NHS
Northern Care Alliance
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Carotid Endarterectomy

An information guide

Health & care information you can trust

The Information Standard Certified Member

Carotid Endarterectomy

Introduction

This leaflet tells you about carotid artery disease and the procedure carotid endarterectomy. It explains what is involved and what the possible risks are.

It is not a substitute for the advice which the doctor or specialist may give you, but can act as a starting point for discussion. Prior to any procedure, you should have a full explanation of the procedure and the risks and benefits involved before signing the consent form.

Consent to store your personal information

Vascular surgeons record information about surgical interventions, including carotid surgery, on the National Vascular Registry (NVR).

This is a secure database that is used to help monitor and improve vascular services throughout the country. Therefore, you (or your nearest relative) may be asked to give permission for your personal information to be stored on the NVR. Although the database is a national system, strict data governance means personal details on the NVR can only be accessed by staff directly involved in an individual's treatment.

Patient information is confidential and is not passed on to third parties other than healthcare professionals directly involved in an individual's care. You need to confirm with your vascular surgeon whether you are happy for them to store your personal information on the NVR.

Glossary

Artery: Blood vessels that take oxygen rich blood away from the heart to other parts of the body

Atherosclerosis: A build-up of disease within the arteries which can cause plaques (made up of fat, cholesterol and other substances found in the blood) which over time can narrow or block the vessel. Commonly referred to as "furring or plaque" of an artery

Carotid: Relating to the two main arteries (one either side of the neck) which carry oxygen rich the brain, face, eyes and scalp.

Ischaemic stroke: Occurs due to a blocked blood vessel in the brain, oxygen can no longer get to the area supplied by the vessel and results in tissue damage.

Endarterectomy: Surgical removal of the plaque from the inner lining of the artery to improve blood flow.

Stenosis: Narrowing of a blood vessel

Vein: blood vessels that carry oxygen depleted blood back to the heart

What is the carotid artery?

You have 2 carotid arteries, one on each side of the neck. They supply blood with oxygen from the heart to the brain, face, eyes and scalp (figure 1A, B).

What is carotid arterial disease?

Disease within arteries occurs when atherosclerosis builds up. Atherosclerosis can occur in any artery of the body. Commonly this process is referred to as "furring" of the arteries. Atheroma may build up resulting in a "plaque" which may cause a stenosis (narrowing) of the vessel or it may be blocked completely. (figure 1C)

When this process occurs in the carotid arteries we refer to it as carotid arterial disease. In the majority of cases people have no symptoms.

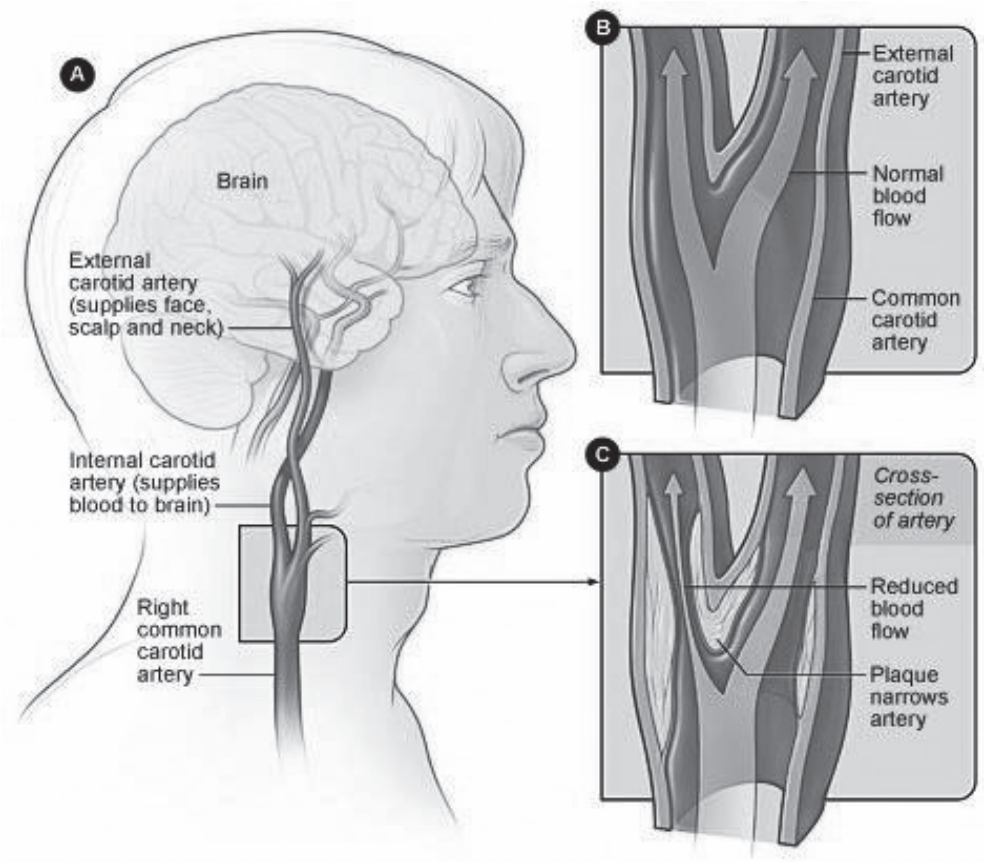

Figure 1

Having carotid artery disease increases your risk of having an ischaemic stroke.

Sometimes a small piece of this plaque can break off and travel up to the brain either temporarily or permanently blocking the blood supply to the area supplied by the vessel. This results in tissue

damage and produces symptoms of a TIA or stroke. This is the most common reason for referral for carotid endarterectomy.

The aim of treatment is to reduce the risks of you having a major (disabling) stroke.

What causes carotid artery disease?

Arteries become narrowed or blocked by atherosclerosis (atheroma). The lining of the artery becomes damaged and plaques form within. (figure 1C)

The build-up of atherosclerosis is known to be caused by several risk factors (increase the risk of getting the disease). The same disease process can occur in all other arteries in the body increasing your risk of other cardiovascular diseases such as peripheral arterial disease, and heart attacks.

It is therefore important to be aware of the risk factors (commonly referred to as **modifiable**) that can be improved by making changes to your lifestyle. By addressing these risk factors as soon as possible you may prevent the disease process getting worse and help to reduce the risk to your health in the future.

The main risk factors include:

- **Smoking**
- **High blood pressure**
- **High blood cholesterol**
- **Being overweight or obese**
- **Diabetes**
- **Physical inactivity**
- Having a first degree relative with any cardiovascular disease. (Mother, father, sister or brother who has developed disease under the age of 65years women and 55years for men).
- Your sex (cardiovascular disease is more common in males).

What are the symptoms of carotid artery disease?

Carotid artery disease is usually diagnosed when you have presented with a TIA or stroke.

Symptoms occur when a part of the blood (oxygen) supply to the brain is interrupted causing damage to the brain tissue or cells. This is referred to as an ischaemic stroke.

Symptoms may include:

- Visual disturbances or blindness. This commonly presents as a temporary curtain being drawn across one eye (amaurosis fugax).
- Limb weakness, reduced sensation or paralysis.
- Speech disturbance; loss of speech, slurring of speech or difficulty finding words.
- Facial drooping or paralysis.
- Loss of co-ordination.

What is a TIA?

If you have been referred to the vascular team it is likely you have already been seen by a stroke physician after experiencing a TIA.

A transient ischaemic attack (TIA), also known as a mini stroke. It commonly describes symptoms lasting less than 24 hours. A stroke is when the symptoms last more than 24 hours.

It can be a warning sign that you are at risk of a stroke. A stroke occurs when symptoms do not resolve after this time period and may be permanent.

What treatment options are available?

We will base the decision on treatment on an individual patient basis and come up with a management plan which will best suit you.

To do this we will review your investigations and may ask for additional information. This may include:

- Other medical history, including your general health.
- Current medications.
- Duplex ultrasound of the carotid arteries. This involves an ultrasound scan of the neck to view the blood flow to your brain and the degree of narrowing of the vessel.
- CT scan of the brain and carotid arteries.
- MRI scan of the brain and carotid arteries.

Non-surgical options

Best medical management is a term used to describe non-surgical treatment. It includes making sure risk factors (as mentioned above) are reduced such as:

- If you **smoke**, **stop**. We know that smoking is a major cause of atherosclerotic build up but also affects all the organs in your body. We have smoking cessation services to help you. Please let us know if you want to be referred.
- **Regular Exercise** is important not only for general fitness but encourages blood flow around your body.
- **Medication**. As well as making sure your blood pressure and cholesterol are under control we will advise you to start on antiplatelet medication (e.g. aspirin, clopidogrel) and statins if you are not already on them. This is based on a strong evidence from numerous clinical studies that these medications help protect against cardiovascular disease.

In some cases this may be the best treatment option for those with mild-moderate disease where the benefit of surgery does not outweigh the risks.

Carotid endarterectomy

This is the name of the operation performed on the carotid artery. Endarterectomy is the term we use to describe the process of cleaning the artery by removing the atherosclerotic build up or plaque.

Our decision for offering surgery is also based on the severity of stenosis (narrowing) within the carotid blood vessel seen on imaging.

We will offer surgery to those patients that we believe the benefits will outweigh the risks of surgery. We will discuss the procedure face to face and go through the risk and complications with you before signing the consent form.

The aim of carotid endarterectomy is to reduce the risk of you having a major (disabling) Stroke in the future. It does not improve the symptoms you may have had as a result of the TIA or stroke.

The operation

The operation can be done with you awake under local anaesthetic or asleep under general anaesthetic. We will discuss this with you in more detail at your face to face consultation.

The procedure commonly takes anywhere from 2 to 3 hours. There are many ways to perform a carotid endarterectomy and your surgeon will go through the procedure with you during your consultation.

Commonly a skin incision approximately 12cm in length (figure 2) is made in the side of your neck and careful dissection is performed down to your carotid artery.

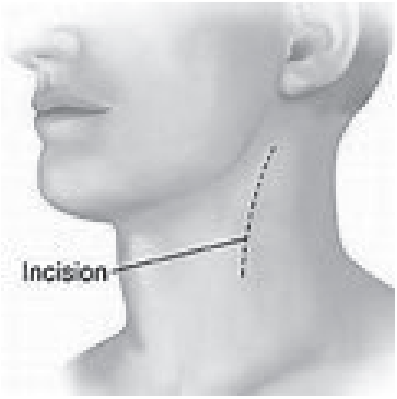

Figure 2

The artery is then clamped before it is opened up to prevent blood loss. A shunt (a small piece of tubing) may be used to re-route the blood to maintain the oxygen supply to the brain. The disease (atheroma/plaque) inside the artery is then carefully removed and the inner wall cleaned.

A patch is then sewn onto the artery to repair the hole created and to prevent further narrowing (figure 3). A patch, usually bovine collegen, will be used.

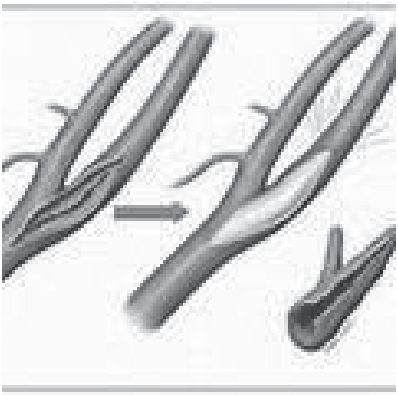

Figure 3

The clamps are then released and blood flow restored. The wound is then closed, we may leave a drain (plastic piece of tubing) in the wound site to monitor for bleeding.

What are the possible risks/complications?

We will only offer the surgical option if we feel the benifits outweigh the risk however with any surgery there are some risks associated with this procedure.

The risks associated with this surgery are:-

Stroke: A small number of people, between 2 and 3 in 100, having carotid endarterectomy will have a stroke during the operation. This severity of stroke can be very mild causing little or no disability, through to severe causing major disability and death. All possible precautions will be taken to prevent this eventuality.

Other Major Complications: As with any major operation there is a small risk of you having a medical complication such as a heart attack, kidney failure, chest problems, or infection in the wound. Each of these is rare, but overall it does mean that some patients may have a fatal complication from their operation. For most patients this risk is about 2% - in other words 98 in every 100 patients will make a full recovery from the operation.

Fluid leak from wound/ bruising: Occasionally the wound can bleed or bleeding beneath the wound will cause swelling. Usually the swelling will settle on its own, but occasionally the wound may need further surgical attention. If you have been started on tablets to thin your blood when you were admitted for symptoms of TIA or stroke, then you may be at an increased risk of bleeding that may require a return to theatre.

Nerve injuries: The most common symptom after this procedure is to feel numbness over the incision site to the ear lobe or lower jaw/ neck. Men should therefore take care when shaving. Women should be careful when wearing earrings. This may improve over time but can be permanent.

Some of the major nerves referred to as the cranial nerves run near the carotid artery and can occasionally be damaged during surgery. These include:

- The nerve that affects the voice box can be affected which can lead to a hoarse weak voice.
- The nerve that supplies the muscles of the tongue or lips can be affected leading to deviation of the tongue or a crooked smile.

All of the above symptoms are generally temporary and should improve with time, however, the numbness to the ear lobe or neck may remain.

Pain: The incision (cut) on your neck is likely to be uncomfortable at first. Pain killers will be prescribed for the first few weeks. The pain will slowly improve, but you may get twinges and aches for between 3 to 4 weeks.

Chest infection: These can occur following this type of surgery, particularly in smokers, and may require treatment with antibiotics and physiotherapy

Pressure sores (bed sores): Can occur in 4 to 10% of patients admitted to hospital. Certain parts of the body which are at higher risk of damage include the heels, buttocks and sacrum. Preventative measures will be discussed with you.

Deep vein thrombosis (blood clot in the legs): Can occur following surgery. Preventative measures such as daily injections of a blood thinning medicine can help reduce the risk of clots performing.

Pulmonary embolism (blood clot in the lungs): Can occur following surgery. Preventative measures such as daily injections of a blood thinning medicine can help reduce the risk of clots performing.

Wound infections: Wounds sometimes become infected and this may need treatment with antibiotics. Wound infections for this type of procedure are rare. Infections of the inserted patch is a very rare, but serious complication.

If you are worried about any of the aspects of surgery please ask one of the medical or nursing staff. We will help you to make the decision about whether to have surgery, but the final decision will be yours.

After the operation

You will be monitored in the theatre recovery area for up to 3 hours and may go to critical care for further monitoring if necessary. This commonly involves checking you neurological status and blood pressure.

Once back to the ward we will continue to check your observations; heart rate, blood pressure, temperature and breathing as well as completing a neurological examination. This involves checking the power, sensation and coordination in your upper and lower limbs and checking your cranial nerves.

If you need extra support we can give you fluids through a drip and oxygen via a face mask or nasal specs if required. As soon as you are able to you can eat and drink.

Mobilising:

You will become gradually more mobile until you are fit enough to go home. This commonly occurs after 24hours. Depending on your symptoms You may be visited by the physiotherapists after your operation. If needed they will help you with your breathing to prevent you developing a chest infection and with your mobilisation to get you walking again.

Wound:

Commonly the stitches used to close the skin are absorbable and do not need to be removed. But if your stitches or clips are the type that need removing this is usually done by the district nurses when you go home approximately 7 days following the surgery (we will arrange this for you). Your neck may be red and swollen at first then become bruised but will gradually fade over next few months.

Once your wound is healed you may bathe or wash normally with mild soap and water. If your wound becomes red, sore or is oozing please let your GP know, as this could be a sign of an infection. Protecting your scar from exposure to sunlight during the first year after having surgery will prevent the scar becoming darker.

Pain:

The nurses and doctors will try and keep you free of pain by giving pain killers. It is likely that you will experience bruising and swelling in the neck, but this will settle over time.

Most patients will go home 1 to 2 days after their surgery, although this may be longer if complications occur or stroke rehabilitation is required. Recovery times vary, and it can take several weeks to feel 'back to normal'.

We recommend if possible that you have someone to help look after you for a while. Think about the tasks, or activities you do which may be difficult, especially if you have a caring role for someone else.

If you think you may need additional support for discharge please let us know and we can arrange something for you.

At home

Mobility, hobbies and activity - start slowly!

It is normal to feel tired for at least 2 to 4 weeks after your operation. Taking regular exercise, such as a short walk, combined with rest is recommended for the first few weeks and you can gradually increase this. Taking on light household chores, and walking around your house is a good starting point.

Working

When to return to work will depend on the type of job that you do. Most people need to wait 6 weeks before returning to work, and may work shorter hours for a few weeks to build back up to their normal hours.

Please ask staff if you require a sick note certificate for work and this will be given to you before you leave hospital. If you require longer time off work that is indicated on the certificate your GP can provide you with an additional certificate.

Sex

You can resume your sex life when you feel comfortable.

Driving

For safety and insurance reasons patients are unable to drive for a minimum of 4 weeks after your operation. If you are in doubt, you should check with your GP and insurance company.

If there is any weakness of the arms or legs, visual disturbance or problems with coordination, memory or understanding or a seizure after 4 weeks you should check with your GP, insurance company or DVLA.

Constipation

Many pain killers can cause constipation, therefore ensure you drink plenty of fluids and speak with your doctors about laxatives if this causes a problem.

Complications and what to look out for

If you think that there is something wrong with your wound once you get home, you should contact your GP, or the ward from which you were discharged.

If you have other concerns or questions during your recovery at home, write them down in this booklet to ask at your follow-up appointment.

Contact numbers

If you have any questions or queries you can contact your GP or the Vascular Team.

Hospital switchboard - Telephone: 0161 624 0420

Vascular Consultant Secretaries - Telephone:

0161 627 8698 / 0161 627 8981 / 0161 627 8826

Vascular Nurses - 0161 778 5090

Ward T3 - Telephone: 0161 627 8850

Smoking Cessation

Smoking cessation services are available locally for people who want to quit smoking or who have already decided to stop.

Bury Lifestyle Service contact the team on 0161 253 7554 or by

email at: LifestyleService@bury.gov.uk

Heywood, Middleton & Rochdale Stop Smoking Support Clinics

Living Well contact the team on 01706 751190

Oldham

Positive steps contact the team on 0800 288 9008 Stop smoking advice and information is also available from the following:

- Your GP
- Your local pharmacy
- NHS Stop Smoking Helpline on: 0300 123 1044
- NHS Smokefree website: **www.nhs.uk/smokefree**

You may like to look at the following websites for further information. However, as we are not responsible for these websites we cannot endorse them.

Vascular society: www.vascularsociety.org.uk

Stroke association: www.stroke.org.uk

British heart foundation: www.bhf.org.uk

NHS: www.nhs.uk

Notes:

If English is not your first language and you need help, please contact the Interpretation and Translation Service

Jeśli angielski nie jest twoim pierwszym językiem i potrzebujesz pomocy, skontaktuj się z działem tłumaczeń ustnych i pisemnych

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: 0161 627 8770

: interpretation@pat.nhs.uk

To improve our care environment for Patients, Visitors and Staff, **Northern Care Alliance NHS Group** is Smoke Free including buildings, grounds & car parks.
For advice on stopping smoking contact the Specialist Stop Smoking Service on 01706 517 522

For general enquiries please contact the Patient Advice and Liaison Service (PALS) on 0161 604 5897

For enquiries regarding clinic appointments, clinical care and treatment please contact 0161 624 0420 and the Switchboard Operator will put you through to the correct department / service

The Northern Care Alliance NHS Group (NCA) is one of the largest NHS organisations in the country, employing 17,000 staff and providing a range of hospital and community healthcare services to around 1 million people across Salford, Oldham, Bury, Rochdale and surrounding areas. Our Care Organisations are responsible for providing our services, delivering safe, high quality and reliable care to the local communities they serve.

The NCA brings together Salford Royal NHS Foundation Trust and the hospitals and community services of The Royal Oldham Hospital, Fairfield General Hospital in Bury, and Rochdale Infirmary (currently part of The Pennine Acute Hospitals NHS Trust).

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