

# Mitral Valve Dysplasia in Dogs

## What is mitral valve dysplasia?

**Mitral valve dysplasia (MVD)** is a congenital cardiac anomaly, or an abnormality in the heart that is present at birth, rather than beginning later in life. Specifically, MVD is characterized by abnormal formation of one of the four valves in the heart, namely the mitral valve.

The mitral valve is located on the left side of the heart between the first chamber (the left atrium) and the second chamber (the left ventricle). Normally a one-way valve, its job is to freely allow blood to flow forward from the left atrium into the left ventricle, and to prevent flow in the opposite direction. In dogs with MVD, some blood is permitted to “leak” backward from the left ventricle into the left atrium. This is called mitral valvular regurgitation, or simply **mitral regurgitation**.

Over time, this extra volume of blood backing up into the left atrium causes enlargement of this chamber. Within the chest cavity, the enlarged left atrium presses on the nearby bronchi (the main branches of the trachea or “windpipe”) and can cause coughing. This chamber enlargement can also lead to *arrhythmias*, or abnormalities in the electrical activity of the heart. Eventually, if the amount of regurgitation of blood through the mitral valve is severe, blood may back up still further into the lungs, resulting in *congestive heart failure*.

## How is MVD diagnosed?

A congenital heart condition is often first suspected following detection of a heart *murmur* during routine **physical examination** in a young dog. This is an abnormal “whooshing” sound associated with the normally crisp heart sounds, heard while listening to the heart with a stethoscope. The murmur is described according to its loudness and where it is best heard on the chest wall. Although many conditions may result in the presence of a heart murmur, the location where the murmur is loudest and the breed of dog may raise suspicion for MVD in particular. If congestive heart failure is already present at the time of first examination, other findings may include abnormally loud lung sounds (also heard with a stethoscope) as well as rapid or labored breathing.

Diagnosis of MVD is confirmed by performing an **echocardiogram**. This is an ultrasound examination of the heart, during which information is collected about the size, structure, and function of the heart, as well as blood flow through its various chambers. This information is used to confirm the presence of MVD, determine its severity, and decide whether or not specific therapy is necessary. Specific echocardiographic findings in dogs with MVD may include thickening or abnormal motion of the mitral valve leaflets, mitral regurgitation, and enlargement of the left atrium (the chamber of the heart that receives the regurgitant blood).

**Chest x-rays** are used to obtain a “big picture” view of the heart and lungs, and to look for evidence of congestive heart failure. An **electrocardiogram** is performed to identify and characterize arrhythmias that may be present, and to guide antiarrhythmic therapy if necessary. Depending on the specific situation, blood work may be recommended as well. Some of these tests may need to be repeated periodically in order to monitor progression of the condition and its response to therapy.

## **How is MVD treated?**

Dogs with mild forms of MVD, such as those that exhibit no symptoms (discussed further below) and have only mild changes on their chest x-rays and echocardiogram, may not require any specific therapy. For those with moderate to severe forms of MVD based on symptoms or echocardiographic abnormalities, medical therapy may be recommended in an attempt to relieve symptoms and delay or prevent the onset of congestive heart failure.

Dogs that develop congestive heart failure may need to be hospitalized. In such cases, supplemental oxygen is administered, and medications are used which help to remove excessive fluid from the body and facilitate forward blood flow through the body’s blood vessels. Medical therapy is continued after leaving the hospital in order to minimize the likelihood of recurrence of heart failure.

It is worth noting that definitive therapy for MVD involves surgical replacement of the mitral valve using cardiac bypass techniques. While this procedure occurs commonly in people, it is performed less frequently in dogs, largely due to financial reasons. However, certain veterinary institutions throughout the country do perform cardiac bypass surgery, and this is a potential topic for discussion.

## **What is the prognosis? What should I watch for?**

Some dogs with mild forms of MVD remain asymptomatic, with the only evidence of the condition being the heart murmur detected during physical examination. Other dogs may develop symptoms, the nature and severity of which are variable between dogs and depend upon how the condition progresses. If cardiac function becomes significantly impaired, **intolerance to activity or exercise** may be noted. If the heart becomes enlarged, it may push on the nearby bronchi and cause **coughing** as described above. If congestive heart failure develops, **rapid** or **labored breathing** may be seen, and the tongue or gums may take on a **blue** color. More nonspecific symptoms include **lethargy** and **loss of appetite**. Arrhythmias may result in development **weakness** or **fainting**. Finally, potential side effects of the medications used to treat MVD and congestive heart failure may overlap with those already discussed, such as lethargy, loss of appetite, and weakness.

Changes in medication administration should always be discussed first with a doctor. If any of the above symptoms are noted, or if you have any questions or concerns, please call your veterinarian or Dr. Marshall at Veterinary Specialty Services immediately to discuss an appropriate plan. Problems that are caught early are more easily corrected and less likely to require a visit to the hospital. If you feel that the problem should not wait and requires immediate attention, then an emergency visit is warranted.