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Original Article

# Incidence and Risk Factors of Surgical Site Infection After Cranial Surgery for Patients with Brain Tumors: A Systematic Review and Meta-analysis

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## Abstract (249 words)

### Introduction

Surgical site infections after craniotomy (SSI-CRAN) are a serious adverse event given the proximity of the wound to the central nervous system. SSI-CRAN are associated with substantial patient morbidity and mortality. Despite the importance and recognition of this event in other surgical fields, there is a paucity of evidence in the neurosurgical literature devoted to SSI-CRAN specifically in patients after brain tumor surgery.

### Methods

Systematic searches of Medline, Embase and Cochrane Central were undertaken. The primary outcome was the incidence of SSI-CRAN at 30 and 90 days. Secondary outcomes were risk factors for SSI-CRAN.

### Results

Thirty-seven studies reporting 91907 patients with brain tumors who underwent cranial surgery were included in the meta-analysis. Pooled incidence of SSI-CRAN at 30 and 90 days was 4.03% (95%CI: 2.94%-5.28%, I2=97.3) and 6.17% (95% CI 3.16%-10.07%, I2 = 97.3), respectively. Specifically, incidence of SSI-CRAN following surgery for posterior fossa tumors was the highest at 9.67% (95%CI:5.98%-14.09%, I2=75.5). Overall pooled incidence of readmission within 30 days and reoperation due to SSI-CRAN were 13.9% (95%CI:12.5%-15.5%, I2=0.0) and 16.3% (95%CI:5.4%-31.3%, I2=72.9), respectively. Risk factors for SSI-CRAN included reintervention (RR 1.58, 95%CI:1.22; 2.04, I2=0.0), previous radiotherapy (RR 1.69, 95%CI:1.20-2.38, I2=0.0), longer duration of operation (MD64.18, 95%CI:3.96-124.40 minutes, I2=90.3) and cerebrospinal fluid (CSF) leaks (RR14.26, 95%CI: 2.14-94.90, I2=73.2).

## Conclusions

SSI-CRAN affects up to one in fourteen patients with brain tumors. High risk groups include those with reintervention, previous radiotherapy, longer duration of operation and CSF leaks. Further prospective studies should focus on bundles of care that will reduce SSI-CRAN.

Recommended articles

## References (0)

## Cited by (0)

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