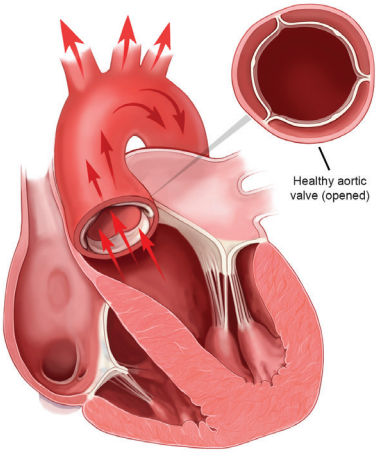
Transcatheter Aortic Valve Replacement (TAVR)

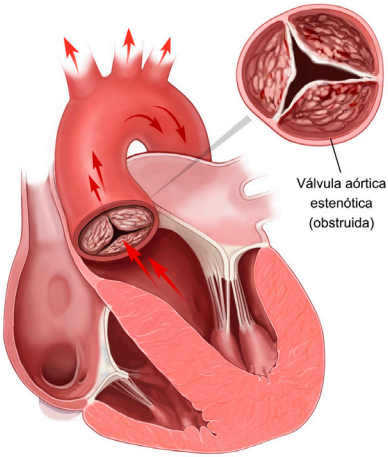
AdventHealth

What is aortic stenosis?

Aortic stenosis (AS) is an abnormal narrowing of the aortic valve. The aortic valve acts like a door that controls the flow of blood from the heart into the body. In patients with AS, this valve doesn't open wide enough to provide the level of blood flow the body needs.



Aortic stenosis is related to a number of issues, including age, a birth defect or radiation therapy. With AS, the heart is forced to work harder to pump blood throughout the body.



Aortic stenosis is most often associated with the buildup of calcium on the leaflets of the valve. This obstructs the flow of blood from the left ventricle in the heart to the aorta, the artery that supplies blood to the body. Because the body is not getting enough oxygenated blood, the heart and lungs need to work harder, so one of the primary symptoms of AS is shortness of breath. Other symptoms include chest pain, fatigue, fainting and heart palpitations.

Severe aortic stenosis is a very serious condition. It can lead to heart failure and increased risk of sudden cardiac death.

How is aortic stenosis treated?

As with most other medical conditions, treatment options for aortic stenosis vary, depending on the severity of the disease. For mild cases, medication may regulate heart rhythm and prevent blood clots. A procedure called balloon valvoplasty might also relieve symptoms of a damaged aortic valve.

For severe cases of AS, the damaged valve needs to be replaced. Traditionally, this requires an open-heart surgical procedure, in which the damaged valve is removed and replaced with either a mechanical valve or one made from human or animal tissue.

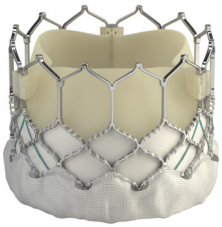
The traditional valve replacement procedure is major surgery with a long recovery time and requires the patient to be put on cardiopulmonary bypass under general anesthesia for several hours.

Transcatheter aortic valve replacement may be an alternative to traditional open-heart aortic valve replacement.

Transcatheter Aortic Valve Replacement

Transcatheter Aortic Valve Replacement (TAVR) is a minimally invasive procedure that does not require open-heart surgery. The TAVR procedure inserts a new valve into the diseased one. The replacement valve is placed with a catheter through a small incision and can be performed while the heart is beating. This greatly lowers risk for patients and reduces the burden on the body and recovery time.

The replacement valve is made of natural tissue supported by a strong metal frame. As with traditional aortic valve replacement, TAVR valves have been proven to lengthen patients' lives, increase heart function and improve their quality of life.



Since the TAVR procedure is performed while the heart is beating, cardiopulmonary bypass is not required and time under anesthesia or the amount of anesthesia is reduced.

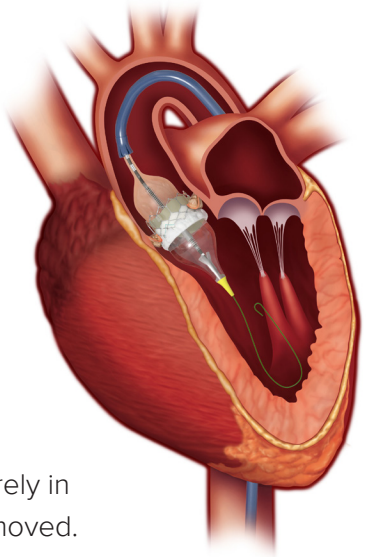
The TAVR procedure

The TAVR procedure is performed in the Hybrid Operating Room at AdventHealth Cardiovascular Institute and takes one to two hours. Patients are usually under general anesthesia (a deep sleep with a breathing tube connected to a mechanical ventilator) or in select cases, under moderate anesthesia (called a twilight sleep).

The procedure uses a minimally invasive approach, which means it is done through a small incision that allows access to a vein or artery (also called a blood vessel) that leads directly to the heart. The doctor will determine the best location for that incision, which will be in the upper thigh, the neck or the chest. A sheath (a short hollow tube) that is about the width of a pencil will be inserted through the incision.

A small, deflated balloon is then inserted through the sheath, which is guided through the blood vessel to the heart. The balloon is inflated with fluid to push open the narrowed aortic valve, then deflated and removed.

The new heart valve is then compressed on a balloon at the end of a tube, which is placed through the sheath and guided to the diseased aortic valve.



The balloon is inflated, expanding the new valve within the diseased one. The new valve pushes the leaflets of the diseased valve aside. The frame of the new valve is very strong and uses the walls of the diseased valve to anchor securely in place. The balloon is then deflated and removed.

An alternative method to implanting the new valve utilizes a self-expanding valve instead of the balloon. Your doctor will determine which type of delivery system is best for your case.

The TAVR team uses advanced imaging technology in our Hybrid Operating Room to see the aortic valve and to monitor progress throughout the procedure.

The doctor will ensure that the new valve is working properly before removing the delivery system and closing the incision. In rare cases, if the new valve is not working properly, additional procedures may need to be performed. These may include open-heart or other surgeries.

TAVR may not be appropriate for people who:

- Have a non-calcified aortic valve
- Have an infection in the heart or elsewhere
- Have a severely diseased mitral valve
- Have an aortic valve that is too large or too small
- Have severe problems with bleeding or blood clotting
- Can’t take aspirin, heparin, ticlopidine (Ticlid) or clopidogrel (Plavix)

AdventHealth Cardiovascular Institute

After your cardiologist or physician has determined you may be a candidate for the TAVR procedure, you will be referred to the Structural Heart program at AdventHealth Cardiovascular Institute. Your doctor will either contact our program's coordinator or speak directly with one of the physicians on our TAVR team.

Required Testing

Testing procedures that may be required before your initial assessment appointment include:

- CT scan to evaluate your aortic valve and blood vessels
- Carotid ultrasound
- Electrocardiogram (EKG)
- Echocardiogram (ECHO)
- Labs
- Pulmonary function test
- Heart catheterization
- Walk test

Your Initial Assessment

After your cardiologist determines that you are a possible candidate for the TAVR procedure, you will be scheduled for an assessment by one of our TAVR surgeons. At this appointment, the surgeon will review your test results, go over your options, answer all of your questions and order additional testing that may be necessary. Your TAVR coordinator will then arrange and schedule the tests to advance the process.

Once all testing is completed, results will be reviewed by the TAVR multidisciplinary team. Once the decision is made to move forward, our team will tailor a personalized plan for your procedure.

After Your Initial Assessment

After our multidisciplinary team has met to create your treatment plan, the TAVR coordinator will contact you to go over the plan with you and help with further arrangements such as scheduling, additional testing and follow-up appointments.

Your Procedure Day

Prior to your procedure day, a member of our team will contact you about check-in time and will instruct you where to go to register.

After registration, you will be taken to a room in the hospital where you will be prepped for the procedure. The procedure typically lasts one to two hours.

After the Procedure

After the TAVR procedure is over, you will be taken to a private room in our cardiovascular intensive care unit (CVICU). You will be given medication that will allow blood to flow smoothly through your new valve, which lowers the risk of developing a blood clot that can lead to stroke. You will also have tests performed, including a physical exam, chest x-ray, blood tests, echocardiogram and electrocardiogram.

Most patients feel better immediately after the new valve has been placed. Your doctor will give you specific instructions to help with your recovery. Most patients stay in the hospital for one to two days after the TAVR procedure.

Be sure to keep your follow-up appointments and to carefully follow your doctor's instructions. These may include a special diet, exercise and medication.

After you have fully recovered, you will need to inform other doctors about your heart valve replacement before any medical or dental procedure. Before any MRI scan, inform the doctor or technician about your new heart valve.

Implant Identification Card

Following your procedure, you will receive an Implant Identification Card, which you must carry with you at all times. You will need to inform other doctors about your heart valve replacement before any medical or dental procedure. Before any MRI scan, inform the doctor or technician about your new heart valve. They will likely ask to see your Implant ID Card.

Medications

When you are discharged, you will be instructed about new medications that may be required. This typically involves what is called a dual anti-platelet therapy, which usually includes Plavix and aspirin. If you were on Coumadin or a blood thinner prior to the TAVR procedure, you will continue that medication in addition to aspirin.

You will be on the blood thinner for four to six months and will take aspirin for the rest of your life, unless otherwise specified by your doctor. If you are discharged without a dual anti-platelet therapy prescribed, speak with the TAVR coordinator for further instructions.

To help prevent infection of your new valve, it is recommended that you receive antibiotic medications when having any invasive medical or dental procedures, including teeth cleanings, tooth extractions colonoscopy or skin cancer removal.

Follow-Up Care

With Your Physician

After your TAVR procedure, you will need to follow up with your primary care physician and your cardiologist within one week of discharge. Even after you have fully recovered, your heart will need to be checked and your medications will be assessed by your physician. At these appointments, let your doctor know about all medications you are taking, including over-the-counter products. Even if you are feeling better, continue to take medications as prescribed, unless altered by your doctor.

With the TAVR Team

30-day follow-up –The TAVR coordinator will schedule your 30-day follow-up appointment with the team to monitor the your new valve. This appointment will include an echocardiogram and labs.

One-year follow-up – One year after your procedure, you will meet with the team again to evaluate your progress. Contact the TAVR coordinator a month before your procedure's anniversary to schedule an appointment for another echocardiogram. If you relocate during that year, contact the TAVR coordinator with your new address and phone number.

Cardiovascular rehabilitation – A medically supervised exercise program may be recommended after the TAVR procedure. At your 30-day follow-up, you will be given a prescription for cardiovascular rehabilitation.

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