Growing Pains: The Use of ViviGen Cellular Bone Matrix in Pediatric Posterior Cervical Spine Fusions

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Disclosures

• Joanna Gernsback is a consultant for Globus Medical.
Introduction

Obtaining a bony fusion in the pediatric cervical spine can be challenging due to limited surface area, and adjuncts are frequently needed, such as autograft or fusion-promoting biologics. Bone morphogenetic protein (BMP) is effective, but its use remains controversial, particularly in pediatrics. Other biologic options are needed, and ViviGen Cellular Bone Matrix has been successfully used in the adult population. Our goal is to demonstrate safety and efficacy in the pediatric population.
Methods

The authors retrospectively reviewed 18 pediatric patients who had undergone posterior occipital or occipitocervical spine fusion at Lurie Children’s Hospital using ViviGen Cellular Bone Matrix as a surgical adjunct from 2016 to 2019. Follow up x-rays and CT scans we reviewed to assess for bony fusion. Other factors were noted, including age, sex, diagnosis, number of surgical levels, use of structural or morselized allograft, dose of ViviGen, and postoperative orthosis use.
## Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years, mean±SD</td>
<td>10.2±5.7</td>
</tr>
<tr>
<td>Male:female</td>
<td>8:10</td>
</tr>
<tr>
<td>Number of levels, mean±SD</td>
<td>2.9±1.1</td>
</tr>
<tr>
<td>Time to last follow up, months, mean±SD</td>
<td>6.3±8.8</td>
</tr>
</tbody>
</table>
Results

- All patients were braced for 3 months postoperatively.
- Patients were seen at 2 weeks, 6 weeks, and 3 months.
Results

• The were no superficial or deep wound infections with ViviGen.
Results

• 15 of 18 patients had postoperative CTs, which all demonstrated evidence of fusion

• 1 patient had a hardware failure (rod fracture) requiring revision
Conclusions

ViviGen is likely to be a valuable adjunct for accomplishing bony fusion, however, few clinical reports have been published, and none in the pediatric population. We show that in the early postoperative period, the use of ViviGen is safe and efficacious in achieving bony fusion in the pediatric cervical spine. There was a high rate of bony fusion without significant complications. Longer follow-up is necessary to verify that ViviGen assists with long-term fusion without significant complication risks.
Summary Points

- Iliac crest bone graft remains the gold standard for promoting fusion in the posterior cervical spine in the pediatric population, but is associated with significant morbidity.

- ViviGen is a safe and effective adjunct for posterior cervical fusions in pediatric patients, without the morbidity associated with iliac crest bone graft.