

## Contraindications to MRI

Contraindications are divided into absolute and relative contraindications. Relative contraindications may allow the conduction of the examination, but definitely need clarification.

### Absolute contraindications

- Implanted medication pump
- Cardiac pacemaker
- Hearing implant if the patient cannot remove the outer component by themselves
- ARROW epidural catheter – must be removed before the examination
- Fragments of metal in the eye
- Six to eight weeks must have passed from last surgery (including dental implantation, nasal septal surgery, intrauterine device implementation)

### Relative contraindications

- Aneurysm clips
- Glycose sensor
- Endoscopic camera
- Infusion, insulin or other medication pumps
- Urinary catheter with temperature sensor
- Piercings/microdermal piercings
- Metal containing makeup products and nail decorations
- External fixations of fractures
- Peritoneal dialysis catheter
- Retinal prosthesis
- Internal orthopaedic prostheses
- Neurostimulator
- Inner ear implant
- Pacemaker electrodes without the pacemaker
- Intracranial pressure sensors
- Holter
- Fever
- Fresh tattoos
- Pregnancy

## More specific

### Aneurysm clips and coils

The examination may be performed if the clips or coils were placed after the year 2000 and if six to eight weeks after the procedure.

### Glycose sensor

Must be removed before the examination.

### Infusion, insulin or other medication pumps

All medication and infusion pumps must be removed before the examination.

### Fever

The fever should be reduced with appropriate medications before the examination. If the fever cannot be controlled, the examination may be performed only with consent from the radiologist. The examination cannot not be performed if the fever is above 39 degrees. No examinations are performed on children with a fever.

### Venous access port

If the port has been placed after the year 2000, the examination can be performed with a 1.5 T device. PLEASE NOTE! The port catheter must be removed before the examination.

### Peritoneal dialysis catheter

If it has been placed after 2000, the examination can be performed with a 1.5 T device.

### Pregnancy

Pregnant women may have an MRI throughout their pregnancy with a 1.5 T device if the radiologist has evaluated the need for the examination. It would be better to avoid the examination during the first trimester. The contrast agent is contraindicated in pregnancy.

### Internal orthopaedic prostheses

Modern orthopaedic prostheses and implants (including plates, screws and bone marrow nails used for fracture fixation) are generally made of a material suitable for magnetic examination. Orthopaedic prostheses and implants placed before the year 2000 may heat up during the scan. The risk is small and is likely to be significantly lower than the benefits of the examination. At least six to eight weeks must have passed from the surgery.

### Stents

Coronary artery stents, aortic stents, lower extremity vascular stents and gallbladder and pancreatic duct stents are permitted if placed after the year 2000. In addition, it is recommended for six to eight weeks to have passed since the stent was placed, unless otherwise specified in the manufacturer's instructions.

### Artificial heart valves and valve prostheses

If it has been placed after the year 2000, the examination can be performed with a 1.5 T device. In addition, it is recommended for six to eight weeks to have passed since it was placed, unless otherwise specified in the manufacturer's instructions.

### Pacemaker wires/electrodes without the pacemaker

The cardiologist and radiologist have to assess the necessity and feasibility of the examination.

### Tattoos (including permanent makeup)

The tattoo must be healed. Some tattoo inks contain more iron particles (especially red ink) and this can cause the tattoo to heat up during the scan. In addition, if the tattoo is within the study area, a metal artifact may appear on the MRI image.

### Piercings/microdermal piercings

Prior to the test, piercings should be removed or replaced with metal-free piercings. Surgical metal piercings outside the examination area are permitted.

## Request more information

- From the medical device manufacturer
- From the MRI radiology technician/radiologist
- [www.mrisafety.com](http://www.mrisafety.com)

## GENERAL

Whenever information is received that there is a foreign body inside the patient's body or it is possible that the patient's condition is causing a contraindication for the examination, the case should be considered in detail.

In case of doubt, always refer to the contraindications guide and safety lists ([www.mrisafety.com](http://www.mrisafety.com)) or consult a radiology technician/radiologist in the MRI office.

During the scan, the patient's body warms up. A strong magnetic field in the MRI scan room can damage foreign objects and electromagnetic devices in the body (e.g. stimulator, medication pump) even if they are not in the examination region. In addition, foreign bodies in the body can cause stimulation of the nervous system or equipment malfunctions in a changing magnetic field.

Only MRI-safe assisting devices may be brought into the examination room. Everything else that comes with the patient (wheelchair, rollator, crutches and the bed) is always left outside the examination room. Patients with reduced mobility are taken to the examination room in an MRI-compatible wheelchair. It is not possible to serve patients with a bed or gurney.

Foreign objects may not always be harmful to the patient but may cause artifacts, which may impair the image quality of the examination.

In the case of relative contraindications, the patient will be provided with a signal button and instructions during the examination, and the study will be discontinued if problems occur.