PROCEDURE

Carotid artery surgery - open

Open carotid artery surgery removes plaque from a neck artery to reduce stroke risk.

PURPOSE
Improve brain blood flow and reduce stroke risk

PROCEDURE TYPE
Therapeutic, open surgical procedure

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General or local anaesthesia

HOW LONG IT TAKES
About one to two hours

PREPARATION
Medication review and fasting before surgery

RECOVERY
Usually overnight; no driving until neck movement and reactions recover

MAIN RISKS
Stroke, bleeding, nerve injury, heart attack

RESULTS
Blood flow improves immediately; follow-up confirms artery remains open

Overview

Open carotid artery surgery, usually called a carotid endarterectomy , removes fatty material called plaque from a carotid artery in your neck. These arteries supply blood to your brain.

The surgeon makes a cut in your neck, opens the narrowed artery and removes the plaque. The artery is then closed, sometimes with a fabric or tissue patch to widen the repaired area.

The aim is to reduce the chance of a stroke caused by plaque or a blood clot blocking blood flow. The operation does not remove plaque elsewhere or prevent every possible cause of stroke.

Why the procedure is performed

Carotid endarterectomy may be offered when an ultrasound or another scan shows significant narrowing, known as carotid stenosis .

It is most often considered after symptoms linked to the affected artery, including:

If surgery is appropriate after a TIA or minor stroke, it may be recommended soon after you are medically stable because the early risk of another stroke can be high.

Selected people with severe narrowing but no symptoms may also be considered. The team weighs the likely benefit against age, general health, life expectancy, scan findings and procedural risk.

- A transient ischaemic attack, or TIA
- A minor stroke
- Temporary loss or dimming of vision in one eye

Who should and should not have it

You may benefit if moderate or severe narrowing has recently caused a TIA, minor stroke or temporary sight loss. Surgery may also be reasonable for some people with severe narrowing but no symptoms.

Surgery may be avoided or delayed when:

A carotid stent or medicines alone may be more suitable. Before you consent, your team should explain your individual stroke risk and the benefits and risks of each option.

- The artery is completely blocked
- Narrowing is mild and the likely benefit is small
- A recent stroke is large or has caused major brain damage
- There is bleeding or significant swelling in the brain
- Serious heart, lung or other disease makes surgery unusually risky
- An infection or uncontrolled medical condition needs treatment first
- The artery's location or previous neck treatment makes open surgery difficult

How to prepare

Follow your treating facility's instructions, which take priority over general advice.

Tell the team about all medicines, vitamins and supplements you use, especially aspirin,

clopidogrel, warfarin, apixaban and other medicines that affect clotting. Aspirin is often continued, while anticoagulants like warfarin or apixaban may need a planned pause or adjustment. Do not stop prescribed medicine unless your treating team tells you to.

You may need blood tests, an electrocardiogram and further artery imaging. Your blood pressure and other medical conditions should be reviewed.

You will usually need to stop eating and drinking before surgery. Follow the facility's exact fasting instructions and advice about which medicines to take that morning.

Arrange transport home and help for the first few days. Bring an up-to-date medicine list and leave valuables at home.

What happens during the procedure

The operation may use general anaesthesia, which makes you unconscious, or local anaesthesia, which numbs your neck while you remain awake. Sedative medicine may help you relax.

The surgeon cuts along the side of your neck and temporarily clamps the carotid artery. A temporary tube called a shunt may carry blood around the clamped area.

The plaque is separated from the artery wall and removed. The artery is closed directly or with a patch. A small drain may be placed under the skin, and the incision is closed with stitches, clips or adhesive.

Your blood pressure, heart and brain function are closely monitored during and after surgery.

Recovery and what to expect afterward

Your neck may feel sore, tight or bruised, and temporary numbness around the incision or jaw is common. Pain is usually controlled with oral medicine. Tell the team if pain or swelling is increasing.

You can usually drink when you are fully awake and can swallow safely. New coughing, choking or difficulty swallowing needs assessment.

Walking is encouraged, but avoid heavy lifting and strenuous exercise until the wound has healed and your surgeon says they are safe. Many people stay in hospital overnight for blood pressure and neurological monitoring.

Do not drive home. Drive again only when you can turn your head comfortably, control the vehicle, perform an emergency stop and are no longer taking medicine that affects alertness.

Follow local rules and your surgeon's advice.

Returning to work often takes two to four weeks. Desk work may be possible sooner than heavy manual work.

Risks and possible complications

Possible complications include:

Your risk depends on recent symptoms, medical conditions, artery anatomy and the treating centre's experience.

- Stroke or TIA: Plaque or a clot may interrupt brain blood flow during or soon after surgery
- Bleeding: Blood collecting in the neck can cause swelling and require urgent treatment
- Nerve injury: This may cause hoarseness, tongue or facial weakness, or swallowing difficulty; some effects can persist
- Heart attack or heart rhythm problems
- Wound infection
- Blood pressure changes requiring treatment
- Re-narrowing from plaque or scar tissue
- Hyperperfusion syndrome: A rare increase in brain blood flow that can cause severe headache, seizures or brain bleeding

Results and follow up

Plaque is removed and blood flow restored during the operation. There is usually no pathology result to await.

Before discharge, the team checks your speech, strength, wound and blood pressure. Follow-up reviews healing and medicines, and an ultrasound may later confirm that the artery remains open.

Surgery reduces stroke risk but does not cure the tendency to develop artery disease. You may still need antiplatelet and cholesterol-lowering medicines, blood pressure treatment, diabetes management and help to stop smoking. Keep taking prescribed medicines unless your healthcare team changes them.

Alternatives

Alternatives include:

Ask how each option affects your short-term procedural risk and long-term stroke risk.

- Medicines and monitoring: Medicines, risk-factor control and lifestyle changes avoid procedural risks, but the plaque remains and protection may be lower for some people with severe, recently symptomatic narrowing.
- Carotid artery stenting: A catheter places a mesh tube inside the artery. It avoids a large neck incision but may have a higher procedure-related stroke risk in some groups.
- Transcarotid artery revascularisation: A stent is inserted through a small neck incision while blood flow is redirected to keep debris away from the brain. It is not suitable or available for everyone.
- No intervention: Observation may be reasonable when narrowing is mild, likely benefit is limited or procedural risk is high.

When to call your healthcare team

Call emergency services immediately for:

Contact your surgical team promptly for increasing redness, warmth, discharge, fever, worsening pain, persistent headache, new hoarseness or swallowing problems.

Discuss improving bruising, mild incision numbness, medicine questions and returning to driving, work or exercise at routine follow-up.

- New facial drooping, limb weakness or numbness, speech trouble or vision loss
- Sudden severe headache, confusion, collapse or a seizure
- Rapidly increasing neck swelling, trouble breathing or trouble swallowing
- Heavy bleeding from the incision
- Chest pain or severe shortness of breath

Common questions

Will I be asleep?

You may have general anaesthesia and be fully asleep. Some centres use local anaesthesia so you remain awake and able to speak. Your anaesthesia team will explain the plan.

Can I drive home?

No. Arrange for someone to take you home. Do not drive again until you can turn your head freely, react safely and are no longer affected by pain medicine.

How painful is it?

Most people have soreness, tightness or bruising rather than severe pain. Increasing pain with neck swelling needs urgent assessment.

When will I know if it worked?

The surgeon assesses blood flow during the operation. Follow-up examination and ultrasound can confirm that the artery remains open.

Will I have a scar?

Yes. The neck scar usually becomes flatter and less noticeable as it heals.

Sources

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