The Medtronic Magnetic Implant is a magnetic device implanted in the bone.

The Medtronic Magnetic Implant consists of two rare-earth magnets hermetically sealed in a titanium frame. The implant is typically located about 2 cm superior and posterior to the patient’s ear.

The two magnets face outward from the side of the head, and are mounted with opposite polarity. The implant is secured to the skull bone with 5 titanium maxillofacial screws.

To minimize demagnetization, avoid facing the side of the patient’s head (ear) toward or away from the bore of the MRI system at any time. As much as possible, maintain 90° between the face of the magnetic implant and the static magnetic field of the MRI system.
Non-clinical testing demonstrated the Medtronic Magnetic Implant is MR Conditional and can be scanned safely using MRI only under the following conditions:

- Remove all external components including the Alpha Sound Processor, Attract™ Magnetic Spacer, Headband or Softband before entering the MR environment.
- Static magnetic field of 3 Tesla or less
- Spatial gradient field of 720 Gauss/cm or less
- Maximum whole-body averaged specific absorption rate (SAR) of 4 W/kg in the First Level Controlled Mode for a maximum scan time of 15 minutes of continuous scanning (per pulse sequence).

In non-clinical testing, the Medtronic Magnetic Implant produced a maximum temperature rise less than 3.2°C during 15 minutes of continuous MR scanning in the First Level Controlled Mode at a maximum whole-body averaged SAR of 4 W/kg. The computed implant temperature increase in response to the worst-case, time-varying magnetic field (94.7 Tesla/second) for the 15 minute possible exposure for a series of clinical MRI scans is less than 2.6°C.

**Image Artifact**

The maximum image artifact size extends approximately 5 cm relative to the size and shape of the implant when scanned in non-clinical testing using the Gradient echo (GRE) pulse sequence in a 3 Tesla/128MHz, Excite, Software 14X.M5, General Electric Healthcare, Milwaukee, WI; active-shielded, horizontal field MR system with a send receive RF coil. Artifacts were less with the T1-weighted, spin echo pulse sequence.

**Implant Function Following MR Scanning**

In non-clinical testing, when positioned parallel to the patient table, the Medtronic Magnetic Implant maintained over 95% of its original magnetic strength after 10 insertions into the static magnetic field and a 10 minute imaging sequence in a 3 Tesla Siemens Tri Clinical MRI Scanner (MRC20587). Additional MRI safety information can be obtained by visiting www.MRISafety.com maintained by Frank G. Shellock, Ph.D., FACR, FISMRR.

**References:**


If you have any questions or need advice in order to ensure patient safety relative to the use of the Medtronic magnetic implant in an MR procedure, contact Medtronic at 800-874-5797.