Modified myofascial technique for open fetal myelomeningocele repair results in improved outcomes

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• None
Inclusion cysts

- MOMS trial did not report statistical difference in inclusion cyst (IC) occurrence between prenatal and postnatal myelomeningocele (MMC) closure
- Dermoid and epidermoid ICs have been reported in both MMC populations
- ICs are associated with neurologic decline requiring re-operation for resection and tethered cord release
Inclusion cysts in fetal and postnatal MMC repair

• Inclusion cyst incidence in postnatal MMC repair patients is not generally known as patients are not routinely imaged and may be thought of as asymptomatic from baseline neurologic injury

• IC etiology in prenatal MMC repair patients:
  – Residual rests of epithelial tissue at placode
  – Persistent skin connection
  – Wound healing factors in fetal environment
Methods

• Single-center retrospective study of subset of post-MOMS trial patients undergoing fetal or postnatal MMC repair from January 2011 to May 2016

• After January 2015, myofascial closure technique for fetal repair was modified

• Families of patients who transitioned care to local institutions were contacted via telephone for outcome information

• Outcomes: hindbrain herniation, hydrocephalus, development of IC requiring surgical resection
Modified myofascial closure

• Dural lined myofascial flaps raised with needlepoint monopolar cautery
• More robust watertight closure created over released placode
## Results

<table>
<thead>
<tr>
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<th>Prior to implementation of modified technique</th>
<th>After implementation of modified technique</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reversal of hindbrain herniation</td>
<td>56/69 (86%)</td>
<td>40/42 (95%)</td>
<td>p=0.13</td>
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<tr>
<td>Hydrocephalus</td>
<td>30/72 (42%)</td>
<td>11/43 (26%)</td>
<td>p=0.12</td>
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<tr>
<td>ICs requiring resection</td>
<td>10/23 (43%)</td>
<td>0</td>
<td>p=0.0007</td>
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Discussion

• Scar tissue and spinal cord adhesion in fetal MMC repair may contribute to IC development

• Modification of surgical closure techniques may decrease cord adhesion and scar tissue
Conclusions

• Modified myofascial closure is safe and feasible

• New approach results in decreased rate of inclusion cyst development requiring surgical resection