

Rates of Surgical Site Infection After Evacuation of Traumatic Intracranial Hematomas

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Introduction

Surgical site infections (SSIs) are an important cause of morbidity in patients undergoing craniotomy or craniectomy for evacuation of post-traumatic intracranial hematoma. We sought to review the rate of SSI and examine characteristics of these infections in a consecutive series.

Methods

We retrospectively reviewed all patients undergoing emergency craniotomy or craniectomy for traumatic brain injury between July 2008 and September 2010. Patient demographics, radiographic data, laboratory values, hospital course, and clinical outcomes information were reviewed. The vast majority of patients were treated with perioperative cefazolin. Fisher exact test was used to examine categorical variables. Mann-Whitney U test was used for continuous variables after demonstrating non-normality of data.

Results

A total of 181 patients were identified in the two-year period of the study. Four SSIs were identified, yielding an infection rate of 2.2%. Wound washouts occurred a median of 17 days after the initial surgery (range 12 -36 days). Cultures were positive for Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter calcoaceticus-baumannii complex, and Staphylococcus epidermidis. Operative times were similar in patients who had SSIs (2:31) and those who did not (2:25). There was a trend towards an association between SSI and any positive blood, urine, or respiratory culture (4.2% of those with any positive systemic culture vs. 0% of those without, $p = 0.12$). There was a trend towards longer hospital stay in patients with SSI (median 22.5 vs. 11 days, $p=0.052$). Age, race, and gender were not associated with SSI. Of note, this study did not have sufficient power for detection of statistically significant differences due to rarity of surgical site infections in the study population; however, p -values are included for reference.

Conclusions

Over a two-year period, the rate of SSI after craniotomy or craniectomy for evacuation of traumatic intracranial hemorrhage at our institution was 2.2%. Although this study was not powered to detect a statistically significant difference, there was a trend towards an association between SSI and positive blood, urine, or respiratory culture as well as longer hospital stay. The organisms noted upon culture were primarily skin flora. Although these patients are often at increased risk of infection due to increased length of stay as well as invasive line and catheter status, the risk of SSIs is likely low.

Figure 1: Patient Demographics and Outcomes

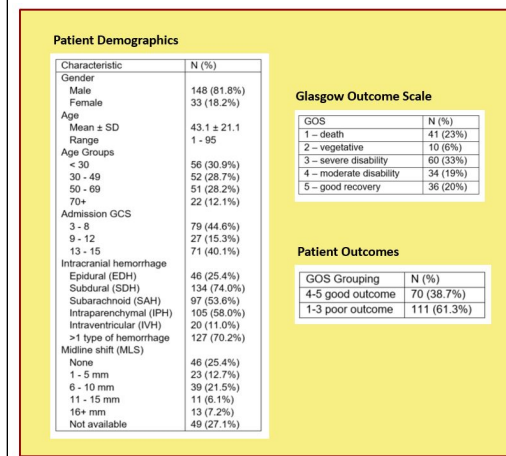


Figure 2: Factors that Trend Towards Association with Surgical Site Infection (SSI)

Factor	Population with SSI	Population without SSI	p-value
Positive blood, urine, or respiratory culture (%)	4.2%	0%	0.12
Length of stay (median)	22.5 days	11 days	0.052

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) State the rate of surgical site infection in patients after surgery for traumatic cranial injury in this series
- 2) State factors possibly relating to surgical site infections in this series
- 3) State factors not related to surgical site infections in this series