

Twin to Twin Transfusion Syndrome

Twin to Twin Transfusion Syndrome: Fetoscopic Surgery

Recent advances in instrumentation and endoscopy have paved the way for the concept of endoscopic or minimally invasive fetal surgery and widespread clinical and maternal acceptability. *Minimally invasive fetoscopic procedures are now performed in many academic and regional centers, including USF.* These procedures have also been shown to be safe and effective in reducing perinatal morbidity and mortality.

Doctors of USF Health

WHAT IS TTTS?

Most identical twins share blood through the blood vessels in their common placenta. Twin-to-twin transfusion syndrome (TTTS) occurs when there is uneven flow of blood between the twins across these connections in the shared placenta.

One twin is smaller, may not get enough blood and is called the “donor” twin, while the other twin is larger, is overloaded with too much blood and is called the “recipient” twin.

The donor, may have only a small amount of amniotic fluid in the bag of waters around the baby (oligohydramnios), reduced or absent urine, and over time the baby stops growing. The recipient twin can have too much amniotic fluid (polyhydramnios), and may develop a form of heart failure.

The cause of TTTS is unknown, but for it to occur the twins must share a common placenta (monochorionic twins or identical twins). Approximately 15-20% of identical twins are at risk for TTTS.

TTTS does not behave the same way in all patients. Some cases are more severely affected than others. TTTS gets increasingly worse as the pregnancy goes on. Without treatment, between 80-100% of twins with TTTS die, either in the womb or in the newborn nursery from problems related to delivering too early. In addition, twins who survive are at risk for having severe cardiac (heart), brain or developmental problems.

DIAGNOSIS

The diagnosis of TTTS is made with an ultrasound that typically shows a large amount of amniotic fluid in the recipient twin, and a small amount of amniotic fluid in the donor twin.

If fetoscopic surgery/laser photocoagulation is the treatment of choice, The Maternal Fetal Medicine physicians (high risk obstetricians) at USF will see the patient. This visit will take about 2 hours and will include a detailed pre-operative ultrasound to get a better idea of how the fetus(es) are doing, to confirm the diagnosis of TTTS, and to rule out any major abnormalities. Other tests on the fetus(es) may also be necessary depending on the results of the ultrasound, for example a fetal echocardiogram (ultrasound evaluating the hearts of the fetuses) or MRI.

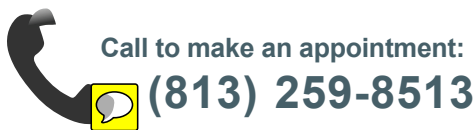
WHAT IS FETOSCOPIC SURGERY?

The fetoscopic procedure starts with an ultrasound examination of the fetus. Under ultrasound guidance, an instrument called a fetoscope (small medical camera) is inserted through a small incision in the mother's abdominal wall into the amniotic sac. The ultrasound is to ensure that the area where the instrument will be inserted does not contain any fetal vital organs. The fetoscope gives the doctor a direct view of the fetus and its placenta.

continued on back

Doctors of USF Health

Doctors of USF Health offer treatment of twin-twin transfusion syndrome, giving patients access to new, minimally-invasive treatment options.



The USF Health Maternal Fetal Medicine is dedicated to providing customized care and the best treatment options for women with high risk pregnancies.

The Fetal Care Center of Tampa Bay brings together a team of highly trained, caring doctors and nurses in state-of-the-art facilities. We use the latest medical procedures before, during, and after your baby is born.

USF physicians provide the level of expertise found only at an academic medical center and are uniquely qualified to offer the most advanced and comprehensive treatment options available. Our world-renowned experts will give you individualized care as they use the latest diagnostic tools, prescribe the newest treatments, and provide the most effective fibroid and endometriosis care available.



doctors.usf.edu
Turning Science Into Health™



Fetoscopic treatment of Twin-Twin Transfusion Syndrome

Fetoscopic Laser Treatment of TTTS:

A long hollow metal tube (trocar) will be introduced into the amniotic cavity. The fetoscope (small medical camera) is then passed through the trocar and used to identify the blood vessels on the placenta that link the circulations. The blood flow in these communicating vessels will be interrupted using laser energy to seal off (clot) the blood vessel. A second trocar may need to be inserted, especially if the placenta is in the front. The heart rate of the babies will be monitored sonographically (by ultrasound) during the procedure. The mother is monitored also. Treatment may need to be stopped if we find out laser treatment might harm the mother or the fetus(es). At the end of the procedure, the sac of the recipient twin may need to have some of its fluid drained. The mother will be given antibiotics before and after surgery. These antibiotics are safe to use during pregnancy. The fetoscopic procedure will take approximately 45 minutes to one hour to perform.

The surgery will take place at Tampa General Hospital, where the mother will typically stay for 1-3 days. This hospital stay includes the procedure (laser surgery) and an ultrasound the day after surgery to see how the fetus(es) are doing.

Follow-up will usually take place with the mother's obstetrician and Maternal Fetal Medicine physician in the city she lives in. Our team will request that the mother's local doctor perform weekly ultrasounds for 4 weeks to see how the fetus(es) are doing and every 3-4 weeks thereafter. Depending on these visits, the mother's obstetrician may consult with the USF physicians who may request a follow up visit here at USF for evaluation and/or ultrasound to determine how the mother and the fetuses are doing. Further follow up will take place after the babies are born.

TREATMENT

Possible Treatment options for TTTS include:

● **Expectant management, or "watchful waiting":** In this option, the pregnancy is followed with frequent ultrasound examinations. In addition, the mother may be offered different medicines to help the fetuses' heart and/or reduce the excess amniotic fluid in the recipient twin. Unfortunately, these medical options have not been successful in treating fetuses with TTTS, and are associated with a high death rate in the period shortly before birth and after birth (up to 95%).

● **Amnioreduction:** The amniotic fluid is removed from around the baby that has too much fluid. The goal of this procedure is to make the mother more comfortable by reducing the pressure in the uterus and prolonging the pregnancy. This procedure may need to be repeated as often as necessary. The success rate of this treatment of TTTS is approximately 56%, as measured by survival of at least one twin, however, 15% - 20% of fetuses treated with amniocentesis may have brain damage.

● **Laser therapy by the fetal surgery team at USF/ TGH:** This procedure involves using laser energy to clot off or seal (laser photocoagulation) the blood vessels that are connected in the placenta and which are causing the TTTS. By sealing these vessels, it prevents unequal blood shifts across the connections in the twins' blood vessels in the placenta. Success rates between 60-80% for 2 or 1 twin(s) respectively, have been reported.

