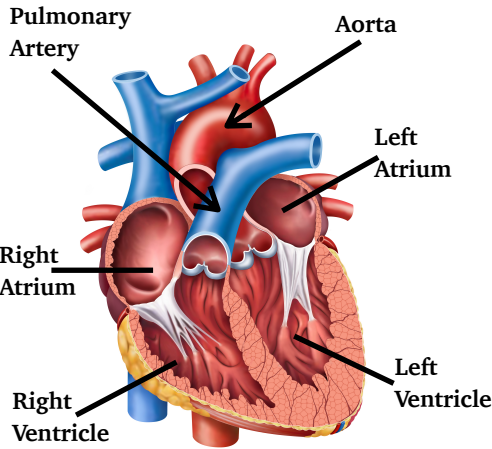


# Patent Ductus Arteriosus

**P**atent ductus arteriosus (PDA) is one of the most common congenital heart defects diagnosed in dogs; it rarely occurs in cats. Congenital heart defects are present at birth and are due to malformation during development. The ductus arteriosus is a normal blood vessel that connects the aorta and pulmonary artery in the fetus, but should close shortly after birth. When this vessel does not close properly, then it is considered a “PDA”.



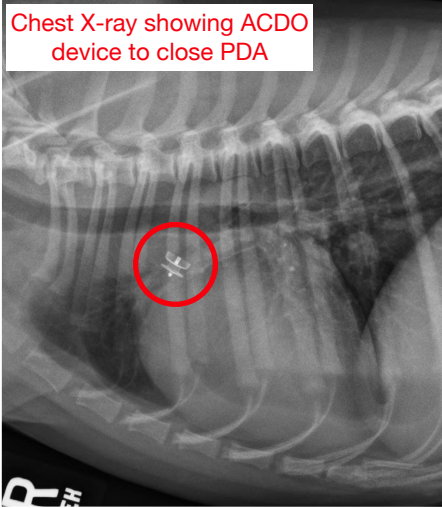
**PDA** causes continuous shunting of blood from the aorta to the pulmonary artery, leading to excess blood flow through the lungs and excess volume in the left atrium (LA) and left ventricle (LV). Eventually the LA and LV will stretch/dilate as pressure builds up in the heart. The end-result is congestive heart failure (CHF) when fluid starts to accumulate in the lungs (pulmonary edema). Some patients can also develop high blood pressure in their lungs (“pulmonary hypertension”)

**A continuous heart murmur** in the left basilar/suprabasilar region (armpit region) is the hallmark exam finding of PDA. Heart murmurs are abnormal heart sounds that occur due to abnormal blood flow. An **echocardiogram** (ultrasound of the heart) is a non-invasive test that allows us to look inside the heart to determine the exact cause of the heart murmur, and also allows us to accurately assess the size and function of the heart. Other tests that may be indicated for patients with PDA:

- ◆ Chest X-ray - to assess overall heart size and the lungs
- ◆ Electrocardiogram (ECG) - to assess electrical activity in the heart, particularly if there is an irregular heart beat (arrhythmia)
- ◆ Blood pressure - to determine if there is excess stress on the heart

**Treatment** requires closure of the PDA - this can be done by a minimally invasive procedure where a device (“Amplatzer Canine Ductal Occluder” or ACDO) is used as a “plug” to close the PDA vessel. Alternatively, the vessel can be closed via chest surgery to ligate (tie off) the PDA with suture. If there are signs of CHF, then this must be controlled with medications prior to any procedure. Closure of the PDA is the only way to stop progression of this disease. In patients with pulmonary hypertension, closure may not be possible. Lifespan will be shortened and life-long medications (e.g. sildenafil) will be necessary.

Chest X-ray showing ACDO device to close PDA



## QUICK FACTS:

- ♥ Patent ductus arteriosus (PDA) is one of the three most common congenital heart defects in dogs
- ♥ Any dog can be affected, but PDA is most common in small dogs such as Maltese, Poodle, Pomeranian, and Chihuahua.
- ♥ With early diagnosis and correction, many dogs with PDA can live a completely normal life
- ♥ Echocardiography is the gold standard for diagnosis and assessment of PDA
- ♥ Treatment requires closure of the PDA vessel by surgery or ACDO device
- ♥ Without treatment, most will progress to CHF and show signs of coughing, difficulty breathing, decreased activity level, fainting, poor appetite