

Vertebroplasty

Consumer Information

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What is a Vertebroplasty?

Vertebroplasty is a medical term which refers to the injection of a plastic cement, called polymethylmethacrylate (PMMA), into a vertebral body or small bones that make up the spinal column. Vertebrae in the spine are typically thick bone enclosing a hole for the spinal cord. They can become damaged through becoming weak with osteoporosis, from tumours (growths), or arteriovenous malformations (abnormalities in the veins or arteries in the spine). The plastic cement supports the vertebrae or bone by forming an internal cast (or mould) which prevents fine fractures (cracks or splits) from forming, causing further collapse of the bone.

PMMA is the plastic material used by orthopaedic surgeons as "cement" for artificial hips and has been used safely for many years. Typically 1-2 cubic centimetres or millilitres (cc or mL) of PMMA is used for one vertebral body.

How do I prepare for a Vertebroplasty?

You will be referred for Vertebroplasty if you are experiencing back pain, as this is the most common symptom of damaged vertebrae. However, it is critical to determine that the pain you are experiencing is related to a fracture of the vertebral body and not to other conditions that can cause back pain such as arthritis, etc. The most definitive method of finding the cause of the pain is by having a magnetic resonance imaging (MRI) scan.

However, MRI scanning uses magnetic fields and if you have a pacemaker, metal fragments, valves, clips or implants etc., in your body you will not be able to have an MRI. There are also other reasons why MRI scanning may not be suitable for you and you will need to discuss these with your doctor.

Computed tomography (CT) scans or [nuclear bone scans](#) are alternatives to MRI, but if you have several fractures it may be difficult without MRI to establish which of these is responsible for the pain.

Medical conditions like diabetes, hypertension or anticoagulant (blood thinning) therapy need to be managed before the Vertebroplasty procedure is performed.

You will be given sedation to make you drowsy so you will need to stop eating solid food for at least 6 hours before the procedure. It is not necessary to

stop drinking clear fluids but milk and other similar fluids (including soups) should also be avoided. Normally a preparation sheet giving detailed instructions will be provided at the time of booking the procedure.

If you have any concerns about preparation for the procedure please contact your doctor or the hospital or radiology practice you are attending.

What happens during a Vertebroplasty?

The process of Vertebroplasty is performed under local anaesthetic with sedation, so you will be awake and only the area where the Vertebroplasty is being done will be numb.

You will be awake but will not feel anything during the procedure. You will lie on your stomach and a needle will be placed through the edge of the vertebra from back to front to allow the injection of the PMMA. This is performed under fluoroscopic control so that the path of the needle into the vertebral body can be seen at all times. Fluoroscopy is an X-ray device where images or pictures of the body can be viewed directly on a screen.

Before the PMMA is injected, an injection of [contrast](#) (X-ray dye) may be given. This ensures that the PMMA will not leak either into the spinal canal where the spinal cord is or into the veins, which drain from the vertebral bones. The contrast or dye is much thinner than the cement so it leaks out much more easily and shows any potential problems.

However, now that high quality imaging is available due to advances in technology, this injection of contrast is less necessary.

Are there any after effects of a Vertebroplasty?

If the pain is due to a fine or very small fracture known as a micro-fracture, it is normal for the pain to be relieved within a few hours of having the procedure. Some minor discomfort from the needle placement and bruising may be experienced in the back muscles for a day or so. After the procedure you will need to lie flat for 2 hours. After 24 hours you can resume your normal activities.

Vertebroplasty is used for strengthening the vertebral bones where these have become damaged and will generally not relieve other symptoms such as nerve related pain like sciatica (compression or pressing on the nerves).

How long does a Vertebroplasty take?

Vertebroplasty can be performed on a day admission or an inpatient basis.

The actual Vertebroplasty procedure itself takes 30-45 minutes depending on how many vertebrae or bones are treated. A maximum of three at one procedure is recommended.

What are the risks of a Vertebroplasty?

Published medical literature indicates that complications may occur in up to 5% of cases.

These risks are higher where the vertebral bone has been destroyed by a tumour or growth because it is harder for the bone to take up the cement. Patients with osteoporosis and fracture have a slightly lower risk of complications.

The major complication associated with a Vertebroplasty procedure is accidental injection of the PMMA outside the vertebral bone. This may cause nerve damage from direct contact with the nerves or spinal cord. If there is pressure on the spinal canal or nerves, surgical removal of the cement may be necessary. If the cement enters the spinal canal in large amounts, i.e. above 5cc/mL, it may cause spinal damage and paralysis. However, high quality imaging will show any such leaks before they become big enough to cause serious problems.

If the PMMA enters the blood stream in amounts greater than 1-2 cc/mL, it may cause blood clots, which can move to the lungs and cause pulmonary embolisms or blockages. Death from large amounts (above 5cc/mL) of cement reaching the lungs was reported in the early days of using Vertebroplasty. However, both of these complications are reduced with the use of high quality X-ray fluoroscopic imaging used to guide the insertion of the cement. Vertebroplasty with mobile fluoroscopic imaging in an operating theatre is not recommended due to the poorer quality of the imaging.

Infection is very uncommon as the opportunity for tissue to become infected is limited because the procedure only requires entry into the body by needle insertion.

What are the benefits of a Vertebroplasty?

Vertebroplasty is successful in removing pain and restoring mobility in 60% - 90% of patients.

If, in the future you have more vertebral bone fractures, further Vertebroplasty can be performed.

Who does the Vertebroplasty?

In most cases Vertebroplasty is performed by an interventional radiologist, a specialist doctor who has been specially trained in this procedure. A [radiologist](#) provides the treatment, after care and a written report to your own doctor.

Other specialists (usually orthopaedic surgeons), who have appropriate training in the procedure and in operating the fluoroscopic imaging equipment

may also perform Vertebroplasty, if they have access to suitable imaging equipment.

Where is a Vertebroplasty done?

In most cases Vertebroplasty is performed in a day procedure setting either in a hospital or private radiology clinic. Whether you have CT or fluoroscopy guidance depends on where you have the procedure.

When can I expect the results of my Vertebroplasty?

The radiologist will confirm correct placement of the PMMA cement using fluoroscopy (filming insertion of the PMMA cement into the vertebrae as it is happening) to guide the procedure. However, you will be the first one to notice the results of the vertebroplasty in the form of pain relief.

Further information about Vertebroplasty:

Almost all cases of major cement leakage have occurred where the imaging equipment was not of the highest quality. Mobile image fluoroscopes are not of sufficient quality to perform vertebroplasty, especially in larger individuals.

Useful websites about Vertebroplasty:

Society for Interventional Radiology (USA) "Nonsurgical Vertebroplasty Is Effective Pain Treatment for Spinal Fractures Caused by Osteoporosis or Bone Tumors":

- <http://www.sirweb.org/patients/vertebroplasty-osteoporosis>

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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