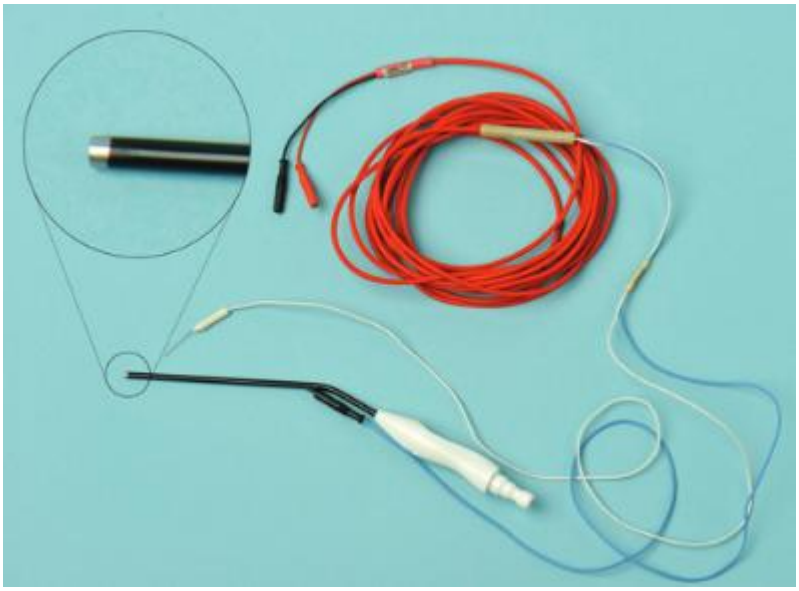
# Continuous Dynamic Mapping

Continuous dynamic mapping is achieved using a suction device with monopolar mapping capabilities.



“Dynamic” refers to the quickly changing location of the suction tip, which enables mapping at the current site of tissue removal. Stimulation (2 Hz) is activated by connecting the cable for the standard monopolar fingerstick probe directly to the suction device.

The surface of the suction probe is isolated to limit electrical contact to the tip of the device. Otherwise, identical stimulation pa rameters as for the classic monopolar train-of-five (TOF; interstimulus interval 4.0 msec, pulse duration 500 m sec).

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Seidel et al. developed a subcortical mapping technique based on the concept of stimulating the tissue at the site of and synchronously with resection. The hypothesis was that instead of performing resection and mapping sequentially, a synchronized resection and mapping could potentially improve deficit rates.

They reported a 5-year series of patients who prospectively underwent tumor surgery adjacent to the corticospinal tract (CST) (defined as < 1 cm using diffusion tension imaging and fiber tracking) with simultaneous subcortical short train cathodal monopolar mapping, equipped with a new acoustic motor evoked potential (MEP) alarm. Continuous (temporal coverage) and dynamic (spatial coverage) mapping was realized technically by integrating the mapping probe at the tip of a new suction device. Motor function was assessed using the Medical Research Council scale (from M1 to M5) 1 day after surgery, at discharge, and at 3 months.

Technically, the method was successful in all 182 cases. The lowest individual motor thresholds reached during resection were > 10 mA, n = 56; 6-10 mA, n = 31; 4-5 mA, n = 37; and 1-3 mA, n = 58. At 3 months, six patients (3%) had a persisting postoperative motor deficit that was caused by direct mechanical injury in three of these patients (1.7%).

Continuous dynamic mapping was found to be a feasible and ergonomic technique for localizing the exact site of the CST and distance to the motor fibers. This new technique may improve the safety of motor eloquent tumor surgery [1)].

1)
Seidel K, Schucht P, Beck J, Raabe A. Continuous Dynamic Mapping to Identify the Corticospinal Tract in Motor Eloquent Brain Tumors: An Update. J Neurol Surg A Cent Eur Neurosurg. 2020 Jan 14. doi: 10.1055/s-0039-1698384. [Epub ahead of print] PubMed PMID: 31935786.