TEST

Lumbar spine CT scan

A lumbar spine CT uses X-rays to create detailed images of the lower back

WHAT IT MEASURES
Detailed images of lower-spine bones and nearby tissues

SAMPLE
None; this is an imaging test

FASTING NEEDED?
Sometimes, if contrast or sedation is planned

HOW LONG IT TAKES
Usually 10 to 30 minutes

RESULTS IN
Often same day; timing varies by imaging department

USED FOR
Diagnosis and procedure planning

MAIN LIMITATION
Less detail than MRI for nerves and soft tissues

Overview

A lumbar spine CT scan creates detailed pictures of the lower part of your spine. CT stands for computed tomography. It uses X-rays taken from several angles and computer processing to produce thin, cross-sectional images.

The lumbar spine contains five large vertebrae, which are the bones between your rib cage and pelvis. The scan can also show the spinal canal, joints, discs and some nearby soft tissues.

CT is especially good at showing bone. It can help identify fractures, changes caused by arthritis, narrowing around the spinal canal, and problems involving previous spinal surgery. MRI is often better for examining nerves, spinal discs, bone marrow and other soft tissues.

Most lumbar spine CT scans do not need contrast dye. Intravenous contrast may be used when the question involves infection, a mass, inflammation or certain complications after surgery.

A CT myelogram is different from an ordinary CT scan. It involves placing contrast into the fluid around the spinal cord and nerves through a lumbar puncture before taking the images.

Why the test is ordered

A lumbar spine CT may be ordered to look for a specific structural problem or to plan treatment. Common reasons include:

CT is not usually the first test for uncomplicated lower back pain without warning signs. Many episodes of back pain improve without imaging, and scan findings do not always explain why pain is present.

- Checking for a fracture after an injury
- Examining complex bone changes or spinal alignment
- Assessing healing after a fracture or operation
- Checking the position of surgical screws or other hardware
- Planning surgery, a biopsy or another image-guided procedure
- Investigating suspected infection or a mass when CT is appropriate
- Examining the spine when MRI cannot be performed

Who should have the test

This scan may be appropriate if your symptoms, examination or medical history suggest that detailed bone imaging is needed. It is often used after significant injury or when an X-ray does not provide enough information.

CT may also be considered if you cannot have an MRI because of certain implanted devices, severe claustrophobia or another practical or medical reason. However, MRI may still be the better test when the main concern involves a nerve, disc, spinal infection or bone marrow.

Tell the imaging team if you are pregnant or could be pregnant. A lumbar CT exposes the abdomen and pelvis to radiation. Another test may be preferred, although CT can still be used when the expected benefit is important.

Children and younger adults are more sensitive to radiation. When CT is needed, the imaging service can adjust the technique to use an appropriate dose.

How to prepare

For a routine lumbar spine CT without contrast, you can usually eat, drink and take your regular medicines as normal. Follow the instructions from your imaging service because local protocols differ.

Wear comfortable clothing without metal around the waist or lower back. You may need to remove a belt, jewellery, underwire clothing or other metal objects. A hospital gown may be provided.

If intravenous contrast is planned, tell the team about:

A kidney function blood test may be needed before intravenous contrast, particularly if you have known kidney problems or other risk factors. Do not stop medicines unless the imaging service or your prescriber gives you specific instructions.

Sedation is rarely needed for a standard lumbar CT. If it is planned, you may need to fast and arrange for someone to take you home.

- Any previous reaction to CT contrast
- Kidney disease or reduced kidney function
- Diabetes and the medicines you take
- Pregnancy or possible pregnancy
- Current illnesses and allergies

What happens during the test

You will lie on a narrow table, usually on your back. The table moves through the scanner, which is shaped like a large ring rather than a closed tunnel.

The radiographer will position you and may use supports to help you stay comfortable. You will need to keep still while the images are taken because movement can blur them. You may be asked to hold your breath briefly.

The radiographer operates the scanner from the next room but can see, hear and speak with you throughout. The scan itself usually takes only a few minutes. Positioning, preparation and contrast can make the full appointment longer.

If intravenous contrast is required, a small plastic tube is placed into a vein. You may briefly feel warm or notice a metallic taste when the contrast is injected.

Understanding your results

A radiologist, a doctor trained to interpret medical images, reviews the scan. The report describes what is visible and explains which findings may matter for the reason the scan was requested.

Possible findings include fractures, bone spurs, arthritis in the spinal joints, narrowing of the spinal canal, or changes around previous surgery. The report may also describe findings that are common with ageing and may not cause symptoms.

There is no single "normal range" for a lumbar CT. Interpretation varies with the imaging equipment and technique, your age, sex, pregnancy status, medicines, previous surgery and the clinical question. The radiologist also compares the images with earlier scans when available.

A scan finding alone does not establish the source of back pain. Your results need to be considered alongside your symptoms, examination and other tests.

What affects the results

Unlike many blood tests, food, coffee, exercise and time of day do not usually change lumbar CT findings. The main influences involve image quality and how the findings are interpreted.

Movement during the scan can blur fine detail. Metal from spinal hardware, jewellery or clothing may create streaks that hide or mimic abnormalities. Larger body size can reduce image detail, although scanners and imaging techniques are adjusted where possible.

The timing and route of contrast matter when the scan is intended to assess infection, a mass or blood vessels. Reduced kidney function does not make a non-contrast CT inaccurate, but it can affect whether intravenous contrast is suitable.

Previous surgery can change normal anatomy. Age-related wear is common and may appear significant on an image even when it is not causing symptoms. Comparing the scan with your symptoms and earlier imaging helps reduce misleading conclusions.

Pregnancy, medicines and recent exercise do not generally alter the appearance of the lumbar bones. However, pregnancy affects whether radiation is appropriate, and some medicines or health conditions may change planning for contrast or sedation.

Accuracy and limitations

CT is very good at showing the shape and alignment of bones. It can detect many fractures that are difficult to see on ordinary X-rays, especially after significant injury.

Even so, CT can miss some subtle injuries. Early stress injuries, bone marrow changes and damage that has not yet altered the outer bone may be clearer on MRI. Image quality can also be reduced by movement or metal.

CT may show disc bulges and narrowing around nerves, but MRI usually gives better detail of discs, nerves, ligaments, infection and spinal cord or bone marrow problems. A CT myelogram may be used when detailed nerve imaging is required but MRI cannot be performed.

A scan can also appear positive when the finding is not the cause of symptoms. Arthritis, disc wear and narrowing become more common with age and may be present in people without pain. Artifacts from movement or metal can occasionally resemble disease or obscure a real problem.

No imaging test can always identify the cause of lower back pain. A different test may be needed if the CT result does not answer the clinical question.

Risks and complications

A lumbar CT uses ionising radiation. The dose is kept as low as reasonably possible while producing useful images. Radiation from the scan does not remain in your body.

If intravenous contrast is used, you may have temporary warmth, nausea or a metallic taste. Allergic-like reactions are uncommon but can occur. Contrast can also leak around the injection site, usually causing temporary pain or swelling.

People with severely reduced kidney function need individual assessment before some intravenous contrast examinations. The imaging team balances this risk against the benefit of obtaining the scan.

A CT myelogram has additional risks because it includes a lumbar puncture. These can include headache, bleeding, infection and a contrast reaction. Your team should explain these separately if a myelogram is planned.

Seek emergency help after contrast if you develop difficulty breathing, severe facial or throat swelling, or collapse. Contact the imaging service promptly for increasing pain, marked swelling, numbness or skin changes around an injection site.

What happens next

The radiologist sends a report to the healthcare professional who requested the scan. Routine results are usually discussed at a follow-up appointment, by telephone or through an electronic health record.

Your next step may be no further imaging, treatment based on the overall findings, or another test such as MRI. An urgent or unexpected finding may be communicated more quickly.

Do not wait for a routine report if you develop new loss of bladder or bowel control, numbness around the genitals or buttocks, or rapidly worsening weakness in both legs. These symptoms need urgent medical assessment.

Common questions

Can I drink coffee before a lumbar spine CT?

Usually, yes, if the scan is being done without contrast or sedation. Follow your appointment instructions if fasting has been requested.

Does the time of day matter?

No. Lumbar bones and spinal structures do not meaningfully change during the day. Appointment timing mainly affects convenience and local scheduling.

Can I exercise beforehand?

Ordinary exercise does not usually affect the images. If exercise worsens your pain or makes it difficult to lie still, consider avoiding strenuous activity immediately before the appointment.

Will I need an injection?

Most lumbar spine CT scans do not require intravenous contrast. An injection may be used when looking for infection, a mass, inflammation or some postoperative complications.

Is a CT scan better than an MRI?

Neither is always better. CT generally shows bone and fractures more clearly and is faster. MRI usually shows nerves, discs, bone marrow and other soft tissues in greater detail.

Can I drive home afterward?

You can usually drive after a standard CT. You should not drive if you received sedation or if the imaging team gives you different instructions.

Sources

- American College of Radiology Appropriateness Criteria: Low Back Pain
- American College of Radiology Appropriateness Criteria: Suspected Spine Trauma
- American College of Radiology: Manual on Contrast Media
- RadiologyInfo.org: CT of the Spine
- U.S. Food and Drug Administration: Medical X-ray Imaging

- NHS: CT scan