INFO: Patent ductus arteriosus (PDA)

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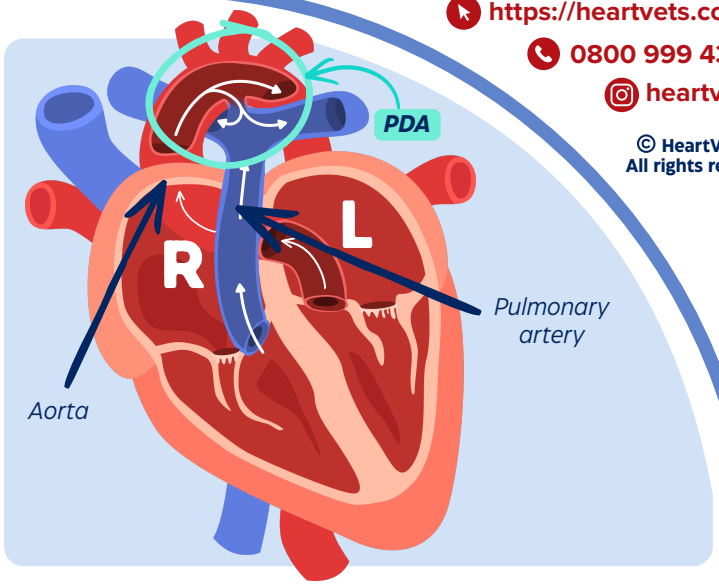
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WHAT IS PDA?

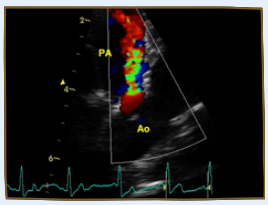
In the foetus, a vessel called the **ductus arteriosus** connects the two major vessels leaving the heart (the aorta and pulmonary artery), allowing some blood to **bypass the lungs** during development.

Shortly after birth, the **ductus arteriosus should close**. When it fails to close, the ductus remains patent (open) – the patent ductus arteriosus.

If left **untreated**, the heart **enlarges** over time, leading to **congestive heart failure** (CHF). If the PDA is not closed, around half of dogs would **die before their first birthday**.



HOW DO YOU DIAGNOSE PDA?



- Your vet may hear a **heart murmur** ('whooshing' noise) – this simply indicates a change to the normal blood flow, **it does not tell us what the cause is**. They will recommend a heart scan to investigate.
- **Echocardiography** (heart ultrasound scan) is used to look at the heart **structures** and **function, diagnose PDA** and **look for other defects**.
- A **bubble study** can be used to see which way the blood is flowing (reversal can occur as disease progresses, which can cause many problems).
- A **blood test** can also help to decide if the blood flow has reversed.
- **ECG** monitors electrical activity, checking heart rate and rhythm. Patients can develop irregular rhythms (arrhythmias) as the heart enlarges.

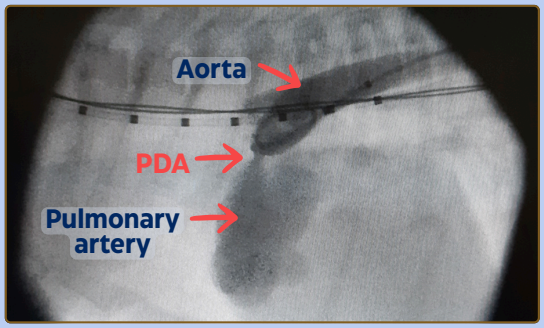
HOW IS PDA CLOSED?

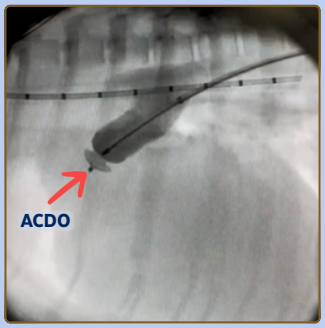
Successful PDA closure can give the patient a normal lifespan, but presence of CHF or arrhythmia can worsen longterm prognosis.

A PDA can be closed in one of two ways:



- **Keyhole surgery** using wires to place a specially designed '**plug**' in the duct called an amplatz canine duct occluder (**ACDO**) or an amplatzer vascular plug (**AVP**).
- **Open chest surgery** to **tie off** the PDA: Good success rates but a 'bigger' procedure with longer recovery time.





WHAT ABOUT OTHER TREATMENT?

Regardless of whether the PDA can be closed, we also use medication to optimise heart function and manage clinical signs.

- **Pimobendan** is used to improve 'pump' function if there is evidence of heart enlargement on echocardiography.
- **Diuretics** and sometimes **ACE inhibitors** are used to manage pulmonary oedema (fluid build up in the lungs), and improve circulation and support heart function in patients with **CHF**.
- **Anti-arrhythmics** / **rate control** drugs are used to control arrhythmias.

WHAT HAPPENS AFTER SURGERY?

- Patients are seen **one month after surgery** for echocardiography to **assess structural changes** and **check implant placement** and look for evidence of **residual blood flow** through the duct.
- Some require **further monitoring and medication**, but many patients can **stop medication** after the first formal check and go on to lead normal lives.

PDA CLINICAL SIGNS

Initially, patients may have no clinical signs.

- Lethargy
- Reduced exercise tolerance
- Breathlessness / increased respiratory rate or effort
- Weakness or collapse
- Abdominal swelling
- Decreased appetite

Speak to your vet if you think your pet may have any of these signs.

PDA is hereditary - patients with PDA should not be used for breeding.

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