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Pain 2
A novel and objective method of evaluation of the pain component/paresthesia coverage using comparative multiparametric tactile interface software and database analysis

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Background/objective: One of the major challenges of neurostimulation is actually to address the back pain component in patients suffering from refractory chronic back and leg pain. To be able to evaluate and compare objectively patient outcomes, depending on therapeutic strategies, it appears essential to develop a rational and quantitative approach to pain assessment and neurostimulation outcomes for those who undergo neurostimulation implantation.
Materials/methods: Our neuroinformatics laboratory (N3Lab) located in Poitiers University Hospital, Department of Neurosurgery, enabled us to develop the Neuro-Mapping Tools software (N3MT) (Inter Deposit Digital Number: IDDN FR 001-1600002-000-R-P-2013-000-31230; Patent Applications n°PCT/EP2014/067231, n°PCT/FR 14/000 186 and n°PCT/FR 14/000 187). This tool consists of touch screen mapping, allowing the patient and/or the physician to interact by means of a tablet computer to delineate painful zones and paraesthesia coverage in the thoracolumbar region and legs.
Results: The software is used in more than 190 patients since 2012, leading us to describe new measurement parameters, divided into two categories: 1) Technical parameters, evaluating the implanted device itself, 2) Clinical parameters, evaluating patient response to the therapy.
Conclusions: The software is an original software designed to objectively and quantitatively characterize reduction of a painful area in a given individual, in terms of intensity, surface and pain typology, in response to a treatment strategy or implantation of an analgesic device. The software could help to guide tomorrow's treatment options by transforming personal convictions into a more robust scientific rationale based on data collection and data mining techniques.

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Pain 2
Multicolumn spinal cord stimulation surgical lead implantation using an optic transligamentar minimally invasive technique

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Background: A new generation of neurostimulation surgical leads is used to increase the success of spinal cord stimulation (SCS) in difficult-to-treat indications such as Failed Back Surgery Syndrome (FBSS). This makes the implant procedure more invasive, which is likely to be a determinant factor in clinical and functional outcomes. Minimal access spinal technologies (MAST) have been previously used for surgical lead implantation. However, only a unilateral approach was described, causing some difficulties for median lead placement and not always preventing laminectomy. A recent MAST technique can be used to implant SCS leads without these limitations, which seems to be key in the positive outcomes experienced. The objective is to describe the original MAST technique used in the pilot study.
Methods: Twenty-four consecutive patients were implanted with a multicolumn surgical lead for refractory chronic back and leg pain using the optic transligamentar MAST technique described extensively. Clinical outcomes, functional ability and adverse events (AEs), were recorded for up to 12 months after surgery.
Results: The MAST technique allowed median lead placement, facilitated visualization of the spine and permitted transligamentar insertion that minimized scarring and muscle damage, intraoperative blood loss and postoperative functional complications. Back pain decreased significantly at all follow-up, while functional status improved significantly at 1 year. No technique-related AEs were reported.
Conclusions: Use of MAST approach could be useful in safe implantation of multicolumn surgical leads and confer major advantages in difficult-to-treat refractory lower back pain conditions such as FBSS.

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