



The use of External Ventricular Drainage to Reduce the Frequency of Wound Complications in Myelomeningocele Closure

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Introduction

Myelomeningocele (MMC) is an open neural tube defect surgically closed within 48 hours of birth to prevent secondary infection. Despite early closure, up to 18% of patients experience wound complications, including dehiscence, pseudomeningocele formation, cerebrospinal fluid (CSF) leak, and infection. 85% of MMC patients require shunting for hydrocephalus. It was hypothesized that wound complications could be reduced by external ventricular drainage (EVD) at the time of closure.

Methods

IRB approval was obtained to review records of the 79 patients who underwent MMC closure between January 2005 and December 2014 at the Children’s Hospital of Pittsburgh. Patients were divided into groups based on whether they did or did not receive an EVD at the time of myelomeningocele closure.

Results

The mean age at closure was 1.1 days (SD = 0.49). Eighty percent of patients had hydrocephalus (e.g., macrocephaly, ventriculomegaly, and/or splayed sutures) apparent at closure. Twenty patients had an EVD placed at closure and underwent 7 days of CSF drainage at 0 cm H2O above midbrain. 15 patients had a shunt placed at the time of MMC closure.

There was no significant difference between the groups in time to MMC closure or presence of hydrocephalus. No patient with an EVD had a wound complication, while 1 (7%) early shunting patient had a wound complication. 10% of the patients without any CSF diversion at closure had a wound complication. There was no significant difference in the likelihood of wound problems between patients with CSF diversion and without (Chi Square = 1.28, p = 0.26). 88% of patients with an EVD required shunt placement, while 80% without an EVD required a shunt. This difference was not significantly different (Chi Square = 0.60, p = 0.44).

Conclusions

Although it was not statistically significant, the fact that the EVD group had no wound complications and the early shunting group had only 1 complication suggests that CSF diversion may help prevent wound complications in MMC closure patients.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Appreciate potential differences in wound complications following myelomeningocele closure with and without CSF drainage. 2) Discuss the possible benefits of CSF drainage at the time of myelomeningocele closure on patient outcome.

References

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