Advanced Vetcare
Veterinary Referral Centre

Specialist Surgery
Specialist Medicine

24hr Emergency Centre
Call 9092 0400 24hrs

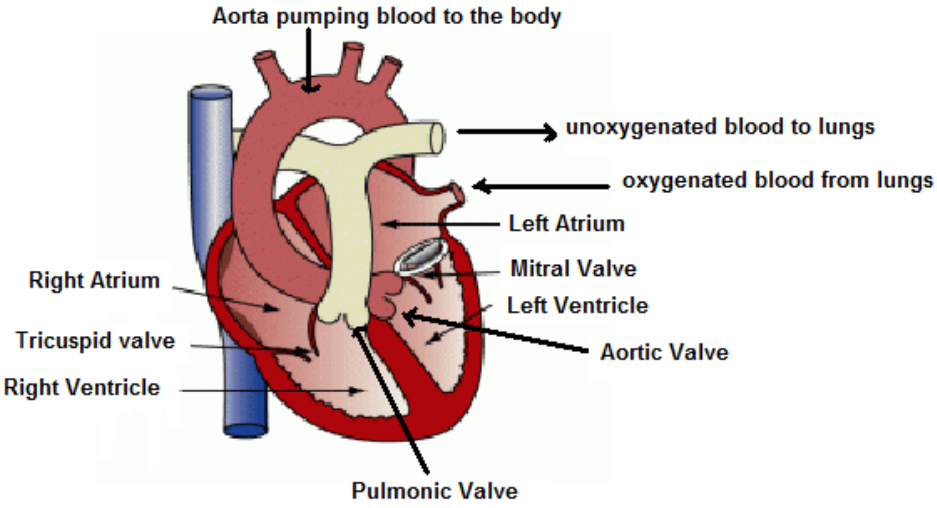
Level 1, 26 Robertson Street, Kensington VIC 3031

Mitral Valve Disease (MVD)

What is the mitral valve?

The heart contains 4 valves within it. Each valve is present to allow unidirectional flow and to prevent flow backwards. The mitral valve is the valve that sits in between the left atrium and the left ventricle. The valve contains two leaflets that during the hearts contraction, when blood is ejected from the left ventricle into the aorta, prevents blood going backwards into the left atrium. The valve leaflefts are connected to the wall of the wall ventricle by structures called chordae tendinae. These are like elastic strings that connect the valve to the inner wall of the left ventricle.

Oxygenated blood from the lungs enter into the left atrium. The mitral valve then opens and allows this blood to move down into the left ventricle. When the left ventricle begins to contract (systole) the pressure forces the leaflefts of the mitral valve to close preventing blood from regurgitating back into the left atrium.



Melway Ref: 2A, A4

Specialist Surgery
Physiotherapy
Hydrotherapy

Specialist Medicine
Behaviour
Ophthalmology

24hr Emergency Centre
Critical Care
CT Scanning

With your pet the mitral valve has become insufficient (leaks) so when the left ventricle contracts, instead of all the blood from this chamber going out into the body via the aorta, some of it goes backwards into the left atrium. Like any muscle in the body, the heart muscle grows in response to workload, and now it has a higher workload because it has to pump the same blood twice. This is known as compensation or the Frank Starling law.

When too much blood is going backwards and not enough is going forward the heart is unable to cope and signs of heart failure begin to develop. As the pressure in the left atrium begins to build up, blood that usually comes into the left atrium from the lungs is no longer able to, and the lungs act as a reservoir for blood and fluid seeps out from the vessels in the lungs into the airways itself, causing a cough, shortness of breath and exercise intolerance.

MVD is a degenerative progressive disease that will keep getting worse. It is now recognised as a heritable genetic disease whereby deposition of material on the valve leaflets occurs, causing thickening of the valve leaflet and interfering with its ability to close tightly. The disease is very common in small dogs, especially Cavalier King Charles Spaniels. In some dogs, the MVD will never progress to be a clinically significant problem and the animal may succumb to another disease.

What clinical signs will your pet show with MVD

In the early stages of the disease the heart is able to compensate well for the leaky valve and the only sign is a murmur. As the disease progresses, further signs begin to develop. These are

- Exercise intolerance
- Lethargy
- Coughing (either a dry hacking cough or a moist wet cough)
- Dyspnoea (struggling for breath)
- Heavy or fast breathing
- Cyanosis (blue gums)
- Syncope (fainting)

How is MVD diagnosed?

MVD is first diagnosed by auscultation of a murmur. The intensity of the murmur does not correlate with the severity of the disease. The next step is to take xrays of the chest and to perform a cardiac ultrasound. The cardiac ultrasound is the most informative diagnostic test as it allows visualisation of the heart in a dynamic manner.

The ultrasound is used to determine the severity of the MVD based on the size of the left atrium, the pressure difference across the MVD and excessive workload placed on the heart

How is MVD treated?

Unlike in humans where an artificial valve is placed in the heart during bypass surgery, this is not an option for dogs.

The aim of medical therapy is to reduce the systemic blood pressure and to prevent build up of fluid on the lungs. Reduction in systemic blood pressure favours forward movement of blood from the left ventricle into the aorta rather than backwards into the left atrium.

Treatments consists of a variety of a number of different classes of drugs

1. Diuretics

These medications are only used when there are signs of heart failure present. The most common of these drugs (Frusemide) is used and it helps remove fluid off the lungs. It will result in your pet urinating more and hence wanting to drink more.

2. Positive inotropes

The most common drug in this category used on dogs is Vetmedin. This drug helps in improving the strength of contraction of the heart whilst also causing dilation of the blood vessels to reduce the workload against which the heart has to pump. This drug can be used before the onset of clinical signs appear

3. Hypotensive agents

The most common class of this drug used on dogs are Angiotensin Converting Enzyme inhibitors (ACEi) which help reduce fluid retention in the body and help reduce blood pressure. In order to use them it is important to measure kidney function as these drugs can potentiate kidney damage if already present.

What are some complications?

There are 3 major complications with MVD that can sometimes lead to a sudden death. These complications are rare

1. Arrhythmias

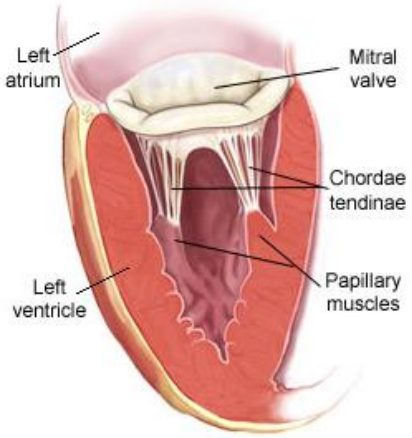
As the blood moves backwards into the left atrium, the muscle of the atrium stretches. If it stretches to a point where it is no longer able to cope, the muscle becomes damaged and fibrous tissue starts to develop in it. As this occurs, the electrical activity of the atrium starts to become abnormal leading to very irregular heart beats that can exacerbate the disease, cause more fluid on the lungs. These arrhythmias may or may not be life threatening, depending on how severe the heart is affected and how effective treatment is in returning the normal heart rhythm.

2. Atrial tear

This is uncommon but is known to occur. It happens from the left atrium stretching beyond its ability to cope and resulting in a tear. Blood from the left atrium leaks into the sac lining the heart (pericardium) and the pressure in this sac disrupts the ability of the right side of the heart to fill and fluid begins to build up in the abdomen. Unfortunately there is no surgical correction for this.

3. Rupture of chordae tendinae

This is a very severe condition where the chordae which connects the valve to the left ventricle muscle ruptures resulting in uncontrollable movement of blood in the heart leading to death within minutes



Should you adjust your pet life?

If your pet as MVD than it is best not to exert your pet with exercise. This is not to say your pet cannot go for a walk, however high intensity exercise and stress can exacerbate MVD. If your pet has medication than it is very important to make sure these medications are given according to the instructions.

How long can your pet expect to live?

This is the most difficult question to answer as there are so many variables to take into account that no study has been able to provide a figure. However, there are numerous factors that can help us give an estimate on life expectancy. These are; the size of the left atrium on ultrasound, the degree of fluid on the lungs, the presence of any complications (i.e arrhythmias) and the response of [PETS NAME] to treatment. You can expect anywhere from a few months to a few years.