



Carotid Endarterectomy

This leaflet is to help answer some of the questions you may have about your procedure. It explains the benefits and risks, as well as what you can expect when you come into hospital.

This information has been put together by clinical representatives from across the acute hospital trusts in West Yorkshire and will be reviewed in September 2025. If you require this information in a different format, please contact your treatment team through the details provided on your appointment letter.

Carotid Endarterectomy

What are the carotid arteries?

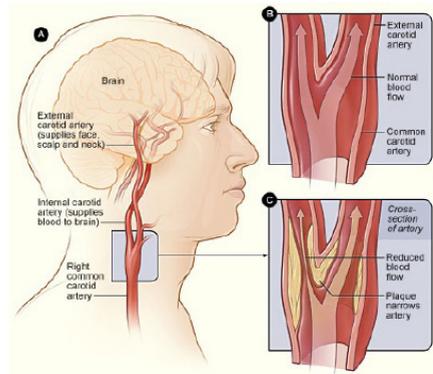
The carotid arteries are the main blood vessels that carry blood and oxygen to the brain. There are two carotid arteries in the neck - one on either side.

What is carotid endarterectomy?

Carotid endarterectomy is a surgical procedure to remove the build-up of plaque (fatty deposits) that can restrict the flow of blood in your carotid artery as it travels to the head and neck. If one or both arteries become narrower, this is known as carotid artery disease, or carotid artery stenosis. Left untreated, this condition can worsen over time and can seriously increase your risk of having a stroke or transient ischaemic attack (TIA).

- **Stroke** - a serious life-threatening condition that happens when the blood supply to the brain is cut off
- **Transient ischaemic attack (TIA)** - a temporary restriction of blood supply (and oxygen) to the brain

The operation is also offered to people who have experienced a TIA or stroke, as it significantly reduces the chance of suffering a second, more damaging stroke in the future.



What causes arteries to narrow?

Healthy arteries are flexible and smooth on the inside, meaning blood can easily flow through them. As a person gets older, fatty deposits (plaque) can start to build up, hardening the arteries and making them narrower. This process is called atherosclerosis.

As well as aging, there are several other factors that contribute to the build-up of plaque. These include:

- An unhealthy diet that is high in fat
- High blood pressure
- Smoking
- Diabetes

Diagnosing carotid artery disease

Carotid artery disease is usually diagnosed if a person has the symptoms of a stroke or TIA, such as drooping on one side of the face, numbness or weakness in the arms or legs, speech problems, or a loss of vision in one eye.

Narrowing of the carotid arteries may be diagnosed if you are having tests for another reason and the doctor testing you notices that your arteries are narrowed. This is called an asymptomatic carotid stenosis.

If you have recently had a stroke or TIA, you will be referred for some brain imaging tests. These check the blood supply to your brain and for any narrowing in your carotid arteries to be diagnosed.

Several tests can be used to examine your carotid arteries and find out how much plaque has built up inside them.

These include:

- **A duplex ultrasound scan** – sound waves are used to produce an image of your blood vessels and measure the blood flow through them
- **CT scan** – a series of x-rays are taken at slightly different angles, and a computer assembles the images to create a detailed picture of the inside of your body



CT scanner

- **A computed tomographic angiogram (CTA)** – a special dye is injected into a vein and a CT machine is used to take x-rays to build up a picture of the arteries in your neck
- **Magnetic resonance angiography (MRA)** – a magnetic field and radio waves are used to produce images of your arteries and the blood flow within them

You will usually have an ultrasound scan first to check if there's any narrowing in your arteries and to determine whether the severity means you would benefit from surgery.

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When is surgery considered?

If tests indicate your carotid arteries are narrowed, the severity of the narrowing is usually graded into three categories:

- Minor – 0 to 49% narrowed
- Moderate – 50 to 69% narrowed
- Severe – 70 to 99% blocked

The National Institute for Health and Care Excellence (NICE) recommends that people who have had a stroke or TIA and have a moderate or severe stenosis should undergo carotid endarterectomy surgery.

This gives the best chance of preventing a further stroke, if it is performed as soon as possible.

Surgery is sometimes recommended for people who have not previously had a stroke or TIA, but are found to have severe stenosis.

Surgery is not routinely recommended in cases where there is minor stenosis (less than 50%). This is because surgery is most beneficial for people with moderate and severe stenosis (more than 50%).

Pre-admission

Before being admitted for surgery, you will have a preoperative assessment. This will usually be carried out at a few days before your procedure. You will have tests to check the health of your arteries, and you may be admitted for surgery immediately if your carotid arteries are found to be severely narrowed.

Following a physical examination, you will be asked about your medical history and any medication you are taking. It is a good idea to bring any medication with you so the details can be recorded.

The pre-admission clinic is a good opportunity for you to ask your treatment team about the procedure, although you can discuss any concerns you have at any time.

The anaesthetic

A carotid endarterectomy can be carried out under a local or general anaesthetic. The choice will be made by you, your surgeon and your anaesthetist.

If you have a general anaesthetic, you will be asleep throughout the procedure. If you have a local anaesthetic, you will remain awake but the area on your neck will be numbed so that you do not feel any pain.

The surgeon and anaesthetist may prefer to use local anaesthetic so that you remain conscious during the operation. This allows them to talk to you and ensure that you are progressing well throughout the procedure.

Carotid endarterectomy

A carotid endarterectomy usually takes between one and two hours to perform. If both your carotid arteries need to be unblocked, two separate procedures will be carried out. One side will be done first, and the second side will be done a few weeks later.

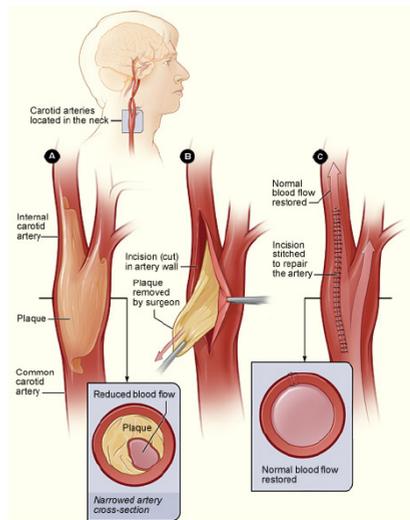
Once you are unconscious, or the area has been numbed, your neck will be cleaned with antiseptic to stop bacteria getting into the wound. If necessary, the area may also be shaved.

A small cut will be made to allow the surgeon to access your carotid artery. During the procedure, your surgeon will decide whether to use a temporary shunt to maintain adequate blood flow to the brain. A shunt is a small plastic tube that diverts blood around the section of the carotid artery being operated on. Any decision to use a shunt is based on the preference of your surgeon and the results of brain blood flow monitoring during the operation.

When the surgeon has accessed the carotid artery, they'll clamp it to stop blood flowing through it and make an opening across the length of the narrowing. If a shunt is to be used, it will be inserted at this point.

The surgeon will then remove the inner lining of the narrowed section of artery, along with any fatty deposits that have built up.

A final check will be made to ensure there is no bleeding. The cut in your neck will be closed with either dissolvable stitches (which do not to be removed), skin glue or occasionally surgical staples.



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Recovery

Before you are discharged, your clinician will advise you on what pain relief may be required when you leave hospital.

Following the operation, you will be closely monitored for a few hours - either in a recovery room or a high dependency unit. You may have a small tube placed just inside your neck to allow any blood or fluid to drain away and not collect under the scar. This tube is easily removed the following day. Most people can eat and drink a few hours after having surgery and you will usually be able to leave hospital and return home within a day or two of the procedure. You may be left with a small scar running from the angle of your jaw to the top of your breastbone. The scar is usually about 7-10cm long and fades to a fine line after two or three months. You will be reviewed as an outpatient or via telephone around 4-6 weeks after your procedure to ensure you are making good progress in your recovery.

Aftercare

- Exercise – regular light exercise is recommended. Your surgeon will advise you about how much you can do and within what time period following your procedure
- Driving – you may resume driving once you are able to perform an emergency stop safely. This is normally around 2-3 weeks after your procedure. If you have had a stroke or TIA, you will not be allowed to drive for a month afterwards. If you have fully recovered, there is no need to inform the DVLA unless you are an HGV or Public Service Vehicle Operator Licence holder
- Bathing – once your wound is dry, you may shower and bathe as normal
- Heavy lifting – this should be avoided for six weeks following your procedure
- Employment – you should speak to your GP prior to any return to work. In most cases, you should be able to do this between 3-4 weeks following your procedure
- Medications – you will be advised about this prior to your discharge. You may be prescribed aspirin and a statin, which help to thin your blood and avoid the development of blood clots

An appointment will be made for you to see your consultant as an outpatient to check on your progress and discuss any findings and subsequent treatment.

Complications

All major operations carry a small risk of serious medical complication.

Following a carotid endarterectomy, the main risk is having a stroke. The risk of stroke is around 2%, although this may be higher in people who have had a stroke before the procedure. Most strokes that occur after a carotid endarterectomy are caused by an artery in the brain becoming blocked during the early postoperative period, or because there's some bleeding into the brain tissue. This may happen if the procedure causes a blood clot to move and block an artery. Your surgical and anaesthetic team will do all they can to prevent this.

The risk of complication resulting in death from a carotid endarterectomy is less than 2%. Your surgeon will only recommend treatment if it is believed that the risk of a stroke or TIA due to the narrowing of your arteries affecting blood flow to the brain is greater than the threat posed by an operation.

Other complications may include:

- **Pain or numbness at the wound site** – this is temporary and can be treated with painkillers
- **Wound infection** – this affects less than 1% of people and is easily treated with antibiotics
- **Nerve damage** – this can cause a hoarse voice and weakness or numbness on the side of your face. It affects around 4% of people, but this is usually temporary and disappears within a month
- **Narrowing of the carotid artery again** – this is called restenosis and further surgery is required in around 3% of patients.

These serious complications are very rare. For example, an estimated 2 in 100 people may experience damage to an artery, but this is often managed by radiologist at the time.

What can I do to help myself?

If you are a smoker, you should make every effort to stop. Smoking will continue to damage your arteries, increase the risk of heart attack and stroke, and will lengthen your recovery time. You should also try to eat a healthy diet and take regular exercise. All our hospital grounds are smoke-free.

Contact us

- If you have any questions or concerns, please do not hesitate to contact a member of the medical team caring for you.

The West Yorkshire
Vascular Service (WYVaS)
is an overarching single,
shared regional vascular
service to ensure that
patients, regardless of
where they live within
West Yorkshire, have access
to the same high-quality
treatment.

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