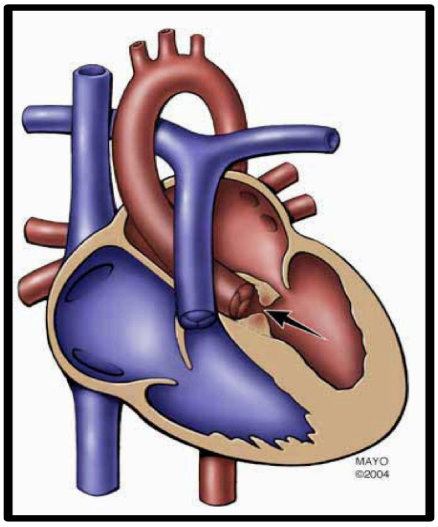
ROCKY MOUNTAIN
VETERINARY CARDIOLOGY, P.C.



Subaortic Stenosis

Your dog has been diagnosed with Subaortic Stenosis (SAS). SAS is a congenital defect that causes an abnormal narrowing of tissue just below the aortic valve. The region tends to progressively narrow over the first year of life. It is commonly heritable so the breeder of your puppy should be notified if possible.

In order to understand how SAS may affect your dog, it is important to understand normal circulation in the heart. Blood drains from the body into the right collecting chamber (called "atrium") where it passes through the tricuspid valve and into the right pumping chamber (called "ventricle"). From here, blood is pumped into the pulmonary artery and subsequently to the lungs where it picks up oxygen. The oxygenated blood then drains passively into the left atrium, through the mitral valve, and into the left ventricle. The left ventricle then pumps the blood through the aorta and back to the body.

Dogs with SAS have a narrow region of tissue just below the aortic valve that causes an acceleration of blood flow as it crosses the region. The abnormal blood flow is what causes the heart murmur that was auscultated by your family veterinarian. Because the outflow tract is abnormally narrowed, the pressure that the left ventricle must overcome in order to pump blood into the aorta is elevated. This change in pressure is termed the pressure gradient – the degree of elevation of the pressure gradient is how SAS is classified. The left ventricular muscle thickens in order to overcome the increase in pressure. The thickened muscle is inadequately perfused by the coronary circulation and becomes damaged. This damaged heart muscle can cause rhythm disturbances and also eventually lead to congestive heart failure.

Diagnosing Subaortic Stenois

An echocardiogram is used to make the diagnosis of SAS and to classify its severity. It is also important to evaluate for concurrent defects. Many dogs with SAS also have aortic insufficiency (leaky aortic valve) as well as an abnormally formed mitral valve (mitral valve dysplasia) that can predispose your dog to heart failure.

The severity of disease is determined by measuring the pressure gradient. In normal dogs, the pressure gradient across the aortic valve is less than 20mmHg. In dogs with mild SAS, the pressure gradient is between 20 and 50mmHg. Dogs with moderate SAS have a pressure gradient between 50 and 80mmHg and dogs with severe SAS have a pressure gradient greater than 80mmHg.

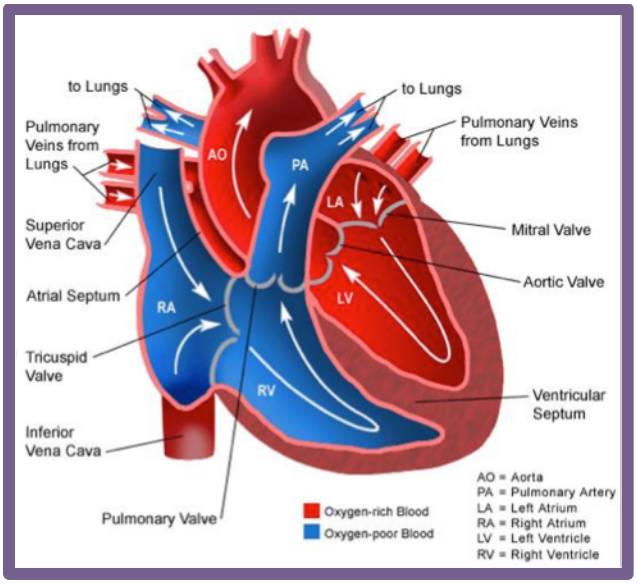
Dogs with mild SAS have a good prognosis and generally live a full life. They can develop late complications such as infections of the heart valve (called endocarditis). Dogs with moderate SAS have a good prognosis in the short term and fair to good long term. A small percentage of dogs with moderate SAS die suddenly. They are at higher risk than the mild group of developing late complications but the risk is relatively low. Dogs with severe SAS are at a high risk for sudden death.

Some dogs with SAS may develop abnormal heart rhythms (arrhythmias) that may require closer monitoring and treatment.

Treatment for Subaortic Stenosis

There is no definitive therapy for SAS. Dogs who have had open-heart surgery to remove the abnormal tissue die suddenly at the same rate as dogs who do not undergo surgery. A catheter based cutting balloon technique has also been recently evaluated, however the long term benefits of this procedure have not been well studied.

Medical therapy with a beta-blocker appears to reduce the incidence of sudden death in dogs with severe SAS. Fortunately, most dogs with SAS are unaware that they are sick and feel like normal dogs.



Flow of blood through normal heart.