PROCEDURE

Vertebroplasty

Vertebroplasty uses injected bone cement to stabilise a painful fractured spinal bone.

PURPOSE
Stabilise a painful fractured vertebra and reduce pain

PROCEDURE TYPE
Therapeutic, minimally invasive interventional radiology

WHERE IT IS DONE
Interventional radiology suite or operating theatre

ANAESTHESIA
Local anaesthetic with moderate sedation; sometimes general anaesthesia

HOW LONG IT TAKES
Usually 30 to 60 minutes per treated level

PREPARATION
Fasting, medicine review, and planned blood-thinner changes

RECOVERY
Same day; no driving for 24 hours after sedation

MAIN RISKS
Cement leakage, infection, bleeding, nerve injury

RESULTS
Cement placement immediate; pain response assessed over days

Overview

Vertebroplasty is a procedure used to stabilise a fractured vertebra, which is one of the bones in your spine. A doctor places a needle into the damaged bone and injects medical bone cement. The cement hardens within minutes.

The procedure is usually performed by an interventional radiologist using continuous X-ray imaging, called fluoroscopy, or CT imaging. These images guide the needle and show where the cement is going.

Vertebroplasty may reduce pain from certain spinal compression fractures, but it does not rebuild the vertebra to its original shape. It also does not treat the condition that weakened the bone.

Research about vertebroplasty for fractures caused by osteoporosis has produced mixed

results. Some studies found no important benefit over a sham procedure, while another trial suggested benefit for carefully selected people with very recent fractures and severe pain. This uncertainty should be part of your consent discussion.

Why the procedure is performed

Vertebroplasty may be considered when a fractured vertebra is causing severe, focused pain that continues despite appropriate non-surgical treatment. Imaging should show a recent or unhealed fracture in the same area as your pain.

Possible reasons for vertebroplasty include:

The aim is to stabilise movement within the fractured bone and reduce pain. Pain may improve quickly, gradually, or not at all.

- A painful compression fracture caused by osteoporosis
- A painful vertebra weakened by cancer
- Selected painful bone lesions, such as certain vertebral haemangiomas
- Pain that limits walking, sleep, breathing deeply, or basic daily activities

Who should and should not have it

Vertebroplasty is not needed for every compression fracture. Many fractures improve with pain relief, gradual movement, and treatment of the underlying bone weakness.

You may be considered for vertebroplasty if your pain is severe and clearly matches a recent or unhealed fracture on examination and imaging. Your healthcare team should also review what non-surgical treatments you have tried and whether the expected benefit outweighs the risks.

The procedure is usually avoided or delayed when:

Pregnancy should be discussed because vertebroplasty uses X-rays. Severe heart or lung disease, allergies to procedure materials, and previous spinal surgery may also change how the procedure is planned.

- The fracture is not painful or your pain is already improving
- Imaging suggests the fracture has healed
- Your pain comes from another source, such as a disc or joint

- You have an active infection
- A bleeding problem or blood-thinner effect cannot be corrected safely
- Bone or tumour is pressing on the spinal cord and surgery is needed
- The vertebra is too damaged for cement to be placed safely
- You cannot safely lie face down for the procedure

How to prepare

Your treating facility's own instructions take priority because fasting and medication plans differ between centres.

Tell the team about all prescription medicines, over-the-counter products, vitamins, and supplements you take. Make sure they know if you use a blood thinner like warfarin or apixaban , have a bleeding disorder, have allergies, could be pregnant, or have an infection.

Do not stop a blood thinner on your own. Your healthcare team will explain whether it should be paused and when it can be restarted.

You may be asked not to eat or drink for several hours if sedation or general anaesthesia is planned. Arrange for a responsible adult to take you home and stay with you if required.

Wear loose clothing and leave jewellery at home. Bring any requested scans, medication list, and information about implanted medical devices.

What happens during the procedure

You usually lie face down on an X-ray table. Monitoring equipment checks your heart rate, blood pressure, and oxygen level. An intravenous line may be placed for fluids and sedation.

The skin over your back is cleaned and covered with sterile drapes. Local anaesthetic numbs the skin and deeper tissues. You may also receive moderate sedation, which makes you relaxed and drowsy without necessarily making you fully unconscious.

Using X-ray or CT guidance, the doctor passes a hollow needle through the back of the vertebra. You may feel pressure, but sharp pain should be reported.

Bone cement is then injected slowly while the doctor watches its position on imaging. The injection stops if cement approaches an unsafe area. The needle is removed after the cement has hardened. A small dressing is placed over the puncture site; stitches are rarely needed.

Recovery and what to expect afterward

You may have mild soreness or bruising where the needle entered. The original fracture pain may improve within hours or over the next several days, but relief is not guaranteed. A short increase in soreness can occur after the procedure.

Once you are fully awake, you can usually drink and eat unless your team gives different instructions.

You may need to lie flat for a short period before standing with help. Walking is often encouraged later that day. Avoid strenuous exercise, heavy lifting, and repeated bending until your team says these are safe.

Do not drive home. If you received sedation, do not drive, operate machinery, drink alcohol, or make important decisions for at least 24 hours. Wait longer if you remain drowsy, cannot turn or brake comfortably, or are taking medicines that impair alertness.

People with desk-based work may return within a few days. Physical work may require more time and specific lifting restrictions.

Risks and possible complications

Cement can leak outside the vertebra. Many leaks cause no symptoms, but cement entering the spinal canal may injure a nerve or the spinal cord. Cement entering a blood vessel can travel to the lungs.

Other possible complications include:

Another vertebral fracture can occur later, particularly when osteoporosis remains untreated. It is uncertain how much vertebroplasty itself affects the chance of a nearby fracture.

- Bleeding or a collection of blood near the spine
- Infection in the skin, bone, or nearby tissues
- Nerve pain, numbness, or weakness
- Reaction to sedation, anaesthetic, contrast material, or cement
- Injury related to lying face down, including rib discomfort
- Continued pain despite technically successful cement placement

Results and follow up

Imaging used during the procedure shows whether the cement has filled the intended area. There is usually no laboratory or pathology result to wait for.

Your pain response is assessed during recovery and over the following days or weeks. Tell your team whether you can move, sleep, and manage daily activities more easily. Persistent pain may need further assessment because it can come from another fracture or a different part of the spine.

Routine follow-up may include checking the puncture site, reviewing pain medicines, and discussing activity. If osteoporosis contributed to the fracture, you may also need bone-density assessment, fall prevention, nutrition advice, and medicine to reduce future fracture risk. Cancer-related fractures require follow-up with the cancer and spine teams involved in your care.

Alternatives

The most suitable alternative depends on why the vertebra fractured and how severe your pain is.

- Non-surgical care: Pain relief, short-term activity changes, gradual walking, and physical therapy avoid an invasive procedure. Improvement may take several weeks, and medicines can have side effects.
- Osteoporosis treatment: Bone-strengthening treatment helps reduce future fracture risk but does not usually provide immediate relief from the current fracture.
- A spinal brace: A brace may reduce painful movement. It can be uncomfortable, and prolonged use may weaken muscles or restrict breathing.
- Kyphoplasty: A balloon or other device creates space before cement is inserted. It may restore some height in selected fractures but is still invasive and has cement-related risks.
- Surgery: Decompression, screws, or rods may be needed for an unstable spine or pressure on nerves. Surgery can address problems vertebroplasty cannot, but recovery and surgical risks are greater.
- Palliative pain treatment: For cancer-related fractures, radiotherapy, medicines, or nerve procedures may control pain without cement. Their effects may take longer or may not stabilise the bone.

When to call your healthcare team

Contact your healthcare team promptly if you develop increasing back pain, fever, redness or drainage at the puncture site, persistent bleeding, or pain that is not controlled by the agreed plan.

Seek emergency medical help for:

Routine questions about activity, work, pain medicines, osteoporosis treatment, and planned follow-up can usually wait for normal clinic hours.

- New weakness or loss of feeling in your legs
- New loss of bladder or bowel control
- Severe chest pain, difficulty breathing, or coughing up blood
- Fainting or rapidly worsening symptoms

Common questions

Will I be asleep?

Usually not fully. Local anaesthetic numbs your back, and moderate sedation may make you drowsy. General anaesthesia is used in selected cases.

Can I drive home?

No. Arrange for someone to take you home. After sedation, avoid driving for at least 24 hours and until you can move comfortably and think clearly.

How painful is vertebroplasty?

The numbing injection may sting. You may then feel pressure as the needle is positioned. Tell the team if you feel sharp or increasing pain.

When will I know whether it worked?

Some people notice relief within hours. For others, the response becomes clearer over several days. Vertebroplasty does not relieve pain for everyone.

Does the cement need to be removed?

No. The hardened cement is intended to remain permanently inside the vertebra.

Will it prevent another fracture?

No. Vertebroplasty stabilises the treated vertebra but does not prevent osteoporosis or protect other vertebrae. Separate bone-health treatment may be needed.

Sources

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