the left mainstem bronchus, causing the left lung to over-inflate from retained fluid and shift the baby's heart to the right side of the body, thus compressing the right lung.

"This baby would not have survived a conventional delivery," said Timothy Crombleholme, MD, Children's Colorado's surgeon-in-chief and director of both the Colorado Fetal Care Center and CIMFH. "There was too much pressure on the baby's distal trachea and left mainstem bronchus to establish an airway after a conventional delivery. Therefore, in order to survive, the baby needed surgical intervention just prior to birth. As a result of tremendous planning and effort from a committed team from three institutions, a beautiful baby girl is home who might otherwise never have made it out of the delivery room."

Perry was slated for an [EXIT \(ex utero intrapartum treatment\)-to-Resection procedure](#) to remove the bronchogenic cyst and restore the airway and lung function and delivery at 36 weeks. The baby's procedure and delivery were scheduled on November 6, 2012, opening day for the new delivery and fetal intervention suite.

A full fetal surgical team was assembled, including fetal surgeons, maternal fetal medicine specialists, fetal echocardiographs, fetal and obstetric anesthesiologists for mother and baby, a full neonatal resuscitation team and a full complement of OB nurses. In sum, there were nearly 40 clinical specialists in the new 1,000-sq-ft fetal surgery suite.

On the day of delivery, general anesthesia was administered to Perry, and the baby was pulled halfway out of her mother's uterus. The baby remains connected to its mother via the umbilical cord during EXIT procedures, because the umbilical cord offers placental support and serves as both a passageway for anesthesia and a heart-lung machine.

Dr. Crombleholme and Stig Somme, MD, pediatric general surgeon, performed a left thoracotomy on the baby to remove the bronchogenic cyst and then a bronchoscopy to open and properly position the endotracheal tube and instill surfactant prior to delivery. The umbilical cord was cut upon completion of the EXIT procedure. At that point, the baby was fully delivered and handed by Dr. Crombleholme to the neonatal team, who were able to assist the baby with ventilation.

Mom was cared for by Henry Galan, MD, a maternal fetal medicine specialist within the department of obstetrics and gynecology, University of Colorado School of Medicine, and co-director of the CFCC.

According to Dr. Crombleholme, an international leader in the field of fetal surgery, this EXIT-to-Resection procedure for a bronchogenic cyst removal is the first procedure of its type ever performed.

Perry and Hall named their baby Lake. On Lake's fourth day, her chest tube was removed, and she was weaned off the ventilator and advanced to full feeding by mouth. Mom and dad were expecting a 6-8 week stay for their daughter in the neonatal intensive care unit at Children's Colorado, but Lake exceeded everyone's expectations and was home within three weeks.

"Lake is doing great. She's now a perfectly healthy baby girl," said Dr. Crombleholme during her recent five-month follow-up appointment. "Our work is done."

"Lake wouldn't be here if it weren't for our amazing team of doctors and nurses," said Perry and Hall. "The coordination and care we received was unparalleled. We can't thank them enough."

About the Fetal Care Center at Children's Hospital Colorado

In its new Children's Colorado East Tower facility, the Fetal Care Center has:

- Its own entrance/exit (separate from that of the main hospital)
- 12 labor, delivery, recovery and postpartum (LDRP) rooms equipped for full maternal care, as well as care of the baby
- Cesarean section OR suite
- One fetal surgery suite (for open fetal surgery, fetoscopic procedures and EXIT procedures)
- Two infant stabilization rooms

With the NICU immediately adjacent on the same floor, everything is designed to keep mother and baby in close proximity to one another. In addition, the hospital's Heart Institute is one floor below.

"The CIMFH offers high-risk expectant mothers and their newborns many services not only unique within the state of Colorado but also nationally and provides mothers and babies access to the full spectrum of fetal, obstetric and neonatal [specialists](#) and interventional capabilities," said Dr. Crombleholme. "Enhanced by our partnership with the University of Colorado Hospital and University of Colorado School of Medicine, all of the different specialists involved in the care of our patients, including the mother's OB and child's pediatrician, can work together as an integrated team."

Capabilities include:

- Prenatal and fetal diagnostic techniques, including fetal MRI
- Fetoscopic surgery (for conditions such as Twin-Twin Transfusion Syndrome)
- EXIT procedures
- Open-fetal procedures, which involve opening the uterus, exposing only the part of the fetus to be operated on, then closing the uterus and allowing the pregnancy to continue

About Children's Hospital Colorado

Children's Hospital Colorado (Children's Colorado) has defined and delivered pediatric health care excellence for more than 100 years. Founded in 1908, Children's Colorado is a leading pediatric network entirely devoted to the health and well-being of children. Continually acknowledged as one of the nation's top ten Best Children's Hospitals by *U.S. News & World Report* and *Parents* magazine, Children's Colorado is known for both its nationally and internationally recognized medical, research, education and advocacy programs, as well as comprehensive everyday care for kids throughout Colorado and surrounding states. Children's Colorado also is recognized for excellence in nursing from the American Nurses Credentialing Centers and has been designated a Magnet® hospital since 2005. The hospital's family-centered, collaborative approach combines the nation's top pediatric doctors, nurses and researchers to pioneer new approaches to pediatric medicine. With urgent, emergency and specialty care locations throughout Metro Denver and Southern Colorado, including its main campus on the Anschutz Medical Campus, Children's Colorado provides a full spectrum of pediatric specialties. For more information, visit www.childrenscolorado.org and connect with Children's Colorado on [Facebook](#), [Twitter](#) and [YouTube](#).

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