



Predictors of Transfusion in Pediatric Patients with Craniosynostosis

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Introduction

Craniosynostosis is a condition involving the premature fusion of one or more cranial sutures, affecting an estimated 1 in 2000 to 2500 live births worldwide. It is typically managed surgically within the first year of life. Operative blood loss in craniosynostosis surgery in children can range from minimal to extensive, depending on the procedure; transfusion events are not uncommon. This study aimed to examine factors related to the likelihood of blood transfusion in children aged 0-3 months undergoing surgery for craniosynostosis in the modern era.

Methods

The Kids Inpatient Database (KID) in the year 2009 was queried for children aged 0-3 months with an ICD-9 diagnosis code for craniosynostosis and a procedure code for craniosynostosis surgery. The age range was chosen to enrich the cohort in endoscopic suturectomy cases over open cranial vault remodeling, however data on the specific surgical technique utilized in each case is not available in KID. Multivariate logistic analyses were used to identify covariates associated with increased incidence of blood transfusion.

Results

Results: An estimated total of 411 hospital admissions for craniosynostosis surgery were identified in 2009. The mean age was 2.3 months, and the mean length of stay (LOS) was 4 days. Within the cohort, 12.8% of the subjects had congenital anomalies and 4.5% had abnormal coagulation profiles. Overall, 32.3% of the patients underwent transfusion. In a multivariate model controlling for demographic, hospital, and clinical factors, presence of a procedural hemorrhagic event (OR 4.6, p<0.001), or a co-morbid congenital anomaly (OR 2.9, p=0.003) were associated with an increased incidence of transfusion. Hospital location in the Southern United States (OR 0.32, p=0.03) was associated with a decreased incidence of transfusion. Age, sex, hospital type, hospital volume, presence of coagulation deficits and hospital LOS were not associated with transfusion incidence.

Conclusions

Procedural hemorrhage, presence of a congenital anomaly, and hospital location were significantly associated with the incidence of transfusion in patients aged <3 months undergoing craniosynostosis surgery. Age, sex, hospital type, hospital volume, presence of coagulation deficits and hospital LOS were not associated with transfusion incidence.

Learning Objectives

By the conclusion of this session, participants should be able to:  
1) Understand factors associated with blood transfusion in young children undergoing surgical management of craniosynostosis.

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