

Multimodal Intraoperative Mapping And Monitoring For Resection Of Tumors Around Motor Eloquent Regions.

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Surgery for tumors around motor eloquent areas is fraught with risks. Intraoperative functional guidance is crucial for safe maximal resections. Intraoperative electrophysiological techniques have evolved over the years to serve this function. Preservation of cortical function is crucial and can be achieved by mapping. Also, integrity of motor tracts can be continuously monitored with motor evoked potentials (MEPs). More importantly, it is the subcortical fibre tracts which are at risk. Subcortical motor mapping is crucial to ensure preservation of motor tracts during resections of tumors around them. Mapping not only identifies truly eloquent zones, but also reliably excludes non-eloquent ones thereby permitting radical resections safely. Continuous dynamic mapping using a suction monopolar is a novel and effective way of achieving this. We describe our experience using this technique. Using a combination of mapping and monitoring techniques, allows more radical excision in such regions. We describe an overview of these techniques with specific mention of our experience with a novel technique of subcortical mapping. 40 consecutive patients operated using this technique between June 2017 and Feb 2018 were analyzed. Transcranial MEPs (TES MEP) were monitored in all. Direct Cortical strip MEPs (DCS_MEPs) were done wherever possible. Subcortical mapping (SCS) was attempted in all cases by adapting the technique using a suction monopolar stimulator adapted to our system. Neurological outcomes and extent of resection (semi-quantitative) were analysed. The results are discussed and feasibility and efficacy are presented alongwith neurological outcomes and extent of resection. Based on our experience, continuous dynamic subcortical mapping is a reliable method to map the motor tracts. This is crucial to correctly identify truly eloquent tumors and tailor the surgical procedure as per planned goals, maximizing the resections with acceptable morbidity.