TEST

Shoulder CT scan

A shoulder CT scan uses X-rays and computer processing to create detailed images of the shoulder

WHAT IT MEASURES
Detailed structure of shoulder bones, joints, and nearby tissues

SAMPLE
None

FASTING NEEDED?
Sometimes, if contrast or sedation is planned

HOW LONG IT TAKES
Usually 10-30 minutes; longer for CT arthrography

RESULTS IN
Same day to several days; timing varies by imaging center

USED FOR
Diagnosis and treatment planning

MAIN LIMITATION
Less soft-tissue detail than MRI without joint contrast

Overview

A shoulder CT scan is an imaging test that uses X-rays and computer processing to create cross-sectional pictures of your shoulder. CT stands for computed tomography.

CT shows bone in greater detail than a standard X-ray. It can also create three-dimensional views that help show how broken or displaced bones fit together. The images may include the upper arm bone, shoulder blade, collarbone, shoulder joint, and nearby soft tissues.

Most shoulder CT scans are done without contrast dye. Contrast may be injected into a vein when the scan is looking for certain infections, masses, blood vessels, or complications after surgery.

A CT arthrogram is different. For this test, contrast is injected directly into the shoulder joint before the CT scan. This outlines structures inside the joint, including cartilage, the labrum-the rim of tissue around the socket-and some tendon injuries.

Why the test is ordered

A shoulder CT is usually ordered when detailed bone images are needed or when another test has not answered the clinical question.

Common reasons include:

A CT arthrogram may be used to examine the labrum, cartilage, or rotator cuff when MRI is unsuitable or has not provided enough information.

CT is not usually a routine screening test for people without shoulder symptoms or a known shoulder problem.

- Examining a complex fracture or possible fracture
- Checking whether the shoulder joint is dislocated
- Planning surgery or assessing healing after surgery
- Looking at joint alignment, arthritis, or bone loss
- Assessing a shoulder replacement or other implant
- Investigating a bone lesion, infection, or unusual growth
- Guiding a procedure or planning treatment

Who should have the test

You may be offered a shoulder CT after an injury, when X-rays suggest a complicated fracture, or when detailed bone information could affect treatment. It may also be appropriate before or after shoulder surgery.

MRI or ultrasound may be more useful when the main concern is a tendon, muscle, ligament, or other soft-tissue injury. The best test depends on your symptoms, examination, previous images, implants, and the question that needs answering.

Tell the imaging team if you are pregnant or might be pregnant. CT uses ionizing radiation, so another test may sometimes be preferred. A CT can still be performed when its expected benefit is greater than the radiation risk.

Children can have CT when needed, but the scan settings should be adjusted for their size. Limiting the scanned area and avoiding unnecessary repeat scans reduce radiation exposure.

How to prepare

For a standard shoulder CT without contrast, you can usually eat, drink, and take your usual medicines. Follow the instructions from your imaging center, because preparation changes if contrast or sedation is planned.

Before the appointment, tell the team about:

If intravenous contrast is planned, you may need a recent blood test to check kidney function. Do not stop metformin or any other medicine unless the service arranging the scan gives you specific instructions.

Wear comfortable clothing without metal around the shoulder. You may be asked to change into a gown and remove jewelry, glasses, or removable metal objects.

- Pregnancy or possible pregnancy
- Previous reactions to CT contrast
- Kidney disease or reduced kidney function
- Diabetes and the medicines you take
- Recent shoulder surgery, injections, or injuries
- Metal implants, a shoulder replacement, or surgical hardware
- Difficulty lying still or severe pain when positioning your arm

What happens during the test

You will usually lie on your back on a narrow table. Your shoulder may be positioned close to the center of the scanner, and your arm may be placed in a particular position if you can tolerate it.

The table moves through a short, ring-shaped scanner. Unlike many MRI scanners, a CT scanner does not surround your whole body in a long tunnel. The technologist can see, hear, and speak with you.

You need to keep still while the images are taken. The scanning itself often lasts only a few minutes, although positioning and preparation take longer.

If contrast is injected into a vein, you may briefly feel warm or notice a metallic taste. These feelings usually pass quickly.

For a CT arthrogram, the skin is cleaned and numbed. A radiologist guides a needle into the joint using X-ray or ultrasound imaging, injects contrast, and then obtains the CT images. This makes the appointment longer than a standard scan.

Understanding your results

A radiologist-a doctor trained to interpret medical images-reviews the scan and sends a report to the clinician who requested it.

The report may describe:

Terms such as "degenerative change" usually describe wear-related changes. These findings become more common with age and do not always explain pain. Results need to be compared with your symptoms, examination, previous injuries, and other imaging.

There is no single normal numerical range for a shoulder CT. When measurements are reported, their meaning can vary by imaging service, age, sex, pregnancy status, medicines or recent injections, and the wider clinical context.

- Fractures, bone fragments, and joint alignment
- Bone loss, arthritis, or abnormal bone growth
- The position of screws, plates, or a shoulder replacement
- Fluid, swelling, infection, or a mass
- Labral, cartilage, or tendon findings on a CT arthrogram

What affects the results

Movement is one of the main causes of blurred CT images. Pain can make it difficult to hold the requested position, so tell the technologist if you cannot remain still.

Metal screws, plates, or a shoulder replacement can produce streaks that hide nearby structures. Modern CT techniques may reduce these artifacts, but they cannot always remove them.

Positioning matters. Some signs of instability, bone loss, or joint alignment are easier to assess when the shoulder is positioned in a particular way. Limited movement may prevent those views.

Contrast timing and placement also matter. Intravenous contrast must be photographed at the correct time for the structure being studied. During a CT arthrogram, contrast needs to enter and spread through the joint properly. Leakage outside the joint can make interpretation harder.

Recent surgery, injury, injections, or a previous joint procedure may cause expected changes that resemble disease if the radiologist does not know the history. Age-related changes and

old healed injuries can also look abnormal without being the cause of current symptoms.

Eating, coffee, exercise, and the time of day do not usually change shoulder anatomy. However, they may matter if sedation is planned or if the imaging center has given special instructions.

Accuracy and limitations

CT is highly effective at showing cortical bone, which is the hard outer layer of bone. It can show fracture shape, small bone fragments, joint alignment, and surgical hardware more clearly than standard X-rays in many situations.

There is no single rate for how often shoulder CT finds or misses a problem. Accuracy changes with the condition being investigated, the scan technique, movement, metal artifacts, and the experience of the person interpreting the images.

CT can miss injuries that mainly affect tendons, ligaments, cartilage, the labrum, or bone marrow. A normal CT therefore does not rule out every cause of shoulder pain. MRI is often better for these soft tissues, while ultrasound can assess some tendons during movement.

A scan can also appear positive when a finding is not responsible for your symptoms. Normal anatomical variations, old injuries, age-related wear, and metal artifacts may resemble a current problem. Comparing the scan with earlier images and your clinical history helps reduce this risk.

CT arthrography improves the view inside the joint, but it requires an injection. MRI arthrography or a standard MRI may be a better choice in some situations.

Risks and complications

CT exposes you to ionizing radiation. The amount depends on the scan area and technique. The imaging team should use the lowest exposure that can answer the clinical question.

Intravenous contrast can cause warmth, nausea, itching, or a rash. Serious allergic-like reactions are uncommon. Contrast can also leak into tissue around the injection site, causing pain and swelling.

People with severely reduced kidney function may need additional assessment before iodine-based contrast is used. Kidney function mainly affects the decision to give contrast; it does not make a non-contrast CT image inaccurate.

A CT arthrogram can cause temporary soreness or pressure in the joint. Bleeding, infection,

contrast reaction, or injury to nearby structures can occur, but these complications are uncommon.

Call emergency services for difficulty breathing, facial or throat swelling, collapse, or another severe reaction after contrast. After an arthrogram, seek urgent medical advice for fever, spreading redness, drainage, or rapidly worsening pain. Mild soreness without these signs can usually be discussed during routine follow-up.

What happens next

You can usually return to normal activities immediately after a standard CT. Drink normally after intravenous contrast unless you have been given different fluid instructions for a medical reason.

After a CT arthrogram, you may be told to limit strenuous use of the shoulder for a short period. Follow the instructions provided by the imaging service.

The requesting clinician will review the report with your symptoms and examination findings. Routine next steps may include reassurance, physiotherapy, more imaging, referral to a specialist, or discussion of treatment options.

A CT result does not diagnose the cause of pain by itself. Further testing may be needed when the scan is normal but symptoms continue, or when a finding needs better soft-tissue assessment.

Common questions

Can I drink coffee before a shoulder CT?

Usually, yes, if the scan is being done without sedation. If contrast or sedation is planned, follow the imaging center's instructions about food and drinks.

Does the time of day matter?

Usually not. Shoulder structures do not change enough during the day to affect a routine CT. Appointment timing may matter only for preparation, contrast, or sedation.

Can I exercise beforehand?

Gentle activity does not usually affect the images. Avoid activity that sharply increases your pain or makes it difficult to hold still during the scan.

Can I drive home afterward?

You can normally drive after a standard CT or intravenous contrast. Arrange transport if you receive sedation or if the imaging center advises against driving after a CT arthrogram.

Will I need contrast dye?

Many shoulder CT scans do not need contrast. Intravenous contrast or a joint injection is used only when it helps answer the specific clinical question.

Is a shoulder CT better than an MRI?

Neither is always better. CT usually gives more detail about bone and surgical hardware. MRI usually gives more detail about tendons, ligaments, cartilage, the labrum, and bone marrow.

Sources

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