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PATENT DUCTUS ARTERIOSUS/PDA (HEART SHUNT)

What is it? The Ductus Arteriosus is a fetal vessel which normally connects the pulmonary artery to the aorta, shunting blood away from the noninflated fetal lungs. At birth, this vessel is supposed to close. If it remains patent for more than a few days after the animal is born, it is called a PDA. Because the PDA continues to shunt blood away from the lungs, it results in poorly oxygenated blood being circulated to the body.

What animals are affected? PDA tends to be seen most commonly in purebred female dogs. Maltese, Pomeranian, Shetland Sheepdogs, English Springer Spaniels, Keeshonden, Bichon Frise, Miniature and Toy Poodles and Yorkshire Terriers are at increased risk.

What are the clinical signs? Dogs with PDA have a very characteristic heart murmur. It is often called a machinery murmur because it is quite loud and persistent through both systole (heart contraction) and diastole (heart filling). Sometimes the murmur can also be felt as a kind of buzzing in the chest (cardiac thrill). Most young patients show no other signs besides mild exercise intolerance. More affected pets may have an occasional cough or episodes of collapse.

How is it diagnosed? Diagnosis is initially made on thoracic auscultation—listening to the heart. The diagnosis can be confirmed by radiographs, cardiac ultrasound, or nuclear scintigraphy.

How is it treated? Treatment involves surgically isolating and ligating the PDA to take away this “bypass” and force the blood to circulate through the lungs properly before going to the rest of the body. This outcome requires a thoracotomy (opening up the chest, in this case usually between the ribs over the heart). Alternatively, some institutions are able to place a coil or other obstructive device within the PDA vessel, which then causes a clot and plugs up the PDA. These intravascular methods are usually done by inserting a special catheter into the femoral artery and then threading it into place under fluoroscopic guidance.

What is the aftercare? If the PDA is corrected surgically, the patient will be hospitalized overnight for monitoring and pain management. They will likely have a chest tube in place for the first 12 to 24 hours. They typically recover quite quickly, and after a 2 week period of restricted activity, return to normal. If the PDA is corrected via a coil or similar method, no actual surgery is done and they recover quite quickly with minimal restrictions necessary.

What is the prognosis? Prognosis for dogs with *untreated* PDA is quite poor—70% will die before one year of age from congestive heart failure and pulmonary edema. Dogs that have been treated, typically do very well with approximately 90% alive at two years. Anesthesia and surgery are not without risk. The PDA can rupture during isolation and ligation. This rupture often results in intraoperative death. The coils or other devices can migrate causing pulmonary emboli, but these complications often are not life threatening.

Can it be prevented? No, PDA cannot be prevented since it is a congenital abnormality; however, spaying or neutering affected animals is recommended since they should not be bred. PDA is known to be genetic in Poodles.