

Subaortic stenosis in dogs

Understanding canine subaortic stenosis (SAS)

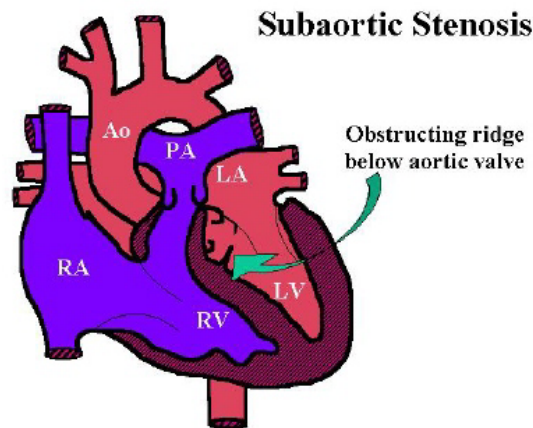


The aortic valve is located between the main pumping chamber of the heart, or left ventricle, and the aorta. It opens during the pumping phase of the cardiac cycle, allowing blood to flow into the aorta and to the rest of the body.

Subaortic stenosis is a form of congenital (*present at birth*) heart disease whereby a fibrous ring of tissue is present in the left ventricle immediately below the aortic valve. It can worsen as a dog matures from puppyhood to an adult (12-18 months).

Subaortic stenosis is more common in large breed dogs, in particular:

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



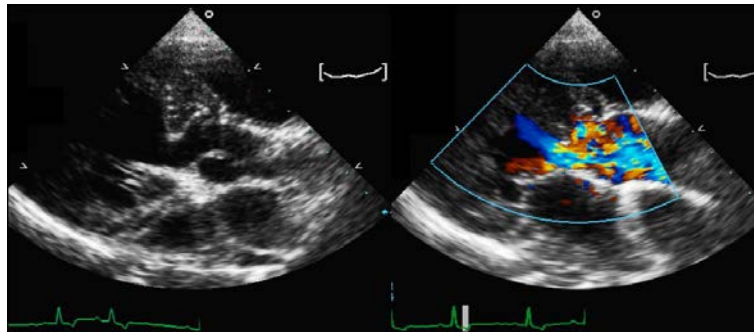
Consequences of subaortic stenosis

- The fibrous ring in subaortic stenosis impedes blood flow out of the left ventricle, increasing the stress placed upon this portion of the heart muscle. Thickening of the heart muscle, known as *hypertrophy*, occurs and results in decreased ability of the heart muscle to fill. The thickened heart muscle is also prone to electrical instability, which can lead to abnormal heart rhythms (*cardiac arrhythmias*).
- The most common clinical signs of subaortic stenosis include exercise intolerance, syncope (fainting), or sudden death. Later in life it can 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 informational bulletin *Heart disease and congestive heart failure*).

How is subaortic stenosis diagnosed?

- Subaortic stenosis is suspected on identification of a heart murmur on physical examination in a puppy or young dog, but it cannot be differentiated from some other forms of heart disease based on the presence of the murmur alone.



- *Echocardiography* (cardiac ultrasound) performed by a board-certified veterinary cardiologist is the best way to confirm the diagnosis and characterize the severity of the disease as mild, moderate, or severe, as well as to determine if any other congenital heart disease is present.
- Since the stenosis can worsen with maturity, final determination of the severity of the stenosis is not made until a dog reaches 12-18 months of age.

Treatment

- Dogs with mild subaortic stenosis may have minimal clinical signs, thus treatment is often only considered for dogs with moderate or severe subaortic stenosis.
- Open-heart surgical correction is not generally performed in dogs due to the complexity of the procedure, need for cardiopulmonary bypass, and cost to the pet owner. Less invasive interventional therapies such as *traditional balloon valvuloplasty* (balloon dilation of the subaortic region) have limited success due to recurrence of the stenosis. A newer form of this procedure known as a *cutting balloon valvuloplasty* has greater promise of short-term success, though still carries a risk of restenosis in the long-term. This procedure may be most useful in patients with significant clinical signs.
- Medications to slow heart rate (e.g. beta-blockers) or reduce scar tissue formation (e.g. ACE inhibitors, aldosterone blockers) in the heart muscle are usually implemented in dogs with moderate or severe subaortic stenosis.

Should I restrict my pet's activity level if he/she has moderate or severe subaortic stenosis?

Limiting intense or heavy exertion (particularly in warm weather) is likely to reduce the risk of exercise intolerance or fainting episodes in dogs with moderate or severe subaortic stenosis. Specific recommendations for activity restriction should be discussed with your dog's cardiologist.

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. Recent data reports an average survival time of 5-7 years in these patients. Many will suffer from exercise intolerance or fainting episodes, and a significant number will have fatal collapse episodes prior to middle age. Those that live to middle age may eventually develop congestive heart failure. The goals of therapy are to reduce the likelihood of these outcomes and improve quality of life.

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