TEST

Shoulder MRI scan

A shoulder MRI uses a strong magnet to create detailed images of the shoulder joint and nearby tissues.

WHAT IT MEASURES
Detailed images of shoulder bones, joints, tendons, and soft tissues

SAMPLE
None

FASTING NEEDED?
Sometimes, if sedation or contrast instructions require it

HOW LONG IT TAKES
Usually 20 to 45 minutes

RESULTS IN
Usually several days; timing varies by imaging centre

USED FOR
Diagnosing injury or disease and monitoring treatment or recovery

MAIN LIMITATION
Abnormal-looking findings may not be the cause of symptoms

Overview

A shoulder MRI scan uses a strong magnet and radio waves to create detailed pictures of your shoulder. MRI stands for magnetic resonance imaging. It does not use X-rays or ionising radiation.

The scan can show muscles, tendons, ligaments, cartilage, bone marrow and fluid around the joint. It is particularly useful for examining the rotator cuff, which is the group of muscles and tendons that helps move and stabilise your shoulder.

Most shoulder MRI scans are performed without contrast dye. In some cases, contrast is injected into a vein. Another procedure, called an MR arthrogram, involves placing contrast directly into the shoulder joint before the scan. This can make small tears in the cartilage rim, called the labrum, easier to see.

Why the test is ordered

A shoulder MRI may be ordered when an examination, X-ray or ultrasound has not fully explained your symptoms. It may also be used when detailed information is needed before surgery.

Common reasons include checking for:

MRI is not always the first test for shoulder pain. An X-ray is often better for showing fractures, arthritis, joint alignment and calcium deposits. Ultrasound can assess some tendons while the shoulder is moving and may be more accessible.

- Rotator cuff damage, including partial or complete tendon tears
- Labral tears or other causes of shoulder instability
- Damage to cartilage, ligaments or the biceps tendon
- Hidden bone injuries not clearly seen on an X-ray
- Inflammation, excess joint fluid or infection
- A lump or abnormal area in the bone or soft tissue
- Healing after an injury, operation or treatment

Who should have the test

You may be offered a shoulder MRI if you have continuing pain, weakness, reduced movement or instability and the cause remains unclear. It may also be appropriate after a significant injury or when a tendon tear, labral injury or another soft-tissue problem is suspected.

Not everyone with shoulder pain needs an MRI. Many common shoulder problems can initially be assessed through your symptoms, a physical examination and simpler imaging. MRI findings also need to be matched with what you feel and what was found during the examination.

MRI may not be suitable with certain implanted devices or metal fragments. Many modern joint replacements, surgical clips and heart devices can be scanned safely under specific conditions, but the imaging team must confirm the exact make and model.

How to prepare

Follow the instructions from the imaging centre. For a routine shoulder MRI without sedation, you can usually eat, drink and take your usual medicines as normal.

Tell the imaging team beforehand if you:

Remove jewellery, hearing aids, removable dental work and other metal items when instructed.

Some clothing contains metal fasteners or metallic fibres, so you may be asked to wear a gown. Medicine patches can also contain metal and should be checked by staff rather than removed without advice.

If sedation is planned, you may need to stop eating and drinking for a set period. You will also need someone to take you home. Follow the specific instructions you receive.

- Have a pacemaker, defibrillator, medicine pump or other implanted device
- Have metal clips, implants, shrapnel or possible metal fragments in an eye
- Have had surgery involving an implant
- Have kidney disease or are receiving dialysis
- Are pregnant or might be pregnant
- Have previously reacted to MRI contrast
- Feel anxious in enclosed spaces
- Cannot lie still because of pain or another condition

What happens during the test

You will usually lie on your back with your shoulder inside a special support called a coil. The coil helps the scanner produce clearer pictures. Your arm may be held in a set position with padding to help you stay comfortable and still.

The table moves into the MRI scanner. The scanner makes loud tapping, buzzing and knocking sounds as it records images. You will be given ear protection and a call button. Staff can see and speak with you throughout the scan.

You need to remain as still as possible. Each set of images may take several minutes, with short pauses between them. A routine appointment commonly takes about 20 to 45 minutes, although positioning, contrast or sedation can make it longer.

If intravenous contrast is needed, a small plastic tube is placed in a vein, usually in your arm. For an MR arthrogram, contrast is injected into the joint using imaging guidance before the MRI. The injection part is a separate procedure and takes additional time.

Understanding your results

A radiologist, a doctor trained to interpret medical images, reviews the scan. The report describes the structures examined and any findings. It is then sent to the healthcare

professional who requested the test.

The report may mention tendon thickening, inflammation, a partial or complete tear, muscle shrinkage, cartilage wear, labral damage, joint fluid or changes within the bone. It may also describe how large a finding is and where it is located.

There is no universal "normal range" for a shoulder MRI. Interpretation varies with age, sex, pregnancy status, medicines, previous surgery, the scanner and imaging method, and your clinical context. Changes that look abnormal on MRI can occur in people without pain, especially as tendons and joints age.

A result should therefore be considered alongside your symptoms, examination and other imaging. A scan finding does not automatically identify the cause of your pain or mean that you need surgery.

What affects the results

Movement is one of the main reasons shoulder MRI images become blurred. Pain, muscle spasms, anxiety, coughing or difficulty holding the required position can all reduce image quality.

Your arm position also matters. Some tendon or labral abnormalities are easier to see in certain positions, but pain may prevent those positions from being used.

Other factors include:

Age-related tendon and joint changes may look important even when they are not causing symptoms. Recent exercise can temporarily increase fluid or signal changes in some tissues, but normal activity does not usually invalidate a routine scan. If a specific activity triggered your symptoms, tell the imaging team or the person who requested the test.

- Metal implants, which can distort nearby images
- Previous surgery, which changes normal anatomy and may leave scar tissue
- The MRI scanner strength and the image sequences selected
- Whether standard MRI or an MR arthrogram is used
- The timing of an injury and the amount of swelling or joint fluid
- The radiologist's experience with shoulder imaging

Accuracy and limitations

Shoulder MRI is good at showing many soft-tissue injuries, but it is not perfect. It can miss small, partial or unusually positioned tendon and labral tears. Motion, metal distortion, an unsuitable imaging protocol or poor positioning can make a real problem harder to see.

MRI can also report an abnormality that is not responsible for your symptoms. Tendon wear, small tears and labral changes may be found in people who have no shoulder pain. This is why the images should not be interpreted in isolation.

An MR arthrogram may show some subtle labral or partial tendon tears more clearly than a standard MRI, but it requires a joint injection. Ultrasound may be better for watching tendons move in real time. X-ray or CT may provide clearer information about certain fractures, bone detail, joint alignment or calcium deposits.

No single scan rules out every possible cause of shoulder pain. Neck, nerve or referred pain may require a different assessment because the problem may be outside the shoulder itself.

Risks and complications

A routine MRI does not expose you to ionising radiation. The main safety concern is the strong magnetic field, which can move or heat unsafe metal objects and interfere with some implanted devices. Careful screening reduces this risk.

An intravenous contrast injection may cause brief discomfort, bruising or a cool sensation. Allergic-like reactions are uncommon, and serious reactions are rare. People with severe kidney impairment need individual assessment because gadolinium contrast can pose additional risks.

An MR arthrogram can cause temporary soreness or pressure in the joint. Bleeding, infection and reactions to the injected medicines are uncommon but possible.

Sedation has separate risks and can affect coordination and judgement for several hours. The team providing it should explain these risks and the arrangements needed afterward.

What happens next

You can usually return to normal activities immediately after a routine scan. If you received sedation, follow the discharge instructions and do not drive until the advised restriction has passed.

At routine follow-up, the person who requested the scan will explain how the findings relate to your symptoms. Next steps may include physiotherapy, activity changes, medicines, an

injection, further imaging or referral to a shoulder specialist. The scan result alone does not determine treatment.

Do not wait for a routine MRI report if you develop urgent symptoms after an injury, such as a cold, pale or blue hand, new loss of feeling, marked weakness, or an obvious deformity. Seek urgent assessment for a hot, red and swollen shoulder with fever. Call emergency services for shoulder discomfort accompanied by chest pressure, severe shortness of breath, sweating or collapse.

Common questions

Can I drink coffee before a shoulder MRI?

Usually, yes. Coffee does not affect routine MRI images. If you are having sedation, follow the fasting instructions from the imaging centre, which may restrict coffee and other drinks.

Does the time of day matter?

Usually not. Choose a time when you are more likely to lie still comfortably. Appointment timing may matter if sedation, contrast or another procedure is planned.

Can I exercise beforehand?

Normal activity is usually fine. Hard exercise may make an already painful shoulder more uncomfortable and harder to keep still. Follow any specific instructions given for your scan.

Can I drive home afterward?

You can generally drive after a routine MRI without sedation. Do not drive if you have been sedated. After an MR arthrogram, ask whether temporary soreness or restricted movement could affect driving safely.

Will my whole body go inside the scanner?

Your shoulder must be near the centre of the scanner, so much of your upper body may be inside. The exact position depends on the scanner. Tell staff beforehand if enclosed spaces make you anxious.

Do I need contrast dye?

Most shoulder MRI scans do not require it. Contrast may be useful for certain questions, including suspected labral injury, infection, a mass or assessment after surgery. The imaging team will use the protocol requested for your situation.

Sources

- American College of Radiology and Radiological Society of North America - MRI of the Shoulder
- American College of Radiology - Appropriateness Criteria: Chronic Shoulder Pain
- American College of Radiology - Appropriateness Criteria: Acute Shoulder Pain
- US Food and Drug Administration - MRI safety information
- NHS - MRI scan
- American College of Radiology - Manual on Contrast Media