Topic: Cochlear Nucleus® 5
Identification of Open MP2 Ground Electrode

There have been reports that a small number of Nucleus CI512 implants (<0.3% of registered devices\(^1\)) have an open circuit on the Monopolar 2 (MP2) ground electrode. In the course of our normal process of continuous improvement, the mechanism that can lead to a MP2 ground electrode open circuit has been identified and processes are being put in place to address this. It is not expected that the hearing performance of your patient will be affected.

The following information is for surgeons and audiologists regarding the management of this situation. The Nucleus CI512 has two extra-cochlear ground electrodes, Monopolar 1 (MP1) and Monopolar 2 (MP2). The use of two ground electrodes is primarily for redundancy and for enhanced NRT recordings. For normal device function, only one of the two ground electrodes is necessary. The MP1 ground electrode is separate from the receiver stimulator and is sometimes referred to as the ball or bullet electrode. The MP2 electrode is the ground electrode located on the casing of the receiver stimulator.

An open MP2 electrode will be identified through routine impedance testing performed using Custom Sound Software, which will automatically flag and deactivate the open electrode. When this occurs, MP1 will become the default mode of stimulation for mapping instead of MP1+2. MP1 is an appropriate and acceptable mode of stimulation. Because the stimulation current flow in the cochlea does not change when the ground electrode selection changes, it is not expected to influence hearing performance.

Guidance for Clinical Management

**Intraoperative Management**
If an open MP2 electrode is identified during Impedance Testing in the OR using Custom Sound programming software, please follow these recommendations:

1. Confirm that the skin flap is moist and in contact with the receiver stimulator.
2. Unflag the MP2 and any other flagged electrodes and re-run impedances. If MP2 is still open, the surgeon should use his or her clinical judgement about whether to go to a backup device.
3. If your intraoperative protocol includes measuring NRT, run Auto NRT\(^2\) as usual.

**Postoperative Clinical Management**

1. If an open MP2 electrode is identified during postoperative impedance testing, the patient should be programmed in MP1 mode.
2. Auto NRT\(^2\) may be run as usual.
3. When changing stimulation mode from MP1+2 to MP1, T/C levels are expected to be the same or at least similar between the two modes; there may be an average 10% increase in impedance values; and there may be a possible reduction in battery life (between 4-7%) depending on the stimulation rate. There is no expected impact on hearing performance.
4. MP2 should remain flagged for exclusion in all future MAPs.

If you have any questions about the functionality of the implant during surgery, Cochlear will always support your decision.

If you have any questions regarding this issue please contact your Clinical Applications Specialist or Audiology on Call at 877-883-3101.

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1. As of June 2011
2. The exclusive use of MP1 may introduce additional noise into the NRT recordings and make it difficult to obtain the response.