
Carotid artery disease and the prevention of strokes

What is a stroke?

Strokes are a common and devastating condition, which can be fatal or result in permanent disability.

What are the causes of a stroke?

There are several causes of stroke, but the commonest cause is when a bloodclot blocks an artery in the brain.

Why can the brain be damaged?

Arteries supply oxygen to the surrounding brain. If a bloodclot blocks an artery, the bloodflow is stopped or reduced and the brain is starved of oxygen. This can lead to brain damage (called an infarction).

Can a stroke be treated?

If a stroke has occurred, urgent and specialised medical care can limit the extent of brain damage. However, often, it is not possible to fully reverse the damage to the brain. Therefore, it is better to try to prevent strokes.

Why do people get strokes?

We know several risk factors for strokes, which include:

- High blood pressure (called hypertension)
- Smoking
- Raised cholesterol
- Irregular heartbeat (called fibrillation)

Can strokes be prevented?

If you are thought to be at risk of having a stroke, it is particularly important that you stop smoking. The other risk factors can be treated medically. Your doctor might also advise you to take a low dose of aspirin once each day.

What is carotid artery disease?

The bloodclot that blocks the artery in the brain, which has caused a stroke, often starts in the carotid artery in the neck. From the carotid artery, the bloodclot breaks off into the flowing bloodstream and passes into the brain (called an embolus).

What are mini-strokes?

Many of the bloodclots from the carotid artery are small and only cause 'mini-strokes'. If you have had a mini-stroke, you might experience the following for a brief period:

- One arm becomes weak
- Your face muscles become weak on one side
- Your speech is difficult
- Your vision is lost in one eye

These are also called transient ischaemic attacks (TIAs). These symptoms often return to normal over 24 hours but they might recur later on.

Why are TIAs important?

TIAs are a warning sign that a more significant stroke might occur, if you receive no preventative treatment. The risk factors above should be reduced, by you stopping smoking and receiving medical treatment. In addition, a specialist should investigate the carotid arteries in your neck.

How are the carotid arteries investigated?

The easiest way for a specialist to look at the carotid artery is using an ultrasound scan. This uses sound waves to bounce off the vessel and is painless and harmless. These ultrasound scans can detect significant narrowing (called stenosis) of the internal carotid artery, which is a major artery to the brain.

What is a carotid endarterectomy?

If you have had a TIA, and an ultrasound scan shows a significant stenosis (greater than 70% narrowed) of the carotid artery, then you are at risk of a major stroke (11% risk over a period of 2 years). Careful studies have shown that this risk can be reduced from 11% to 6% by surgery to the carotid artery.

This operation is called a carotid endarterectomy. The aim is to remove the diseased (rough) area of the artery. If the artery has its smooth surface restored, further bloodclots should be prevented.

What does a carotid endarterectomy involve?

To get to the diseased artery, specialist surgeons need to make a small incision (cut) in the neck. The operation takes about two hours, and can be done under local or general anaesthesia. Most patients stay in hospital for three to four days.

What are the risks of the operation?

The major risk of the operation is that it will cause a stroke. This occurs in three to five per cent of cases. We take strenuous efforts to prevent these strokes, by careful surgery and monitoring. Other more minor complications include numbness around the wound area, and disturbance to the nerves to the tongue and throat.

What are the advantages of the operation?

When we compare the risks of the operation with the benefits of preventing strokes, the overall benefit favours surgery if there is a significant stenosis.

Who should have the operation?

There is no age limit for the operation, providing there are no severe problems with heart disease. The operation is highly advanced and discussion about it (including risks and benefits) should always be between the patient and a specialist surgeon. Referrals can only be accepted from general practitioners or other specialists.