

# Twin-twin transfusion syndrome

*Patient Information Series – What you should know, what you should ask.*

**Twin-twin transfusion syndrome (TTTS)** is a problem seen in twins sharing one placenta (monochorionic). In this condition a significant fluid discordance between the twins is seen. One twin, the donor, is dehydrated and presents with less amniotic fluid (oligohydramnios) and in severe cases is possibly not producing urine at all. The other, the recipient, is over hydrated, presents with excessive amniotic fluid levels (polyhydramnios). The condition is the most frequent complication seen in monochorionic gestation, that is, identical twins sharing a placenta and is reported in about 15% of monochorionic gestations.

Without intervention, severe cases are associated with overall poor outcome and high risk of losing the pregnancy. Intervention options are reassuring with overall good prognosis.

## **What are the symptoms of TTTS?**

While most pregnant individuals presenting with TTTS will be asymptomatic, some may report preterm contractions, a sudden increase in the girth of the mother's abdomen, and shortness of breath as a result of too much amniotic fluid in one twin's sac (polyhydramnios). Patients might also report decreased fetal movements.

## **What causes TTTS?**

In any monochorionic gestation blood flows back and forth from one twin's circulation to the other through vascular connections on the placenta. These connections are usually balanced. In occasions when the net flow of blood is unbalanced TTTS may develop. This causes one twin to be the recipient and the other to be the donor.

## **How is TTTS diagnosed?**

TTTS is diagnosed in monochorionic twin gestation prenatally by ultrasound. Key measurements include the depth of the amniotic fluid pockets around each twin and documentation of the presence or absence of a visible fetal bladder in each fetus.

Severity is defined in stages from 1-5 based on the amount of amniotic fluid around each fetus, the presence or absence of a visible bladder, changes in blood flow through the umbilical cord, brain and liver and evidence of heart failure with excess fluid under the skin and around the lungs, heart or in the abdomen and overall viability of the babies.

## **Other tests you may encounter include:**

- Fetal echocardiography: A special ultrasound of a baby's heart.
- Magnetic resonance imaging (MRI): To determine if there is any neurological damage in either twin; without using radiation this technique takes pictures of the fetus's brain through the mother's abdomen

## **How do we treat TTTS?**

There are several different methods used to treat TTTS. Management options depends on the following parameters:

- Gestational age at onset
- Severity
- Additional findings such as selective growth restriction, congenital anomalies (structural differences in the babies' anatomy)
- Parents' preferences

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- **Fetoscopic laser surgery:** A procedure in which a small puncture is made on the mother's abdomen and endoscope is inserted into the amniotic cavity. This allows the surgeon to look into the uterus and use a laser to interrupt abnormal connections between the twins' circulations. By doing that we separate the vascular connections on the placenta and halting the pathophysiology
- **Amnioreduction:** Specific cases when laser cannot be offered or parents elect not to proceed with laser; drainage of excessive amniotic fluid on the recipient's side might be offered. While amnioreduction will not stop the pathophysiology, it may alleviate maternal symptoms.
- **Selective termination:** This surgery is can be performed when one twin is severely compromised with impending death and laser is not elected. The reduction to a singleton pregnancy may reduce the risks associated with twin pregnancy and protect the remaining twin from adverse outcomes related to TTTS.
- **Termination of pregnancy:** some patients elect to terminate these pregnancies due to the high risk of adverse outcomes, especially in untreated cases.

## What is the long-term outlook?

The outlook depends on the severity of the condition, and how far it's progressed and the treatment procedures required. Gestational age at delivery also has a major impact. Along with serial monitoring of the babies' condition before birth close monitoring postnatally and follow-up during infancy and early childhood is also prudent.

## What other questions should I ask?

- What is the stage of the TTTS affecting my babies?
- Do the babies have any concurrent conditions such as significant growth differences?
- How will these babies be monitored during my pregnancy?
- What treatment is best for my situation?
- What are the complications of these treatments?
- Where should I deliver?

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