PROCEDURE

Bone lesion biopsy

A bone lesion biopsy removes a small tissue sample for laboratory testing.

PURPOSE
Obtain tissue to identify a bone abnormality

PROCEDURE TYPE
Diagnostic; image-guided minimally invasive or surgical

WHERE IT IS DONE
Radiology suite or operating theatre

ANAESTHESIA
Local with sedation; sometimes general anaesthesia

HOW LONG IT TAKES
About 30-60 minutes for most needle biopsies

PREPARATION
Fasting if sedated; blood-thinner and medication review

RECOVERY
Usually same day; no driving after sedation

MAIN RISKS
Bleeding, infection, fracture, nearby tissue injury

RESULTS
Usually several days after pathology and culture testing

Overview

A bone lesion is an area of bone that looks different from normal on an X-ray, CT scan, MRI, or other imaging test. "Lesion" does not automatically mean cancer. Changes can come from non-cancerous growths, infection, inflammation, previous injury, or cancer.

A bone lesion biopsy removes a small sample from the abnormal area. A pathologist examines the sample under a microscope. It may also be tested for bacteria or other organisms.

Most biopsies are needle biopsies performed through a small skin opening using imaging guidance. Less often, a surgeon makes an incision to collect a larger sample. Careful planning is important, especially when a primary bone cancer is possible.

Why the procedure is performed

A biopsy may be recommended when imaging cannot reliably show what a bone lesion is. The result can help your healthcare team:

Not every bone lesion needs a biopsy. Some have a typical harmless appearance and can be monitored or left alone.

- Distinguish a non-cancerous change from cancer
- Identify the type and features of a tumour
- Determine whether cancer elsewhere has spread to bone
- Look for a bone infection and identify the organism
- Plan surgery, medicines, radiation therapy, or other treatment

Who should and should not have it

You may be offered a biopsy if the result is likely to change your diagnosis, treatment, or follow-up plan. Before you consent, ask what question the biopsy is expected to answer and how each possible result would affect your care.

A biopsy may be delayed if you have an uncorrected bleeding problem, are taking medicine that increases bleeding risk, or have an infection in the skin where the needle would enter. It may also be delayed if you are not medically stable enough for sedation or surgery.

The procedure may not be appropriate if imaging already gives a clear diagnosis, the lesion can be safely monitored, or there is no safe route to reach it. Sometimes another lesion is easier and safer to sample.

If a primary bone cancer such as a sarcoma is possible, the biopsy should be planned with the specialist team that would perform any later surgery. The needle or incision path can affect that operation. An unplanned biopsy may make later treatment more difficult.

Pregnancy does not automatically prevent biopsy, but the team may adjust or avoid imaging that uses radiation when possible.

How to prepare

Follow the treating facility's own instructions first, because they take priority over general advice.

Tell the team about all prescription medicines, over-the-counter products, and supplements

you use. Make sure they know if you take anticoagulants or antiplatelet medicines, often called blood thinners. Do not stop these on your own. The team will tell you whether and when changes are needed.

You may need blood tests to check clotting and blood cell levels. Tell the facility about allergies, previous reactions to anaesthesia or contrast material, pregnancy, and any recent illness.

If you will receive sedation or general anaesthesia, you may need to stop eating and drinking beforehand. Arrange for a responsible adult to take you home and follow any instructions about staying with you afterward.

Wear loose clothing. Leave jewellery and valuables at home if the facility asks you to do so.

What happens during the procedure

Before the biopsy, the team checks your identity, the planned biopsy site, your medicines, and your consent. Imaging is reviewed to choose a safe route that avoids important nerves, blood vessels, joints, and organs.

For a needle biopsy, you lie on an examination table. The exact position is based on the bone being sampled. CT, X-ray, or ultrasound imaging helps guide the needle.

The skin is cleaned and covered with sterile drapes. Local anaesthetic numbs the skin and deeper tissues. This can sting briefly. You may also receive medicine through a vein to make you relaxed and drowsy. Sedation is not the same as general anaesthesia, although you may remember little.

A small cut may be made in the skin. The clinician guides a hollow needle into the lesion and removes one or more tissue cores. A powered or hand-operated device may be needed to pass through the hard outer bone. You may feel pressure, pushing, vibration, or a brief deep ache.

The samples are sent to pathology. If infection is possible, some tissue may be sent for culture, a test that looks for microorganisms.

For an open biopsy, a surgeon makes an incision and removes part of the lesion. This is usually done under general anaesthesia in an operating theatre. The wound is then closed with stitches, staples, or surgical adhesive.

Recovery and what to expect afterward

Pain: Mild to moderate soreness and bruising are common around the biopsy site. Use the pain

relief recommended by your team. Pain should generally improve rather than steadily worsen.

Eating: If you had only local anaesthetic, you can usually eat normally. After sedation or general anaesthesia, begin according to the facility's instructions. Nausea can occur for a short time.

Activity: Keep the dressing clean and dry for the period you were given. Avoid strenuous activity and heavy lifting until cleared. If the biopsy involved a weight-bearing bone, you may need crutches or temporary limits on walking because the opening can weaken the bone.

Driving: Do not drive yourself home after sedation or general anaesthesia. Follow the facility's stated driving restriction, commonly at least until the next day. Do not drive while taking medicines that make you drowsy.

Work: Many people return to desk-based work within a day or two after a needle biopsy. Physical work may require more time, especially after a biopsy of the leg, pelvis, or spine. Recovery after an open biopsy is usually longer.

Risks and possible complications

Your team should explain risks that apply to the lesion's location and the planned technique. Possible complications include:

Tumour cells can sometimes be displaced along a biopsy path. When bone cancer is possible, specialists plan the path so it can be removed during later surgery if necessary.

- Bleeding, bruising, or a collection of blood called a haematoma
- Infection of the skin, soft tissue, or bone
- Injury to a nearby nerve, blood vessel, joint, or organ
- Temporary or persistent pain
- Weakening or fracture of the sampled bone
- A sample that is too small or unclear, requiring another biopsy
- Reactions related to sedation, anaesthesia, or contrast material

Results and follow up

The clinician performing the biopsy may tell you how the procedure went, but usually cannot provide a diagnosis immediately. The tissue must be processed and examined by a pathologist.

Initial pathology results are often available within several days. Special stains, genetic or molecular testing, or infection cultures can take longer. Ask who will give you the results and

when to expect contact.

The report may identify a specific condition, show no cancer, or describe an uncertain or inadequate sample. An unclear result does not by itself confirm or exclude a diagnosis. Your team may compare the pathology with your scans, repeat the biopsy, request further tests, or discuss the findings at a specialist meeting.

Alternatives

The realistic alternatives depend on why the lesion is being investigated.

Repeat or additional imaging may better define the lesion. MRI, CT, bone scans, or PET scans avoid a tissue procedure, but imaging often cannot prove exactly what the lesion contains.

Monitoring with later imaging may be reasonable for a lesion that appears harmless and is not changing. This avoids immediate biopsy but delays certainty and requires follow-up.

Biopsy of another site may be safer if there are several abnormal areas. It can answer whether cancer or infection is present, but may not provide every detail about the bone lesion itself.

Open surgical biopsy provides a larger sample when a needle biopsy is unlikely to be adequate. It involves a larger wound, more anaesthesia, and a longer recovery.

Needle biopsy instead of open biopsy is less invasive and usually has a faster recovery. Its smaller samples are sometimes insufficient, making another procedure necessary.

Blood tests can support the assessment of infection or some cancers, but they usually cannot replace tissue testing when the exact nature of a bone lesion remains uncertain.

When to call your healthcare team

Contact your healthcare team promptly for increasing pain, swelling, redness, warmth, drainage, fever, or chills. Also seek prompt advice for new numbness, weakness, difficulty moving the limb, or inability to bear weight when you were previously told it was safe.

A small amount of soreness or bruising can be part of routine recovery. Questions about dressings, activity, or pending results can usually wait for normal office hours unless symptoms are worsening.

Call emergency services for uncontrolled bleeding, fainting, severe breathing difficulty, chest pain, or a limb that suddenly becomes pale, cold, very painful, or difficult to move.

Common questions

Will I be asleep?

Most needle biopsies use local anaesthetic, sometimes with sedation that makes you drowsy. Open biopsies usually use general anaesthesia. Your team should tell you the plan before you consent.

Can I drive home?

Not if you received sedation or general anaesthesia. Arrange for someone to take you home. Even without sedation, driving may be unsafe if pain or movement restrictions affect control of the vehicle.

How painful is a bone biopsy?

The numbing injection can sting. During a needle biopsy, you may feel pressure, vibration, or a short deep ache. Soreness afterward is expected, but severe or increasing pain needs medical advice.

When will I know the result?

Pathology commonly takes several days. Results can take longer when special tests or infection cultures are needed. Ask for a specific follow-up plan before leaving.

Can the biopsy spread cancer?

Cell displacement along a biopsy path is possible. When cancer is suspected, careful planning places the path where it can be removed during later surgery if needed. This is one reason specialist planning matters.

Will the biopsy weaken my bone?

The biopsy creates a small opening in the bone. Temporary activity restrictions may be needed if the lesion or biopsy site raises the risk of fracture.

Sources

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