PROCEDURE

Transcatheter aortic valve replacement

A catheter-based procedure that replaces a severely narrowed aortic heart valve.

PURPOSE
Replace a narrowed aortic valve and improve blood flow

PROCEDURE TYPE
Therapeutic, minimally invasive catheter-based procedure

WHERE IT IS DONE
Operating theatre or specialised cardiac procedure room

ANAESTHESIA
Local with moderate sedation or general anaesthesia

HOW LONG IT TAKES
About one to two hours

PREPARATION
Fasting, medication review, and planned blood-thinner changes

RECOVERY
Usually overnight; no driving until your team clears you

MAIN RISKS
Bleeding, stroke, vascular injury, pacemaker requirement

RESULTS
Valve function checked immediately; recovery assessed during follow-up

Overview

Transcatheter aortic valve replacement, or TAVR, replaces a damaged aortic valve without open-heart surgery. The aortic valve controls blood flow from the heart into the body's main artery.

During TAVR, a doctor guides a replacement valve to your heart through a thin tube called a catheter. The catheter usually enters through an artery at the top of the leg. Other access routes may be used when the leg arteries are unsuitable.

The replacement valve is expanded inside the existing valve. It pushes the old valve tissue aside and begins controlling blood flow. Your original valve is not removed.

TAVR is less invasive than surgical aortic valve replacement, but it is still a major heart procedure. A specialist heart team should discuss its expected benefits, risks, and alternatives

with you.

Why the procedure is performed

TAVR is mainly used to treat severe aortic stenosis. This means the aortic valve has become so narrow that the heart must work harder to pump blood through it.

Severe aortic stenosis can lead to breathlessness, chest discomfort, fainting, reduced activity, heart failure, or damage to the heart muscle. TAVR aims to improve blood flow, reduce symptoms, and help the heart work more effectively.

In selected people, TAVR may also be used when a previously implanted biological valve has stopped working properly. This is sometimes called a valve-in-valve procedure.

Who should and should not have it

TAVR may be an option if you have severe aortic stenosis and replacing the valve is expected to improve your health or quality of life. It may be considered whether your risk from open-heart surgery is low, moderate, or high.

The choice between TAVR and surgery is personal. A heart team considers:

TAVR may be delayed if you have an active infection, uncontrolled bleeding, or another medical problem that needs treatment first.

It may not be suitable if the valve or nearby structures cannot safely hold the replacement valve, or if the arteries are too small or damaged for available access routes. Another route or open surgery may still be possible.

TAVR may also be inappropriate when serious illness or advanced frailty makes meaningful recovery unlikely. In that situation, the burdens of the procedure may outweigh its benefits. The heart team should explain this clearly and discuss supportive care.

- Your age, general health, mobility, and goals
- The shape and size of your valve and blood vessels
- Previous heart surgery or other chest procedures
- Your risk from open-heart surgery
- How long each type of replacement valve may need to last
- Whether future heart or coronary procedures may be needed

How to prepare

Your treating facility's own instructions take priority because preparation differs according to your health, medications, and planned anaesthesia.

Testing commonly includes an echocardiogram, which is an ultrasound scan of the heart. A CT scan is usually used to measure the valve and check possible access routes. You may also need blood tests, an electrocardiogram, and tests of the coronary arteries.

Give your team a complete list of medicines, vitamins, and supplements. Blood thinners and diabetes medicines may need special planning. Do not stop a prescribed medicine unless the team performing the procedure tells you to do so.

Tell the team about allergies, previous reactions to contrast dye, kidney problems, dental or other infections, and any implanted medical devices.

You will receive instructions about when to stop eating and drinking. Arrange transport home and help during your early recovery. You will not be able to drive yourself home.

What happens during the procedure

You will have monitors attached to check your heart rhythm, blood pressure, and oxygen level. An intravenous line provides fluids and medicines.

Many people receive local anaesthetic to numb the catheter site plus sedation that makes them relaxed and sleepy. Others receive general anaesthesia and are fully unconscious.

The most common access point is the femoral artery near the groin. The doctor makes a small opening and guides the catheter through the artery to the heart using X-ray imaging. A temporary pacing wire may be placed to control the heartbeat during parts of the procedure.

The replacement valve is compressed onto the catheter. Once correctly positioned inside the old valve, it is expanded. Some valves expand with a balloon; others expand by themselves.

The team checks the new valve's position and function. The catheter is then removed, and the access site is closed. Open-heart surgery is not usually needed, but a surgical team and emergency equipment are available in case a serious complication occurs.

Recovery and what to expect afterward

Pain is usually limited to soreness or bruising around the catheter site. You may also have back discomfort from lying flat. Tell the hospital team if pain is severe, increasing, or associated with

swelling or bleeding.

You can usually drink and eat once you are awake and it is safe to swallow. Some people need temporary limits on salt or fluids because of heart failure or kidney function.

You may need to lie flat for several hours. Staff will then help you sit, stand, and walk. Avoid heavy lifting and strenuous activity until the access site has healed and your team says it is safe. Walking is usually encouraged and can be increased gradually.

Do not drive home. Resume driving only after your team has confirmed that your access site, heart rhythm, symptoms, and local driving requirements make it safe.

Returning to work may take several days to a few weeks. It can take longer if your job is physical or your health was limited before TAVR. Cardiac rehabilitation may help you rebuild strength safely.

Risks and possible complications

Your team should explain your individual risk. Possible complications include:

A blood transfusion or procedure to repair a damaged blood vessel may be needed. The chance and importance of each risk are affected by your anatomy, kidney function, other illnesses, and the type of valve used.

- Bleeding, bruising, or damage to the access artery
- Stroke or a temporary interruption of blood flow to the brain
- Heart rhythm problems, sometimes requiring a permanent pacemaker
- Leakage around the replacement valve
- Kidney injury, including injury related to contrast dye
- Infection
- Damage to the heart, valve, aorta, or coronary arteries
- An allergic reaction to medicines or contrast dye
- The need for emergency heart surgery
- Heart attack or death

Results and follow up

The team checks valve function during and immediately after TAVR. An echocardiogram is

often performed before you leave hospital.

Some people notice easier breathing within days. Strength and activity may improve over several weeks, especially if symptoms caused reduced fitness before the procedure. Improvement is not identical for everyone, and other heart or lung conditions may still affect how you feel.

You will need follow-up visits and heart scans to check the valve and your recovery. Keep taking prescribed antiplatelet or anticoagulant medicines exactly as directed. These medicines affect blood clotting, and the plan is based on your bleeding risk, heart rhythm, and other conditions.

Tell future healthcare and dental professionals that you have an artificial heart valve. Your team will explain whether you need antibiotics like amoxicillin or doxycycline before certain dental procedures and how to care for your teeth and gums.

Alternatives

Open surgical aortic valve replacement removes the damaged valve through an incision in the chest. It involves a longer initial recovery but may be preferred when TAVR anatomy is unsuitable, another heart operation is needed, or long-term valve durability is a major concern.

Balloon aortic valvuloplasty uses a balloon to stretch the narrowed valve. It may improve blood flow for a limited time, but the valve commonly narrows again. It is mainly used as a temporary measure or when immediate valve replacement is not possible.

Medicines can treat fluid buildup, blood pressure, or other symptoms. They do not open a severely narrowed valve or stop the valve disease from progressing.

Supportive or palliative care focuses on comfort, symptoms, and personal goals without valve replacement. This may be appropriate when a procedure is unlikely to provide meaningful benefit or does not match your preferences.

When to call your healthcare team

Contact your healthcare team promptly for increasing redness, warmth, drainage, swelling, or pain at the catheter site. Also report fever, new palpitations, worsening breathlessness, rapid weight gain, leg swelling, or a clear decline in activity.

Seek emergency help for:

Do not drive yourself during an emergency. Call your local emergency services.

- Signs of stroke, such as facial drooping, arm weakness, or trouble speaking
- Severe chest pain, severe breathlessness, fainting, or sudden confusion
- Bleeding that does not stop with firm pressure
- A rapidly enlarging lump at the access site
- A leg that becomes suddenly cold, pale, painful, or numb

Common questions

Will I be asleep?

Not always. Many people receive local anaesthetic and sedation, making them sleepy but not fully unconscious. General anaesthesia may be used based on your health and the procedure plan.

Can I drive home?

No. Arrange for someone to take you home. Do not resume driving until your heart team confirms that it is safe.

How painful is it?

Most people have mild to moderate soreness or bruising at the catheter site rather than chest-incision pain. Pain that is severe or getting worse needs assessment.

When will I know if it worked?

The team checks blood flow and valve function immediately. You may notice symptom improvement within days, but recovery and activity gains can take several weeks.

Will I need a pacemaker?

Most people do not, but TAVR can disrupt the heart's electrical pathways. Your rhythm will be monitored, and a permanent pacemaker may be recommended if the problem does not resolve.

How long will the replacement valve last?

TAVR valves are designed for long-term use, but no valve lasts forever. Durability is especially important for younger people, and your team should discuss future treatment options before you consent.

Sources

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