WINELANDS CARDIOLOGY

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Aortic Valve Stenosis

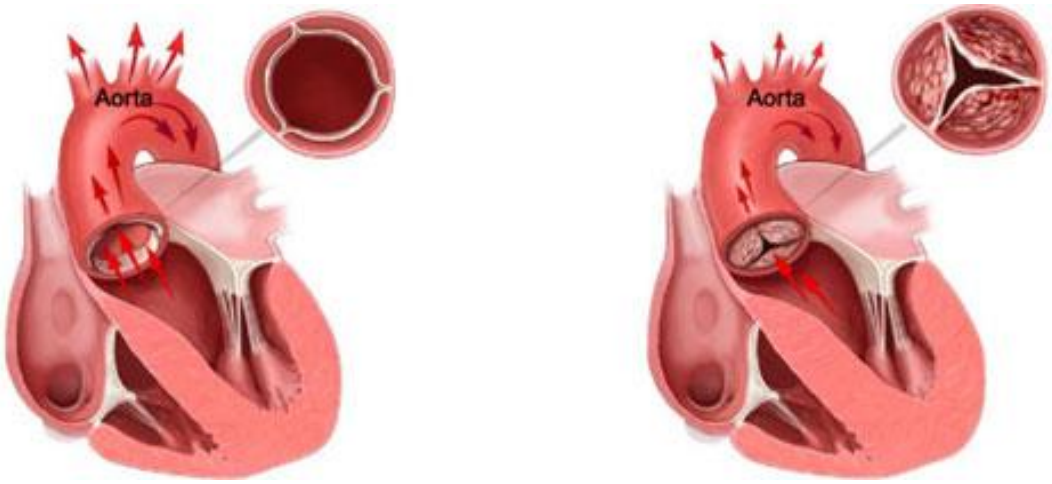
What is an aortic valve?

The aortic valve is a valve on the left side of the heart, between the left ventricle (pumping chamber) and the aorta, the main artery into which all oxygen and nutrient rich blood is pumped for further dispersion to all body parts.

The aortic valve opens each time the heart contracts to allow blood to exit the heart into the aorta. It is subjected to high levels of pressure and force, as the heart pumps on average 100 000 times per day. The aortic valve normally consists of 3 cusps/leaflets which open and closes as the heart pumps and relaxes.

What is aortic valve stenosis?

Aortic Valve Stenosis (Commonly referred to as 'AS') is a condition where the valve leaflets become diseased, calcified, and loses its ability to open normally. As the normal valve area becomes smaller and smaller, the obstruction to outflow of blood from the left ventricle becomes progressively more. The most common causes for AS include a congenital bicuspid valve (2 cusps instead of 3 and much more prone to "wear and tear"), rheumatic heart disease, and age-related "wear and tear" (also known as degenerative AS). Degenerative AS is the most common cause of AS and usually affects patients older than 60 – 70 years.



Normal aortic valve on the left, and aortic valve stenosis (AS) due to calcification of the leaflets on the right.

What are the symptoms of Aortic valve stenosis?

As the valve opening becomes smaller and smaller, patients develop a murmur over the chest, which is usually incidentally found by an astute doctor. In later stages patients may become symptomatic. They may complain of:

1. Increasing shortness of breath
2. Chest pain/angina
3. Dizzy spells and black outs

How will I be followed up?

A doctor will refer the patient to a cardiologist, who will perform a heart sonar (echocardiogram). This will confirm the diagnosis, but importantly, will grade the severity of the valve narrowing and obstruction. A simple grading system is used:

- Mild aortic valve stenosis – aortic valve opening area (AVA) > 2.0cm2
- Moderate aortic valve stenosis – aortic valve opening area of 1.0 – 2.0cm2
- Severe aortic valve stenosis – aortic valve opening area < 1.0cm2

With earlier grades of AS (mild – moderate AS) patients are typically monitored at 6- or 12-monthly intervals, as progression of severity tends to be slow and may never become severe. However, when a patient becomes symptomatic or the AVA < 1.0cm2, the prognosis starts to deteriorate and on average a patient will then have a life-expectancy of less than 3 years. This is the point where an intervention to the valve becomes necessary before it becomes too late to intervene.

What treatment options are available if my aortic stenosis becomes severe?

Medication will help in alleviating symptoms, but unfortunately cannot halt progression of AS. As it is a mechanical process, the critically stenosed valve needs to be replaced. The replacement of the valve can be achieved in one of 2 ways:

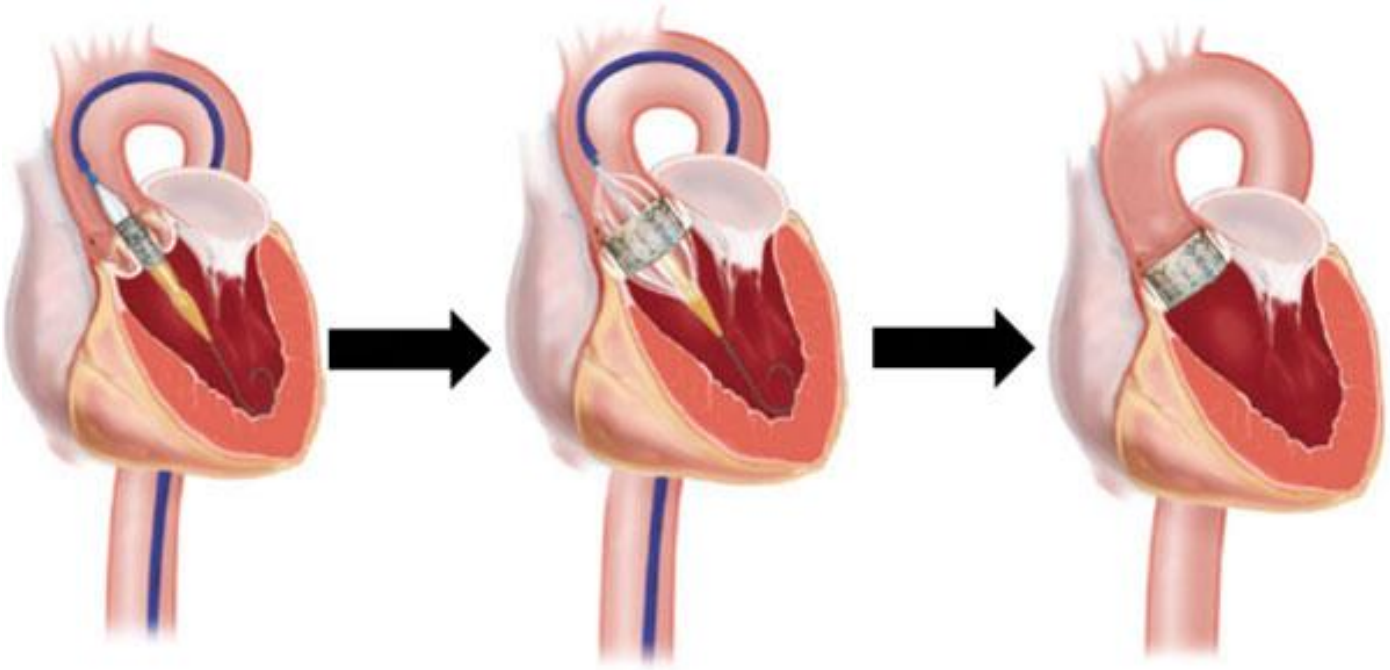
1. Surgical Valve Replacement (SAVR)
2. Transcatheter aortic valve implantation (TAVI)

Surgical Valve Replacement (SAVR):

This is the traditional way of replacing the valve. It is done by an expert team, including a Cardiothoracic Surgeon, Cardiac Anaesthetist and Imaging Specialist, Perfusion Technologist and scrub sisters. (At Vergelegen Mediclinic this would be respectively Dr. Barry Barnard, Andre Phillips, and Mr. Jose) The patient's chest is opened up over the breastbone. The heart is stopped and the valve is surgically excised and replaced with a new valve. The heart is then restarted and the chest is then closed. The patient will spend approximately 3-5 days in ICU, followed by another 3-5 days in a general ward before being discharged. The operation takes around 6 hours. Tissue valves are preferred over metallic valves, as it avoids the long-term requirement for Warfarin, especially in older patients. Warfarin is usually prescribed for 3 months, following surgery. The average mortality risk for this procedure is around 3%, with a 6% risk of stroke. These valves have excellent durability of 12-15 years.

Transcatheter aortic valve replacement (TAVI):

This is a relatively new method to implant an aortic valve, first performed in 2002. During TAVI, the valve is crimped onto a balloon or inside a sheath, which is around 5-6mm in diameter. This is advanced from the femoral artery in the groin and pushed into the existing diseased valve. Once the TAVI valve is released, it squashes open the existing valve, replacing it by new functional leaflets/cusps. The valve is also a tissue valve, made from the cardiac sac (pericardium) of either pig or cow, and therefore does not require Warfarin long term. TAVI is a very good alternative to SAVR in the carefully selected patient.



The VMC Heart Team approach

Our practice at Vergelegen Mediclinic is to evaluate all patients with severe AS to determine the best valve replacement procedure. The Heart Team will perform all necessary investigations and then suggest the best treatment approach based on many different patient, anatomical, and technical considerations. Ultimately, we also engage with the patient and family with regards to their expectations and preferences. We have a strong Multidisciplinary Team and achieve excellent outcomes.