Coarctation of the Aorta

A GUIDE TO HELP UNDERSTAND YOUR BABY'S HEART

PROVIDED BY THE
CENTER *for* ADVANCED FETAL CARE
the FETAL HEART PROGRAM

UNIVERSITY *of* MARYLAND
MEDICAL CENTER

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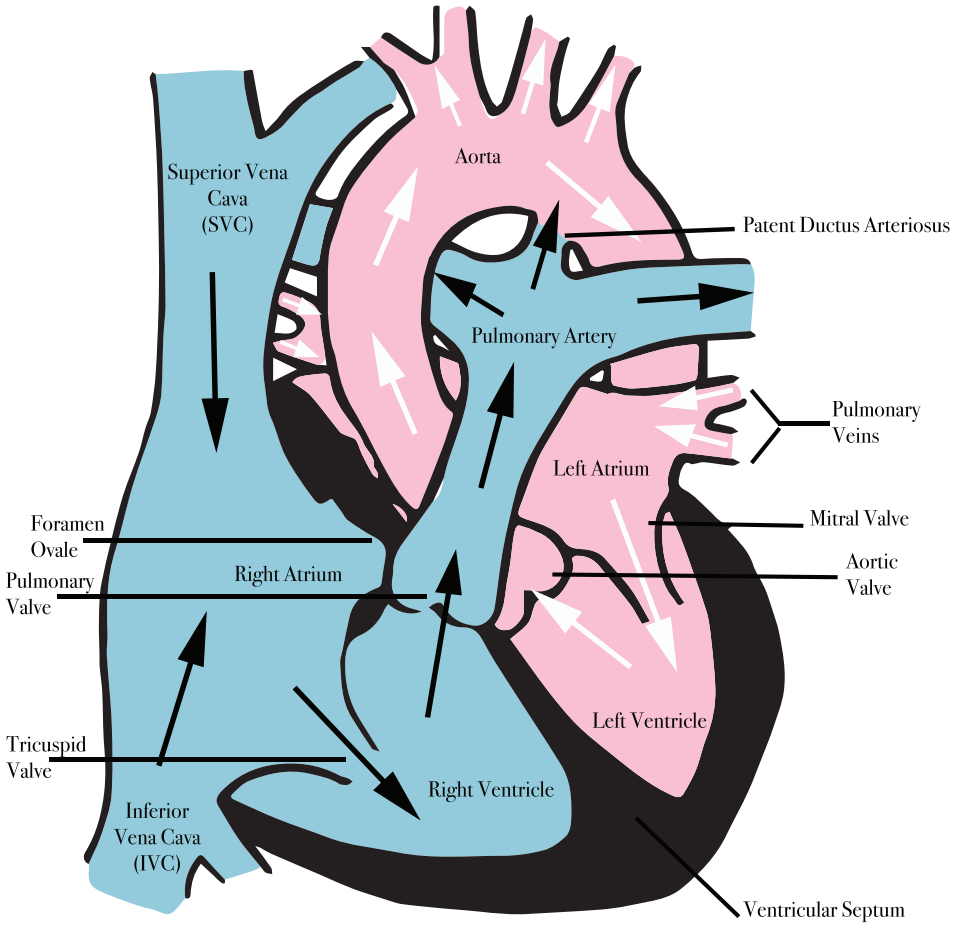
This guide will help you understand your child's heart. It is not a diagnosis and should never be used instead of medical advice.

Our goal at the Center for Advanced Fetal Care is to assist you on the journey ahead and help educate you to better communicate with your team of physicians, friends and family.

Illustrations by Dr. Alicia Chaves

The Normal Heart



The heart is a complex organ which pumps blood through the body. It drives the circulatory system, which carries oxygen and nutrients to the vital organs through a system of arteries and veins.

The heart has four chambers. The top two chambers are called the atria, which are separated by the atrial septum. The bottom two chambers are the ventricles, which are separated by the ventricular septum. As blood passes through each individual chamber, it exits through a valve. Each side of the heart works as its own pump.

Pump 1 - Right side pumps blood to the lungs. (blue on diagram) Blood travels from the right atrium through the tricuspid valve into the right ventricle. From the right ventricle, it travels through the pulmonary valve into the pulmonary artery to the lungs. Oxygenated blood from the lungs returns to the left atrium through the pulmonary veins.

Pump 2 - Left side pumps blood to the body. (pink on diagram) From the left atrium, oxygenated blood travels through the mitral valve to the left ventricle. Then, blood exits through the aortic valve to the aorta, the main artery, sending blood to the rest of the body. Once blood has supplied oxygen to the vital organs, it returns to the right atrium through the inferior vena cava (IVC) and the superior vena cava (SVC), the main veins of the body, to begin the process again.

What is a congenital heart defect?

A congenital heart defect is an abnormality of the structure and/or function of the heart. The defect typically develops during the early stages of pregnancy.

Why did this happen to my baby?

A congenital heart defect is the most common abnormality found in babies. Congenital heart disease may occur due to environmental factors, chromosome abnormalities, or genetic conditions; the majority of heart defects are multifactorial, which means that it occurs because of interactions between genes, chance, and the environment. In most cases, there is not an explanation for why a baby is born with a heart defect.

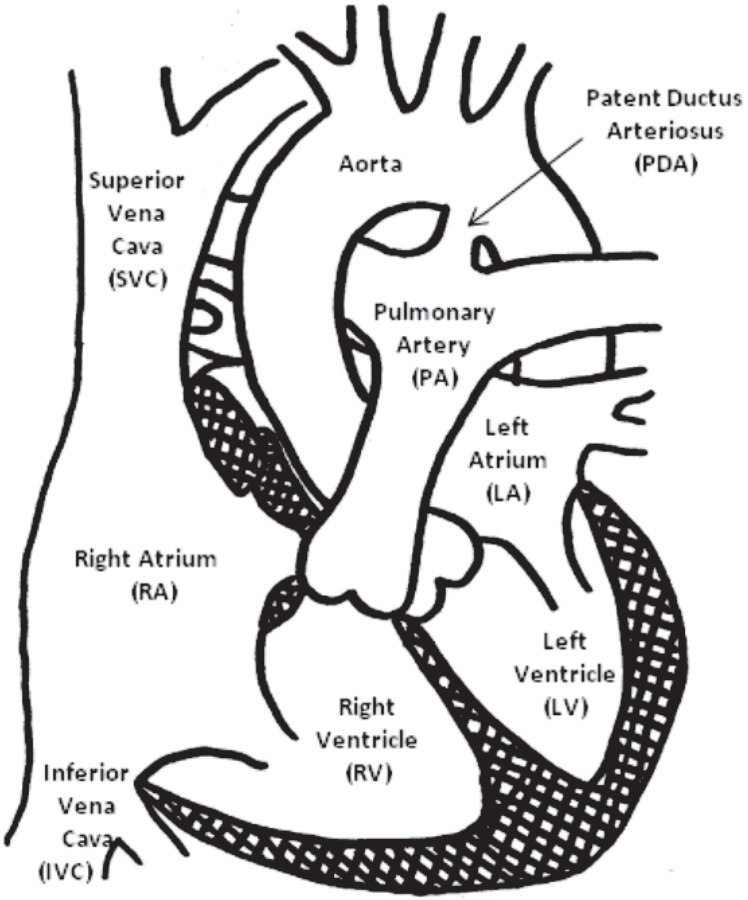
It is important to remember that any baby can have a congenital heart defect. Neither parent is to blame. Our hospital offers monthly support groups for families with children born with a congenital heart defect.

For more information, visit the fetal heart program online at: umm.edu/programs/fetalheart/patient-information/resources

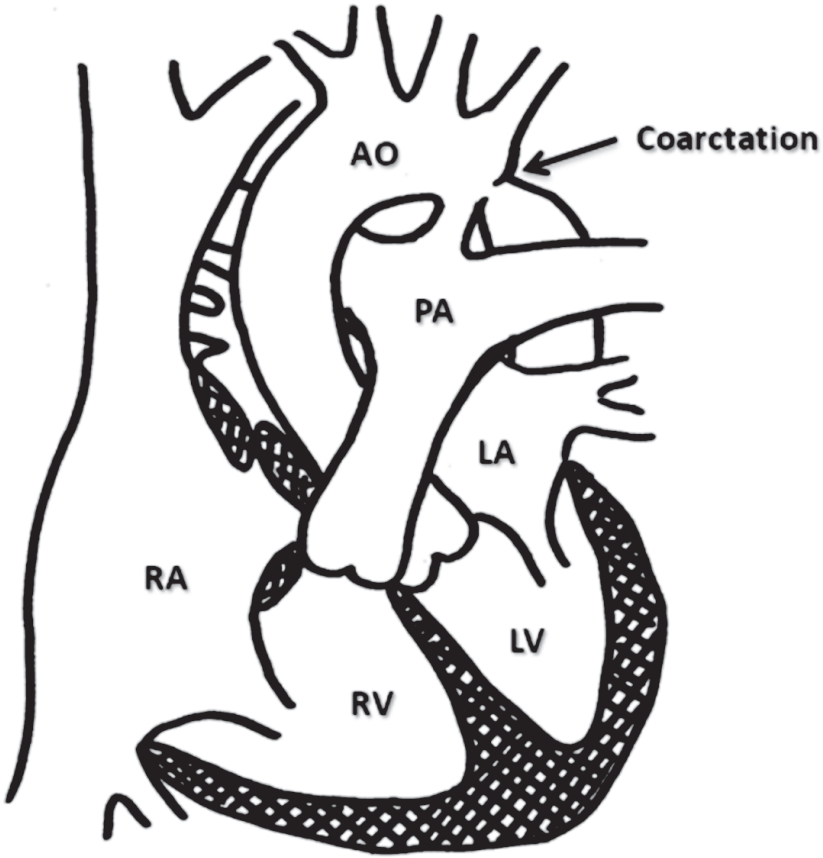
What is Coarctation of the Aorta?

Coarctation of the aorta is a congenital heart defect (CHD). It is narrowing of the aorta, which is the main blood vessel carrying oxygen rich blood from the heart to the rest of the body.

Normal Heart



Coarctation of the Aorta



For more information visit the fetal heart program online at:
umm.edu/programs/fetalheart/health-information/services/coarctation-of-the-aorta

How is Coarctation of the Aorta Diagnosed?

Coarctation of the aorta is diagnosed during an echocardiogram. A fetal echocardiogram (ultrasound of the fetal heart) is the first step in detecting if your baby demonstrates a possible narrowing of the aorta. Coarctation of the aorta can not be confirmed until after the baby is born and the patent ductus arteriosus (PDA) closes. After delivery, an MRI or a CT scan may be performed to further evaluate your baby's heart.

What causes Coarctation of the Aorta?

The cause of coarctation is often unknown, but it can be associated with other cardiac defects. The most common congenital heart defect seen with coarctation is bicuspid aortic valve. Another defect present with coarctation of the aorta is a ventricular septal defect (VSD). Decreased function of the left side of the heart may also be associated. Coarctation may be found in patients with a genetic syndrome, such as Turner syndrome. A baby who has coarctation of the aorta because of a chromosomal or genetic condition usually has physical and developmental problems, too. Many of these chromosomal conditions can be tested for during pregnancy with either a chorionic villus sampling (CVS) or an amniocentesis. These procedures are associated with a small risk of miscarriage; however, many providers and patients believe that the benefits outweigh the risks. If a family chooses not to have these tests during pregnancy, all newborns with coarctation will be screened for genetic and chromosomal conditions.

What can I expect during my pregnancy?

If, before birth, your baby is suspected to have coarctation of the aorta, a team of specialists will care for you and your unborn baby. The team at the University of Maryland Medical Center includes a maternal fetal medicine specialist (MFM), cardiologists (fetal and pediatric), genetic counselor, neonatologist, and a pediatric cardiac surgeon. Your baby will be monitored closely by fetal ultrasounds and a delivery plan will be discussed among you, your obstetrician, and the various other specialists. Induction of labor may be scheduled for a pregnancy affected with coarctation of the aorta to ensure that your care team is present at delivery. If there are no maternal or fetal issues other than the baby's coarctation, our goal is for you to have a normal delivery.

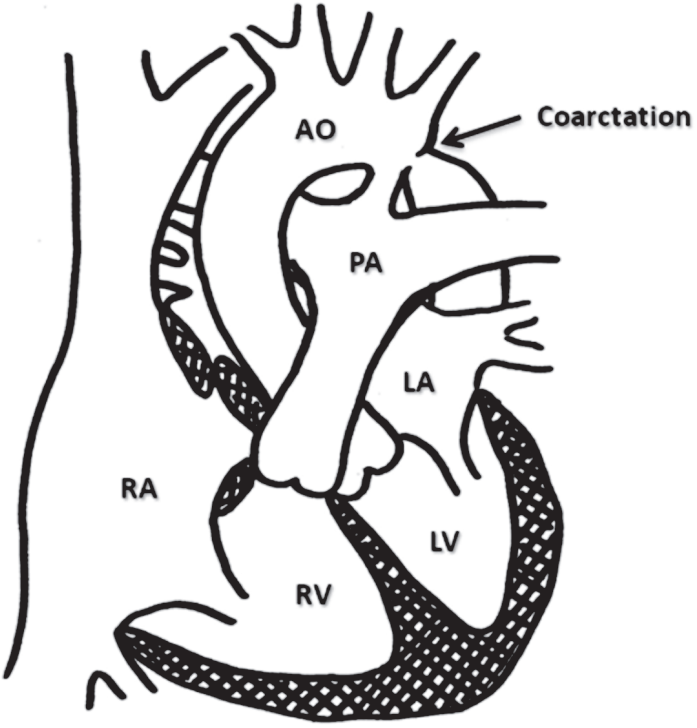
What can I expect after my baby is born?

After delivery, your baby will be taken to the neonatal intensive care unit (NICU). The specialists in the NICU will closely monitor your baby's vitals. An echocardiogram will be performed to determine if a coarctation of the aorta exists. And, if confirmed, how severe the coarctation is. During the echocardiogram, the patent ductus arteriosus (PDA) is evaluated. Because the PDA is still open right after birth, the baby is able to get enough blood to their lower body and may not have difficulty breathing. A medication, prostaglandins, is given through an IV to maintain the PDA. An electrocardiograms (EKG), CT scans, or cardiac MRI's may also be needed. Once the diagnosis is confirmed, treatment will be determined.

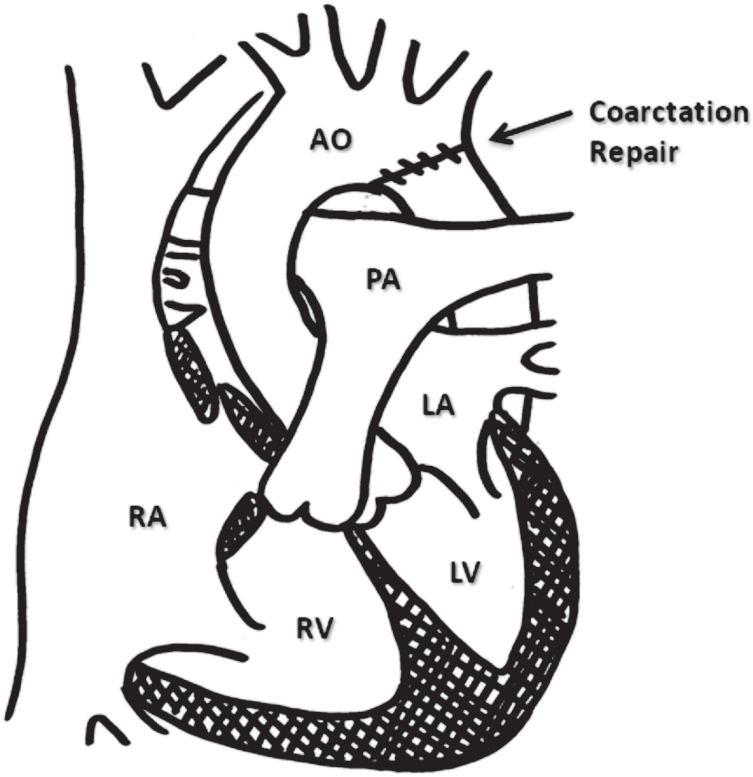
How is Coarctation of the Aorta treated?

If surgery is required, a team of pediatric surgeons, anesthesiologists, pediatric cardiac operating room staff and nurses will work together to repair your baby's heart. The surgeon will cut out the narrowed portion of the heart and sew the aorta back together. A baby typically needs about 7-10 days in the hospital to recover from the procedure. Because the surgery leaves a scar on the blood vessel, it is possible for this area to narrow in the future.

Before Surgery



After Surgery



Will my baby have a normal childhood?

Most children born with coarctation of the aorta can participate in normal activities, including sports. Within the first year after surgery, your child will have frequent follow up appointments with the pediatric cardiologist. If the narrowing develops again, less than 10% of patients need a 2nd procedure. Patients with coarctation might develop high blood pressure, which may require medication. Your cardiologist will decide if your child should avoid any specific types of activities.

Will we have another child with a congenital heart defect?

Studies suggest that if you have one child with a congenital heart defect, your risk of having another child with a heart defect is about 2%-3%. If your baby's congenital heart defect is associated with a chromosome abnormality or a genetic syndrome, a genetic counselor can discuss with you and your family the risk of having another baby with the same condition. In any future pregnancies, we highly recommend nuchal translucency screening with an early fetal echocardiogram during your first trimester. Then, we recommend a targeted anatomy ultrasound between 18-20 weeks, and a fetal echocardiogram between 22-24 weeks.

How can the Fetal Heart Program help?

The Fetal Heart Program at the University of Maryland Medical Center is dedicated to the care and support of you and your unborn child. Our world class program aims to diagnose congenital heart defects as early, and as accurately as possible. We strive to create personalized prenatal care and optimize your delivery plan. Our multidisciplinary team is devoted to you and your baby's needs before and after birth.

It has been
our privilege
to care for you and your child.

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