

Fetal surgeon shows for first time that laser procedure may treat vasa previa

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A University of South Florida fetal surgeon at Tampa General Hospital successfully treated in utero a rare but potentially devastating condition in which placental blood vessels block the birth canal and can rupture during labor, leaving the baby without vital blood and oxygen. If undiagnosed, the condition known as vasa previa is frequently deadly for newborns.

The case was reported by Ruben Quintero, MD, professor and director of the Division of Maternal-Fetal Medicine at USF Health, in the December 2007 issue of the *Journal of Maternal-Fetal and Neonatal Medicine*. Dr. Quintero used a laser to seal off the abnormally positioned fetal blood vessels connecting the two parts of a bilobed placenta. The procedure essentially removed the unprotected vessels crossing the cervical entrance to the birth canal beneath the baby, so that the vessels would not tear or break and cause rapid fetal hemorrhage.

“This is the first time laser therapy has been used to correct vasa previa,” said Dr. Quintero, a pioneer in the field of minimally-invasive fetal surgery. “Patients have described this prenatal condition as a ticking time bomb waiting to go off. A patient with vasa previa lives with the constant worry that if her water breaks at any time, she may lose the pregnancy.”

“Dr. Quintero has long been recognized for his excellence in innovation in fetal intervention. His successful in utero laser treatment of vasa previa is potentially a very important breakthrough because it may avert

fetal hemorrhage,” said Frank Chervenak, MD, chairman of the Department of Obstetrics and Gynecology, New York-Presbyterian Hospital/Weill Cornell Medical Center. “This report must be followed by scientifically and ethically rigorous clinical investigation before being offered to patients as the standard of care.”

Dr. Quintero is an expert at pinpointing abnormal placental vessels with an endoscope inserted through the abdominal wall and into the uterus. Using a selective endoscopic technique he developed, he had already performed hundreds of laser ablations of malfunctioning placental blood vessels to treat twin-to-twin transfusion syndrome.

Vasa previa occurs in about 1 in every 2,000 to 5,000 pregnancies. Despite advances in medical technology, the condition often goes undetected until it is too late and then an emergency caesarian section and aggressive resuscitation is required to save the baby. Vasa previa has a high death rate if it’s not caught before labor, because many babies lose most or all of their blood supply within a few minutes when their mother’s water breaks. A color Doppler ultrasound showing blood flow in the womb can help detect vasa previa, but unless a woman is identified as having a high-risk pregnancy, she typically does not get this more sophisticated test during pregnancy.

The 37-year-old patient described in the published report had an abnormal placenta with one smaller and one larger lobe linked by two exposed fetal vessels. Normally the blood vessels feeding the fetus are embedded in the placenta or umbilical cord, but in this case the vessels linked the two lobes. This would not necessarily be life-threatening if the unsupported vessels were positioned in other areas of the uterus – but these vessels were caught between the fetus and the opening to the birth canal (cervix). Such exposed vessels are prone to tearing when the patient’s amniotic membranes rupture, or they may be compressed between the baby and the walls of the birth canal during birth, cutting

off oxygen to the baby.

There is no uniform standard of care for vasa previa. When the condition is diagnosed, physicians often manage it by recommending bed rest, hospitalizing the patient beginning at 7 months of pregnancy and scheduling an elective cesarean delivery before labor. However, Dr. Quintero suggests, the risk of fetal death might be substantially minimized if the unprotected vessels were ablated in utero. Laser treatment might eliminate prolonged hospitalization and the obligatory C-section, and allow the pregnancy to progress to term with a vaginal delivery, he said.

The patient described in Dr. Quintero's paper was counseled about management alternatives and elected to undergo laser surgery to seal the abnormal fetal vessels. The procedure was performed at Tampa General Hospital at about 23 weeks of pregnancy without complications, Dr. Quintero reported. However, the patient subsequently required a cesarean delivery at 27 weeks for ruptured membranes, which may have been prompted by the breech position of the fetus. After a stay in the neonatal intensive care unit, the infant was discharged and is thriving today at 9 months old.

"This case is a first step requiring more study to determine the effectiveness of the procedure and its risks," Dr. Quintero said. "But it demonstrates that, if an accurate diagnosis is made, something proactive may be done to treat vasa previa.

"It may provide physicians with justification and greater impetus to look for the prenatal diagnosis early, and hopefully save more babies."

Source: University of South Florida Health

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