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C2 XTEND

C2 NerveMonitor

APPLICATION FIELD

Neurosurgery

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C2 XTEND

A WIDE RANGE OF APPLICATION POSSIBILITIES:

- Direct cortical stimulation
- Speech mapping
- Motor mapping
- Mapping of cranial nerves

Upgrade to all C2 applications is possible:

- EMG module for general surgery and ENT
- Spine module for pedicle stimulation in spinal column surgery
- SEP module for carotid surgery
- pIOM module for colorectal surgery

- Specially developed software for cortical mapping
- Easy and intuitive operation according to the proven C2 software concept
- Stimulation parameter for all types of cortical stimulation – biphasic pulse form and train stimulation are possible
- Clear view of the EMG signals
- Continuous and automated impedance monitoring for the measuring electrodes
- Barcode scanner for patient data
- Integrated database
- Thanks to the intuitive comment function of the C2 software, all relevant events can be controlled at any time, also retrospectively.

C2 Xtend

Advanced Brain Mapping for safe tumor resection

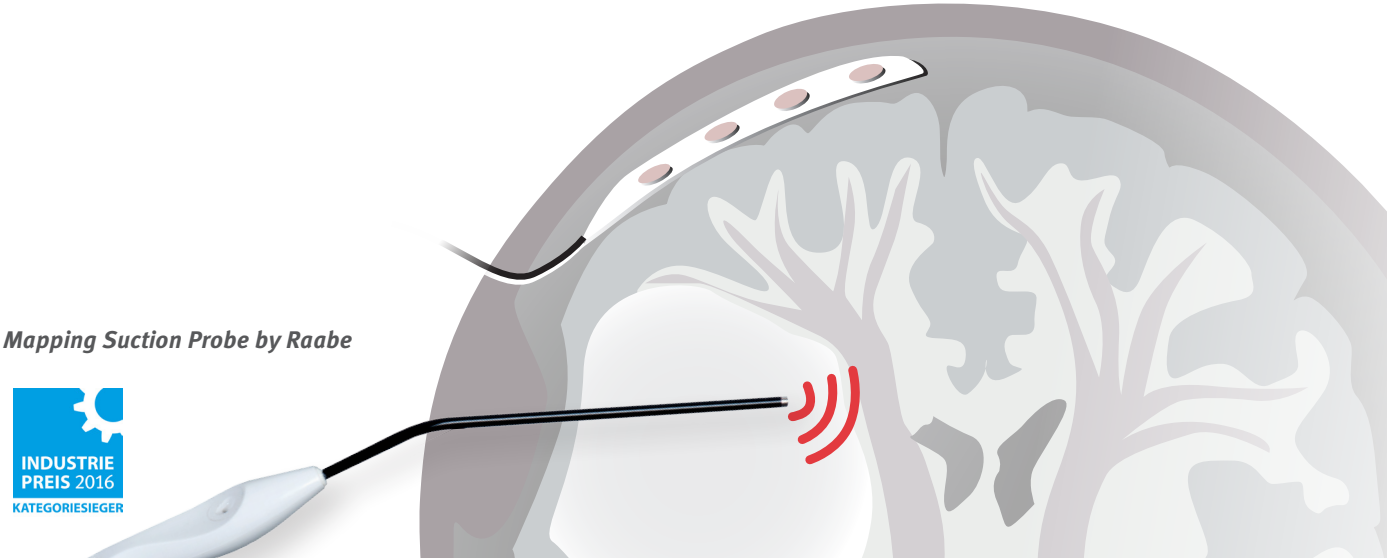
Localisation of functional areas – known as mapping – plays an extremely important role in the surgical resection of brain tumors. Mapping allows the surgeon to localize motor and speech relevant areas and then gently perform the tumor removal by continuous monitoring of this region.

AVOIDANCE OF NEUROLOGICAL DEFICITS THROUGH INTRAOPERATIVE NEUROMONITORING

Intraoperative neuromonitoring (IONM) plays an important role. Using IONM, eloquent functions of the nervous system are continuously monitored during a neurosurgical operation, reducing the patient's risk of postoperative impairments. Simultaneously, the neuromonitoring allows a function-controlled resection of tumors during surgical procedures, which makes it possible to preserve the function of brain areas, connected nerve pathways, the spinal cord and peripheral nerve structures.

›› Measurement mode

Tumors, abscesses or haemorrhages can shift the normal anatomy. On the one hand, this makes orientation more difficult for the surgeon, and causes functional areas to become undetectable. During surgery, functionally important areas of the brain are located using hand-held stimulation probes or strip electrodes, and their integrity is monitored throughout the entire operation.
Standard programs are available for this purpose.
If required, own programs can be created at any time.



Mapping Suction Probe by Raabe

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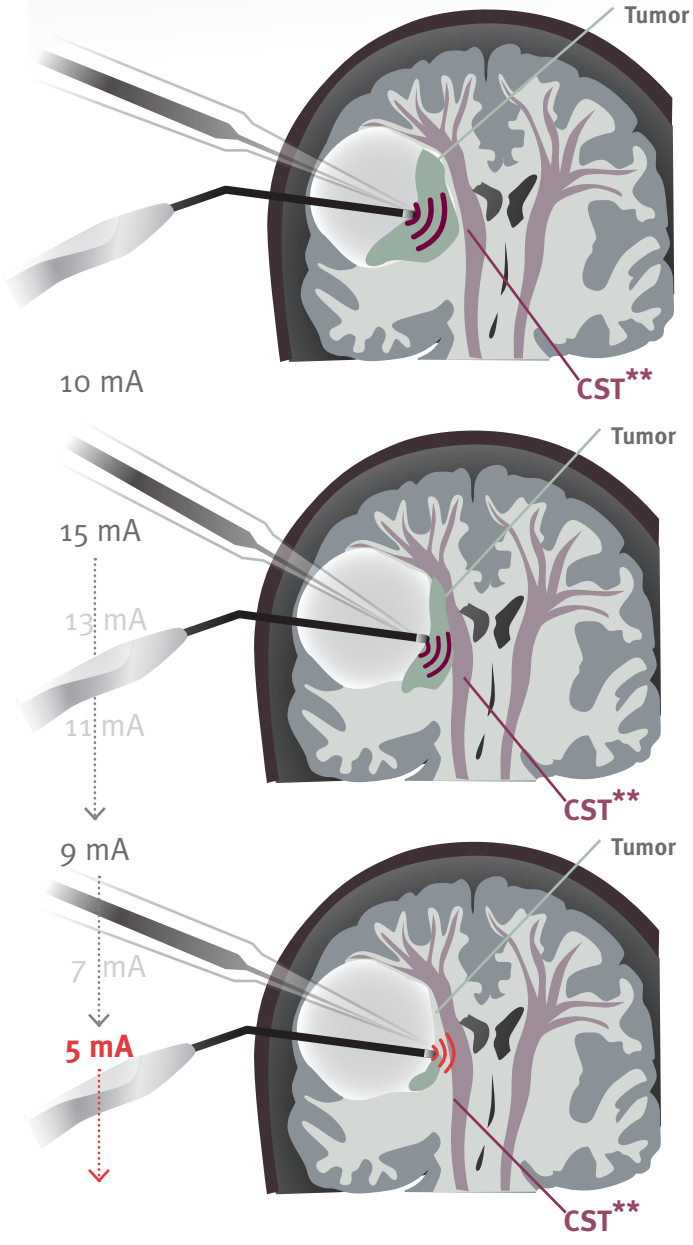
Motor mapping

Protection of corticospinal tracts and motor cortex

Dynamic continuous subcortical mapping simplifies a safe tumor resection.



›› Mapping starts with 10 mA (ca. 10 mm distance to the corticospinal tract)

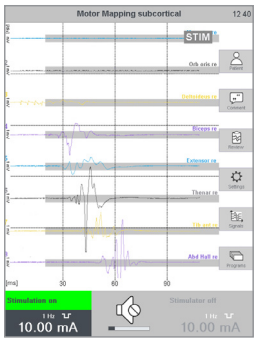
›› Current intensity is proportional to the distance of the corticospinal tract (Rule of thumb: 1mm ≈ 1 mA)

›› If a motor response is triggered, the current should be reduced in 2 mA steps until 5 mA is reached.

›› As soon as a motor response is triggered, the resection should continue on a more distant position to the corticospinal tract.

›› The suction tip is at any time on the same place where the resection is performed and enables continuous mapping.

›› The tumor resection should be terminated by the surgeon considering the progress of the operation and appropriate current intensity of the cortical MEPs.



Additionally, a strip electrode can be placed on the motor cortex for continuous monitoring of the corticospinal tracts during mapping.

Raabe A, Beck J, Schucht P, Seidel K: „Continuous dynamic mapping of the corticospinal tract during surgery of motor eloquent brain tumors: evaluation of a new method“ in Journal of Neurosurgery 03/2014. (**) corticospinal tract

Speech mapping

Penfield technique

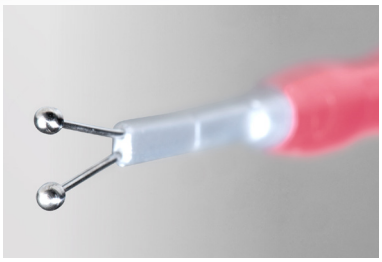
Speech mapping is performed in awake craniotomies in the area of Broca and Wernicke to evaluate the speech function. The purpose of the IONM is to minimise postoperative speech deficits by identifying the cortical regions for language, so that surgeons can adapt their surgical strategy if necessary.

The C2 Xtend is equipped with a special stimulation program for speech mapping. It meets all the requirements of a standalone stimulator. Biphasic stimulation and the Penfield technique (50 Hz or 60 Hz) are possible.

In addition, the program has two standard stimulation configurations:

Speech Mapping: continuous stimulation, biphasic pulse, 50 or 60 Hz
Speech Mapping 4s: time-limited stimulation of 4 seconds, biphasic pulse, 50 or 60 Hz

The set stimulation pulse with all its settings, as well as the visual and acoustic stimulation confirmation are available at any time and during the mapping.



Fork probe straight, ball tip

A. Szelényi u. a., „Intraoperative electrical stimulation in awake craniotomy: methodological aspects of current practice“, Neurosurgical focus, Bd. 28, Nr. 2, S. E7, 2010.

W. Eisner, H.-J. Reulen, J. Ilmberger, U. Swozil, and K. Bise, „Intraoperative mapping of eloquent brain areas“, Front Radiat Ther Oncol., Bd. 33, S. 28–36, 1999.

Accessories

Art. No. 508 280
C2 Xtend Edition
For direct cortical stimulation and mapping, extendable to all other C2 application fields, developed for ease of use in the daily OR routine

Art.-No. 520 040
Adapter Cable
with 4 pole device connector and 1.5mm touchproof connector red/black
› delivered non-sterile
› autoclavable

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Art. No. 525 650
Mapping Suction Probe by Raabe monopolar
work element length 120mm, 2mm active tip
with connection cable and SDN counter electrode
cable length 3m
› single use
› ETO sterilised

Art. No. 522 624
Fork probe straight, ball tip
1.5mm touchproof connector
ball diameter 2mm,
work element length 45mm
cable length 3m
› single use
› ETO sterilised

Art. Nr. 540 730
EMG adapter for colour-coded accessories
for maximal 8 colour-coded channels, differential, cable length 5m
› delivered non-sterile
› non-autoclavable

Strip electrodes
for cortical stimulation
contact material stainless steel contact diameter 4mm, contact distance 10mm with connection cable and 1.5mm touchproof connector
cable length 1.8m
› single use
› ETO sterilised

Art. No. 611 014 4 contact – 1 strip with cable

Art. No. 611 016 6 contact – 1 strip with cable

Art. No. 611 018 8 contact – 1 strip with cable

SDN Electrode Set
1.5mm touchproof connector, 10 electrode pairs: red/black, red/white, blue/black, blue/white, yellow/black, yellow/white, violett/black, violett/white, grey/black, grey/white,
needle diameter 0.45mm, cable length 2m
› single use
› ETO sterilised

Art. No. 533 646 Needle length 15mm

Art. No. 533 666 Needle length 20mm

Art. No. 533 651
SDN Electrode
1.5mm touchproof connector, 1 green electrode (ground), needle length 20mm, needle diameter 0.45mm, cable length 1.5m
› single use
› ETO sterilised

Pioneer and partner in neuromonitoring

Intraoperative Neuromonitoring
Functional Neurosurgery
Pain Treatment
Neurological Diagnostics

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