



Patient information - Intrauterine transfusion

Why does a baby need a transfusion before it is even born?

A baby may need a transfusion before birth because the number of red blood cells (the cells in the blood stream that are responsible for carrying oxygen to all the organs) is too low. This is called fetal anaemia. Severe anaemia can cause fetal heart failure and subsequent death.

What causes fetal anemia?

There are two groups of causes. The first group is haemolytic, which happens when the blood cells of the baby are destroyed, and production can also be decreased. The most common cause is Rhesus disease where antibodies in the mom's blood cross over into the fetal circulation and cause destruction of the fetal blood cells. The other group is non-immune fetal anaemia, when there are no antibodies involved. One of such causes is fetal parvovirus B19 infection but it could also be due to bleeding or bone marrow problems, for instance.

How is anaemia diagnosed?

Once the fetus is identified to be at risk of being or becoming anaemic (either because the mother has antibodies or there are abnormal scan findings), Doppler studies of the baby's blood flow are performed. The blood's maximum speed is measured in one of the blood vessels of the brain and if this speed is too high, it is a sign of possible severe fetal anaemia.

How is severe anaemia treated?

Once we suspect the baby may be severely being anaemic, an intervention is required to prevent the baby from dying before birth.

If the pregnancy is quite advanced, the safest option may be to deliver the baby and treat it afterwards.

If the baby is still very premature however, an intra uterine transfusion is a far better option as it can prevent the complications of being born too early. Blood that is Rh negative and cross matched to the mother is ordered from the blood bank. Cross matched to the mother means that blood is also taken from the mom to make sure her blood will not break down the donor blood too.

Before the procedure, the mother may receive antibiotics to prevent an infection and medication to make her or her uterus relax during the procedure, which can take up to an hour. When the pregnancy is more than 26 – 28 weeks, steroid injections will be given to the mother to improve the baby's lung maturity just in case complications arise and the baby is born preterm.

Once the blood arrives from the blood bank, a needle is put through the mother's abdomen under ultrasound guidance and placed into one of the blood vessels (preferably the vein) of the umbilical cord. At this stage blood is drawn from the baby to check how low the blood count actually is, as this will tell the doctor how much blood the baby needs. With the needle still inside the blood vessel, blood is slowly injected after the baby is given some medication to make sure it lies still during the procedure. Sometimes it is difficult to get the needle into a blood vessel of the umbilical cord. In those cases, the needle will be placed either in the vessel in the tummy of baby or just in the tummy. In case the pregnancy is less than 20 weeks for instance, the blood is slow injected into the tummy of the baby as the vein is just too small to get in to.

In cases where the pregnancy is more than 26 – 28 weeks, the baby is monitored after the procedure and, in case fetal distress develops, an emergency caesarean section is performed.

The cause of the anaemia will determine how many transfusions are needed. If it is the result of an infection the baby may need only one or two transfusions. If the baby is anaemic due to Rhesus disease, repeat transfusions may be needed every two to three weeks and it is important that patients stick to follow-up dates for ultrasound assessments, which will determine when the next transfusion is due.

What are the complications?

If intrauterine transfusions are performed before the baby develops heart failure, the survival rate is more than 90%, but it remains a procedure that carries some risks.

There can be bleeding from the vessel. This usually stops on its own but occasionally can result in significant blood loss.

There can be bleeding into the wall of the umbilical cord, which can reduce blood flow to and from the baby.

The fluid in the sac around the baby may leak from the puncture hole. This happens in approx. 2% of cases. One can recognise this by a small amount of water draining from the vagina. This usually improves within a week and bed rest may help.

The mother can go into early labour.

She can develop infection in the womb.

The baby's condition could deteriorate unexpectedly, usually preceded by reduced movements.

Fetal transfusions in HIV positive women are considered safe when the viral load is undetectable but there remains a small risk of HIV transmission to the baby due to the procedure. In women where the viral load is high, the risk of transmission is increased. |

[U1] In the event of any signs of complications (e.g., development of fever, a tender abdomen, contractions, fluid leaking from the vagina, reduced fetal movements) the mother should contact her obstetrician immediately.

What happens next?

A baby that has received transfusions for Rhesus disease needs to be delivered in a baby unit that is experienced in dealing with such babies, since, after birth, there is still a high risk for anaemia but also for severe jaundice, even though the baby may initially look perfectly well. Rhesus disease has become very rare, so there are paediatricians who have never treated a baby like this before. If not managed optimally after birth, the anaemia or jaundice could result in severe complications and it is therefore extremely important to check with the paediatrician whether one should rather make arrangements to deliver in another hospital than what was originally planned.