TEST

Lumbosacral spine CT

A lumbosacral spine CT uses X-rays to create detailed images of the lower spine and sacrum.

WHAT IT MEASURES
Detailed X-ray 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
Same day to several days; varies by imaging centre

USED FOR
Diagnosis and planning treatment or procedures

MAIN LIMITATION
Nerves, discs, and marrow are often clearer on MRI

Overview

A lumbosacral spine CT is a computed tomography scan of the lower back and sacrum. The sacrum is the triangular bone between your hip bones. It connects the spine to the pelvis.

The scanner uses X-rays taken from different angles. A computer combines them into thin, cross-sectional images. These show bone in more detail than a standard X-ray and can be rebuilt into views from several directions.

The scan may be performed without contrast or with an iodine-based contrast medicine injected into a vein. Contrast can make certain blood vessels, inflammation, masses, and nearby tissues easier to see. It is not needed for every lumbosacral CT.

CT is particularly useful for examining bone. MRI is often better for looking at spinal nerves, discs, ligaments, bone marrow, and the spinal canal. The most suitable test depends on the suspected problem and whether MRI can be performed safely.

Why the test is ordered

A clinician may order this scan to look for a structural cause of lower-back, pelvic, or leg symptoms. It may also be used after an injury or when detailed bone images are needed before treatment.

Common reasons include:

CT is not usually a screening test for people without symptoms. Imaging may also be unnecessary for uncomplicated, recent lower-back pain when there are no warning signs. Your symptoms, examination, previous treatment, and medical history help determine whether the scan is likely to add useful information.

- Checking for a fracture after a fall, collision, or other injury
- Examining a possible stress fracture or defect in a vertebra
- Assessing spinal alignment, arthritis, or narrowing around nerves
- Planning surgery, an injection, a biopsy, or another procedure
- Checking the position of surgical hardware
- Investigating an abnormality found on an X-ray or another scan
- Looking for bone damage related to infection or a tumour

Who should have the test

You may be offered a lumbosacral spine CT when detailed pictures of the lower spinal bones are needed quickly. It can be useful after significant trauma or when MRI is unavailable, unsafe, or difficult to complete.

For example, some implanted devices or metal fragments may prevent MRI. People who cannot remain in an MRI scanner because of severe claustrophobia may also be offered CT, although this depends on the clinical question.

Tell the imaging team if you are pregnant or might be pregnant. CT may still be appropriate when the expected medical benefit is important, particularly in an emergency, but the team can consider the radiation exposure and possible alternatives.

If contrast is planned, tell them about previous reactions to contrast, kidney problems, diabetes, and your current medicines. This information helps the team decide whether contrast is suitable and whether any extra precautions are needed.

How to prepare

Follow the instructions from your imaging centre because preparation differs according to whether contrast or sedation will be used.

For a CT without contrast, you can usually eat, drink, and take your usual medicines normally. Do not stop any medicine unless the team responsible for your care has given you specific instructions.

If intravenous contrast is planned, you may be asked not to eat for a short period. You can often still drink clear fluids, but confirm this with the imaging centre. Kidney blood tests may be needed for some people before contrast is given.

Wear comfortable clothing without metal around the waist or lower back. You may need to remove jewellery, belts, coins, or clothing with metal fasteners. Bring details of previous spine surgery and relevant earlier scans if the centre does not already have them.

What happens during the test

You will usually change into a gown and lie on a narrow table, commonly on your back. The table moves through the scanner, which is shaped like a wide ring rather than a long tunnel.

The radiographer positions you carefully and may use supports to help you stay still. Movement can blur the images. You may be asked to hold your breath briefly while some pictures are taken.

If contrast is required, a small plastic tube called a cannula is placed into a vein, usually in your arm. The injection may cause a brief warm feeling, a metallic taste, or the sensation that you are passing urine. These feelings usually fade quickly.

The scan itself often takes only a few minutes. Positioning, safety checks, and contrast administration make the full appointment longer. The radiographer can see and hear you throughout, although they step behind a screen while the X-rays are taken.

Understanding your results

A radiologist, a doctor trained to interpret scans, reviews the images and prepares a report. The report usually has a detailed findings section and a shorter impression or conclusion.

The report may describe:

There is no universal "normal range" for this test. Interpretation varies with age, sex, pregnancy status, symptoms, medicines, previous surgery, and the reason for scanning.

Imaging methods and reporting practices also differ between centres.

Wear-related changes are common as people get older and do not always explain pain. Likewise, a scan that appears normal does not rule out every cause of back or leg symptoms. The report needs to be considered alongside your examination and medical history.

- Fractures or other bone damage
- Spinal alignment and the spaces between vertebrae
- Wear-related changes in joints and discs
- Narrowing of the spinal canal or openings around nerves
- Changes around previous surgery or implanted hardware
- Unexpected findings in nearby tissues or organs

What affects the results

Movement during the scan can blur fine detail. Following breathing and positioning instructions helps reduce this problem.

Metal from spinal surgery, jewellery, or objects in clothing can create streaks that hide nearby structures. Modern scanning software can reduce these streaks, but it may not remove them completely.

Body size can affect image sharpness. Osteoporosis, which means reduced bone strength, can also make some fractures harder to identify. Recent surgery changes normal anatomy and may make the images more difficult to interpret without earlier scans for comparison.

The timing and amount of contrast affect how blood vessels and soft tissues appear. Kidney function does not usually change a noncontrast CT image, but it may influence whether intravenous contrast is used.

Food, coffee, recent exercise, and most medicines do not change the underlying CT findings. Pregnancy does not make the images inaccurate, but it is important because CT uses radiation. Age matters because wear-related findings become more common over time.

Accuracy and limitations

CT is very good at showing the hard outer surface of bone, displaced fractures, bone fragments, and spinal alignment. However, there is no single accuracy rate for every condition examined with a lumbosacral CT. How often it misses a problem depends on the condition,

scanner, image quality, and reader experience.

A CT can miss subtle stress injuries, early changes inside bone marrow, small areas of infection, and some tumours. It may also fail to show why a nerve is irritated when there is no clear structural narrowing.

MRI is usually the better test for discs, spinal nerves, ligaments, bone marrow, infection, and many soft-tissue problems. In selected cases, CT myelography may be used when detailed views around the nerves are needed but MRI cannot be performed. This involves injecting contrast into the fluid around the spinal cord and has additional risks.

CT can also show abnormalities that are real but unrelated to your symptoms. Common wear-related changes may appear significant on the image even when they are not causing pain. Comparing the report with your symptoms helps avoid treating an incidental finding as the answer.

Risks and complications

CT uses ionising radiation. The amount is kept as low as reasonably possible while still producing useful images. Radiation carries a small potential long-term risk, so unnecessary repeat scans are avoided when possible.

If intravenous contrast is used, you may have brief warmth, nausea, or a metallic taste. Allergy-like reactions can occur, although serious reactions are uncommon. Contrast can also be a concern for some people with severe kidney dysfunction or an acute kidney injury.

The cannula can cause a small bruise or soreness. Occasionally, contrast leaks into the tissue around the vein, causing pain and swelling. Tell the radiographer immediately if the injection site hurts.

Seek emergency help after leaving if you develop trouble breathing, swelling of the face or throat, or collapse. Mild bruising at the cannula site can usually be monitored, but increasing pain, marked swelling, blistering, or skin colour changes need prompt medical advice.

What happens next

You can usually go home immediately after a scan without sedation. If contrast was used, the centre may ask you to remain briefly for observation. Follow any instructions about drinking fluids or restarting medicines.

A radiologist sends the report to the clinician who requested the test. Routine results are often

discussed at a scheduled appointment, by telephone, or through a patient portal. Urgent findings may be communicated more quickly.

The next step may be no further testing, treatment based on your symptoms, comparison with earlier images, or another test such as MRI. Sometimes a finding needs follow-up even though it is unrelated to the original reason for the scan.

Do not wait for a routine results appointment 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 require emergency assessment, whether or not you have already had a CT.

Common questions

Can I drink coffee before the scan?

Usually yes for a CT without contrast or sedation. If contrast or sedation is planned, follow the imaging centre's fasting instructions. Black coffee may not count as a clear fluid under every local policy.

Does the time of day matter?

No. Lumbosacral spine findings do not normally change according to the time of day. Appointment timing may matter only for fasting, medicine instructions, or coordination with another procedure.

Can I exercise beforehand?

Usually yes. Exercise does not normally alter the scan findings. If movement increases your pain, avoid strenuous activity that could make it difficult to lie still.

Can I drive home afterwards?

You can generally drive after a standard CT. Do not drive if you received a sedative or if the imaging team tells you not to. Arrange an escort when sedation is planned.

Will I feel claustrophobic?

The CT scanner is a short, wide ring, so it is usually less enclosed than an MRI scanner. Tell the radiographer if you are anxious or have difficulty lying flat.

Why might I need contrast?

Contrast can make certain blood vessels, inflammation, masses, and soft tissues stand out more clearly. Many scans for fractures or bone detail do not require it.

Sources

- American College of Radiology, ACR Appropriateness Criteria: Low Back Pain
- American College of Radiology, ACR Manual on Contrast Media
- Radiological Society of North America and American College of Radiology, CT of the Spine
- US Food and Drug Administration, Medical X-ray Imaging
- NHS, CT scan
- National Institute for Health and Care Excellence, Low back pain and sciatica in over 16s: assessment and management