

Pulmonic stenosis

Pulmonic stenosis is the second most common congenital cardiac defect diagnosed in the dog. It is much less common in cats. The pulmonic valve is at the junction of the right ventricle and the pulmonary artery, which conducts blood from the heart to the lungs. Individuals with pulmonic stenosis have a dysplastic (abnormally formed) pulmonic valve which is typically thickened and irregular. The abnormal pulmonic valve leaflets are typically fused and do not open properly. Due to the resistance to blood flow and increased pressure, the right ventricle often becomes thickened and dilated. The thickened walls of the right ventricle are also stiff, leading to abnormal relaxation and high pressure in the right heart.

Affected dogs can be at risk for right-sided congestive heart failure and fainting/collapse. They are also at risk for both ventricular and supraventricular arrhythmias (including atrial fibrillation). Some dogs will develop right to left shunting at the level of the atria or upper heart chambers (patent foramen ovale), leading to cyanosis and signs of exercise intolerance. Sudden death is a possibility for dogs with a severe form of this disease.

Long term prognosis is typically guarded for dogs with severe disease, due to the risk of congestive heart failure, sudden death, arrhythmias and exertional syncope. Dogs with mild disease typically live a normal life span without symptoms or need for medication, while dogs with moderate disease can have variable outcomes – either live a normal lifespan asymptotically, or they could be at risk for exercise intolerance, fainting, right heart failure, and sudden death.

Treatment:

Balloon valvuloplasty to tear open the abnormal pulmonic valve is considered in animals with moderate to severe disease. This is an interventional surgery performed through an introducer catheter placed in a vein in the neck or sometimes the leg. A balloon catheter is introduced into the vein and advanced into the heart and to the level of the valve where it is inflated in an effort to tear open the valve leaflets. The goals of this procedure are to lessen the workload placed on the right heart, and help to alleviate clinical signs. Balloon valvuloplasty is successful in the majority of patients, however, not every patient is a good candidate for this procedure. There are risks with the procedure, including death, and in some dogs the valvuloplasty does not sufficiently reduce the pressure gradient between the right ventricle and pulmonary artery. A veterinary cardiologist will typically utilize one or more imaging modalities to assess the type of stenosis. Imaging techniques may include echocardiography, angiography, and cardiac CT.