TEST

Cervical spine CT scan

A cervical spine CT scan uses X-rays to create detailed images of the bones in your neck.

WHAT IT MEASURES
Detailed X-ray images of neck bones and their alignment

SAMPLE
None

FASTING NEEDED?
Sometimes, if contrast or sedation is planned

HOW LONG IT TAKES
10 to 30 minutes

RESULTS IN
Often same day; timing varies by imaging service

USED FOR
Diagnosis and monitoring after injury or surgery

MAIN LIMITATION
Ligament, spinal cord, and disc injuries may be missed

Overview

A cervical spine CT scan creates detailed pictures of the seven vertebrae in your neck. These bones surround and protect the spinal cord.

CT stands for computed tomography. The scanner takes X-ray images from different angles, and a computer combines them into thin cross-sectional slices. CT shows fractures and bone alignment more clearly than ordinary X-rays.

Most cervical spine CT scans are performed without contrast dye. Contrast may be used to investigate infection, a mass, blood vessel injury, or another specific problem.

CT is very good at showing bone, but it may miss injuries to the spinal cord, discs, ligaments, nerves, and other soft tissues. MRI is often better for examining these structures.

Why the test is ordered

A cervical spine CT is commonly ordered after a significant injury, such as a vehicle collision, fall, sports injury, or direct blow to the head or neck. It may be used when your symptoms,

examination, or the way the injury happened suggest a possible fracture.

Other reasons include:

CT is not normally used to screen people who have no symptoms or relevant injury.

- Checking an abnormal or unclear neck X-ray
- Planning treatment for a fracture
- Monitoring healing after injury or surgery
- Looking for bone damage caused by infection or a tumour
- Assessing severe arthritis or narrowing around the spinal canal
- Guiding some cervical spine procedures

Who should have the test

Not everyone with neck pain after an injury needs imaging. Clinicians use your age, symptoms, examination, and how the injury occurred to decide whether a scan is needed.

CT is often the preferred first scan for adults with a meaningful risk of cervical spine injury. It may also be needed when ordinary X-rays do not show the entire neck clearly.

Children are assessed differently because their anatomy and injury patterns differ and they are more sensitive to radiation. When CT is necessary, the scan should be tailored to the child's size and the clinical question.

Tell the imaging team if you are or could be pregnant. Pregnancy does not automatically prevent an urgent neck CT. The uterus is outside the main scan area, and the risk from radiation must be balanced against the danger of missing a serious injury.

How to prepare

A routine cervical spine CT without contrast usually requires no special preparation. You can generally eat, drink, and take your usual medicines.

Before the scan, tell the team if:

If contrast or sedation is planned, follow the instructions you receive about eating, drinking, medicines, transport, and blood tests. Do not stop prescribed medicine unless the team arranging the scan tells you to.

Remove jewellery, hearing aids, hairpins, or other metal near your head and neck if asked. In an

emergency, staff may keep a cervical collar in place while positioning you.

- You could be pregnant
- You have previously reacted to CT contrast
- You have significant kidney disease
- You have metal implants or previous neck surgery
- You have difficulty lying flat or keeping still
- You may need sedation because of pain, anxiety, or another condition

What happens during the test

You lie on a narrow table, usually on your back, with your head supported. If an injury is suspected, staff will move you carefully and avoid unnecessary neck movement.

The table passes through a short, ring-shaped scanner. You may hear humming or clicking, but the scan is painless. You must remain still while images are taken. Scanning often takes only a few minutes, although positioning and safety checks make the appointment longer.

If contrast is needed, it is usually injected through a small intravenous line in your arm. You may briefly feel warm or notice a metallic taste.

Understanding your results

A radiologist reviews the scan and reports findings such as:

A normal CT makes a major bone injury less likely but does not always rule out spinal cord, disc, or ligament injury. If you have weakness, numbness, severe continuing pain, or other concerning findings, you may need further assessment or an MRI.

There is no universal normal range. Results are interpreted using your age, symptoms, previous injuries, surgery, and reason for imaging.

- Broken or misaligned vertebrae
- Bone fragments narrowing the spinal canal
- Swelling around the spine
- Arthritis, bone spurs, or disc-space narrowing
- Changes from previous surgery

- Unexpected findings in nearby tissues

What affects the results

A cervical spine CT does not produce a single number affected by food, exercise, or time of day. Most problems involve image quality or changes that resemble an injury.

Movement can blur images. Dental fillings, jewellery, surgical hardware, and other metal may create streaks that hide nearby structures.

Severe arthritis, unusual anatomy, old fractures, and surgical changes can sometimes resemble a new injury. Earlier images may help clarify the findings. Very small or non-displaced fractures can also be difficult to see.

Accuracy and limitations

CT is more likely than ordinary X-rays to detect an important cervical spine fracture. It also provides clearer views when the shoulders or other structures obscure the neck on an X-ray.

However, very small fractures may not be visible, and movement or metal can hide abnormalities. Old fractures, normal anatomical variations, and arthritis may be mistaken for recent injuries without clinical context.

CT is less reliable for injuries involving only the spinal cord, nerves, discs, or ligaments. MRI is often better when these tissues are the main concern, particularly when neurological symptoms do not match the CT findings.

If an artery injury is suspected, CT angiography is a separate test that uses contrast to show blood vessels.

Risks and complications

A cervical spine CT uses ionising radiation, which carries a small potential lifetime cancer risk. The concern is greater in children and with repeated scans. Imaging teams use the lowest dose that can answer the clinical question.

Contrast is not needed for most scans. When used, it can leak around the injection site or cause an allergic-like reaction; serious reactions are uncommon. Kidney function may need consideration in people with severe kidney disease or acute kidney injury.

Lying flat or being moved may briefly increase pain. Tell staff immediately if positioning causes

new numbness, weakness, breathing difficulty, or severe pain.

What happens next

Urgent results are often sent directly to the emergency or treating team. If a fracture is found, you may need continued neck support, specialist assessment, further imaging, or surgery, depending on the injury's type and stability.

If no fracture is seen, the next step depends on your symptoms and examination. You may be able to stop using a collar, or you may need an MRI or follow-up assessment if a soft-tissue injury remains possible.

Arthritis and other non-urgent findings can usually be discussed at routine follow-up. Such changes are common and may not explain your pain.

Seek emergency help for new or worsening arm or leg weakness, loss of coordination, difficulty breathing, loss of bladder or bowel control, or numbness around the groin. After a recent injury, severe worsening neck pain or new widespread numbness also requires urgent assessment.

Common questions

Can I drink coffee before a cervical spine CT?

Usually, yes. Coffee does not affect a non-contrast scan. Follow the imaging service's instructions if contrast or sedation is planned.

Does the time of day matter?

No. Neck bones do not look meaningfully different at different times.

Can I exercise beforehand?

Exercise does not normally affect the images. Avoid activity that worsens pain or could move an injured neck.

Will I need contrast dye?

Usually not. Contrast may be used to examine infection, a mass, inflammation, or nearby blood vessels.

Can I drive afterward?

You can usually drive after a routine scan if your injury and symptoms make driving safe. Do not drive after sedation, and follow any instructions about contrast reactions.

Is CT the same as MRI?

No. CT uses X-rays and is especially useful for fractures. MRI uses a magnetic field and is better for the spinal cord, discs, ligaments, and nerves.

Sources

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