Reconstruction of Peripheral Trigeminal Nerve of Mandible in Pediatric Patients with Long-Span Nerve Allografts

Miloro M1, Zuniga JR2

1Professor and Head, Univ. of Illinois at Chicago, Oral and Maxillofacial Surgery, 2Professor and Chair, UT Southwestern at Dallas

Abstract

Goal: To determine outcomes of immediate nerve allograft reconstruction of long-span IAN defects (≥4.5cm) with pediatric mandible resection for benign pathology.

Methods: Retrospective cohort of pediatric patients (age 8-18) with immediate allograft repair of IAN gaps ≥45 mm (AxoGen Avance, Alachua, FL). Demographic and clinical data was analyzed using clinical neurosensory testing (NST), and outcomes reported according to MRCS for functional sensory recovery (FSR).

Results: 100% of subjects achieved FSR with S3, S3+, or S4 at 1 year.

Conclusions: Immediate IAN allograft reconstruction of long span defects (≥4.5 cm) achieves FSR in children.

Background

- Contemporary treatment of ablative jaw defects includes bone and soft tissue, but should also include nerve reconstruction
- Current techniques: none, autograft (sural), conduit, allogeneic graft
- Some adult data-Zuniga 2015, Miloro 2016
- No pediatric data

Disclosures

Drs. Miloro and Zuniga are Consultants for AxoGen, Inc.

Methods

- Retrospective chart review of immediate IAN allografts of gaps ≥45mm at two academic centers by two surgeons (MM, JRZ) from Sept 2013 to Sept 2019 (6 yrs)
- Inclusion criteria
  - Pediatric (8-18)
  - Normal sensation S4 LLC before surgery
  - Immediate IAN allograft ≥45mm
  - Follow up x 2, one at 12 mo
- Study Group
  - Immediate Avance allograft 45-70mm
- Positive Control Group
  - No nerve graft
- Primary predictor variable
  - Functional sensory recovery (S3,S3+,S4)

Results

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Positive Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (gender)</td>
<td>18 (11F, 7M)</td>
</tr>
<tr>
<td>Mean age (range)</td>
<td>14.6 (10-18)</td>
</tr>
<tr>
<td>Mean graft/gap length (range)</td>
<td>63.75 mm (graft: 45-70)</td>
</tr>
<tr>
<td>Pathology</td>
<td>Ameloblastoma (60%) Ossifying fibroma (20%) Myxoma (15%)</td>
</tr>
<tr>
<td>Ameloblastoma (66%) Ossifying fibroma (16%) Myxoma (16%)</td>
<td></td>
</tr>
<tr>
<td>FSR at 3 months</td>
<td>66.7% (12/18)</td>
</tr>
<tr>
<td>FSR at 6 months</td>
<td>83.3% (15/18)</td>
</tr>
<tr>
<td>FSR at 12 months</td>
<td>100%(18/18)</td>
</tr>
</tbody>
</table>

Conclusions

- Immediate allograft reconstruction of long-span IAN defects (≥45 mm) is a predictable option to achieve functional sensory recovery in pediatric patients
- Standard of practice?

References