

## **SAFETY OF MRI AT 1.5 TESLA IN PATIENTS WITH BLADDER NEUROSTIMULATOR**

### Hypothesis / aims of study

Sacral neuromodulation has become an established method to treat voiding dysfunction. Currently the use of Bladder neurostimulator is becoming more popular worldwide. MRI is an important diagnostic tool for many medical and neurological disorders. It is the policy for many radiology centers to avoid patients with bladder neurostimulators from MRI examinations. The basis for that are the potential hazards like motion, dislocation or torquing of the neurostimulator, heating of the leads, damage to the neurostimulator that may result in painful stimulation. On the other hand, many studies were conducted on MRI at 1.5 Tesla in patients with implantable devices have found it to be safely executed, if the area to be imaged is out of the isocenter of the MRI scanner.

### Study design, materials and methods

Eight MRI examinations at 1.5 T were conducted in areas outside of the pelvis on six patients with implanted bladder neurostimulator (InterStim<sup>®</sup> neurostimulator, Medtronic, Inc, Minneapolis, MN). Neurostimulators were examined before and after MRI procedure. All patients had their parameters recorded then devices were put to "nominal" status. Patients were continuously monitored during and after the procedure. Following the MRI session, the site of the implanted device was examined and changes were reported. Devices were then re-programmed to their previous set up using a programmer (model 7432 Medtronic MN). Voiding diaries were collected after MRI procedure and compared to previous records.

### Results

During the MRI session no patient showed symptoms which required stopping the examination. There was no change in perception of the stimulation according to patient's replies following re-programming of the device. Devices were functioning properly, and no change in bladder functions reported after MRI examinations.

### Interpretation of results

Long term follow-up showed no complications due to malfunction of neurostimulators

### Concluding message

Based on this small series, we propose that MRI may be safely done in patients with implantable bladder neurostimulator provided that certain precautions are considered. In addition, follow-up studies are suggested.