

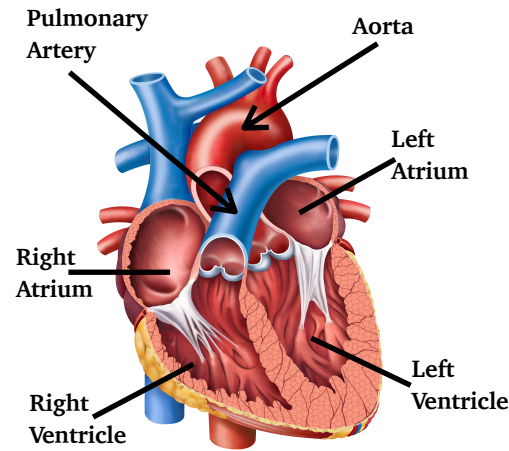
Subaortic Stenosis

Subaortic stenosis is one of the most common congenital heart defects diagnosed in dogs; it rarely occurs in cats. Congenital heart defects are present at birth and are due to malformation during development. With SAS, a ring of scar (fibrous) tissue forms below the aortic valve. This causes a narrowing in this region and an obstruction to the blood flow leaving the left ventricle.

SAS causes an increased workload on the left ventricle (LV) due to narrowing below the aortic valve. With SAS, the LV has to generate much higher pressure to push blood through the narrowed valve opening, and out to the body. Increased pressure/workload on the heart causes thickening (hypertrophy) of the wall. In severe cases, this thickening can result in dysfunction and lead to left-sided congestive heart failure (CHF) or arrhythmias (irregular heart beat)

QUICK FACTS:

- ♥ Subaortic stenosis (SAS) is one of the three most common congenital heart defects in dogs
- ♥ Large breed dogs including the Golden Retriever, Boxer, Newfoundland, German Shepherd and Rottweiler are predisposed
- ♥ Dogs with mild (and some with moderate) SAS can live a completely normal lifespan
- ♥ Echocardiography is the only non-invasive test to diagnosis and assess the severity of SAS
- ♥ In severe cases, a cutting balloon valvuloplasty procedure can decrease severity
- ♥ Severe cases may develop arrhythmias or CHF (breathing difficulty, coughing, fainting). Unfortunately some dogs may die suddenly



A heart murmur in the left basilar (armpit) region is the hallmark exam finding of SAS, along with weak pulses. Heart murmurs are abnormal heart sounds that occur due to abnormal blood flow. Another type of congenital heart defect called pulmonic stenosis also causes the same type of murmur. An **echocardiogram** (ultrasound of the heart) is a non-invasive test that allows us to look inside the heart to diagnose the exact cause of the heart murmur, and also allows us to accurately assess the severity of SAS. Other tests that may be indicated for patients with SAS:

- ◆ Electrocardiogram (ECG) or Holter - to assess electrical activity in the heart, particularly if there is an irregular heart beat (arrhythmia)
- ◆ Chest X-ray - to assess the overall heart size and the lungs
- ◆ Angiogram - dye injection with fluoroscopy (live X-ray)

Treatment is not needed for mild SAS. For dogs with severe SAS, medications such as atenolol or sotalol are used to decrease the workload on the heart and minimize arrhythmias. In dogs that are symptomatic, a cutting balloon valvuloplasty procedure can be done to dilate/open the fibrous ring below the aortic valve. If left untreated, some dogs will progress to left-sided CHF with signs such as coughing, difficulty breathing, weakness or fainting. These patients have a poor prognosis and require treatment with diuretics (furosemide). SAS also increases the risk of developing endocarditis (infection in the heart).

Fluoroscopy image - angiogram of dog with SAS - narrowing of dye due to fibrous ring below valve

