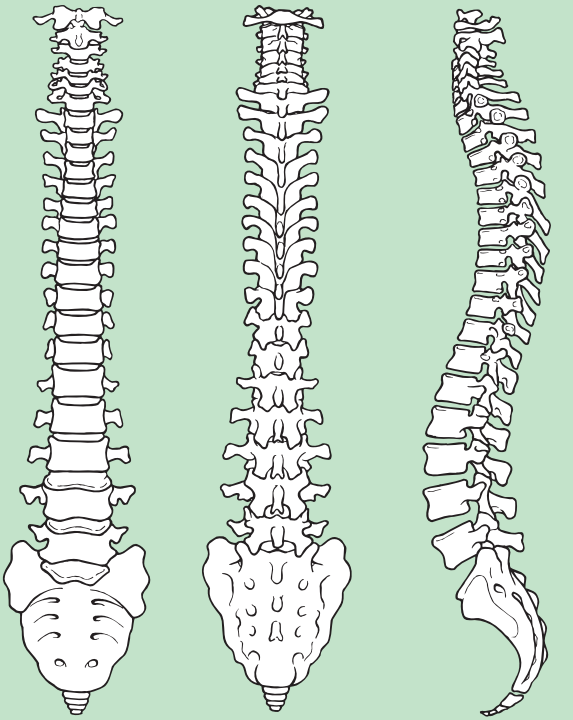
BASS
British Association of Spine Surgeons

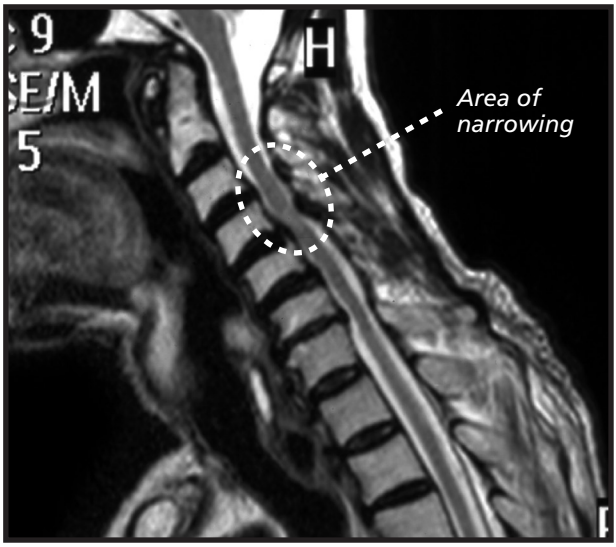
Posterior Cervical Decompression



Issue 5: March 2016
Review date: February 2019

Following your recent MRI scan and consultation with your spinal surgeon, you have been diagnosed with a narrowing of your cervical spinal canal (cervical stenosis). This is usually related to wear and tear of the spine. The spinal cord is compressed by bone spurs (osteophytes) that consequently narrow the spinal canal and this pressure can damage the spinal cord (myelopathy).

Myelopathy is a generally progressive condition that develops slowly and is most commonly caused by spinal stenosis. Symptoms may not progress for years and then difficulties with coordination may suddenly increase.



MRI image showing cervical stenosis

Most patients first visit their doctor with symptoms of spinal stenosis at about the age of 60 or so. Often it is the symptoms of arm pain, tingling, weakness or numbness that prompts someone with this condition to seek medical treatment and then the myelopathy is discovered through medical history and physical examination.

Unfortunately, most conservative treatments (manipulation, physiotherapy, medication or injections) are unlikely to be of much benefit and the symptoms rarely improve without surgery to relieve the pressure (decompress) from the affected area.

About the operation

The objective of surgery is to remove the bony arch (lamina) off the back of the spine to give the spinal cord more room. The operation is performed under general anaesthetic (so you are fully asleep).

Because surgery is performed with the patient lying on their front, it is necessary to apply temporary pins in the skull, attached to a special clamp, which enable the patient's head to be securely suspended over the operating table. These pins are removed immediately after the procedure (before you wake up).

First, the skin incision is made in the midline of the back of the neck and the muscles are lifted off the bony arch (lamina). A high-speed burr (like a dentist's drill) can be used to make a trough in the lamina. The lamina can then be removed to allow the spinal cord to 'float' backwards to give it more room.

The results of the surgery are variable since some people have more extensive disease than others. The main aim of surgery is to stop the progression of the condition. After surgery some patients may regain:

- some spinal cord function;
- modest improvement in their hand function and walking capabilities;

- less numbness in their hands. (If there is a lot of numbness prior to the surgery, it probably won't go away completely).

If the surgery simply prevents progression of the spinal cord damage (myelopathy) and there is no loss of function due to the surgery, both the patient and the surgeon should consider it successful.

Sometimes, to add stability to the spine following decompression, a cervical plate or rod can be placed on the side of the spine and attached using screws. The screws are angled out into the bone, away from the spinal canal, into what is known as the lateral mass. This is often in conjunction with a fusion using bone graft.

X-ray showing rod and screws in cervical spine

To achieve a spinal fusion, a bone graft is used to connect two bones together. The patient's own bone will then grow into

the bone graft and join the graft bone as its own.
There are several techniques to get the bone graft needed for spinal fusion:

- **Patient's own bone (autograft bone):** This is usually taken through an incision over the iliac crest (pelvis);
- **Donor bone (allograft bone):** This eliminates the need to use the patient's own bone. The donor bone graft acts as a calcium scaffolding which the patient's own bone grows into and eventually replaces;
- **Artificial bone (bone substitutes).**

In the past, a patient's own bone was more commonly used. This can result in complications including pain from the bone graft site, infection and pelvic fractures so, for the most part, artificial bone is now used.

Risks and complications

As with any form of surgery, there are risks and complications associated with this procedure. The principal risk is deterioration in the function of the spinal cord.

Other potential risks include:

- damage to the nerve root and the outer lining or covering which surrounds the nerve roots (dura). This is reported in less than 5 out of 100 cases. It may occur as a result of the bone being very stuck to the lining and tearing it as the bone is lifted off. Often the hole or tear in the dura is repaired with stitches or a patch. This could result in neck or arm pain, weakness or numbness, leaking from the wound, headaches or, very rarely, meningitis;
- recurrent symptoms as a result of scarring;

- infection. Superficial wound infections may result in up to 4 out of 100 cases. These are often easily treated with a course of antibiotics. Deep wound infection may result in less than 1 out of 100 cases. These can be more difficult to treat with antibiotics alone and sometimes patients require more surgery to clean out the infected tissue. The risk may increase for people who have diabetes, a reduced immune system or are taking steroids;
- blood clots (thromboses) in the deep veins of the legs (DVT) or lungs (PE). This occurs when blood in the large veins of the leg forms blood clots and may cause the leg to swell and become painful and warm to the touch. Although rare, if not treated this could be a fatal condition if the blood clot travels from the legs into the lungs, cutting off the blood supply to a portion of the lung. It is reported as happening in less than 1 in 700 cases. There are many ways to reduce the risk of blood clots forming. The most effective is to get moving as soon as possible after your operation. Walk regularly as soon as you are able to, both in hospital and when you return home. Perform the leg exercises illustrated in the 'Preventing Blood Clots' leaflet and keep well hydrated by drinking plenty of water. Ladies are also advised to stop taking any contraceptive which contains the hormone oestrogen four weeks before surgery, as taking these during spinal surgery can increase the chances of developing a blood clot;
- bleeding. Tablets used to thin the blood, such as warfarin, aspirin, or clopidogrel, increase the risk of bleeding so you must inform your consultant if you are taking these as it is likely you will need to stop the medication prior to your surgery;
- problems with positioning during the operation, which might include skin injuries or pressure problems. Special gel mattresses and protection is used to minimise this;

- placement of the screws involves some risk to the vertebral artery and the existing nerve root;
- bone graft non-union or lack of solid fusion (pseudoarthritis). This can occur in up to 5 out of 100 cases. See below for more information about factors which can affect fusion;
- there are also very rare but serious complications that in extreme circumstances might include damage to the spinal cord and paralysis (the loss of use of the legs, loss of sensation and loss of control of the bladder and bowel). This can occur through bleeding into the spinal canal after surgery (a haematoma). If an event of this nature was to occur, every effort would be made to reverse the situation by returning to theatre to wash out the haematoma. Sometimes however, paralysis can occur as a result of damage or reduction of the blood supply of the nerves or spinal cord and this unfortunately is not reversible. Other serious complications might include a stroke, heart attack or other medical or anaesthetic problems, including death which is reported as happening in 1 in 250,000 cases under general anaesthetic.

Factors which may affect spinal fusion and your recovery

There are a number of factors that can negatively impact on a solid fusion following surgery, including:

- smoking;
- diabetes or chronic illnesses;
- obesity;
- malnutrition;
- osteoporosis;

- post-surgery activities (see note on recreational activities); and
- long-term (chronic) steroid use.

Of all these factors, the one that can compromise fusion rate the most is smoking. Nicotine has been shown to be a bone toxin and inhibit the ability of the bone-growing cells in the body (osteoblasts) to grow bone. Patients should make a concerted effort to allow their body the best chance for their bone to heal by not smoking.

What to expect after surgery

Immediately after the operation you will be taken to the recovery ward on your bed, where nurses will regularly monitor your blood pressure and pulse. Oxygen will be given to you using a facemask for a period of time to help you to recover from the anaesthetic. You will have an intravenous drip for about 24 hours or until you are able to drink again after the surgery.

A drain (tube) may come out of your wound if there has been significant bleeding during the operation – this prevents any excess blood or fluid from collecting there. This will be removed when the drainage has stopped (usually 24 hours later).

You will have some discomfort or pain after surgery but the nursing and medical staff will help you to control any pain with appropriate medication.

Usually on the first day after your operation your physiotherapist will help you out of bed. They will also show you the correct way to move safely.

Going home

You will normally be allowed to leave hospital when you and your physiotherapist are happy with your mobility. This tends to be 3–6 days after your operation.

Please arrange for a friend or relative to collect you, as driving yourself or taking public transport is not advised in the early stages of recovery. If you are likely to require a hospital car please inform one of the nurses as soon as possible.

Wound care

Your wound will most likely be closed with clips. You must keep the dressing dry when you get home so bathing should be avoided for two weeks, until the wound is completely dry. If a dressing is required then a simple dry dressing from the pharmacist (chemist) is sufficient.

Please contact your GP to report any of the following:

- redness around the wound;
- wound leakage;
- high body temperature.

The ward will inform you whether a community (district) nurse has been arranged to come to your home to remove the clips, or ask you to arrange an appointment with your GP practice nurse for the clip removal. This will usually be 7–10 days after surgery.

Date of clip removal: ..... / ..... / .....

Surgical collars

Instructions for use of collars vary depending on the exact procedure carried out, so please check with a member of your consultant's team before leaving hospital.

Driving

When to resume driving after surgery does depend on the individual situation. If you have no altered sensation or weakness in your legs or hands and you can move your head around freely, then you may resume driving following surgery if you feel safe to do so. Please discuss driving with your surgeon before leaving hospital.

Recreational activities

Walking is the best activity to do following your surgery as you are able to. Recovery may be slow though and take many months.

Lifting and carrying

Please refer to the physiotherapy advice sheet and discuss with your physiotherapist. Heavy lifting and carrying should be avoided for several weeks.

Follow-up

We will send you an appointment to attend the clinic 8–12 weeks after your operation. If you have any queries before your follow-up date please contact the nurse specialist for your consultant's team.

If you have any questions regarding the operation or what to expect afterwards please do discuss them with either the ward nurses or a member of your consultant's team.

Produced, researched and revised by spinal nurse specialist Helen Vernau at The Ipswich Hospital NHS Trust, in association with and on behalf of the BASS Consent and Patient Information Committee.

Designed and illustrated by Design Services at The Ipswich Hospital NHS Trust.

DPS ref: 01626-16(RP)