Heart dissection

Transcript

The heart is made of cardiac muscle, which contracts and relaxes regularly to pump blood around the body.

A sheep's heart will be dissected to show some of the different structures inside. A sheep's heart looks like a human heart and works in the same way.

This is the front-facing view of the heart. This is how it sits in the body if you were facing the person whose heart it is.

This is the back of the heart.

The heart muscle contracts to squeeze blood out, and then relaxes to allow blood to flow in. The muscle on the right side of the heart feels thinner than the muscle on the left side of the heart. This is because the left side of the heart has a thick muscular wall to pump blood around the whole body.

This is the top of the heart. The vessels have been cut away.

This is the apex of the heart.

These are the coronary arteries. These special arteries bring oxygenated blood to the outer layers of the heart wall.

The heart muscle has its own oxygen supply because it needs lots of energy to contract.

If one of the coronary arteries gets blocked by a blood clot, here for example, it could cause a heart attack. This part of the heart would not get the oxygen it needed and so would not contract properly; disrupting the proper action of the heart.

Now let's look at the blood vessels. This is the aorta. It is the largest artery in the body. It carries oxygenated blood out of the left ventricle, all around the body. Notice how thick its wall is. This helps it to withstand the high pressure of the blood as it is pumped out of the heart.

Here you can see into the right ventricle. The vena cava has been removed. The vena cava is the biggest vein in the body; it brings blood back to the right atrium from the rest of the body. Its wall is thinner than the aorta as the blood moves at low pressure.

The pulmonary vein has also been removed; this flows into the left atrium, bringing blood back to the heart from the lungs.

This vessel is the pulmonary artery. Notice how this also has quite a thick wall, though not as thick as the aorta.

This vessel carries deoxygenated blood from the right ventricle to the lungs.

Now let's look inside the heart. The muscular wall of the heart is cut from top to bottom, about 2 and a half centimetres to the left of the coronary artery.

The heart is held open along the cut so that cutting can continue from the inside.

The same is done for the other side, about 2 and a half centimetres to the right of the coronary artery.

This is the left side of the heart. The top chamber is the left atrium and the bottom chamber is the left ventricle.

Here is the right atrium …

… and the right ventricle.

These are the one-way valves between the atrium and the ventricles. They allow blood to flow down from the atrium into the ventricles, but not back up again. These tendons hold the valves down.

The muscular wall of the left ventricle is really thick because it needs to produce a large force to push the blood out of the heart at high pressure, so that the blood can travel all around the body and back again. The muscular wall of the right ventricle isn't quite as thick, because the blood is only pushed from here to the lungs and back.

The aorta has been cut open to show the one-way valves inside. The valves allow blood to flow out of the left ventricle into the aorta but not back into the ventricle again.

They are forced open when the heart muscle contracts and pushes on the blood; and they flap shut when the heart muscle relaxes.

The pulmonary artery also has these valves.

Let’s follow the path of the blood as it moves through the heart.

Deoxygenated blood from the body flows through the vena cava into the right atrium. Then to the right ventricle and out of the heart through the pulmonary artery to the lungs.

Oxygenated blood from the lungs passes through the pulmonary vein into the left atrium. Then into the left ventricle and out of the heart through the aorta.

It is important to realise that the flow of blood through each side of the heart happens simultaneously.

The left and right atria contract at the same time as each other. And the left and right ventricles contract at the same time as each other.

It should now be possible to better visualise the pathway of the blood in and out of the heart.