Transposition of the Great Arteries

What is Transposition of the Great Arteries?

Transposition of the Great Arteries (TGA) is a congenital heart defect. Congenital means present at birth. They occur early in pregnancy often before a mother even knows she is pregnant. These structural defects of the heart can vary in severity from simple problems to more serious problems.

The pulmonary artery is a blood vessel arising from the right ventricle of the heart that normally allows blood to flow to the lungs. The aorta is a blood vessel that arises from the left ventricle of the heart. Blood is normally pumped through the aorta to the body.

In TGA, the position of the aorta and pulmonary artery are switched, the exact opposite of a normal heart. After birth in babies with TGA, two separate circuits result, one that circulates oxygen-poor (blue) blood from the body back to the body and another that recirculates oxygen-rich (red) blood from the lungs back to the lungs.

TGA can sometimes be identified during a prenatal ultrasound at 18-20 weeks of pregnancy, but some cases are not found until later in pregnancy or after birth.

What are the causes of TGA?

For every 10,000 babies born, approximately 2-4 babies will have TGA.
Some congenital heart defects may have a genetic link causing heart problems to occur more often in certain families. But most of the time TGA occurs by chance and it appears to be a random event that can happen to anyone.

**What does this mean?**

During pregnancy, TGA is well tolerated by the baby as the baby does not need to use his/her lungs and the heart does not need to send blood to the lungs to pick up oxygen. The placenta and umbilical cord carries oxygen to the baby.

Other organ abnormalities are not usually seen in babies with TGA. Sometimes babies have a chromosomal abnormality or genetic problem. In babies with TGA, other heart abnormalities are frequent.

Babies with TGA often have an opening between the right and left side of the heart. If this “hole” occurs between the two chambers located at the top of the heart (atria) it is called an Atrial Septal Defect (ASD). If this “hole” occurs between the two chambers located at the bottom of the heart (ventricles) it is called a Ventricular Septal Defect (VSD). An ASD or VSD can help the baby after birth by allowing some oxygenated blood (red blood) to be pumped to the body.

**What other tests should we consider?**

Other tests include a detailed ultrasound that is used to assess the baby’s other organs. Because other heart abnormalities occur frequently with TGA, a fetal echocardiogram, which is a detailed ultrasound of your baby’s heart will be done.

An amniocentesis may be offered. During an amniocentesis, a small amount of amniotic fluid is taken from the area around the baby and tested for chromosome problems.

**What will happen around the time of the baby’s birth?**

Babies with TGA will need to be born at a hospital with a pediatric cardiovascular surgeon (specialist in heart surgery for children). Babies with TGA will require care in a neonatal or paediatric intensive care unit.

This level of care may not be available in your hospital and you may need to deliver at another centre. Your doctor will be able to tell you where your baby needs to be delivered.

Babies with TGA are closely monitored in the intensive care unit and further testing after birth will help the paediatric cardiologist (heart specialist for children) plan your baby’s care. All babies with TGA will need heart surgery, usually this occurs within the first month of life.
What does this mean for my baby’s future?

The operation to correct TGA is called an “arterial switch”. This open-heart surgery involves “switching” the pulmonary artery and the aorta back to their normal positions. The coronary arteries are also moved to the new aorta so they can take oxygen-rich (red) blood to the heart muscle. An ASD or VSD is often closed at this time.

Children with TGA will require follow up by a paediatric cardiologist who will make assessments to check for any heart related problems.

What do we do now?

You will meet with a doctor that specializes in high-risk obstetrics. A referral to a paediatric cardiologist and a paediatric cardiovascular surgeon will be made. These doctors will discuss with you in detail your options for further testing, discuss with you test results and provide you with treatment options. They will be able to answer any questions you may have.

Where can I get more information?

The Children’s Hospital of Philadelphia
Managing Transposition of the Great Arteries (TGA)
http://www.chop.edu/service/cardiac-center/resources/tga.html

The Children’s Heart Institute
Congenital Heart Defects: Transposition of the Great Arteries
http://childrensheartinstitute.org/educate/defects/transpo1.htm