**Does Conventional Posterior Vault Remodeling Alter Endocranial Morphology in Patients With True Lambdoid Synostosis?**

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**BACKGROUND**

True Lambdoid Synostosis (TLS) occurs in 1 in 40,000 live births. 1-3% of all craniosynostosis cases. 

**Objectives**

1. To determine what effect conventional posterior vault remodeling has on endocranial morphology in patients with TLS.

**METHODS**

- **Retrospective Case Series**
  - All patients diagnosed with TLS at CHOP (1990-2010)
  - CT proven craniosynostosis
  - Underwent posterior vault remodeling
  - Adequate pre and post op CT scans (Silic thickness 2mm or less)
  - 3D reconstructions performed on TeraRecon Aquarius workstations

**RESULTS**

- Five patients met criteria for enrollment (2F, 3M)
- Postop CT scans were obtained at a mean age of 1.82 years between surgery and post CT scans.
- Mean 1.33 years between surgery and post op CT scans.

**CONCLUSIONS**

- Conventional vault remodeling restores normal cranial shape but does not affect the abnormal growth of the endocranial base.

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### Future Directions

- Recent studies have demonstrated that expansion of the cranial vault with distraction ostegenesis significantly alters the deformed endocranial base in patients with unisutural synostoses. 
- The senior author has shown the feasibility of posterior vault distraction. 
- Our future work will be directed toward expansion of the posterior vault in patients with TLS and restoration of both the endocranial base and facial skeleton.

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**STATISTICS**

- **Deviation of posterior fossa toward affected suture**
- **Normal anterior cranial fossa**
- **Larger contralateral petrous ridge angle**
- **Expanded contralateral middle cranial fossa**

**OBJECTIVES**

1. To determine if conventional posterior vault remodeling has on endocranial morphology in patients with TLS.

**RESULTS**

- **Anterior Cranial Fossa**
  - Symmetrical pre op (Mean %RD = 34.9)
  - No significant change after surgery for affected (p=0.03)

- **Middle Cranial Fossa**
  - Ipsilateral PRA changed from 132.1 to 121.1 (p=0.001)
  - No significant change after surgery for affected (p=0.02) sides

**CONCLUSIONS**

- Conventional vault remodeling restores cranial shape but does not affect the abnormal growth of the endocranial base.

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**TABLE 1: STATISTICS**

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<th>Feature</th>
<th>Preop</th>
<th>Postop</th>
<th>Significant Change</th>
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</thead>
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<td>Deviation of posterior fossa</td>
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<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Normal anterior cranial fossa</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Larger contralateral petrous ridge angle</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Expanded contralateral middle cranial fossa</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**TABLE 2: OBJECTIVES**

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**TABLE 4: ENDOCRANIAL FEATURES**

- **Deviation of posterior fossa toward affected suture**
- **Normal anterior cranial fossa**
- **Larger contralateral petrous ridge angle**
- **Expanded contralateral middle cranial fossa**

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**TABLE 5: RESULTS**

- **Anterior Cranial Fossa**
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**TABLE 6: CONCLUSIONS**

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