

CT-GUIDED SACRAL NEUROMODULATION S3 - A NEW TARGETED APPROACH AFTER INITIAL TREATMENT FAILURE: THE FIRST 10 PATIENTS

Hypothesis / aims of study

Insertion of tined lead electrodes through the neuroforamen to the sacral root S3 under fluoroscopy is established for Sacral Neuromodulation (SNM). This approach is not feasible in some patients due to anatomic abnormalities. Our trial is to evaluate a Computed tomography (CT) - guided SNM procedure as a more targeted approach for electrode placement in patients who fail with the standard procedure.

Study design, materials and methods

We included 10 patients (7 female, 3 male, mean age 47a). Indications for SNM were overactive bladder (3), retention (4), retention due to meningocele (3). In 5 patients conventional puncture failed primarily, one patient was considered to be not accessible for conventional SNM due to trauma and in four patients an intraoperative positioning control was required due to electrode dislocation after initially successful SNM. The individual anatomy and the subsequent "roadmap" were figured out by an initial planning CT. CT- guided S3 approach itself was conducted in local anaesthesia by sequential scanning of the needle insertion. Once the nerve was reached according to CT criteria, the clinical response was evaluated. If an adequate stimulation result was confirmed, the electrodes were implanted again under CT guidance using the standard tools via guide wire. Further clinical evaluation was according to our standard protocol.

Results

Bilateral S3 nerve root could be well identified by CT in all cases. CT-guided S3 access and an adequate clinical response could be obtained. The needed stimulation parameters were comparatively low. All patients were implanted bilaterally due to the specific clinical set up. Operation time was between 45 – 90 minutes. All but one patients underwent definitive IPG implantation after a successful clinical trial according to our standard criteria. No short/long term complications were observed.

Interpretation of results

SNM is an expensive therapy associated with considerable revision rates up to 50% according to literature. Imaging to ensure proper electrode placement during conventional SNM is not available either. CT-guidance might help increase response rates, improve clinical effects and reduce reinterventions due to lead- repositioning.

Long term SNM efficiency might be increased by lower stimulation parameters needed after CT SNM. It might even be considered for patients with SNM failure after initial effectiveness. We will evaluate the stimulation parameters closely on the long run and evaluate more patients not suitable for the conventional SNM to prove this approach for new indications.

Concluding message

CT-guided sacral neuromodulation (S3) offers a reliable and safe option for patients who are not suitable for or fail SNM under fluoroscopy due to anatomical complexity like meningocele, narrow neuroforamina or following a trauma.



References

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Disclosures

Funding: NONE **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** Written informed consent was obtained from each patient, the local ethics committee did not require an ethical approval **Helsinki:** Yes **Informed Consent:** Yes