

## Patent ductus arteriosus (PDA)



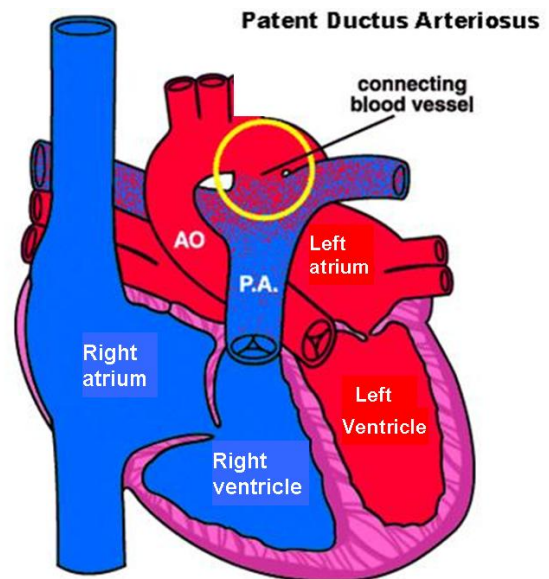
### Understanding patent ductus arteriosus (PDA)

The ductus arteriosus is a blood vessel that connects the pulmonary artery (blood supply to the lungs) to the aorta (blood supply to the remainder of the body) in the developing fetus. After birth, this vessel closes.

If the vessels fails to close, it is termed a *patent ductus arteriosus (PDA)*, a form of congenital (present at birth) heart disease.

PDA occurs in both dogs and cats. Breeds of dog predisposed to PDA include:

- Bichon Frise
- Chihuahua
- Cocker Spaniel
- Collie
- English Springer Spaniel
- German Shepherd
- Keeshond
- Labrador Retriever
- Maltese
- Newfoundland
- Poodle
- Pomeranian
- Shetland Sheepdog
- Yorkshire Terrier



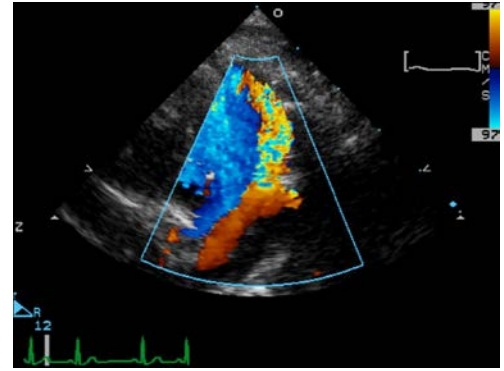
### How does a PDA affect a dog or cat's health?

A PDA results in continued communication between the aorta and pulmonary artery and excess blood flow to the lungs. This can lead to enlargement of the left side of the heart, leakage of fluid into the lungs, a syndrome known as *congestive heart failure (CHF)*

(For more information see our informational bulletin: *Heart disease and congestive heart failure*), usually within the first few years of life. A PDA can also lead to *pulmonary hypertension* (elevated pressure in the pulmonary artery).

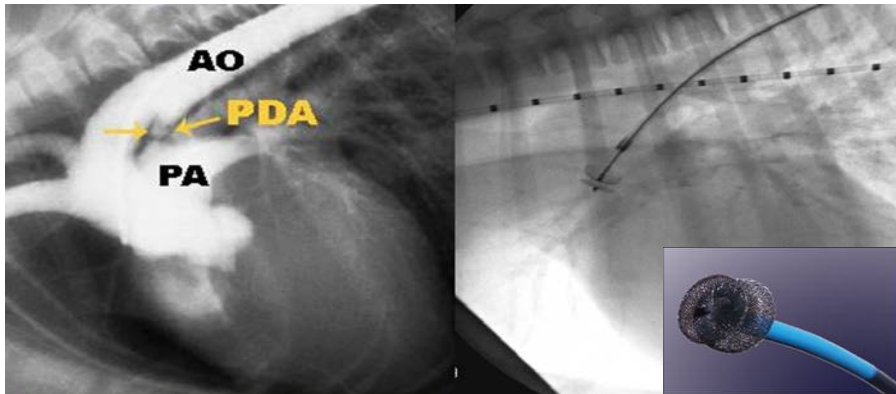
### Diagnosis

The detection of a loud, continuous (“washing-machine”) quality heart murmur on physical examination is usually the first indication that a dog or cat may have a PDA. Echocardiography (cardiac ultrasound) by a veterinary cardiologist is performed to confirm the diagnosis. Chest radiographs (x-rays) determine if any congestive heart failure is present.



### Treatment

Closure of a PDA is the definitive, and curative, treatment in most cases. This can be achieved by a few methods. *Transcatheter device placement* is considered ‘minimally invasive’, meaning that open-chest surgery is not required and pain/discomfort to the patient is limited. This is the preferred method of closure. *Transcatheter device placement* involves the placement of a vascular catheter into the region of the PDA via a small incision in the groin area. A sterile device (ductal occluder, vascular plug, or coil) is deployed through the catheter to close the PDA.



Surgical ligation is another option for PDA closure. While equally effective, surgical ligation requires open-chest surgery, carries greater risk of serious complications, and is generally reserved for cases where transcatheter device placement is not possible.

### Prognosis

- If left untreated, a PDA usually leads to congestive heart failure within the first few years of life. Thankfully, most PDAs are diagnosed early in puppyhood such that a closure procedure is curative, resulting in return of the heart to normal size in many cases. In these cases, the prognosis is considered good for normal life expectancy.
- In late-diagnosed PDAs permanent cardiac dysfunction may be present which can worsen prognosis. In rare cases the PDA may have resulted in severe pulmonary hypertension, and “reversed”, known as a ‘right-to-left PDA’. In these cases, closure is contraindicated and overall prognosis is poor.



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