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Ziegler, Dorthe Schøler

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The association between early post-operative leg pain intensity and disability at one and two years follow-up after first-time lumbar discectomy

Dorthe Schaler Ziegler, MSc1,2, Rikke Krüger Jensen, PhD3, Lisbeth Sommer, PT4, Leah Carreon, MD1,2, Mikkel Østerheden Andersen, MD1,2

1 Spine Surgery and Research, Spine Center of Southern Denmark – part of Lillebaelt Hospital, Middelfart, Denmark. 2 Institute of Regional Health Research, University of Southern Denmark, Odense, Denmark. 3 Nordic Institute of Chiropractic and Clinical Biomechanics, Odense, Denmark

Objective

1) To investigate if a cut-off point in leg pain intensity measured pre-operatively or at early follow-up could identify patients in risk of poor outcome in terms of functional limitation at one year and two years follow-up after lumbar discectomy.

2) To identify pre-operative and peri-operative characteristics associated with the early post-operative leg pain intensity.

Method

The study population was a consecutive series of patients who had first-time, single-level, limited discectomy due to persistent radiculopathy. The leg pain intensity was measured pre-operatively and at early follow-up (4-6 weeks post-operative) and dichotomized into mild (VAS<30) and moderate/severe (VAS≥30). Associations between leg pain intensities and the outcome Oswestry Disability Index (ODI) were examined using Generalized Estimating Equations. The models were adjusted for pre- and peri-operative characteristics identified in a lost-to-follow-up analysis. Analyses of baseline characteristics associated with leg pain intensity at early follow-up were conducted using Chi-square, Mann-Whitney and Student’s t test. Significance level: 0.05

Results

In total, 556 patients constituted the final study population, age range 18-87. Moderate/severe leg pain intensity was reported by 88% of the patients at baseline, 28% at early follow-up, 31% at one-year follow-up and 36% at two-year follow-up. Patients with moderate/severe leg pain intensity at early follow-up had statistically significant worse ODI scores at one-year and two-year follow-up compared to those who reported mild leg pain intensity (table 1), β (95% CI) 11.00 (7.86 - 14.13) and 10.07 (6.87 - 13.27) respectively.

Patients with moderate/severe leg pain intensity at early follow-up were statistically significant more often smokers, more prone to receive social benefits and more prone to long-term duration of back pain compared to patients with mild leg pain.

Conclusion

Moderate/severe leg pain intensity (>29 on a 0-100 scale) at early post-operative follow-up (4-6 weeks) can identify patients in risk of clinically important disability at one-year and two-year follow-up after first-time, single-level, lumbar discectomy. The proposed cut-off point was not clinically useful when measured pre-operatively.

Future research should investigate if patients with moderate or severe leg pain intensity at early post-operative follow-up will benefit from additional or more intensive post-operative interventions.

Introduction

After surgical treatment of lumbar disc herniation up to 20% of the patients experience poor outcome in terms of continued pain and disability within the following years. This, with individual and societal consequences.

A pre-operative or early post-operative identification of patients in risk of a poor outcome would be beneficial to the stratified care management. A cut-off point in leg pain intensity would give the surgeon an easy, manageable tool in daily clinic that would enhance the correctness of the informed prognosis and make planning of post-operative interventions such as medical and/or vocational rehabilitation easier.

Table 1: Disability (ODI) at all time-points, stratified by time of leg pain measurement and leg pain intensity

<table>
<thead>
<tr>
<th>Leg pain intensity</th>
<th>Proportion of leg pain intensity at times of measurement (n (%))</th>
<th>Cut-off (baseline/1st year/2nd year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>baseline n=556</td>
<td>1st year n=511</td>
</tr>
<tr>
<td><strong>Leg pain intensity pre-operative:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>86 (12%)</td>
<td>36 (22)</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>400 (88%)</td>
<td>46 (24)</td>
</tr>
<tr>
<td><strong>Leg pain intensity, early follow-up:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>402 (72%)</td>
<td>-</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>153 (28%)</td>
<td>-</td>
</tr>
</tbody>
</table>

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Spine Surgery and Research, Spine Center of Southern Denmark – part of Lillebaelt Hospital