



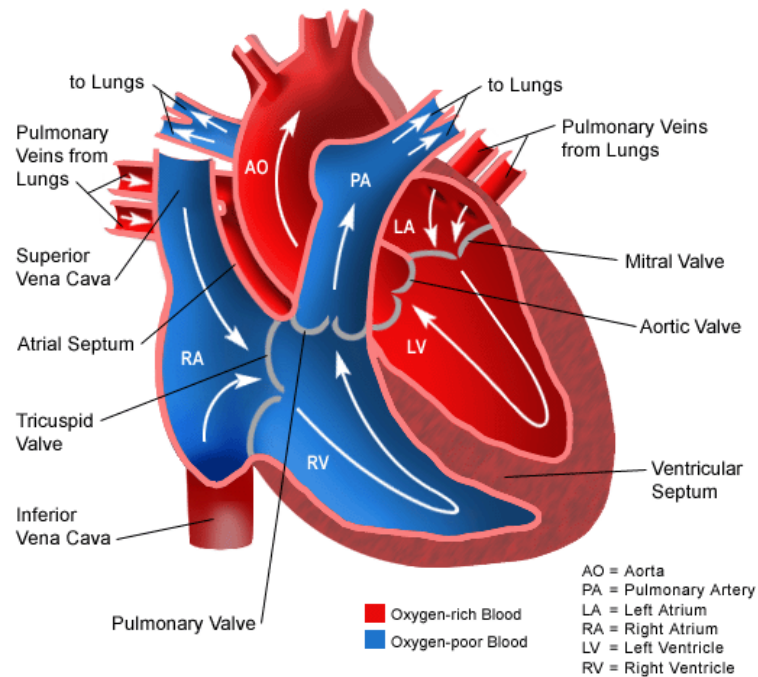
Patent Ductus Arteriosus

BRIEFLY, HOW DOES THE HEART WORK?

The heart has four chambers. The upper chambers are called atria. One chamber is called an atrium, and the lower chambers are called ventricles. In addition to the upper and lower chambers, the heart is also considered to have a right and left side.

Blood flows from the body into the right atrium. It is stored there briefly, then pumped into the right ventricle. The right ventricle pumps blood into the lungs, where it receives oxygen. It flows from the lungs into the left atrium; it is held here briefly before going into the left ventricle. The left ventricle contains the largest muscle of the heart so the blood can be pumped out to all parts of the body.

Movement of blood results from electrical impulses that are transmitted from the brain to the heart. The impulses not only direct the heart to beat but also to maintain a steady, regular rhythm.





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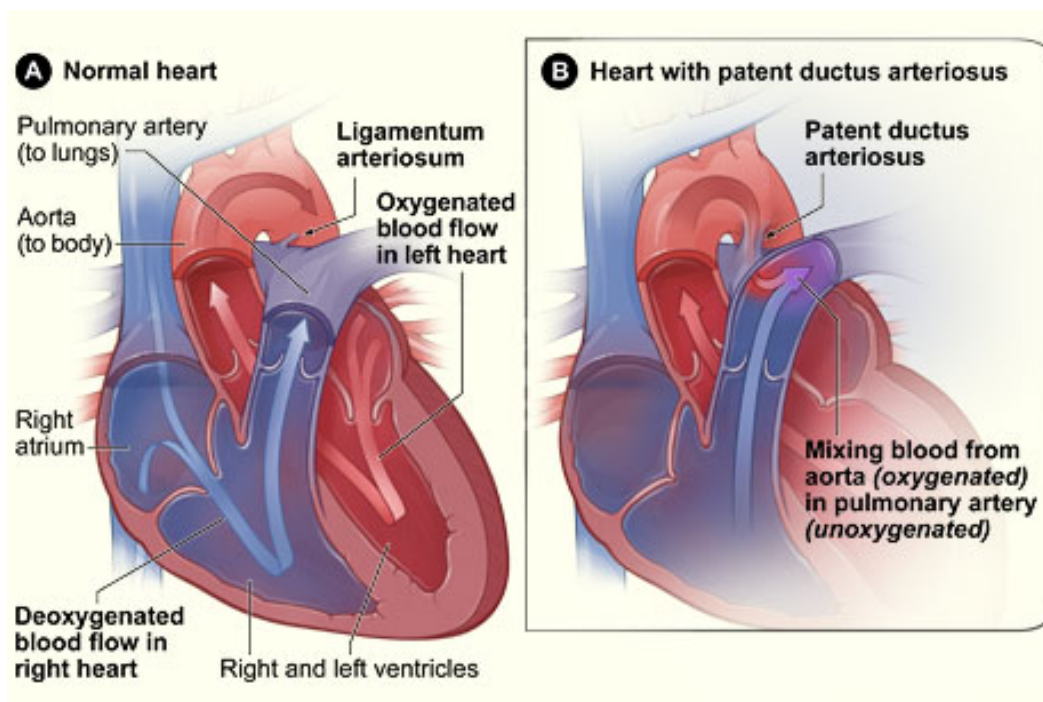
WHAT IS PATENT DUCTUS ARTERIOSIS?

The ductus arteriosus is a small vessel connecting the pulmonary artery (the vessel that takes blood from the heart to the lungs) and the aorta (the vessel that takes blood from the heart to the rest of the body).

In a developing foetus the blood bypasses the non functioning lungs through the ductus arteriosus.

Normally, after birth the ductus will close within the first 3 days of life, and is securely closed by day 7-10 of life, but in some instances this does not happen and the blood flows not to the body, but into the pulmonary artery.

In order to meet the body's oxygen demand, the heart has to then pump more blood than usual to cover what circulates in the shunt as well as what the body requires. This extra work for the heart can result in heart failure as the chambers of the heart increase in size due to the increased work. Blood can also back up into the lungs in this situation.





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WHAT ARE THE CLINICAL SIGNS OF PDA?

Clinical signs may include;

- Increased or laboured respiration (normal respiratory rate is less than 30 breaths per minute when sleeping)
- Change in heart rate or rhythm
- Lethargy or weakness
- Decreased appetite
- Heart murmur

HOW IS PDA DIAGNOSED?

A characteristic murmur can be heard in patients with a patent ductus arteriosus. The murmur is described as sounding like a washing machine and is often called a “continuous” murmur.

The best way to diagnose a PDA is to perform an echocardiogram (heart ultrasound). This gives the most accurate determination of the size of each heart chamber, the thickness of heart walls, a visual on the size of the PDA and a look at the direction and velocity of blood flow through the chambers.

Occasionally a chest xray and ECG (electrocardiogram) may be recommended. These give us the best look at the lungs and an assessment of the electrical activity of the heart.

The combination of all of these tests gives us our best evaluation of the animal’s heart function, however if cost considerations prohibit us performing all of them, two or three will provide much valuable information.





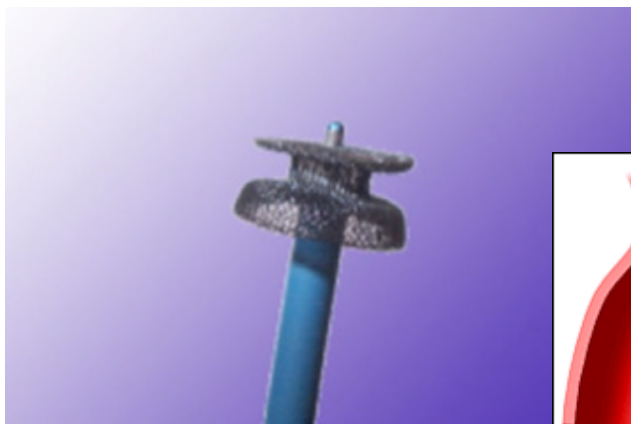
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HOW IS PDA TREATED?

Surgical ligation is the traditional method of repair. The chest is opened and a piece of suture is used to tie off the patent ductus. A specialist surgeon is required to perform this procedure. There is a complication rate of less than 5%, of this less than 2% requiring a second procedure due to re-opening of the ductus.

A new method of repair is now also available where a small device (canine ductal occluder) can be placed into the duct via a small incision in a femoral artery. This is performed under x-ray guidance and has the advantage of not having to surgically enter the chest.

Treatment is nearly always recommended, as up to 50% of dogs with PDAs will die before 12 months of age



Canine Ductal Occluder

