Overview of neurophysiology in functional neurosurgery

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Conflict of interest statement  

Dr. med. Univ. Klaus NOVAK

- Consultation honoraria
  - Medtronic

- Advisory board member
  - NeuroScios GmbH

- Travel support
  - Boston Scientific
  - Integra GmbH
  - Nevro Germany GmbH
  - LivaNova Austria GmbH
  - DID Medical
Monitoring of neurological function

- Prediction of outcome
- Monitoring of NS integrity
- Detection of neurological injury
- Neuroprotection

- Optimizing of the surgical outcome (Epilepsy Surgery, MVD, DBS, SCS)
<table>
<thead>
<tr>
<th><strong>Brain Surgery</strong></th>
<th><strong>Spine Surgery</strong></th>
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<tbody>
<tr>
<td>• Epilepsy Surgery (ECoG)</td>
<td>• Spinal Cord Stimulation</td>
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<tr>
<td>• Microvascular Decompression</td>
<td>• DREZ-Lesioning</td>
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<td>(Jannetta-Operation)</td>
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<td>• Deep Brain Stimulation</td>
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Intrinsic Epileptogenicity of Human Dysplastic Cortex as Suggested by Corticography and Surgical Results

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Francois Dubé, MD, FRCP(C),† Jaderson C. da Costa, MD, PhD,* André Olivier, MD, PhD, FRCS(C),†
Donatella Tampieri, MD,† Pierre Gloor, MD, PhD,† Felipe Quesney, MD, PhD,† Eva Andermann, MD, PhD,†
Eduardo Paglioli, MD,* Eliseu Paglioli-Neto, MD,* Ligia Coutinho, MD, PhD,*
Richard Leblanc, MD, FRCS(C),† and Hyoung-il Kim, MD, PhD†


- Resection of brain areas that display ictal or continuous epileptogenic discharges (I/CEDs) is crucial for best seizure control
Monitoring of Lateral Spread Response (abnormal muscle response ABR) in MVD for HFS

- Monitoring of AMR has a guiding role in 33.8%, and a confirming role of 52.7%
Intraoperative Neurophysiology in Functional Neurosurgery

### Brain Surgery
- Epilepsy Surgery (ECoG)
- Microvascular Decompression (Jannetta-Operation)
- Motor Cortex Stimulation
- Deep Brain Stimulation

### Spine Surgery
- Spinal Cord Stimulation
- DREZ-Lesioning
Intraoperative Neurophysiology in Functional Neurosurgery

Brain Surgery
- Epilepsy Surgery (ECoG)
- Microvascular Decompression (Jannetta-Operation)
- Motor Cortex Stimulation
  - SEP-Phase Reversal
- Deep Brain Stimulation

Spine Surgery
- Spinal Cord Stimulation
- DREZ-Lesioning
Spinal Cord Stimulation

Neuromonitoring for Spinal Cord Stimulation Lead Placement Under General Anesthesia

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Spinal cord stimulation (SCS) is a common therapeutic technique for treating medically refractory neuropathic back and other limb pain syndromes. SCS has historically been performed using a sedative anesthetic technique where the patient is awakened at various times during a surgical procedure to evaluate the location of the stimulator lead. This technique has potential complications, and thus other methods that allow the use of a general anesthetic have been developed. There are two primary methods for placing leads under general anesthesia, based on 1) compound muscle action potentials and 2) collisions between somatosensory evoked potentials. Both techniques are discussed, and the literature on SCS lead placement under general anesthesia using intraoperative neurophysiological mapping is comprehensively reviewed.

Key Words: Spinal cord stimulation, EMG, Standard somatosensory evoked potential, Collision, Neurophysiology.

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- CMAP Technique
- Collision Technique
Brain Surgery

- Epilepsy Surgery (ECoG)
- Microvascular Decompression (Jannetta-Operation)
- Motor Cortex Stimulation
  - SEP-Phase Reversal
- Deep Brain Stimulation

Spine Surgery

- Spinal Cord Stimulation
- DREZ-Lesioning
  - SEP and MEP Monitoring

Clinical Study

DOI: 10.1159/000479889

Intraoperative Neurophysiological Monitoring (Motor and Somatosensory Evoked Potentials) in Dorsal Root Entry Zone Lesioning for Brachial Plexus Avulsion Pain

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James Parkinson

founding member of the Geological Society of London

SHAKING PALSY.

CHAPTER I.

DEFINITION—HISTORY—ILLUSTRATIVE CASES.

SHAKING PALSY. (Paralysis Agitans.)

Involuntary tremulous motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forwards, and to pass from a walking to a running pace: the senses and intellects being uninjured.

The term Shaking Palsy has been vaguely employed by medical writers in general. By some it has been used to designate or-
James Parkinson 1755-1824

No.1 Hoxton Square, London 1817

1811
Parkinsonia parkinsoni
Walter Birkmayer 1910-1996

1960

Der L-3,4-Dioxyphenylalanin (= DOPA)-Effekt bei der Parkinson-Akinese

Von W. Birkmayer und O. Hornykiewicz

Aus dem Pharmakologischen Institut der Universität Wien
(Vorstand: Prof. Dr. F. Brücke)
und der Neurologischen Abteilung
des Krankenhauses der Stadt Wien-Lainz
(Vorstand: Prim. Doz. Dr. W. Birkmayer)

<table>
<thead>
<tr>
<th></th>
<th>adult non PD patient</th>
<th>PD patient</th>
<th>postencephalitic patient</th>
</tr>
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<tbody>
<tr>
<td>N. Caudatus</td>
<td>3,5</td>
<td>1,1</td>
<td>0,2</td>
</tr>
<tr>
<td>N. Putamen</td>
<td>3,7</td>
<td>0,8</td>
<td>0,3</td>
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Wiener klinische Wochenschrift

Jg. 73, Heft 45
10. November 1961

L-DOPA: FROM BENCH TO BEDSIDE

Oleh Hornykiewicz *1924

L-Dopa therapy introduced 1967

1961
“Imagination is more important than knowledge“.

“For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.”