

What are the findings?

- The use of ISM in high-grade glioma surgery leads to more gross-total resections
- High-grade glioma resections with ISM are associated with fewer postoperative complications
- AC improves overall postoperative survival in high-grade glioma surgery

How might it impact on clinical practice?

- ISM can lead to more extensive resections with fewer postoperative complications in high-grade glioma surgery, with AC improving overall survival
- The use of ISM and AC in this patient group can make resections both more succesful and safer

Methods

- Embase, Medline, WOS, Scholar, Cochrane
- Inclusion: WHO III-IV, >18 y/o, mapping or evoked potentials, investigating primary outcomes
- Primary outcomes: neurological complications, overall survival, percentage GTR
- Secondary outcomes: KPS, eloquent areas
- ISM: distinction between electrocortical mapping vs motor- or somatosensory evoked potentials

Introduction

- Intraoperative stimulation mapping (ISM) using electrocortical mapping (awake craniotomy, AC) or evoked potentials is widely used for low-grade glioma
- Traditionally, gross-total resection (GTR) yields improved survival with the risk of higher morbidity
- No systematic reviews or meta-analyses have been performed yet
- Purpose: to systematically summarize the evidence regarding the use of ISM and AC in high-grade glioma surgery in eloquent areas

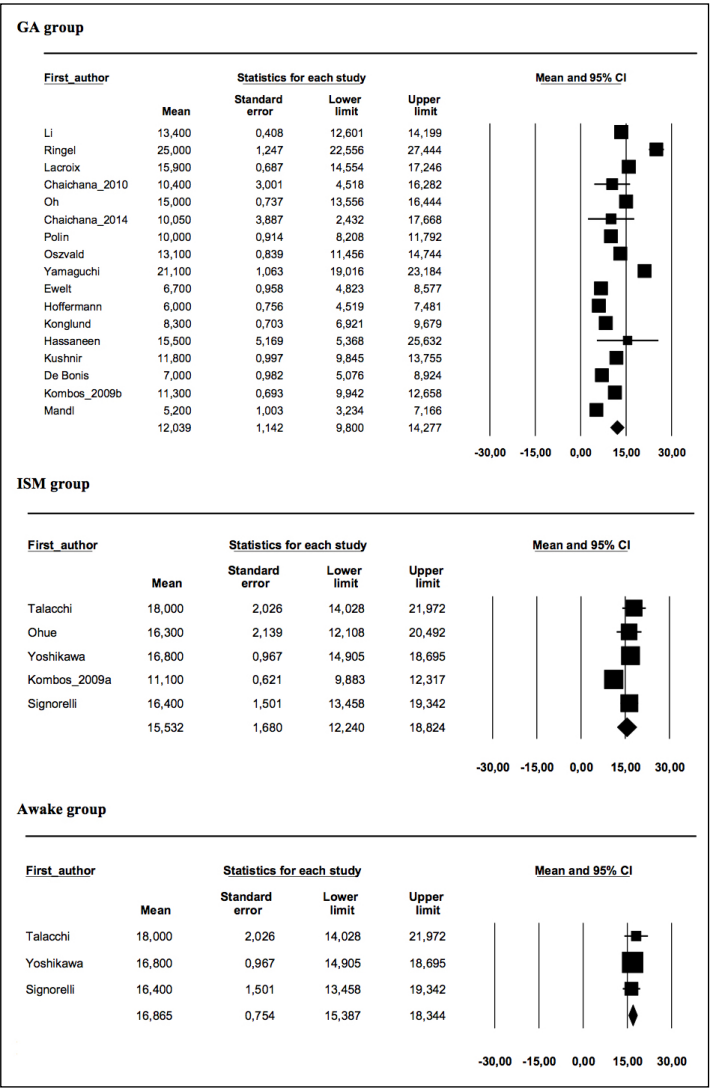


Figure 1: Overall postoperative survival per group (Forest plot)

Results

- 53 articles were included in the qualitative synthesis, including 9,102 patients in total
- Significantly longer postoperative median survival in the AC group: 16.87 months (SE=0.75) vs 12.04 months (SE=1.14) in the GA group (p<0.001)
- Significantly lower postoperative complication rate in the ISM group: 0.13 (95% CI 0.10-0.16) vs 0.21 (95% CI 0.20-0.23) in the GA group (p<0.001)
- Significantly higher mean percentage of GTR in ISM group: 79.1% vs 47.7% (p<0.0001)
- Prognostic factors: extent of resection, KPS
- Predictive factors: KPS, eloquent areas

Conclusions

- ISM significantly improves percentage of GTR
- ISM is associated with significantly less postoperative complications
- AC leads to a longer overall postoperative survival

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