



Vertebroplasty (repair of vertebrae with bone cement)

This leaflet tells you about the procedure known as “vertebroplasty”, explains what is involved, the benefits and possible risks. It is not meant to replace informed discussion between you and your doctor but can act as a starting point for such a discussion.

You should have plenty of time to discuss this procedure with the doctor who will be performing the procedure.

What is a vertebroplasty?

Vertebroplasty is a procedure used to strengthen a collapsed spinal vertebra that has fractured and usually lost height due to osteoporosis or, less commonly, tumour infiltration or trauma. Vertebroplasty is primarily aimed at relieving the patient’s pain, to allow a rapid return to the previous level of activity, and secondarily to prevent further vertebral collapse. It is minimally invasive which means that patients suffer less disruption, face less risk and recover more quickly than with conventional open surgery.

It is most effective when the fracture is relatively recent and particularly in patients who are very debilitated by the pain of the fracture or who cannot tolerate adequate quantities of painkilling medication. In some circumstances, vertebroplasty can be very effective even if the fracture is many months or even years old.

Vertebroplasty is accomplished by injecting orthopaedic cement through a needle into the fractured bone; essentially forming an internal cast to stabilise the fracture.

Typically, vertebroplasty is recommended if simpler treatments, such as bed rest, back bracing or pain medication have been ineffective, or if the side effects of analgesia (painkillers) have become problematic, such as causing stomach ulcers or drowsiness.

Which patients are at risk of vertebral fractures?

Osteoporotic compression fractures are common in women who have gone through the menopause, which makes them especially vulnerable to bone loss and fractures.

More than a quarter of women over age 65 will develop a vertebral fracture due to osteoporosis. Older people suffering from vertebral fractures tend to become less mobile, and decreased mobility accelerates bone loss. High doses of pain medication, especially narcotic drugs, can cause drowsiness and further limit functional ability. Osteoporotic fractures can also occur in younger patients on long-term steroids.

Vertebral fractures and pain can also be secondary to malignant tumours including myeloma and these patients can also respond well if considered as suitable candidates for the procedure

What tests and patient preparation are necessary before the procedure?

- Prior to the procedure, patients will usually have an MRI scan to confirm that the fracture(s) is recent and unhealed and therefore will benefit from vertebroplasty. Occasionally, if an MRI is not suitable due to metalwork from previous operations, a CT scan and isotope bone scan can be done instead.
- Anticoagulation medication (blood thinners such as Warfarin or Clopidogrel), will have to be stopped at least 5 days before the procedure. It may be necessary to commence another form of temporary blood thinner for a few days if the clotting risk is high, but your doctor will discuss this with you if necessary. If Warfarin had been stopped, a blood test to check the clotting has normalised is performed just prior to the procedure. Aspirin can be taken as normal.
- **Patients are asked not to have any food for 6 hours or liquids for 2 hours prior to the procedure.** All medications other than the blood thinners should be taken as normal.

How is the procedure performed?

The procedure is performed in the Interventional Radiology Suite by a specially trained doctor called an interventional radiologist. You will be given antibiotics a few minutes beforehand to minimise the very small chance of infection.

You will be asked to lie face down on an x-ray table and will get sedation to make you drowsy, but not completely asleep. A dedicated nurse will monitor you throughout the procedure and give further sedation if required.

Following the injection of local anaesthetic into the skin and around the spine, a hollow needle is passed into the fractured vertebral body under continuous X-ray guidance. Once in place, a medical grade cement mixture is injected. The cement mixture resembles toothpaste or epoxy resin when mixed but sets hard within 20 minutes. The interventional radiologist will monitor the entire procedure on the x-ray monitors to ensure the cement fills the fractured vertebrae adequately and does not leak into the spinal canal or adjacent blood vessels. Small cement leaks into the adjacent soft tissues may occur but very rarely causes any problems.

The procedure usually takes less than 60 minutes, but occasionally longer if more than one fracture is being treated.

What should I expect during / after the procedure?

You will lie face down throughout the procedure. The sedatives will ensure you are calm and drowsy, thereby minimising any discomfort during the procedure. The vertebroplasty is generally well tolerated. You will be able to hear anything that is said in the room, although, because of the sedatives, you may not recall all of the procedure.

Bed rest is recommended for the first 1-2 hours following vertebroplasty, although after an hour you will be able to get up to use the bathroom. Outpatients go home the same day. Inpatients usually remain in hospital while your pain medications are reduced and you will have physiotherapy to regain mobility.

Following discharge, you are advised to gradually increase physical activity, and resume all regular medications. Blood thinners are usually restarted on the day of the procedure, but the doctor performing the procedure will usually discuss this with you in more detail.

What are the benefits versus the risks?

Benefits:

- Approximately 50% of patients have lower pain as a result of the procedure, but this varies and in some patient groups have more pain relief. Some patients respond very well and become painfree. The other benefit is to stabilise the fracture and reduce further collapse. Unfortunately it's not possible to restore vertebral height.
- About 50% of patients regain lost mobility and become more active, which helps combat osteoporosis. After vertebroplasty, patients who had been immobile can usually get out of bed, reducing their risk of pneumonia and preserving muscle strength.

Risks:

Usually, the vertebroplasty procedure is safe with a low risk of serious complication.

- The most serious potential risk is if a cement leak presses upon the spinal cord or an adjacent nerve. In the worst case, this could require an emergency operation. We consider the risk of this occurring to be 1 in 500. There are reports of cement leaking into an adjacent vein and then being transported through the body to the lungs potentially causing breathing problems. Again, this is very unlikely and we consider the risk also to be 1 in 500.
- Infection is another possible risk, but with the use of intravenous antibiotics and the procedure being conducted under sterile conditions, this is very unlikely.
- Bleeding is a risk, but again very unlikely. This could potentially bleed into the spinal canal compressing the cord, but would be rare.
- There is also the possibility of a new vertebra fracture above or below the one being treated, which can occur in up to 10% of cases, but maybe partly due to the fact that patients are at a higher risk of vertebral fracture anyway. Without vertebroplasty, there is a 20% chance of a second fracture within 12 months of having the first fracture.

What are the limitations of vertebroplasty?

Patients with a vertebral fracture that has already healed are not suitable for vertebroplasty, even if the fracture is painful. These are patients sometimes better served by a procedure called a facet joint injection.

Vertebroplasty, generally, has no role as a preventive treatment to help patients with osteoporosis avoid future fractures. Vertebroplasty is not used for herniated disks nor arthritic back pain and will not correct a curvature of the spine secondary to fractures, but may keep the curvature from worsening.

It may be difficult for someone with severe lung and heart disease to lie face down for the procedure. The healthcare team will try to make special accommodations for patients with these types of conditions.

If you have any further questions please make a note of them and ask the doctor who will perform your procedure.

Further information

National Institute for Health and Clinical Excellence (NICE) www.nice.org.uk/guidance/IPG12
Percutaneous Vertebroplasty

Contacting us

Radiology Department, Tel 0118 322 7991.

To find out more about our Trust visit www.royalberkshire.nhs.uk

Please ask if you need this information in another language or format.

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Dr Archie Speirs, Interventional Radiology, May 2024.

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