

Cost Analysis Between an Awake Craniotomy Versus Surgery Under General Anesthesia for Eloquent Region Gliomas: Evaluating Quality of Life and Neurological Outcome

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Introduction

Cost effectiveness has become an important factor in the healthcare system, requiring surgeons to improve efficacy of procedures, while reducing costs. An awake craniotomy (AC) with direct cortical stimulation (DCS) presents one method to resect eloquent region tumors, however, some authors assert that this procedure is an expensive alternative to surgery under general anesthesia with neuromonitoring (GA). Here we evaluate the cost effectiveness and clinical outcomes between the two groups.

Methods

Retrospective analysis of a cohort of 17 patients with perirolandic gliomas who underwent an awake craniotomy with DCS, by a singlesurgeon at a single-institution, were case-control matched using SPSS with 23 patients with perirolandic gliomas who underwent surgery under general anesthesia with neuromonitoring (i.e. motor-evoked potentials, MEP; somatosensoryevoked potentials, SSEP; phasereversal). Inpatient costs, quality adjusted life years (QALY), extent of resection (EOR), and neurological outcome were compared between the groups.



Results

Total inpatient expense per patient was \$34,804 in the AC group and \$46,798 in the GA group (p=0.046). QALY score for the AC group was 0.97 and 0.47 for the GA group (p=0.041). The incremental cost per QALY for the AC group was \$82,720 less than the GA group. Postoperative karnofsky performance status (KPS) was 91.8 in the AC group and 81.3 in the GA group (p=0.047). Length of hospitalization was 4.12 days in the AC group and 7.61 days in the GA group (p=0.049).

Conclusions

The total inpatient costs for awake craniotomies were found to be lower than surgery under general anesthesia. Despite the trend of higher operating room costs for awake craniotomies, this expense was offset by the better postoperative status and shorter hospitalizations in AC patients. This study shows better cost

Learning Objectives

1)To determine the costeffectiveness of awake craniotomies versus surgery under general anesthesia for eloquent region gliomas

2)To understand the impact of awake craniotomies and asleep craniotomies on quality of life in the patient population with an eloquent region tumor

3) To understand the postoperative clinical outcomes, regarding extent of resection and neurological outcomes, between an awake craniotomy and surgery under general anesthesia

References

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The total inpatient expense of an awake craniotomy versus an asleep craniotomy. The awake craniotomy has significantly less total cost than the asleep craniotomy during a single hospitalization stay.



The quality adjust life year for the awake craniotomy versus the asleep craniotomy. The awake craniotomy shows a better QALY score than the asleep craniotomy following surgery for perirolandic gliomas.