



## TRANSPOSITION OF THE GREAT ARTERIES WITH MUSTARD OR SENNING OPERATION

### What is it?

Unlike in the normal heart (see The Normal Heart), in transposition of the great arteries, the large blood vessels that pump blood to the body (aorta) and lungs (pulmonary artery) are reversed. This means that without some sort of correction, oxygen-rich blood would not get delivered to the body. Without surgery, survival is not possible.

The first operations to fix this defect were described by Dr. Mustard and Dr. Senning, hence the names of the respective operations. Both these procedures redirect blood in the heart. Blood is redirected using tubes called “baffles” and is redirected within the upper chambers of the heart called “atria”. These operations are often called “atrial switch” operations and are quite different from the “arterial switch operation” that some older patient’s with transposition may have.

After a Mustard or a Senning operation, the main heart-pumping chamber may weaken (medical term: heart failure) and the heart valves may leak (medical term: regurgitation). Some women can develop irregular heart rhythms (abnormally fast or slow, medical term: arrhythmias).

### How safe is it for me to become pregnant?

Pregnancy is associated with increased demands on the heart (see Cardiovascular Changes During Pregnancy). In women with Mustard or Senning operations, the ability to tolerate these changes primarily depends on the strength of the pumping chambers of the heart muscle and the function of the heart valves.

Every pregnancy carries some risk for complications and this risk may be increased by underlying heart disease. All women have to consider the safety of a pregnancy taking their underlying heart disease into account. Every person’s heart condition is different and therefore the safety of pregnancy differs too. Before proceeding with trying to have a baby you should discuss your specific condition and the details of your situation with a heart specialist who knows about the care of women with heart disease in pregnancy.

### Issues for the mother

#### Which forms of birth control are safe?

Birth control (medical term: contraceptives) should be discussed with your physician. Estrogen-containing contraceptives are associated with the formation of blood clots. If your heart is weak, if you have arrhythmias, holes in your heart, or artificial heart valves, this form of contraception may not be suitable for you. There are alternative methods and contraception should be discussed with a physician who has an understanding of your underlying heart condition. (See Birth Control)

## **What are my risks if I become pregnant?**

In order to determine your risk during pregnancy, you should see your heart specialist before getting pregnant. You may be required to have additional heart tests such as an ultrasound of your heart (medical term: echocardiography) or a magnetic resonance imaging scan (MRI scan) to better determine the risks of pregnancy.

Some women with a Mustard or a Senning operation can have a successful pregnancy; however, there are a number of potential risks. The most common heart-related complications that occur during pregnancy are heart rhythm abnormalities (abnormally fast or slow heart rates) or heart failure (weakening of the heart muscle). If these complications occur, they usually can be treated with medications. Deaths are rare, but they have been reported. Some women may develop heart muscle weakening that cannot be fixed with medications and persists after the pregnancy. If you had heart failure or rhythm disturbances before pregnancy, your risk for complications during pregnancy is higher. There are other cardiac characteristics that can also have an impact on pregnancy risks. (see General Considerations) It is important to see a congenital heart specialist before pregnancy to discuss your risk of pregnancy.

Additionally, women who have had repair of transposition of the great arteries may have a higher risk of complications such as pregnancy-induced hypertension or preeclampsia (see High Blood Pressure). Women are also at increased risk of early labour.

Some medications are not safe in pregnancy. Do not stop medications without first checking with your doctor, but do check your medications out before pregnancy so you will have a plan. If you did not do that, then do so as soon as you know you are pregnant. The MOTHERISK website is an excellent resource. (<http://www.motherisk.org>)

### **Issues for the baby**

Generally, babies of mothers with Mustard or Senning operations do well. However, there is an increased risk of early (medical term: preterm) delivery and small (medical term: low birth weight for gestational age) babies.

In the general population, the risk of having a baby with congenital heart disease is about 1%. If a parent has transposition of the great arteries, this risk increases to about 5%. Women will be offered ultrasound screening of the baby's heart (fetal echocardiogram) at the end of the fifth month (20 weeks gestation) of pregnancy. The ultrasound can detect most major cardiac defects in the developing baby. Minor defects may not be detected until after birth.

### **Medical care during pregnancy and delivery**

## **Where should I be followed?**

Once pregnant, you should be followed at a center that specializes in high-risk pregnancy. Your specialists will determine the frequency of follow up through your pregnancy.

## **What can I do and expect during pregnancy?**

Your heart specialist will arrange for check up visits during your pregnancy. In addition to your clinic visits, your doctors will arrange echocardiograms to help determine how your heart is adapting to the pregnancy.

You need to pay attention to symptoms related to your heart. Notify your doctor if you develop any concerning symptoms such as shortness of breath, swelling of the legs and/or heart palpitations. If you develop complications you may be admitted to hospital for closer care and monitoring.

If your symptoms are worrying and you cannot get in touch with your doctor, go to your nearest emergency department. It is helpful to keep a letter from your doctor explaining your condition so that other health care professionals can better help you in an emergency situation.

Labour and delivery should be planned carefully with a team including a specialist in congenital heart disease, an anesthetist, and a high-risk obstetrician. A vaginal delivery is usually recommended. Good pain management is important.