# HARRIS ORTHOPAEDICS AND SPORTS MEDICINE

# **MRI** Arthrogram



# Your doctor has ordered an MRI arthrogram - How is this different from a regular MRI?

MRI arthrogram (AKA: arthrogram) is an imaging study using magnetic resonance imaging (MRI). This exam demonstrates more detail of the interior of the joint than standard MRI because contrast is injected into the joint.

- MRI A specialized diagnostic imaging study done to obtain high quality images of the ligaments, tendons, and cartilage that reinforce the joint to help find the source of your current problem.
- MRI arthrogram An imaging study involving injection of a contrast agent into the problem joint.
- Contrast agent Sometimes called "radiology dye," used to highlight certain areas of the body during imaging exams. The dye that is injected into the joint is clear with a water-like consistency.

#### How is MRI arthrogram different from the regular MRI continue...

With an MRI arthrogram your doctor will be able to better visualize a joint in your body, more than a routine MRI; this test is often used when looking at the shoulder joint (but it can be preformed on any body joint), because the structures within the shoulder are so tight, most the other joints a regular MRI will be ordered rather then MRI arthrogram. An MRI arthrogram is a radiographic procedure in which a radiologist injects contrast material into the joint before the MRI exam is completed; in a regular MRI there is no contrast used that's the difference.

First the radiologist will explain the procedure and you will need to sign a consent form. Next, the radiologist will cleanse the area over the joint and the skin will be numbed with a local anesthetic (this may burn for a moment.) The radiologist will use x-ray fluoroscopy to place a needle into the joint and to observe the contrast material being injected into the joint. The contrast material is put into your affected joint, which allows your doctor to see the soft tissue structures of your joint, such as tendons, ligaments, muscles, cartilage, and your joint capsule. These structures are not seen on a plain X-ray without contrast material. You will then be taken over to the MRI suite for the completion of the exam. The technologist will be observing you and giving you instructions during the exam.

An MRI arthrogram is used to check a joint to find out what is causing your symptoms or problem with your joint. An MRI arthrogram may be more useful than a regular X-ray because it shows the surface of soft tissues lining the joint as well as the joint bones. A regular X-ray only shows the bones of the joint. This test can be done on your hip, knee, ankle, shoulder, elbow, wrist, jaw (temporomandibular joint) etc....

Other tests, such as magnetic resonance imaging (MRI) and computed tomography (CT), give different information about a joint. They may be used with an arthrogram or when an arthrogram does not give a clear picture of the joint.

#### Related Documents: A Patient's Guide to MRI

# Why is an MRI arthrogram being done?

Although MRI without contrast is quite useful in many cases, certain joints and certain problems require injecting contrast into the joint, as in your case. Your doctor feels that the MRI arthrogram is one way to obtain information and images of the area of concern. The information obtained during this procedure will help guide future treatment options, and may also be used to keep tabs on a condition that you already have and are perhaps being treated for.

#### How is the procedure performed?

The first part of the procedure will be done in a special procedure room in the radiology department. Your skin will be cleaned with an antiseptic soap. Using a needle, the radiologist will then anesthetize the area using a local anesthetic. After the area is numb a needle will be placed into the joint space using fluoroscopy. When the needle is in the correct place, the contrast will be injected and a number of X-ray images will be taken. This part of your study will take about 30 minutes, after which you will be sent to the MRI scanner for the rest of your study. The MRI may take as long as 45 minutes.

- Local anesthesia The **temporary** loss of sensation, especially that of pain, only in the area of the body where an anesthetic drug is applied or injected.
- Fluoroscopy An X-ray machine that allows the radiologist to see images in real time.

# Why It Is Done

An MRI arthrogram is used to find the cause of ongoing, unexplained joint pain, swelling, or abnormal movement of your joint. It may be done alone or before other tests, such as MRI, CT, or arthroscopy.

An MRI arthrogram is used to:

- Find problems in your joint capsule, ligaments, cartilage (including tears, degeneration, or disease), and the bones in the joint. In your shoulder, it may be used to help find rotator cuff tears and the cause of a frozen shoulder.
- Find abnormal growths or fluid-filled cysts.
- Confirm that a needle has been placed correctly in your joint before joint fluid analysis, a test in which a sample of joint fluid is removed with a long, thin needle.
- Check needle placement before a painkilling injection, such as a corticosteroid injection.

# How It Is Done

An MRI arthrogram is usually done by a medical specialist called a radiologist who specializes in performing and interpreting X-rays, MRI's, Arthrogram's, and CT's.

You will be asked to remove any jewelry or metal objects from the joint area. You will then sit or lie down with your joint under an X-ray viewer (fluoroscope) that is hooked to a video screen that can show X-ray pictures. The skin over your joint is cleaned with a special soap and draped with sterile towels. A local anesthetic is used to **temporary** numb the skin and tissues over the joint.

A needle is put into your joint area. Joint fluid may be removed so that more dye or air can be put into your joint. A sample of your joint fluid may be sent to a lab to be looked at under a microscope. The fluoroscope shows that the needle is placed correctly in your joint. The dye or air is then put through the needle into your joint. Your joint may be injected with both dye and air (double-contrast arthrogram). The needle is then removed.

You may be asked to move your joint around to help the dye or air spread inside your joint. Pictures from the fluoroscope show if the dye has filled your entire joint. Hold as still as possible while the X-rays are being taken unless your radiologist tells you to move your joint through its entire range of motion. The X-rays need to be taken quickly, before the dye spreads to other tissues around your joint.

If you are having a CT scan or MRI after an arthrogram, a small amount of a medicine called epinephrine may be mixed with the dye to stop the dye from spreading into other tissues.

An arthrogram usually takes about 30 to 60 minutes.

After the arthrogram, rest your joint for about 12 hours. Do not do any strenuous activity for 1 to 2 days. Use ice for any swelling and use pain medicine for any pain. If a bandage or wrap is put on your joint following an MRI arthrogram, you will be told how long to use it.

# How does it feel with the injection of the contrast material (arthrogram)?

With the arthrogram part of the test (AKA: injection of the contrast material) you will feel a prick and sting when the anesthetic is given. You may **temporary** feel tingling, pressure, pain, or fullness in your joint as the dye is put in.

You may have some mild discomfort, tenderness, and/or swelling of the joint following the examination. You may also hear a grating, clicking, or cracking sound when you move your joint. This is normal and goes away in about 24 hours. It is best to rest the joint for 12 hours after the procedure. During this time you may apply ice if swelling occurs and take a mild pain reliever such as Tylenol. If symptoms continue or worsen, immediately call your doctor.

The actual testing or MRI does not hurt, it is loud, but does not cause pain. More about the MRI testing will follow in the next section.

#### After the contrast material is injectioned how does the MRI test feel or preformed?

The X-ray table may feel hard and the room may be cool. And the MRI is Very loud, but the MRI staff will give you ear plugs to help cut down on the loud noise.

A magnetic resonance imaging (MRI) test is usually done by an MRI technologist. The pictures are usually interpreted by a radiologist. But some other types of doctors can also interpret an MRI scan.

You will need to remove all metal objects (such as hearing aids, dentures, jewelry, watches, and hairpins) from your body because these objects may be attracted to the powerful magnet used for the test. Other things that need to be removed are credit cards or ATM cards with scanner strips on them because the MRI magnet may erase the information on the cards. You may be asked to wear a hospital gown if you are wearing clothes that have metal buttons/zippers; it is best to wear sweatpants type material with draw strings vs. pants with buttons/zippers. You'll need to remove any metal objects, such as jewelry, that might interfere with image results.

During the test you will lie on your back on a table that is part of the MRI scanner. The table will slide into the space that contains the magnet. A device called a coil may be placed over or wrapped around the area to be scanned. A special belt strap *may* be used to sense your breathing or heartbeat. This triggers the machine to take the scan at the right time.

Some people feel nervous (claustrophobic) inside the MRI magnet. If this keeps you from lying still, you can be given a medicine (sedative) to help you relax. Some MRI machines (called open MRI) are now made so that the magnet does not enclose your entire body. Open MRI machines may be helpful if you are claustrophobic, but are not available everywhere. The pictures from an open MRI may not be as good as those from a standard MRI machine. See pictures of a standard MRI machine and an open MRI machine below.

Inside the scanner you will hear a fan and feel air moving. You may also hear tapping or snapping noises as the MRI scans are taken. You may be given earplugs or headphones with music to reduce the noise. It is very important to hold completely still while the scan is being done. You may be asked to hold your breath for short periods of time.

#### After the contrast material is injectioned how does the MRI test feel or preformed continue...

During the test, you may be alone in the scanner room. But the technologist will watch you through a window. You will be able to talk with the technologist through a two-way intercom.

If contrast material is needed, the technologist may put it in an intravenous (IV) line in your arm. The material may be given over 1 to 2 minutes. Then more MRI scans are done.

An MRI test usually takes 30 to 60 minutes but can take as long as 2 hours.

Standard MRI machine



#### How to Prepare

You must not take any blood thinning medications for 48 hours before and 24 hours after the arthrogram. These include prescription drugs, aspirin products, and vitamin E. This exam does not require any fasting, but it is preferable that you have clear liquids only for 2 to 3 hours before the exam. The entire examination should take approximately 1 to 1 1/2 hours.

You may not be able to have an MRI if you have one of the following:

- Cardiac Pacemaker
- Cerebral Aneurysm Clip
- Metallic Implants
- Cochlear Implants
- Metal fragments in your eye or other parts of your body
- Prosthetic Implants
- Women who are pregnant

Please be sure your doctor and the MRI staff are aware of any of these conditions. If you have any questions, be sure to ask!



## What the Radiology Department Needs to Know

- Are allergic to iodine. The dye used for an arthrogram may contain iodine
- Have ever had a serious allergic reaction (anaphylaxis) from any substance, such as a bee sting or eating shellfish.
- Are you allergic to local anesthetics such as lidocaine or novacaine?
- Are allergic to any medicines, including anesthetics.
- Do you have diabetes or take metformin (Glucophage) for your diabetes.?
- Have asthma.
- Have bleeding problems or do you take Coumadin or other blood-thinning medicines?
- Are you being treated now for any kind of infection?
- Do you have a history of claustrophobia?
- Have arthritis that is bothering you at the time of your test.
- Have a known infection in or around your joint. The dye may make your infection worse
- Do you have any metal in your body such as a pacemaker, aneurysm clips, artificial heart valves, hearing aids, medication pumps, dentures, orthopedic items such as pins, rods, wires, plates, and/or any shrapnel or gun shot fragments?
- For women, are you using an IUD or diaphragm, breastfeeding an infant, pregnant or suspect that you are pregnant?

#### Risks

You can have a few problems from an arthrogram, such as:

- Joint pain for more than 1 or 2 days.
- An allergic reaction to the dye.
- This is <u>very rare</u> because the needle that is used is small, but damage to the structures inside your joint or bleeding in the joint.
- Infection in the joint.

There is always a slight risk of damage to cells or tissue from being exposed to any radiation, including the low levels of radiation used for this test. However, the risk of damage from the X-rays is usually very low compared with the potential benefits of the test. For example, the radiation exposure from a chest X-ray is about equal to the natural radiation exposure received during a round-trip airline flight from Boston to Los Angeles (Montreal to Vancouver) or ten days in the Rocky Mountains (Denver, Colorado).

#### What Affects the Test

Reasons you may not be able to have the test or why the results may not be helpful include:

- If you cannot hold still during the test. The pictures may not be clear.
- If there is a large amount of fluid in your joint. This may affect the spread of the dye and the pictures.

#### After Your MRI Arthrogram

You may leave the department right after your MRI. Restrict yourself to light activity the rest of the day. You may resume normal activities the next day. Your joints may be stiff or sore the next day, but this should get better in one or two days. If you have significant pain after the test, please contact us or your referring doctor right away. A rare, but possible problem is joint infection, which should be treated right away.

#### **Obtaining Your Test Results**

The findings from your test are reviewed and interpreted by the radiologist. These results will be given to your referring doctor, who will also interpreted the reading share them with you during your follow-up visit. After your doctor has seen the condition of your joint area, further treatment with medicine, physical therapy, or surgery may be recommended.

<sup>\*</sup> References available upon request