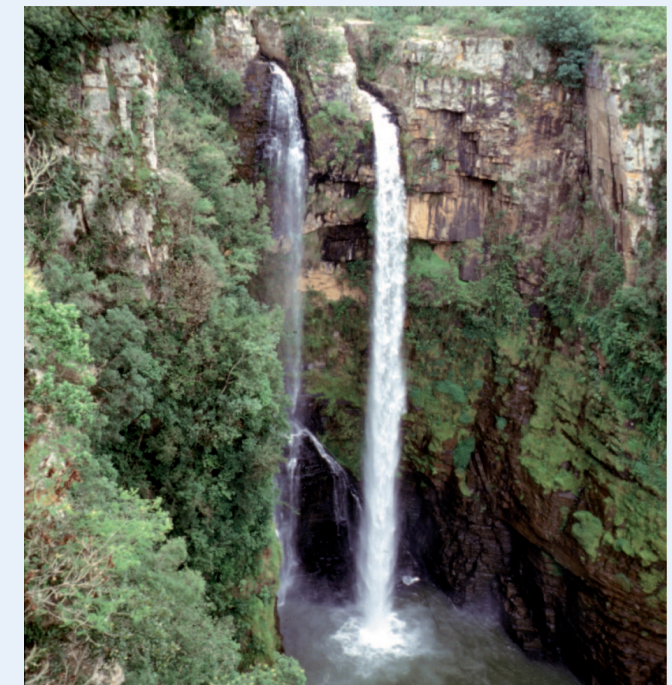


Department of Obstetrics and Fetal Medicine

Director: Prof. Dr. K. Hecher

TWIN to TWIN TRANSFUSION SYNDROME (TTTS)

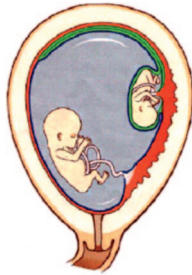
Information for parents



Which therapeutic options are available?

Serial amnioreduction (drainage of amniotic fluid)

During the procedure amniotic fluid is drained through a needle which is inserted into the amniotic sac of the recipient through the wall of the uterus. This treatment reduces the risk of pre-mature delivery and in about 20% of the cases TTTS stops.



However, in most cases the effects on TTTS on the fetuses remain unchanged, as this does not aim at the underlying cause of TTTS.

Laser therapy

This form of therapy attempts the treatment of the underlying cause for TTTS by using the Laser to occlude the connecting vessels and therefore stopping the blood flow between the donor and the recipient. Afterwards an amnioreduction is performed. The advantage of this form of therapy is that it aims at the underlying cause of TTTS and that following the closure of all connecting vessels during the procedure the twins have a significantly higher chance for subsequent normal development. This form of therapy is only available in selected centres in Europe.

With an anterior placenta (on the near wall) of the uterus or following amnioreduction the procedure may be technically more difficult and we use a special form of fetoscope which was specifically designed for this purpose.

The chance for survival of both twins is 70% and that for survival of at least one twin about 90%.

The increased risk for significant neurological damage in surviving babies remains (6% for severe and 7% for mild neurologic abnormalities), but appears to be lower than the risk following serial amnioreduction.

Where can I get more information?

Primary sources for information are the referring physicians and the University Hospital Eppendorf in Hamburg where the Laser therapy is performed in the department of Obstetrics and Fetal Medicine.

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What is Twin to Twin Transfusion Syndrome?

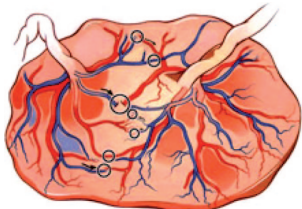
Twin to Twin transfusion syndrome (TTTS) is a disease of the placenta. It develops in identical twins during pregnancy because of the presence of connecting blood vessels between the two umbilical cords. There is repeated transfusion of small amounts of blood between the two twins through these vascular connections. The receiving fetus (the recipient) has too much blood volume which can result in heart failure and death in the womb. The transfusing twin (the donor) has too little blood volume and may die due to malnutrition.

The recipient produces excessive amounts of urine which leads to an increase in amniotic fluid volume. This may cause discomfort to the mother and also results in pressure on the cervix, which is the lower part of the womb. This may result in miscarriage or preterm delivery. The donor twin hardly produces any urine and therefore has almost no amniotic fluid in his sac.

In Twin to Twin transfusion syndrome the twins themselves are completely normal in most of the cases. The problem lies in the placenta which then results in disturbed development in the twins.

What causes Twin to Twin Transfusion Syndrome?

The Twin to Twin transfusion syndrome only affects identical twins who share a single placenta. It is believed that the basis for the development of TTTS is initiated at the time when cleavage of the fertilised egg begins and the structure of the placenta and vessel connections are determined. It is known that problems including TTTS are more severe if the cleavage of the fertilised egg occurs later. Nearly all cases of TTTS are found in identical twins with separate amniotic sacs and a single placenta.



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How often does Twin to Twin Transfusion Syndrome occur?

It is estimated that 15% of identical twin pregnancies with a single placenta, or one in 2700 pregnancies develop twin to twin transfusion syndrome. However, the true incidence may be higher since many patients with TTTS who have spontaneous miscarriage may not be reported.

The most severe forms of this syndrome develop in the middle of pregnancy, between 16-26 weeks of gestation.

What are the consequences of untreated Twin to Twin Transfusion?

The consequences are different for each twin.

For the recipient:

The recipient receives too much blood via vascular connections on the placental surface between the two cord insertions. Some blood vessels from the donor run across the placenta like pathways underneath the dividing membrane to reach the recipient. In addition to its own blood the recipient receives blood from the other (donor) twin. This has the following results:

- The increased blood volume provides an increased workload for the heart. This results in increased stress and exhaustion in the recipient and can cause heart failure.
- Increased blood volume and blood pressure causes the recipient to pass a large volume of urine resulting in increased amniotic fluid in his sac. This is one of the early signs of TTTS which can be recognized during an ultrasound examination. The extended bladder of the recipient and the increased amount of amniotic fluid may be noted.

For the donor:

The donor loses blood volume to the recipient with little return of blood through the vessel connections. His development is distinctly different from that of the recipient:

- The donor suffers from too little blood volume which may result in death if the TTTS is left untreated.
- Often the donor is termed the stuck twin because he hardly has any amniotic fluid in his sac and is squeezed to the wall of the womb by the full amniotic sac of the recipient twin. This is a result of the low blood volume which causes marked decrease in urination in the donor. In addition to the low amniotic fluid volume the bladder is very small or hardly seen on ultrasound.

If twin to twin transfusion syndrome is detected in the middle of pregnancy and left untreated, there is an 80-100% chance that the twins will not survive. This may be due to death in the womb or miscarriage.

What are signs of Twin to Twin Transfusion?

- A uterus which is too large for the gestational age and associated complaints including a tense belly, breathing problems, back pain and contractions.
- Ultrasound images of a single placenta and twins with equal sex which also show the following:
 - increased amniotic fluid volume and enlarged urinary bladder of one fetus,
 - decreased amniotic fluid volume and an empty urinary bladder in the other fetus,
 - signs of heart problems in one twin (valve regurgitation, occasionally hydrops),
 - sometimes size difference between the twins.