Failed awake craniotomy: a retrospective analysis in 424 patients undergoing craniotomy for brain tumor.


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Abstract
Object Awake craniotomy for removal of intraaxial tumors within or adjacent to eloquent brain regions is a well-established procedure. However, awake craniotomy failures have not been well characterized. In the present study, the authors aimed to analyze and assess the incidence and causes for failed awake craniotomy.

Methods The database of awake craniotomies performed at Tel Aviv Medical Center between 2003 and 2010 was reviewed. Awake craniotomy was considered a failure if conversion to general anesthesia was required, or if adequate mapping or monitoring could not have been achieved.

Results Of 488 patients undergoing awake craniotomy, 424 were identified as having complete medical, operative, and anesthesiology records. The awake craniotomies performed in 27 (6.4%) of these 424 patients were considered failures. The main causes of failure were lack of intraoperative communication with the patient (n = 18 [4.2%]) and/or intraoperative seizures (n = 9 [2.1%]). Preoperative mixed dysphasia (p < 0.001) and treatment with phenytoin (p = 0.0019) were related to failure due to lack of communication. History of seizures (p = 0.03) and treatment with multiple antiepileptic drugs (p = 0.0012) were found to be related to failure due to intraoperative seizures. Compared with the successful awake craniotomy group, a significantly lower rate of gross-total resection was achieved (83% vs 54%, p = 0.008), there was a higher incidence of short-term speech deterioration postoperatively (6.1% vs 23.5%, p = 0.0017) as well as at 3 months postoperatively (2.3% vs 15.4%, p = 0.0002), and the hospitalization period was longer (4.9 ± 6.2 days vs 8.0 ± 10.1 days, p < 0.001). Significantly more major complications occurred in the failure group (4 [14.8%] of 27) than in the successful group (16 [4%] of 397) (p = 0.037). Conclusions Failures of awake craniotomy were associated with a lower incidence of gross-total resection and increased postoperative morbidity. The majority of awake craniotomy failures were preventable by adequate patient selection and avoiding side effects of drugs administered during surgery.

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