

## Carotid Stenting

### Consumer Information

#### Contributors:

Dr Timothy Harrington  
MBBS, FRANZCR

Dr James Burnes, Ms Ann Revell, Dr Christine Walker,  
A/Prof Stacy Goergen

### What is Carotid Stenting?

Carotid Stenting is a procedure where a thin wire cage (called a stent) is placed into one of the main arteries carrying blood to the front part of the brain (carotid artery) that has become partially blocked. The stent is placed in the artery and is then expanded to widen the artery to its normal size and smooth the inner surface which increases the blood flow. If the supply of blood to the brain is reduced it can cause a stroke.

Placement of the stent is guided by using X-ray images or pictures displayed on a television screen. An X-ray dye (sometimes called contrast medium or contrast agent – see [Iodine-containing contrast medium \(ICCM\)](#)) is injected into an artery and outlines the arteries clearly on the X-ray screen to assist accurate placement of the stent (this is called angiography).

The procedure is performed to reduce the likelihood of a stroke in people who have a narrowing of the carotid artery, caused when the blood supply to the brain is interrupted. It is an alternative treatment to open surgery (endarterectomy) or medical anti-coagulation. In some cases the procedure will be performed while you are awake and alert and in others, performed under a general anaesthetic (where you are asleep). Whether or not a general anaesthetic is used is decided by the doctor performing the procedure, based on how complex the procedure is and the medical condition of the patient.

### How do I prepare for Carotid Stenting?

The most important preparation for Carotid Stenting is taking medications to thin the blood (called anti-platelets) and reduce the likelihood of blood clots forming in the arteries. You will usually be required to take aspirin as well as a prescription medication called clopidogrel. This may start from up to 5 days before the procedure or it can be started closer to the time of the procedure using a larger dose. Your doctor or the hospital where you are having the procedure will advise you what medication you will need to take and when you are required to take it.

If a general anaesthetic is to be used, you will be required to fast (go without food or drink) usually for 6 hours before having the procedure. A shorter time of fasting will be required if the doctor has decided you will be awake for the procedure.

### What happens during Carotid Stenting?

The procedure is performed while you are lying on a special X-ray bed in the angiography room of a hospital. During a Carotid Stenting procedure, a catheter (long thin plastic tube) is inserted into the common carotid artery, usually through the groin, immediately below the internal carotid artery which is to be stented. You will first be given a local anaesthetic to numb the area where the catheter is to be inserted or a general anaesthetic if this is decided by the doctor performing the procedure.

A thin wire will be inserted through the catheter and passed across the narrow part in the blood vessel that is to be widened with the stent. Frequently a device to reduce the risk of the procedure (embolic protection device) will be inserted via this wire. An embolic protection device is a tiny instrument that catches any blood clots or small particles of the material that is blocking the artery that may break away from the artery during the procedure. Sometimes the narrowing is such that a stretching of the narrowing is required before the embolic protection device can pass through the narrowing and before the stent placement occurs.

A stent attached to a catheter is placed through the narrow point and uncovered to release the stent. After the stent is put in place there may be a need for balloon stretching of the narrowing, where a small balloon is inserted with a catheter. If an embolic protection device is used, it needs to be retrieved and all of the catheters will then be removed.

Usually the groin puncture will be closed using a closure device to rapidly seal it even though anti-platelet therapy and blood thinning agents are given during the procedure. After the procedure it is very important to continue the anti-platelet drugs (aspirin and clopidogrel).

You will be observed in a ward or intensive care unit (ICU) at least over night. It may be necessary to control your blood pressure and use other monitoring equipment for this period.

### Are there any after effects of Carotid Stenting?

Most people have no new symptoms after Carotid Stenting. If there is a complication this is most often a stroke, and the symptoms will depend upon the size and the exact location of that stroke. You may have some discomfort in the region of the stent for a period from days to weeks but this usually improves by itself.

You will need to have an imaging procedure (usually computed tomography (CT) angiography) 3-6 months after the procedure to check whether the artery has narrowed again.

## How long does Carotid Stenting take?

The duration of a Carotid Stenting procedure is variable. Sometimes the procedure is over within 30 minutes but can take 2 hours if the artery to be stented is difficult to access.

## What are the risks of Carotid Stenting?

There are risks with Carotid Stenting. The main risk is of causing stroke during the stenting procedure. This complication occurs in between 2% and 10% of Carotid Stenting procedures carried out. Whilst the complication rate is similar for open surgery (carotid endarterectomy) it is not yet proven which procedure is the safer one. Risks will be individualised for each patient but presently the procedure would only be recommended for patients who are likely to have more complications from having surgery.

Other problems that can occur with the procedure are:

- Difficulties with the groin puncture site such as haematoma (bruising)
- Pseudo aneurysm (outpouching (a fluid filled sac) from the vessel wall) at the groin puncture and
- Dissection (separation of the layers of the vessel wall). This can occur in the groin or in the carotid artery.

Contrast medium can be damaging to kidneys, particularly in people who already have poorly functioning kidneys. Occasionally people can be allergic to the contrast material (See *Iodinated Contrast Medium*).

Occasionally the artery that has been stented narrows again. Checking for this is the reason for the follow up imaging. If this occurs, the re-narrowed area can be restretched with a balloon.

People who are considering this procedure should explore the benefits and risks. This can be done by asking for material to read as well as seeking a second opinion.

## What are the benefits of Carotid Stenting?

The purpose of Carotid Stenting is to reduce your chance of stroke from a reduced supply of blood through the stented artery. This is considered by many to be more effective than medical therapy if there is no problem during the procedure. The other option is open surgery.

It is still unclear, based on the medical evidence, which of these two procedures is generally the better option. Currently it is believed people considering Carotid Stenting should be experiencing symptoms from a narrowed artery and be considered as having a higher than average risk from having open surgery.

Carotid Stenting and surgery can cause stroke. Sometimes open surgery can also cause damage to nerves in the neck such as ones involved with speech and swallowing. This is not a problem of Carotid Stenting. The recovery period from an uncomplicated procedure in Carotid Stenting would normally be quicker than a similarly uncomplicated procedure for carotid endarterectomy (open surgery).

## Who does Carotid Stenting?

There are a wide variety of doctors that now perform Carotid Stenting. This includes interventional neuroradiologists, interventional radiologists, vascular surgeons and cardiologists. All these specialist doctors are performing this procedure well. There are significant advantages in choosing a specialist doctor experienced in this procedure as complications such as stroke are likely to be lower.

## Where is Carotid Stenting done?

Carotid Stenting is performed in the angiography suite of a wide variety of public and private hospitals.

## When can I expect the results of my Carotid Stenting?

Most of the risks of Carotid Stenting are during the procedure, so if a patient feels fine after the procedure this is likely to continue. The purpose of Carotid Stenting is to prevent future strokes so the results of successful Carotid Stenting are an ongoing absence of stroke.

## Further information about Carotid Stenting:

1. Cochrane review: Stroke. 2005 Apr;36(4):905-11. Epub 2005 Mar 3
2. Connors JJ *et al* Journal of Vascular and Interventional Radiology 2003;14-S317-S319 - *Document re training requirements for safe performance of Carotid Stenting*

### Please note:

This information is of a general nature only and is not intended as a substitute for medical advice. It is designed to support, not replace, the relationship that exists between a patient and his/her doctor. It is recommended that any specific questions regarding your procedure be discussed with your family doctor or medical specialist

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