



Animal Emergency & Referral Associates

1237 Bloomfield Avenue • Fairfield, NJ 07004
973.226.3282 • Fax 973.364.0004 • animalerc.com

**Gordon D. Peddle, VMD,
DACVIM (Cardiology)**
Director of the Cardiology Section,
AERA Internal Medicine Department

Subaortic Stenosis in Dogs

Understanding canine subaortic stenosis (SAS)

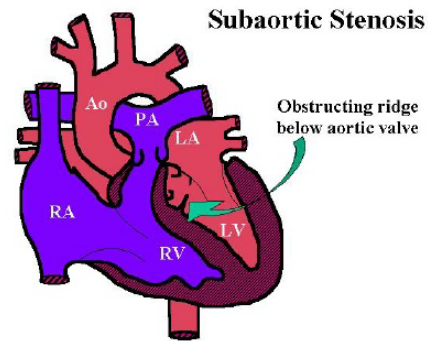
The aortic valve is located between the main pumping chamber of the heart, or left ventricle, and the aorta. It opens during the pumping phase of the cardiac cycle to allow blood to flow into the aorta. In canine subaortic stenosis, a thick, fibrous ring of tissue is present in the region within the left ventricle just below the aortic valve. This ring forms a narrow channel for blood to be ejected into the aorta, creating an obstruction, which increases the workload of the heart muscle significantly and reduces the amount of blood ejected from the heart. The disease is congenital (present at birth) but the obstruction can become more severe as a dog grows into adulthood. Subaortic stenosis is more common in large breed dogs, in particular:

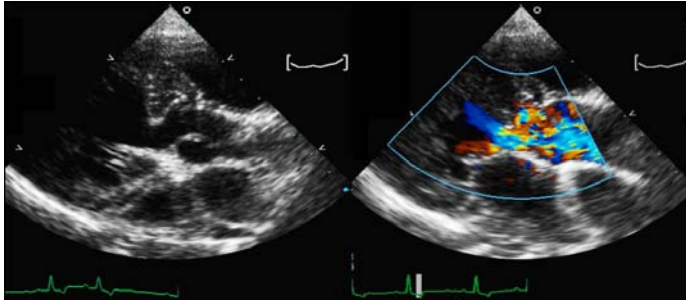


- *Bouvier des Flanders*
- *Boxer*
- *English Bulldog*
- *German Shepherd*
- *German Shorthair Pointer*
- *Great Dane*
- *Golden Retriever*
- *Newfoundland*
- *Rottweiler*
- *Samoyed*

Consequences of subaortic stenosis

The obstruction results in decreased blood flow to the body. Thickening of the heart muscle, known as *hypertrophy*, secondary to subaortic stenosis results in decreased ability of the heart muscle to relax and fill, and decreased blood flow to the heart muscle itself. These processes make the heart muscle stiff and prone to electrical instability, which can lead to arrhythmias (*abnormal heart rhythms*). Ventricular arrhythmias can lead to exercise intolerance, syncope (fainting), or sudden death. Later in life, the stiff ventricle may lead to circulatory congestion in the lungs and leakage of fluid into the surrounding tissues, a syndrome known as *congestive heart failure (CHF)* (for more information see our educational brochure *Heart disease and congestive heart failure*).





Diagnosis

Detection of subaortic stenosis most commonly occurs following auscultation of a loud heart murmur at the left heart base on physical examination in a puppy or young dog, particularly of a breed considered at high risk for the disease.

Echocardiography (cardiac ultrasound) by a veterinary cardiologist is required to confirm the diagnosis and characterize the severity of the disease. Since the severity of the stenosis itself can worsen as a young dog grows into adulthood, final characterization of the stenosis is withheld until a dog reaches 12-18 months of age.

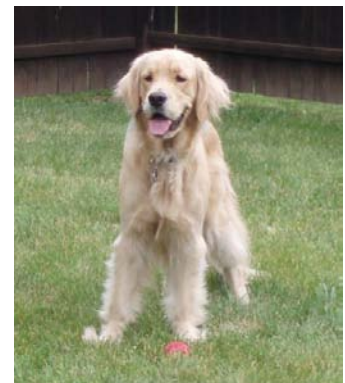
Treatment

Dogs with mild or moderate SAS often remain asymptomatic or have only mild exercise intolerance, thus treatment is generally only considered for dogs with severe SAS. Open-heart surgical correction of SAS is not generally performed in dogs due to the complexity of the procedure, need for cardiopulmonary bypass, and cost to the owner. Less invasive catheter-based therapies such as balloon valvuloplasty have only shown short-term success to date and are not routinely performed for this reason. Investigation of more advanced forms of balloon valvuloplasty is currently underway.

Medical management of severe SAS is focused on improving the heart's ability to relax and fill by slowing the heart rate. This is generally achieved with medications such as beta-blockers (eg. atenolol). In some cases, cardiologists may use additional drugs aimed at reducing remodeling of the heart muscle.

Should I restrict my dog's activity or exercise if he/she has severe SAS?

Some degree of restriction is likely to benefit your dog by preventing overexertion and reducing the risk of collapse episodes. At the same time, your dog should enjoy his/her life with you and your family. We recommend avoiding intense or lengthy activity/play periods and avoiding activity on hot days, while monitoring your dog's tolerance of such activity and adjusting accordingly if he/she does not seem to tolerate them.



Prognosis

While dogs with mild or moderate SAS often have minimal clinical signs and a normal life span, dogs with severe SAS carry a more guarded prognosis. Many will suffer from exercise intolerance or fainting episodes, and a significant number will have fatal collapse episodes. The goals of therapy are to reduce these occurrences and improve quality of life.