

# Role of MRI Machines in Orthopedics



Orthopedics is one of the vast fields in the medical niche and it is growing at a good pace. The continuous growth of the field of orthopedics has helped in the treatment of certain serious conditions that were difficult or impossible to treat earlier. Besides all this, medical devices/machines like MRI machines also play a key role in orthopedics but special care is required with its use.

Orthopedic surgeries require the application of metal implants and [Trauma Instruments](#) like Titanium Screw for Surgery, Orthopedic Bone Plates, and DCS Orthopedic Implants, and before going for an MRI scan, it is important to ask the patient whether any trauma implant is there in the body or not.

In this post, we will see how MRI works in orthopedics, what care is required, and what the reason behind that is.

## Working of MRI Machine

MRI machine works with the help of its primary components namely:

- The primary magnet
- The gradient magnets
- The coil

The primary magnet is the permanent one and it is treated in liquid helium at a temperature of 450 degrees F below zero to produce magnetic fields of 1.5 to 3 Tesla. The strength of most MRI machines used in hospitals and other health care centers is 1.5 to 3 Tesla only.

Besides a primary magnet, there are 3 small gradient magnets in the MRI machine and they help in precisely altering the magnetic field. These magnets help create small parts of the human body and allow the doctor to take the image of the targeted area. For differentiating the tissues in the human body, the MRI machine uses the properties of hydrogen atoms. A property of atoms known as “spin” is used by the machine to identify tissues between other compounds like fats, muscles, and tendons. When the magnet in the machine is turned on, nuclei of hydrogen atoms spin in one of two directions. Now, to spin it in the other direction the coil emits radio frequency and that results in the transition. The images produced by MRI are due to the energy released by the transitioning or processing of molecules.

## **Points to Consider While Going for MRI Scan**

For the safety of the patients and reliability of the test, certain points are required to be considered:

### **Metals in the Body**

Here is the point where the field of orthopedics comes into place. Most commonly, the metals in the human body are placed to fix any serious orthopedic condition like fractures. Orthopedic implants are generally made of metal alloys where the most commonly used metals in the highest proportion include stainless steel and titanium. Though studies have confirmed that most trauma implants are compatible with MRI machines, it is important to tell the technician or doctor before going for the scan for safety purposes. Metallic eye implants and aneurysm clips in the brain are known to cause complications during MRI scans. So, such people must avoid going for MRI scans that have these implants in their bodies.

### **Implanted Devices**

Patients with pacemakers and internal defibrillators must also avoid any MRI scan. If any doctor prescribes this, do inform him about such implants in your body.

## **Metal Jewelry or Clothing**

Make sure that no metal jewelry or clothing is there on your body while going into the MRI machine for scans.

Remember, metal objects closer to MRI machines could be dangerous and life-threatening. So, both patients and MRI staff need to be very careful about this.

MRI machines are also important in diagnosing stress fractures and other musculoskeletal injuries when other diagnostic procedures fail. For the content source, contact SIORA SURGICALS PVT. LTD. The company is also looking to become one of the experienced [Orthopedic Equipment Suppliers in Italy](#).

## **Contact Information**

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