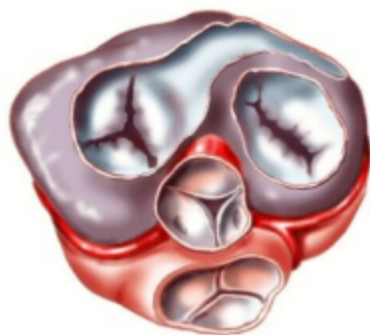


ALDERFER & TRAVIS CARDIOLOGY, PC
670 Lawn Ave., Suite 3A Sellersville, PA 18960
Tel (215)257-9500 FAX (215) 257-9500

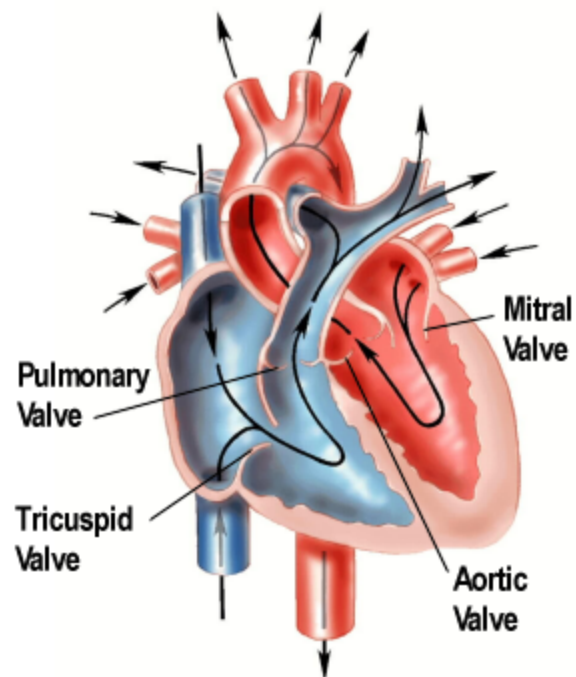
Aortic Valvular Disease

What is the aortic valve?

The aortic valve is located between the main pumping chamber of the heart, the left ventricle, and the aorta, the blood vessel that carries blood full of oxygen to the rest of the body. The aortic valve normally has three thin leaflets that open widely as the left ventricle pumps the blood out of the heart. When the left ventricle has finished ejecting the blood, the backflow of blood against the valve leaflets closes the aortic valve preventing blood from leaking back into the left ventricle.



The Valves of the Heart



What is aortic regurgitation?

When the aortic valve leaflets do not close properly, there is leakage of blood back into the left ventricle. This is known as aortic regurgitation or insufficiency. This leads to inefficiency of the heart in that the blood that leaks back into the left ventricle must be pumped out again with the next heartbeat. A significant amount of leakage can occur before the heart function is significantly impaired. When the leak is severe, heart failure may occur. This is manifest by fatigue,

shortness of breath and a decrease in exertional capacity.

Aortic regurgitation is usually caused by thickening and calcification of the valve leaflets as they age. Some valves are affected by a chronic inflammatory process that leads to thickening and retraction of the leaflets (rheumatic heart disease, ankylosing spondylitis). Some valve leak because an infection (bacterial endocarditis) eats a hole into the valve leaflets. Some valves leak because the aorta becomes dilated thus stretching the valve leaflets apart.

What is aortic stenosis?

Aortic stenosis refers to a narrowing of the aortic valve opening. This is often due to an age related thickening and calcification of the valve leaflets. There are also inflammatory conditions involving the aortic valve that lead to thickening of the leaflets and fusion along the margins of the valve cusps. Rheumatic heart disease may cause these changes. Some aortic valves are imperfectly formed at birth having two rather than the usual three leaflets. These two leaflet or bicuspid valves tend to wear out sooner than normal by becoming thickened, fused and non-pliable.

The end result of aortic stenosis is a progressive narrowing of the valve to the point where blood flow across the valve becomes limited. This is manifested by a decline in the ability to exercise, increased shortness of breath, heart failure, chest pain and fainting episodes. Once the aortic valve becomes narrowed to the point where symptoms are present, there is a significant increase in the chances of dying suddenly.

How is aortic valve disease diagnosed?

Both narrowed and leaking aortic valves cause the blood flow across the valve to become turbulent. This turbulence creates a sound that can be heard with a stethoscope. This is called a heart murmur. The diagnosis of aortic valvular disease starts with a physical examination in which a heart murmur is heard. Heart murmurs due to the aortic valve have a characteristic sound and location.

An echocardiogram, an ultrasound examination of the heart, is a useful way to look at the aortic valve to see if there is significant disease present. The appearance of the leaflets can provide important information as to thickening, mobility and whether there are two or three leaflets. The amount of leakage and narrowing can be determined by Doppler ultrasound. The effect of the aortic valve disease on the heart function can also be assessed.

If the echocardiogram suggests that the aortic valve is significantly diseased to warrant surgical replacement, a cardiac catheterization is performed. This is a hospital test that involves measuring pressures in various heart chambers using small tubes or catheters inserted into an artery and a vein in the groin and

directed into the heart. Motion picture x-ray are also obtained to assess the heart function and the appearance of the valve and the aorta. X-ray pictures are usually obtained of the coronary arteries at the same time. If there is co-existing coronary artery disease, this is usually bypassed at the time of the aortic valve surgery.

How is aortic valvular disease treated?

Mild to moderate aortic valvular disease requires no specific treatment. Your physician will want to see you periodically to be certain the disease is not progressing. Your physician will also obtain periodic echocardiograms to follow the status of your aortic valve. Because diseased heart valve are more susceptible to infection when bacteria are present in the blood stream, antibiotics should be given before any procedures that are likely to cause bacteria in your blood stream. This would include dental work (including dental cleaning), genitourinary procedures, colonoscopy, sigmoidoscopy and the like. If you have aortic valvular disease, please ask your doctor about antibiotic prophylaxis.

Aortic regurgitation may be treated by drugs that decrease the resistance of the blood vessels into which the heart pumps. This is called afterload reduction therapy. A class of drugs called ACE inhibitors are commonly used for this purpose. If the narrowing or leakage leads to mild heart failure and fluid accumulation, a water pill (diuretic) may be prescribed. If more significant heart compromise develops, then surgery will be recommended, unless there are contraindications to surgery.

Surgery involves replacement of the aortic valve. There are a variety of heart valves available. There are man made mechanical valves that have great durability but which require life long blood thinners (coumadin) to prevent clots from forming. There are valves constructed from animal tissue. These include pig aortic valves and valves made from pericardium. Aortic valves from human cadavers may also be used. In general the tissue valves require only short term blood thinners but they have a limited life of around ten years. If aortic valve replacement is recommended, your cardiac surgeon and cardiologist will discuss the various options with you.

When aortic regurgitation is the result of an infection (bacterial endocarditis), the regurgitation may occur quite suddenly and represent a medical emergency because of the development of heart failure. Antibiotics to treat the infection will be started preoperatively and continued for a prolonged period of time post operatively.