Spine CT



Computed tomography (CT) of the spine is a diagnostic imaging test used to help diagnose—or rule out—spinal column damage in injured patients. CT scanning is fast, painless, noninvasive and accurate. In emergency cases, it can reveal internal injuries and bleeding quickly enough to help save lives.

Tell your doctor if there's a possibility you are pregnant and discuss any recent illnesses, medical conditions, medications you're taking, and allergies. You will be instructed not to eat or drink anything for a few hours beforehand if the exam requires contrast material. If you have a known allergy to contrast material, your doctor may prescribe medications to reduce the risk of an allergic reaction. These medications must be taken 12 hours prior to your exam. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.

What is CT Scanning of the Spine?

Computed tomography, more commonly known as a CT or CAT scan, is a diagnostic medical imaging test. Like traditional x-rays, it produces multiple images or pictures of the inside of the body.

A CT scan generates images that can be reformatted in multiple planes. It can even generate three-dimensional images. Your doctor can review these images on a computer monitor, print them on film or via a 3D printer, or transfer them to a CD or DVD.

CT images of internal organs, bones, soft tissue, and blood vessels provide greater detail than traditional x-rays. This is especially true for soft tissues and blood vessels.

Using CT, the bony structure of the spine vertebrae (http://www.radiologyinfo.org) is clearly and accurately shown, as are intervertebral disks (http://www.radiologyinfo.org) and, to some degree, the spinal cord (http://www.radiologyinfo.org) soft tissues.

What are some common uses of the procedure?

Perhaps, the most frequent use of spinal CT is to detect—or to rule out—spinal column damage in patients who have been injured.

CT scanning of the spine is also performed to:

- assess spine fractures due to injury.
- evaluate the spine before and after surgery.
- help diagnose spinal pain. One of the most common causes of spinal pain that may be diagnosed by CT is a herniated (http://www.radiologyinfo.org) intervertebral disk. Occasionally, this diagnosis is made using CT myelography.
- accurately measure bone density in the spine and predict whether vertebral fractures are likely to occur in patients who are at risk of osteoporosis (http://www.radiologyinfo.org) .
- assess for congenital (http://www.radiologyinfo.org) anomalies of the spine or scoliosis.

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- detect various types of tumors in the vertebral column, including those that have spread there from another area of the body. Some tumors that arise elsewhere are first identified by finding deposits of malignant (http://www.radiologyinfo.org) cells (metastases (http://www.radiologyinfo.org)) in the vertebrae; prostate cancer is an example.
- guide diagnostic procedures such as the biopsy of a suspicious area to detect cancer, or the removal of fluid from a localized infection (abscess (http://www.radiologyinfo.org)).

In patients with narrowing (stenosis (http://www.radiologyinfo.org)) of the spine canal (http://www.radiologyinfo.org) , vertebral fracture, infection or degenerative disease such as arthritis, CT of the spine may provide important information when performed alone or in addition to magnetic resonance imaging (http://www.radiologyinfo.org) (MRI).

Who interprets the results and how do I get them?

A radiologist (https://www.radiologyinfo.org/en/info/article-your-radiologist) , a doctor specially trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send an official report to the doctor who ordered the exam.

You may need a follow-up exam. If so, your doctor will explain why. Sometimes a follow-up exam further evaluates a potential issue with more views or a special imaging technique. It may also see if there has been any change in an issue over time. Follow-up exams are often the best way to see if treatment is working or if a problem needs attention.

What are the benefits vs. risks?

Benefits

- Spinal CT scanning is a rapid procedure and offers an accurate evaluation of bone and most soft tissues. Using the latest equipment, the spine may be displayed in multiple planes and three-dimensional imaging may be reconstructed.
- CT scanning is painless, noninvasive, and accurate.
- A major advantage of CT is its ability to image bone, soft tissue, and blood vessels all at the same time.
- Unlike conventional x-rays, CT scanning provides very detailed images of many types of tissue as well as the lungs, bones, and blood vessels.
- CT exams are fast and simple. In emergency cases, they can reveal internal injuries and bleeding quickly enough to help save lives.
- CT has been shown to be a cost-effective imaging tool for a wide range of clinical problems.
- CT is less sensitive to patient movement than MRI.
- Unlike MRI, an implanted medical device of any kind will not prevent you from having a CT scan.
- CT imaging provides real-time imaging, making it a good tool for guiding needle biopsies (http://www.radiologyinfo.org) and needle aspirations (http://www.radiologyinfo.org) . This is particularly true of procedures involving the lungs, abdomen, pelvis, and bones.
- A diagnosis via CT scan may eliminate the need for exploratory surgery and surgical biopsy.
- No radiation remains in a patient's body after a CT exam.
- The x-rays used for CT scanning should have no immediate side effects.

Risks

- There is always a slight chance of cancer from excessive exposure to radiation. However, the benefit of an accurate diagnosis far outweighs the risk involved with CT scanning.
- The radiation dose for this procedure varies. *See the Radiation Dose (https://www.radiologyinfo.org/en/info/safety-xray) page for more information.*
- Women should always tell their doctor and radiologic technologist if there is any chance they are pregnant. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy and*

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x-rays.

- Doctors do not generally recommend CT scanning for pregnant women unless medically necessary because of potential risk to the unborn baby.
- IV contrast manufacturers indicate mothers should not breastfeed their babies for 24-48 hours after contrast material is given. However, the most recent American College of Radiology (ACR) Manual on Contrast Media reports that studies show the amount of contrast absorbed by the infant during breastfeeding is extremely low. *For further information please consult the ACR Manual on Contrast Media (https://www.acr.org/Clinical-Resources/Contrast-Manual) and its references.*
- The risk of serious allergic reaction to contrast materials that contain iodine is extremely low, and radiology departments are well-equipped to deal with them. If you had prior allergic reactions to CT contrast materials, it is important to inform your doctor in advance. Medications may be prescribed prior to the CT scan to minimize the risk of allergic reactions.
- Because children are more sensitive to radiation, they should have a CT exam only if it is essential for making a diagnosis. They should not have repeated CT exams unless necessary. CT scans in children should always be done with low-dose technique.

What are the limitations of CT Scanning of the Spine?

A person who is very large may not fit into the opening of a conventional CT scanner. Or, they may be over the weight limit—usually 450 pounds—for the moving table.

Spinal CT does not consistently show enough detail to properly assess the spinal cord. If a patient had a previous surgery to place hardware such as rods or a screw, the quality of the CT images may be degraded due to the hardware. MRI may be more suitable than CT for demonstrating injured ligaments, the status of the intervertebral disks, spinal cord abnormalities and hematomas (http://www.radiologyinfo.org) in the area of the spine.

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