Learning curve of lumbar discectomy using an anular closure device (ACD) in large defect patients

Ardavan Ardeshiri¹, Florian Geiger¹, Ardeshir Ardeshiri²

¹Center for Spine Surgery, Hessing Kliniken, Augsburg, Germany; ²Section for Spine Surgery, Department for Traumatology and Orthopaedics, Klinikum Itzehoe, Germany
Introduction

High reherniation rates in large anular defects\(^1,2\) (≥ 25%)

Surgical dilemma: What to do?

Aggressive discectomy

→ reherniations ↓
→ back pain ↑

Limited discectomy

→ reherniations ↑
→ back pain ↓

Solution?: Limited discectomy followed by bone-anchored ACD\(^2\)

1 Carragee EJ et al., J Bone Joint Surg Am, 2003
2 Thomé C et al. Spine J, 2018
Introduction

What is the surgical learning curve of a bone-anchored ACD in lumbar disc surgery?
Materials and methods

• 100 patients with large anular defects treated with limited discectomy and ACD in two spine centers (50 at each center)

• surgical time and intraoperative implant-related problems were recorded
Results

<table>
<thead>
<tr>
<th></th>
<th>Center A</th>
<th>Center B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical time (all pat., min)</td>
<td>51.0 ± 16.2</td>
<td>51.1 ± 12.0</td>
</tr>
<tr>
<td>Patients 1-25 (min)</td>
<td>56.7 ± 17.1</td>
<td>57.0 ± 13.6</td>
</tr>
<tr>
<td>Patients 26-50 (min)</td>
<td>45.2 ± 12.1</td>
<td>45.2 ± 7.5</td>
</tr>
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Turnover point: comparison of surgical time

pat. 1-25 were compared to 26-50

statistical analysis

pat. 1-20 were compared to 21-40

statistical analysis

pat. 1-15 were compared to 16-30

statistical analysis

sample sizes were reduced until statistical analysis showed a difference → turnover point
Results

- adverse events: small implantation problems in pat. 3 and 4 in center A and pat. 6 in center B
- turnover point was reached after the first 12 patients in center A and after 13 patients in center B
Conclusions

According to the surgical time and intraoperative problems with the device implantation, the learning curve for bone-anchored anular closure can be estimated to be 10-15 procedures.