

VALVULAR HEART DISEASE

What are heart valves?

The heart has four valves. The purpose of these valves is to ensure that blood flows in a forward direction. When the valves are open the blood may flow forward. When the valves are closed blood is prevented from backwards.

What conditions may effect my heart valve?

Conditions that effect the heart valves may be either hereditary, that is you are born with them, or acquired, that is they develop during life. Any valve may be effected by a hereditary or acquired condition. Once effected the valve(s) either become narrowed or stenotic restricting flow through them or they become leaky or regurgitant resulting in excessive back-flow of blood.

Narrowed or stenotic valvular lesions create a pressure-load on the chamber behind the valve, which can cause straining, and thickening of that chamber. Leaky or regurgitant valves cause a volume load on the chambers of the heart, which can lead to progressive enlargement.

Most valvular conditions remain asymptomatic for many years as the heart has great capacity to cope with both pressure and volume overload, but ultimately they may result in progressive deterioration of function of the heart and may require surgical intervention.

Specific valvular lesions:

1. **Aortic Stenosis.**

The aortic valve is situated between the left ventricular which is the main pumping chamber of the heart, and the aorta which is the big blood vessel leading from the heart. This valve may become narrowed either on a congenital or hereditary basis or on an acquired basis such as due to rheumatic heart disease or calcific degeneration due to aging. When the valve is narrowed or stenotic the left ventricle has to pump against a higher pressure. This ultimately leads to thickening of the ventricle and may over time lead to weakness of heart muscle.

The symptoms of aortic stenosis include chest pain, shortness of breath and dizziness or fainting. If any of these symptoms occur, then surgical replacement of the aortic valve is warranted. If there are no symptoms then it is safe to follow the patient with periodic physical examination and cardiac ultrasound. As with other patients with valvular heart disease antibiotics are required under certain conditions to prevent infection from occurring on the heart valve.

2. **Aortic regurgitation**

The aortic valve may leak or become regurgitant. This may be due to a congenital or hereditary abnormality or may be acquired. The heart has great capacity to deal with the leaking aortic valve. The heart may enlarge considerably. At some point if the patient develops symptoms of shortness of breath, or congestive heart failure then valve replacement would be indicated. As well, it is necessary to follow patients with leaky aortic valves periodically with clinical examination and cardiac ultrasound as at a certain point it is necessary to replace the valve with or without the presence of symptoms.

3. Mitral Stenosis

Mitral stenosis is a condition where the valve leading into the left ventricle from the left atrium, that is into the main pumping chamber from the left atrial filling chamber, becomes narrowed. This is usually due to rheumatic heart disease. Symptoms of mitral stenosis include shortness of breath and palpitations. Mitral stenosis develops slowly and it may be many years before patients become symptomatic. When symptomatic it is possible to do balloon valvuloplasty procedures to open the mitral valve non-surgically using a catheter procedure. In some patients open surgery to repair or replace the mitral valve is required.

All patients with mitral valve disease require anti-biotic prophylaxis.

4. Mitral Regurgitation

Mitral regurgitation or leaking of the mitral valve results in an excess volume overload of the left ventricle and left atrium. Both chambers enlarge. The heart can cope for many years with a leaky mitral valve but may eventually wear out. It is necessary to follow the patients with significant mitral regurgitation closely to try and predict the timing of mitral valve repair or replacement. In mitral regurgitation, if one waits to the point where patients develop symptoms the left ventricle may be irreversibly damaged.

There are various causes of mitral regurgitation. The most common is a condition called mitral valve prolapse, which is a hereditary condition of thickening and elongation of the mitral valve. Mitral valve prolapse may be present in very minor form or may be present in severe form with significant leaking of the valve. All patients with mitral valve prolapse and significant leaking of the mitral valve, or thickening of the mitral valve, require antibiotics during dental work or other surgical procedures to prevent infection from developing on the abnormal valvular structures.

The mitral valve may also become leaky due to rheumatic heart disease. Sometimes the mitral valve is affected by enlargement of the heart due to coronary heart disease or other causes of weakened heart muscle (cardiomyopathy). These conditions may lead to leaking of the valve as well.

