SNM – Sacral neuromodulation:

Intraoperative electromyography (EMG) monitoring for optimization of electrode placement

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Optimal SNM electrode position for:

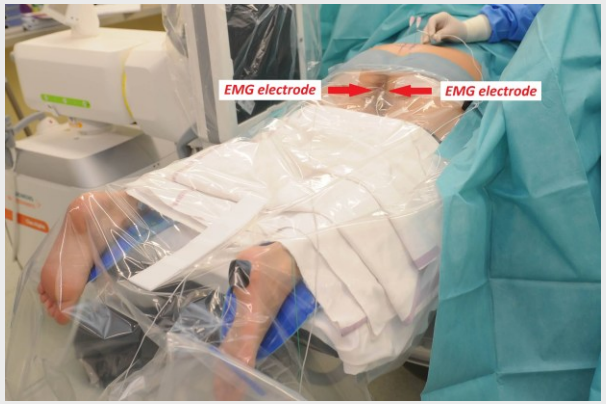
- improvement of SNM outcome
- lower stimulation currents
- longer battery life
- less adverse effects

Current guidelines for optimal SNM electrode placement:

- visual detection of pelvic floor elevation (bellows response)

Why EMG?

- EMG is more sensitive for muscle contraction than visual detection.
- Some patients (~10 %) do not present with visually detectable bellows response when S3 or S4 spinal nerve is stimulated.



Our results:

- 50 patients (bladder / bowel / pain / sexual dysfunction)
- success rate: 92 % faecal incontinence
  91 % urinary incontinence
  73 % urinary retention women
  20 % complete urinary retention men
- currents needed to reach sensory threshold:
  95 % < 1.0 mA
  10 % 0.2 mA

insertion of needle EMG electrode on either side of external anal sphincter

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recording of EMG activity during stimulation in foramina S3 and S4 bilaterally

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implantation of SNM electrode in foramen with lowest threshold for EMG response

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stimulation of all four electrode contacts and determination of threshold

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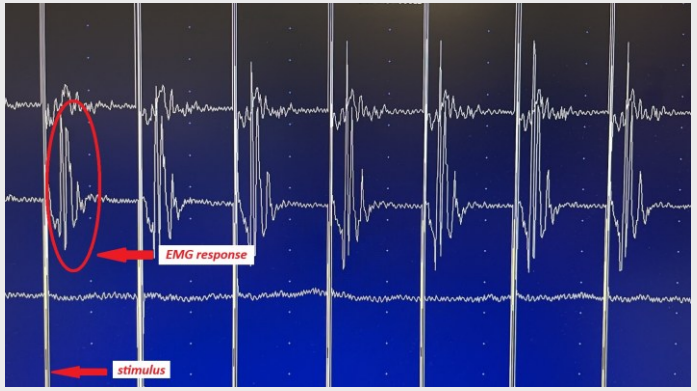
repositioning of electrode until EMG and motor threshold are optimal



EMG signal in external anal sphincter during SNM needle testing