Patient Information

Carotid Artery Stenting

Why is carotid artery stenting required?

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The carotid artery is a major vessel that brings blood to the brain. There are two carotid arteries – one each side of the neck.

Over time a fatty material called plaque builds up in the artery which can cause blood flow to be partially or totally blocked. A partial blockage is called carotid artery stenosis (narrowing) and also known as carotid artery disease. A narrowing of the carotid artery or blockage in the artery can reduce the blood supply to the brain. This can lead to mini-strokes (Transient Ischaemic Attack - TIA) and cause a stroke.

Treatment has been offered to prevent a stroke in the future.

What is a stent?

Carotid artery stenting is an endovascular treatment which means it is performed through a blood vessel by a consultant interventional neuro-radiologist. The procedure is usually carried out under local anaesthetic.

A stent is metal mesh shaped like a tube. They are usually made of nitinol (nickel and titanium alloy) or cobalt-chromium (cobalt and chromium alloy). They vary in different lengths and diameters however they tend to be relatively small.
The stent is a permanent implant that opens up blocked or narrowed arteries which allows improved bloodflow to flow to the brain.

### What happens before the procedure?

You are generally brought to pre op clinic to be assessed and allow you to ask questions regarding the procedure. This clinic visit usually lasts up to 2 hours as a detailed clinical history and examination takes place and tests completed to ensure your safety for the procedure and anaesthetic.

You should drink 2 litres of water 2 days before the procedure and the day before. This is to prepare your kidneys to flush out the dye used during the procedure.

You normally come in the same day as the procedure at 7am in the morning. Unless there are plans for you to come in the day before, you should make your way to Jefferson ward.

The night before the procedure you should not eat any food from midnight. You can sip water until your procedure. You should take your normal medicines in the morning unless you have been told to withhold them at pre op.

You may have some blood taken before the procedure.
You will normally start anti platelet medication up to 7 days in advance. These drugs are most commonly aspirin and clopidogrel although others may be chosen. The purpose of these drugs is to reduce the risk of the blood clotting during the procedure and so it is important you take them.

If you have certain medical conditions, you may need to come in the day before.

If you take anticoagulation medications such as warfarin, this will be reviewed by your specialist nurse at pre-operative clinic and you will be advised when to stop your medication and when to recommence it.

Before any procedure consent must be obtained. A doctor will explain the risks, benefits and how they will do the procedure before they gain your consent. At this time you can ask questions about the proposed procedure. Please do not hesitate to ask any questions.

Every effort is made so that you can have your procedure on the planned day but unfortunately, if another patient comes in as an emergency, your procedure may need to be postponed. Emergencies will always take priority.

Although you are not likely to need one; if there are no intensive care beds your procedure will be cancelled as your safety is our priority.

We will make every effort to prevent cancelling your procedure. If it is cancelled, you will normally go home and return a second day.
What happens during the procedure?

Carotid artery stenting is a delicate procedure that may take a couple of hours or longer. During the procedure you will be closely monitored by medical and nursing staff.

Local anaesthetic is injected through the skin and into the groin and a needle is then used to enter the artery. A wire can then be passed through the needle and then a catheter (a plastic tube) is inserted into the artery while under x-ray control.

The catheter is guided up to the carotid artery just below the narrowed area. Part of the catheter has a balloon with a stent over it. The balloon and stent is carefully placed across the narrowed section of the carotid artery. A balloon is then inflated, this helps to widen the artery and the stent then opens and embeds against the artery wall. There may be a brief discomfort in the neck but this usually goes away.

Once the stent is in place, the balloon is then deflated and removed. This will then leave the stent supporting the arterial wall. The catheter will then be removed and then pressure is applied to the groin area until bleeding has stopped. Sometimes a plug is used to help stop the bleeding.
What happens after the procedure?

Once the procedure has finished, you will then spend time in the post-operative care unit (recovery). You will be closely monitored and then you will go back to the ward once it is safe to do so. However, sometimes it is necessary for you to go to the critical care unit where there are more facilities to treat and monitor you, if that is what your interventional radiologists recommends.

On return to the ward

Once you return to the ward, you will need to lie down on bed and rest for up to 6 hours which helps to minimise the pressure on the artery that has been used to access for your procedure.

You will have regular observations of your conscious level, blood pressure, heart rate, puncture site and pulses in your feet. You will also have a drip to make sure you don’t get dehydrated. Once the drip has been removed, it is expected that you will drink at least 2 litres of water the next day as this helps to wash out the contrast (dye) used in the procedure.

You will have stockings and compression devices on your legs until you have started mobilising. You will also have blood thinning injections that go into your stomach after the procedure until you go home. This is to prevent venous clots (DVT) in your legs while you are not moving around as much and will be discontinued when you get home.

You will normally be commenced on aspirin and clopidogrel after the procedure. This depends on the instructions your consultant interventional neuro-radiologist advises.

Eventually you will be allowed to gradually sit up after 6 hours and gently mobilise with supervision if the nurse looking after you feels it is safe to do so.

The puncture site in your groin is sometimes painful afterwards. There may also be some bruising and swelling. Occasionally this can be excessive. **If you do notice this then you must inform the nurse**
looking after you or your medical team. The site should not bleed afterwards and it is advisable to hold this area while coughing or straining afterwards if possible.

**What are the risks of stenting?**

The procedure will not be carried out unless the benefits outweigh any possible risks. You will have discussed the procedure and the risks associated with your neurologist/ interventional neuro-radiologist/ neurosurgeon. You will have given your consent before you go ahead with the procedure.

- Stroke or stroke-like symptoms such as weakness or numbness in an arm or leg, problems with speech or problems with speech.
- Bleeding/bruising – almost all patients have some bruising at the groin.
- Sometimes damage to the arteries due to the catheter.

**When will I go home?**

Once your medical team are happy that you no longer need treatment you will be allowed to go home. This is often 1 to 3 days after the procedure if there were no complications.

You will have a baseline magnetic resonance (MRI) scan before you go home. If this cannot be fitted in and you are ready to go home then your medical team may allow you come back for it as an outpatient.

Also the day after the procedure, you will have blood sample taken to make sure your kidney function is stable as sometimes the contrast (dye) can make your kidney function worse. If the blood tests are normal then you can go home.

**You will go home on a course of anti-platelet medication such as aspirin and/or clopidogrel. You should have clear instructions on the dose and length of time you should take this before you go home. Please ask your medical team, specialist nurse or ward nurse for the instructions for your medication. You should not**
normally stop this medication unless you are advised to do so by your medical team.

Aspirin can sometimes worsen ingestion or heart burn, and may make breathing worse in those with asthma. Occasionally, it can cause bleeding or skin reactions. **If these side effects occur seek medical advice.** Clopidogrel can rarely cause stomach upset, excessive bruising and bleeding problems.

**In the rare event you get excessive bruising or bleeding please contact your G.P and contact us for further advice.** You may need a blood sample taken to check on your blood clotting if this happens.

**Can the stent move?**

The tissue cells of the artery wall begin to grow over the stent and the stent will become part of the artery wall and cannot move.

**Follow up**

You will usually be seen in clinic in 2-3 months and you will be seen by your consultant neurologist. It depends on your consultant neurologist if you require any further follow up imaging.

**Some advice for recovery**

Whilst there are no scars from this procedure please be aware that you may need time to recover as it is a delicate procedure. You may feel a little ‘under the weather’ or tired for a few weeks following the procedure.

**Discomfort of the neck**

You may have some discomfort in the region of the stent for a period of days to weeks, but this usually improves by itself.

**Headaches**

Headaches may occur following the procedure. They usually ease after a few weeks. Simple medications such as paracetamol should help. Headaches can be triggered by dehydration, stress, too much or too little
sleep and missing sleep. Drinking 2 litres of water a day should help reduce the frequency and severity.

A rare risk that could occur after stenting is something that we call ‘Cranial Reperfusion Injury’. Severe headaches within the first month of the procedure are a sign of this. If you experience severe headaches you must seek urgent medical advice. These headaches develop as blood flow is restored to the brain.

**Pacing**

Recovery is helped by pacing your activity for the first week or so following going home. Take a daily rest as well as some gentle exercise. Build up activity as you improve.

**Returning to work**

You can return to work as soon as you feel able although most people need about 2 weeks off to recover. (Occasionally more if there have been complications).

**Commonly asked questions**

**Driving**

You do not normally have to inform the DVLA following this procedure unless there are complications with vision or stroke. The DVLA does recommend that you do not drive 7 days following arterial puncture in the groin. You should always check with your medical team or specialist nurse before you go home.

**Flying**

You should be able to fly as soon as you feel able. It is safe to go through the metal detectors in the airport, they do not affect the stent. **You should always inform your insurance company before flying.**
Smoking cigarettes

Smoking cigarettes is one of the major risk factors to carotid artery disease; it is advised that you give up smoking completely. A free help line number is printed at the end of this booklet.

Drinking Alcohol

Whilst alcohol in moderation is acceptable it is advisable you reduce the amount you drink if excessive.

The government suggests that women should not drink more than 2-3 units each day and men should not drink more than 3-4 units each day. Information websites on alcohol awareness is printed at the back of this booklet.

Sexual Activity

You can resume normal sexual activity as soon as you feel able.

Starting a family

It is advisable not to start a family for the first 6 months. You should discuss this with your consultant neurologist.

Sport and swimming

Most sports can be resumed gradually once you have recovered, although it is best to avoid extreme and contact sport until you have seen your consultant neurologist.

Hair washing and hair dyeing

You can wash your hair as soon as you feel up to it. The stent will not be affected by dyeing or perming your hair.

Dental treatment

Dental treatment is safe after the stent has been inserted however your dentist may not be happy to treat you whilst you are taking aspirin and
clopidogrel. If treatment isn’t urgent you should wait until the course has finished. Please contact us for further advice if you need treatment whilst taking aspirin and clopidogrel.

**Is there anything I should do?**

As you had contrast (dye) during your procedure, it is really important that you drink at least 2 litres of water over the next few days. This will help your kidneys work and help flush out the contrast.

**What to look out for when I go home?**

Seek urgent medical advice if you experience any of the following:

- Bleeding or lump getting bigger in the groin
- Any weakness in your arms or legs, altered sensation, slurred speech or visual problems
- Sudden onset of severe headaches within the first month of the procedure

Also you should be aware that sometimes a rash can develop. This can be related to the contrast (dye). It is usually mild and does settle however if the rash is severe please seek medical advice.

**If you have any concerns or would like advice after discharged you can contact the ward or the neurovascular nurse. Contact numbers are at the back of this booklet.**
Contact Details

For any emergency see your G.P or your go to your local Accident and Emergency Department

Neurovascular Nurse Specialists: 0151 556 3325

Or through hospital switch.

(Non-urgent enquiries – calls may not be answered the same day)

Walton Centre switchboard - 0151 525 3611

Dott Ward -0151 529 5633 / 5634
Cairns Ward - 0151 529 5637 / 5638
Caton Ward -0151 529 5628 / 5629
Sherrington Ward - 0151 529 5641 / 5642
Lipton Ward - 0151 529 8884 / 8738
Chavasse ward – 0151 529 5070
High dependency - 0151 529 5489
Intensive Care - 0151 529 5772/ 5773

For information regarding appointments or DVLA contact your Consultant’s secretary.
Useful contact details

NHS 111: 111

Telephone advice if you need urgent medical help fast but it is not a 999 emergency (or you do not have a GP)

Website: http://www.nhs.uk and search ‘emergency and urgent care’

D.V.L.A. Driver Vehicle Licensing Authority,
Drivers Medical Group, DVLA, Swansea, SA99 1DL.
Medical Enquiries: 0800 032 5202
www.dvla.gov.uk

Brain Haemorrhage Support Group affiliated to Walton centre:
bhsupport@live.co.uk
Facebook or via Brain Charity
The Brain Charity: 0151 298 2999. www.thebraincharity.org.uk
Working Life Service at The Brain Charity: 0151 298 3288
Department of Work and Pensions: 020 7712 2171
www.awp.gov.uk
NHS Free smoking helpline: 0800 0224 332
www.smokefree.nhs.uk
Brain and Spine foundation: 0808 808 1000
www.brainandspine.org.uk
Advice on Alcohol: www.drinkaware.co.uk or
www.drinkingandyou.com