Lateral Lumbar Interbody Fusion in Adult Scoliosis: 5 Year Follow-up

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SMISS Annual Forum 2018
Las Vegas, NV
Disclosures

• Dr. Emami receives research funding from NuVasive
• Dr. Faloon is on the speaking bureau of K2M and Depuy
Background

• Patients with scoliotic deformities were traditionally treated with large open procedures

• Morbidity and complications were high in these patients, especially with long term follow-up

• Minimally-invasive Lateral Lumbar Interbody Fusion (LLIF) has been suggested as an alternative approach, aiming to achieve similar clinical outcomes while minimizing complications

• Current literature suggest lower complication rates at 2 years of follow-up with LLIF
Purpose

- To extend our knowledge of LLIF with posterior stabilization in adult deformity patients by evaluating:
  - Revisions and complications
  - Radiological parameters
  - Clinical outcomes
Methods

• Retrospective design, single institution, 2008-2013
• 34 consecutive patients underwent LLIF, 8 were lost to follow-up
• Mean follow-up 77 months
• Adult scoliosis defined as Lumbar cobb angle $\geq 15^\circ$
• Pre-op and post-op cobb angle, pelvic incidence (PI), and lumbar lordosis (LL) measurements calculated
• Functional outcome scores including Visual Analog Scale (VAS), Oswestry Disability Index (ODI) and SRS-22.
## Demographics

<table>
<thead>
<tr>
<th>Patient Demographics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>18</td>
</tr>
<tr>
<td>Mean Age</td>
<td>62 (43-81)</td>
</tr>
<tr>
<td>Mean F/u</td>
<td>77 months (SD: 19.2)</td>
</tr>
<tr>
<td>Mean Levels Fused</td>
<td>1.7 (1-3)</td>
</tr>
</tbody>
</table>

**Table 1:** Patient baseline characteristics
Results

- **26** patients included in the study
- *No* intraoperative complications
- *5 patients* (19.2%) experienced unilateral thigh weakness, numbness or pain in early post-op period
- *4 patients* (15.4%) required revision surgery
Results

Radiological Outcomes

<table>
<thead>
<tr>
<th>Spinal Parameter</th>
<th>Preoperative</th>
<th>Postoperative</th>
<th>Mean Improvement</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronal Cobb Angle</td>
<td>26°</td>
<td>14°</td>
<td>12°</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>PI-LL</td>
<td>11.7°</td>
<td>5.9°</td>
<td>5.8°</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Table 2: Pre- and postoperative mean radiological parameters
Results

### Clinical Outcomes

![Clinical Outcomes Chart]

#### Table 3: Mean pre- and postoperative clinical and patient reported outcomes

<table>
<thead>
<tr>
<th>Clinical Outcomes (Mean)</th>
<th>Preoperative</th>
<th>Final Follow-up</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vas Back</td>
<td>7.8</td>
<td>3.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Vas Left Leg</td>
<td>6.4</td>
<td>2.5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Vas Right Leg</td>
<td>6.1</td>
<td>1.9</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>ODI</td>
<td>52%</td>
<td>30%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SRS-22</td>
<td>2.1/5</td>
<td>3.7/5</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Excellent or Good Outcome</td>
<td>N/A</td>
<td>22/26 (85%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Would Have Surgery Again</td>
<td>N/A</td>
<td>24/26 (92%)</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Discussion

- Adult spinal deformity is a cause of reduced quality of life due to sagittal, axial and coronal imbalance

- Traditional open methods are associated with a high complication rate

- Current literature reports improved patient and radiographic outcomes of LLIF at the 2 year follow-up mark

- Our study further demonstrates success of LLIF at a mean follow up of 77 months.

- Limitations
  - Long-term follow-up requirement
  - Single institution
  - Small sample size
  - Variation in length of posterior constructs
Conclusion

- Patients who underwent LLIF achieved successful outcomes
- Complication and revision rate remained low at long-term follow-up
- Ability to reduce pelvic mismatch may further reduce rate of revision
- Patients were highly satisfied and would likely undergo the procedure again
References