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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

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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 (Visual Analogue Scale 0-100)) 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.

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>Leg pain intensity (VAS)</th>
<th>Cut-off (baseline/1 year/2 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (n=556)</td>
<td>One year (n=511)</td>
<td>Two years (n=556)</td>
</tr>
<tr>
<td>Low</td>
<td>66 (12%)</td>
<td>36 (22)</td>
<td>12 (19)</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>490 (88%)</td>
<td>18 (22)</td>
<td>10 (24)</td>
</tr>
</tbody>
</table>

Leg pain intensity, early follow-up:

- Low: 402 (74%)
- Moderate/severe: 153 (28%)

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