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# The Utility of Motor Evoked Potential Monitoring for Predicting Postoperative Motor Deficit in Patients With Insular Gliomas

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## Abstract

**Purpose:** Motor evoked potential (MEP) monitoring has been widely applied in various neurosurgical operations. This study aimed to assess the predictive value of MEP monitoring for postoperative motor deficit (PMD) in patients with insular gliomas.

**Methods:** Demographic and clinical data, MEP monitoring data, and follow-up data of 42 insular glioma patients were retrospectively reviewed, and 40 patients were finally enrolled. The value of MEP monitoring for predicting PMD was assessed with sensitivity, specificity, and false-positive/false-negative rates. Binary multivariate logistic regression analysis was performed to further identify the predictive value of MEP monitoring.

**Results:** Statistical analysis showed that irreversible MEP changes, but not all MEP changes, were more effective in predicting PMD. The sensitivity and specificity of irreversible MEP changes for predicting long-term PMD were 85.71 and 93.94%, whereas the false-positive and -negative rates were 25.00 and 3.12% respectively. In addition, irreversible MEP changes were identified as the only independent predictor for long-term PMD (odds ratio, 101.714; 95% confidence interval, 6.001-1724.122;  $p = 0.001$ ).

**Conclusions:** MEP monitoring has been proven to be feasible in insular glioma surgery. Irreversible MEP changes showed good performance in predicting PMD. Their absence can offer an optimistic expectation for the long-term motor outcome. The findings can provide the surgical team with a more effective interpretation of MEP changes and contribute to exploring tailored MEP warning criteria.

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