

Coarctation of the Aorta

The aim of this fact sheet is to explain what Coarctation of the Aorta is, what effect it will have on a child and how it can be treated.

What is Coarctation of the Aorta?

Coarctation means a narrowing in the blood vessel wall. The **Aorta** is the main artery carrying red (oxygenated) blood from the heart to the body.

Coarctation of the Aorta is a narrowing of the aorta. This means that the left ventricle has to work much harder than normal to push the blood through the narrowed area.

There is also a more severe condition called **Interrupted Aortic Arch (IAA)**. **Interrupted** means stopped. The **Aortic Arch** is the first part of the aorta as it bends around the top of the heart. **Interrupted Aortic Arch** means that the aorta cannot carry red (oxygenated) blood to all parts of the body.

Figure 1 shows a heart affected by coarctation of the aorta. You can see where the aorta narrows before splitting in two. The blood going to the left travels to the rest of the body but the blood on the right is flowing into the pulmonary artery.

The duct taking the blood into the pulmonary artery is part of the foetal circulation. In healthy babies this closes of its own accord soon after birth, but in some patients with coarctation of the aorta it will stay open. Babies with interrupted aortic arch rely on this duct for their blood to circulate so if it starts to shut down they will become ill very quickly.

Fig 1 – Coarctation of the aorta

Coarctation of the aorta

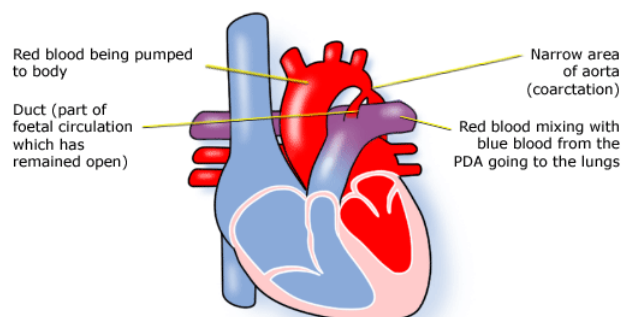


Fig 2 – normal heart

Normal Heart

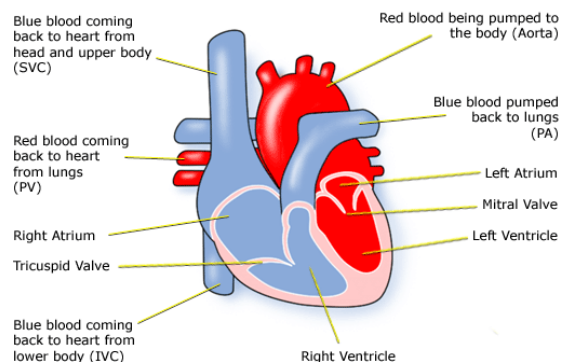


Figure 2 shows a healthy heart. The aorta is much wider than in the previous picture and the heart muscle around the left ventricle is thinner as it does not have to work so hard.

Diagnosis

Coarctation of the aorta or interrupted aortic arch can sometimes be seen on a scan during pregnancy.

If a baby has interrupted aortic arch and has not been diagnosed before birth, they will be diagnosed during their first few days of life because they will become very ill and need urgent surgery.

If the aorta is very narrow, then children born with coarctation of the aorta will also become ill and will soon be diagnosed. If the aorta is not very narrow, then the child may not start to show symptoms for some years.

Older children may be diagnosed after they start to show symptoms such as pains in their legs, tiredness, headaches and dizzy spells. Sometimes there are no symptoms, but a heart murmur is heard during a routine examination.

Some children with coarctation of the aorta also have other heart disorders, such as a VSD (a hole between the ventricles), or an Aortic Stenosis (a narrowing around the entrance to the aorta).

When a heart murmur is heard the following tests may be carried out:

- pulse, blood pressure, temperature, and number of breaths a baby takes a minute;
- listening with a stethoscope for changes in the heart sounds;
- an oxygen saturation monitor to see how much oxygen is getting into the blood;

- a chest x-ray to see the size and position of the heart;
- an ECG (electrocardiogram) to check the electrical activity;
- an ultrasound scan (echocardiogram) to see how the blood moves through the heart;
- checks for chemical balance in blood and urine; and
- a catheter or Magnetic Resonance Imaging test.

Treatment

If a baby needs treatment for coarctation of the aorta or interrupted aortic arch, then they will need to have surgery. The surgery will widen the artery or fill in the missing section.

Coarctation of the aorta in older children can be treated either with or without surgery. The non-surgical method uses a balloon catheter or stent.

A tube, called a catheter, is threaded into the heart via a vein and into the aorta past the narrowed area. A balloon on the end of the catheter is then inflated and pulled back to stretch the narrow part of the aorta. In older children a stent, which is a metal cage inserted over the balloon, is left at the place where the artery was too narrow to keep the aorta wide open.

The other option is to have corrective surgery which will widen the aorta at the point where it is too narrow.

Surgery on the aorta is done through the left side of the chest, and the heart continues beating throughout the operation.

If your child has other heart defects, the surgery needed will depend on how the heart can best be modified to cope with the problems the child has.

For most children this kind of surgery is low risk, but it can depend on how well a child is otherwise. The surgery takes place close to the spine so there is a slight risk of damage to the nerves. The cardiologist or surgeon should discuss the risks with parents or carers before asking them to consent to the operation.

The length of time in hospital will usually be only a week or so, of which one or two days will be spent in the intensive care and high dependency unit. Of course, this depends on how well your child is before and after the surgery, and whether there are any complications.

How the child is affected

Most children are completely well, active, and gaining weight a few days after surgery. They will have a scar on the left side of the chest, and there may be smaller scars on the hands and neck, which will usually fade away to nothing.

Sometimes the coarctation reoccurs – this is more common after a balloon catheter than after surgery. So children need regular follow-ups to make sure narrowing is not reoccurring.