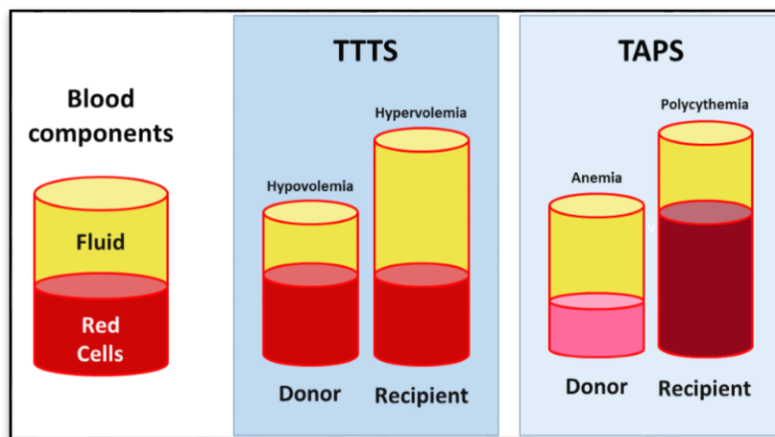


Twin-twin transfusion syndrome

Important things to know

What is twin-twin transfusion or twin anemia polycythemia syndrome?

Twin twin transfusion syndrome (TTTS) complicates up to 15% of identical twins. It is due to unequal sharing of blood volume across blood vessel connections in a monochorionic placenta. Twin anemia polycythemia sequence (TAPS) complicates 4% of identical and is due to unequal sharing of blood cells.



How do TTTS and TAPS present or harm the babies?

In TTTS the donor twin has low blood volume (essentially dehydration) while the recipient has a high blood volume (overhydrated). The dehydrated donor drinks up the amniotic fluid and produces less and less urine. Eventually this leads to a progressive emptying of its amniotic sac until the donor becomes “stuck” wrapped in his own membrane. The recipient twin does the opposite, urinating so much that a massive amount of amniotic fluid is generated distending the amniotic sac and uterus. Eventually TTTS can lead to heart failure or even death in either twin. In other circumstances the massive increase in amniotic fluid can distend the uterus so much that preterm labor and birth of both twins may be triggered.

In TAPS donor has thin blood and is anemic, which results in higher than normal blood flow speed. The recipient has thick, slow flowing blood, with a high red cell count (polycythemia). The anemic donor twin is eventually at risk for heart failure and death. The polycythemic recipient twin is also at risk for heart failure or sudden clotting of the thick blood in the blood vessels in the body or the placenta.

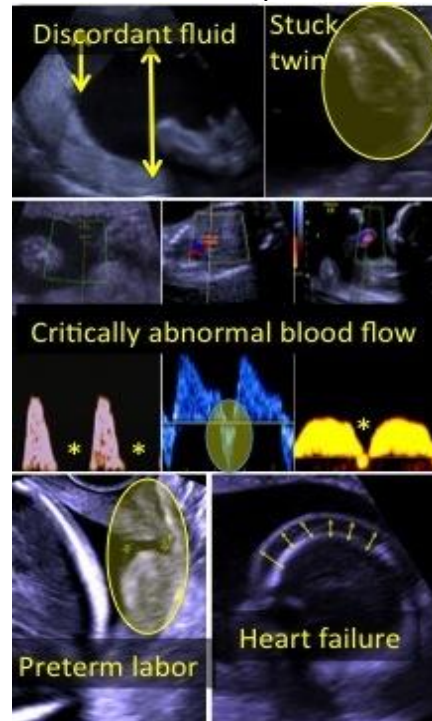
How are TTTS and TAPS detected?

TTTS and TAPS are detected by a detailed prenatal ultrasound examination that evaluates the anatomy, bladder filling, amniotic fluid volume and blood flows in the bodies and the placenta of both babies. The

definitive finding in TTTS is a maximum amniotic fluid pocket depth over 8 cm in the recipient twin and a pocket below 2 cm in the donor twin in a monochorionic pregnancy. Once the diagnosis of TTTS is made severity is assessed by the Quintero staging system.

The diagnosis of TAPS is made by finding a decreased blood flow speed in the middle cerebral artery of the recipient twin and increased speed in the donor twin. The severity of TAPS is measured by the Leiden staging system.

Stage	Quintero staging for TTTS
1	Discordant amniotic fluid
2	No bladder filling in the donor
3	Abnormal blood flow to the heart or placenta
4	Heart failure in either twin
5	Death of one or both twins
Stage	Leiden staging for TAPS
1	Mildly discordant blood flow speed
2	Greatly discordant blood flow speed
3	Abnormal blood flow to the heart or placenta
4	Heart failure in either twin
5	Death of one or both twins



Comprehensive assessment of suspected TTTS/TAPS requires the assessment of amniotic fluid volume, fetal bladder filling as well as a detailed assessment of the fetal circulation and cardiac function. A cervical length measurement is required to determine if there has been preterm labor with cervical shortening.

What is the treatment for TTTS or TAPS?

Fetoscopic laser surgery allows an examination of the placenta to identify the vessel connections between the two fetuses that cause unequal blood volume or blood counts. With the use of LASER energy these vessels can be closed. Fetoscopic laser surgery offers the highest survival rate for TTTS, and also gives both babies the best chance at normal development. Using the equatorial technique, the entire surface of the placenta is coagulated along the vascular equator. This technique, offers 70% survival of both twins and normal brain development for 90% of surviving babies.

