



ACVIM

Cardiology
Fact Sheet

ACVIM Fact Sheet: Patent Ductus Arteriosus

Overview

What is Patent Ductus Arteriosus (PDA)?

- PDA is the failure of a large blood vessel, the ductus arteriosus, to close just after birth.
- In the fetus, this vessel is normal and allows blood to bypass the lungs since the lungs are not used during development in the uterus. This vessel runs from the aorta to the pulmonary artery.
- At birth, the vessel should close within hours, directing blood to flow into the newly inflated lungs.

Who gets this defect?

- PDA is the most frequently seen congenital defect in dogs and is sometimes seen in cats.
- The most commonly affected breeds are Maltese, Poodle, Pomeranian, Keeshond, Bichon Frise, Chihuahua and German Shepherd.
- PDA is more common in females than males in most breeds.

Signs & Symptoms

- Pets diagnosed with a PDA have a greater than 50% mortality rate by one year of age if left untreated.
- A PDA will usually result in significant left sided heart enlargement and ultimately left sided congestive heart failure (fluid in the lungs/pulmonary edema).
- Pets with left sided heart failure will usually cough and have labored or difficulty breathing.
- Some patients with a PDA will not thrive or grow and may be considered the “runt” of the litter.

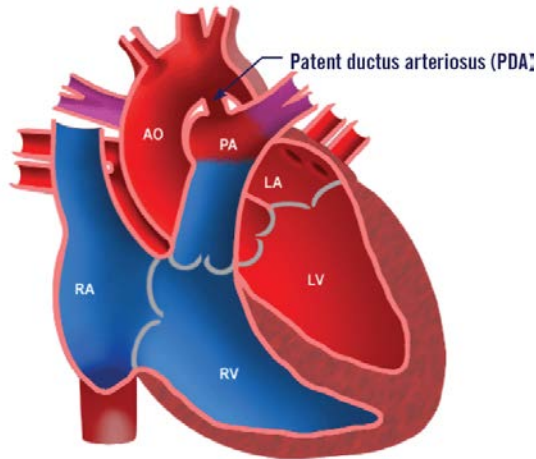


Diagram showing abnormal flow from the aorta (AO) to the pulmonary artery (PA) across the PDA.

Diagnosis

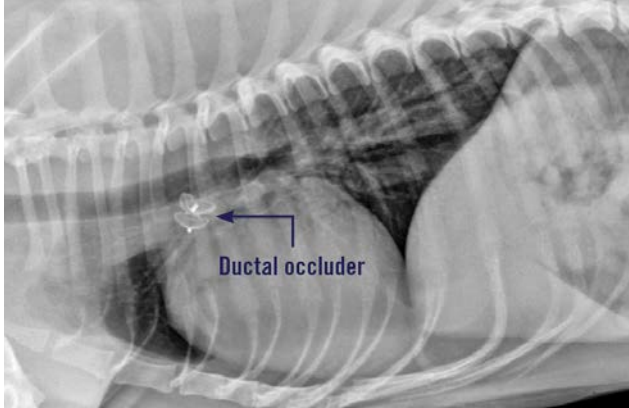
- A continuous ‘machinery’ heart murmur is heard with a stethoscope by your veterinarian.
- A referral to a board certified veterinary cardiologist for accurate and definitive diagnosis via an echocardiogram (ultrasound or sonogram of the heart) is recommended. This helps to rule out other concurrent cardiac defects, to determine how urgent it is to have this defect corrected, and to determine what treatment method is best for your pet.

Treatment & Aftercare

Based on the size of the patient at time of diagnosis and severity of complications, one of two available procedures is recommended:

1. Transvenous Catheterization:

- In most patients, this non-invasive procedure is recommended.
- A small incision is made inside one of the hind legs. A long catheter is then passed from the hind leg into the abnormal vessel using fluoroscopic guidance (video x-ray).
- A device called an Amplatz Canine Ductal Occluder (ACDO) is then deployed to stop the abnormal blood flow through the PDA. This causes a blood clot to form in the abnormal blood vessel that then closes off the abnormal blood vessel or PDA.



Thoracic radiograph revealing Amplatz Canine Ductal Occluder (ACD) device after successful deployment in the PDA.

2. Surgical Ligation:

- Very small dogs or cats require open chest surgery to tie off the vessel itself.
- This procedure requires surgery in the chest cavity but does not require open heart surgery.
- Your cardiologist will be able to recommend a surgeon who is experienced with this surgical technique as this can be a complicated procedure. Some cardiologists are also trained to do this open chest procedure as well.

Medications:

- Some patients may require medical treatment prior to any type of surgical intervention. Your cardiologist will be able to best decide what treatment, if any, is required at the time of your pet's evaluation and echocardiogram. Treatment may range from a simple vasodilator to aggressive therapy for congestive heart failure that may include hospitalization. Some patients with very large PDAs may require emergency surgery to help control their congestive heart failure symptoms.

Aftercare:

- Regardless of which procedure your pet has to correct its PDA, exercise restriction with leash walking only is recommended for at least two to four weeks.
- The surgical incision will need to be monitored for signs of infection (excessive redness, swelling or discharge).
- If sutures or surgical staples are present, these will need to be removed in 10-14 days after the surgery.
- A follow-up echocardiogram with your cardiologist is usually recommended 4-6 months after the procedure. This allows the cardiologist to confirm complete closure of the PDA and resolution of any secondary heart enlargement. If medications were initiated prior to the surgery, they can usually be stopped at this time.

Prognosis

Most dogs and cats that undergo correction of their PDA have good to excellent long term prognosis, and most will lead a completely normal life after surgery. Some patients that were in congestive heart failure prior to their procedure may have to remain on some cardiac drugs long term. This is determined by your cardiologist on an individual pet basis. Thus, it is important to try to correct your pet's PDA prior to them going into congestive heart failure.

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