The Effect of Psychological Status on Postoperative satisfaction and Clinical outcomes in Spinal Surgery Patients

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Degenerative spine disease

- Degenerative changes concerning the of the spinal column, intervertebral disc and tissue of the spinal cord
- Spinal stenosis
- Spondylolisthesis
- Intervertebral disc herniation
Degenerative spine disease

- Radicular pain, caudication, neurologic deficit
- Impaired functional ability
- Decreased quality of life
- Surgical treatment
  - Progressive neurologic deficit, cauda equina syndrome
  - Refractory pain and functional deficit
Introduction

- Patient satisfaction and surgical results after spinal surgery

- Average satisfaction: 60 ~ 80%

- Sex, age, BMI, comorbidity, duration of symptoms, complications...

- Psychological factors:
  - Depression, anxiety, optimism, somatization, coping, social support...

Purpose

- To assess..
  - Psychologic status of patients with degenerative spinal disease
  - Correlation of preoperative psychologic status with postoperative satisfaction and clinical outcomes
Materials & Methods

❖ Inclusion criteria
  - Short level spinal fusion (≤ 2 level) due to degenerative spinal disease
  - Symptom duration ≥ 3 months.
  - OPD f/u ≥ 24 months.

❖ Exclusion criteria
  - Hx. of previous spinal surgery
  - Spine deformity (kyphosis, scoliosis)
  - Motor weakness
  - Spinal tumor or infection
**Demographic information & clinical data in the patients (n=206)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex(M:F)</td>
<td>69:137</td>
</tr>
<tr>
<td>Age(Years) (SD)</td>
<td>62.4(8.7)</td>
</tr>
<tr>
<td>Symptom duration(Mos) (SD)</td>
<td>12.7(4.6)</td>
</tr>
<tr>
<td>Preoperative Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Lumbar spinal stenosis</td>
<td>153(74.3%)</td>
</tr>
<tr>
<td>Spondylolisthesis</td>
<td>16(7.8%)</td>
</tr>
<tr>
<td>Spinal stenosis with spondylolisthesis</td>
<td>37(17.9%)</td>
</tr>
<tr>
<td>Fusion level</td>
<td></td>
</tr>
<tr>
<td>1 level</td>
<td>131(63.6%)</td>
</tr>
<tr>
<td>2 level</td>
<td>75(36.4%)</td>
</tr>
</tbody>
</table>
Materials & Methods

❖ Clinical assessment

- Preoperative
  - Visual analogue scale (VAS) for pain
  - Oswestry disability index (ODI) for functional activity

- Postoperative (after 24 months.)
  - Visual analogue scale (VAS) for pain
  - Oswestry disability index (ODI) for functional activity
  - Satisfaction for surgery
Materials & Methods

- Psychological assessment
  - Hospital anxiety and depression scale (HADS)
  - Revised life orientation test (LOT-R)
Materials & Methods

Patient expectation and fulfillment

- Questionnaire of North American Spine Society
  - Expectation for surgery
    - Leg pain, back pain, walking capacity, independence in everyday activities, sporting activities, general physical capacity, social contact, mental well-being
  - Most important reason for surgery
  - Fulfillment for surgery
  - Most important change after surgery
Materials & Methods

- Analysis of psychologic factors
  - Correlation
    - Preoperative psychologic factor
    - Surgical outcomes, satisfaction, expectation, fulfillment
  - Comparative analysis
    - Satisfied group VS Unsatisfied group
Results

- **VAS**
  - Preop: 7.2
  - Follow-up: 3.8

- **ODI**
  - Preop: 58.9
  - Follow-up: 30.8
Results

- Oswestry disability index

![Bar chart showing Oswestry Disability Index for various activities like Pain, Self Care, Lifting, Walking, Sitting, Standing, Sleeping, Social Life, and Traveling, comparing preoperative and follow-up data.](image-url)
Results

- **Lumbar spine questionnaire of NASS**

  **Most important reason for surgery**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg pain</td>
<td>7</td>
</tr>
<tr>
<td>Back pain</td>
<td>87</td>
</tr>
<tr>
<td>Walking capacity</td>
<td>109</td>
</tr>
<tr>
<td>Independence</td>
<td>2</td>
</tr>
<tr>
<td>General physical activity</td>
<td>1</td>
</tr>
</tbody>
</table>

  **Most important change after surgery**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg pain</td>
<td>21</td>
</tr>
<tr>
<td>Back pain</td>
<td>71</td>
</tr>
<tr>
<td>Walking capacity</td>
<td>100</td>
</tr>
<tr>
<td>Independence</td>
<td>4</td>
</tr>
<tr>
<td>General physical activity</td>
<td>10</td>
</tr>
</tbody>
</table>
Results

Psychological assessment

Optimism

Anxiety

Depression

Preop.

54.9

8.7

9.3
Results

- **Relationship between preoperative optimism and clinical outcomes**

<table>
<thead>
<tr>
<th>Optimism</th>
<th>Coefficient</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔVAS</td>
<td>0.12847</td>
<td>0.1067</td>
</tr>
<tr>
<td>ΔODI</td>
<td>0.29628</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Expectation</td>
<td>0.43708</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Fulfillment</td>
<td>0.56224</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

ΔVAS = Preop. VAS – F/U VAS
ΔODI = Preop. ODI – F/U ODI
Results

- Relationship between preoperative anxiety and clinical outcomes

<table>
<thead>
<tr>
<th>Anxiety</th>
<th>Coefficient</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔVAS</td>
<td>-0.05381</td>
<td>0.4424</td>
</tr>
<tr>
<td>ΔODI</td>
<td>-0.30042</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Expectation</td>
<td>-0.22438</td>
<td>0.0012</td>
</tr>
<tr>
<td>Fulfillment</td>
<td>-0.11049</td>
<td>0.1139</td>
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</tbody>
</table>
Results

- Relationship between preoperative depression and clinical outcomes

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ΔVAS</td>
<td>-0.11617</td>
<td>0.0963</td>
</tr>
<tr>
<td>ΔODI</td>
<td>-0.27645</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Expectation</td>
<td>-0.26702</td>
<td>0.0001</td>
</tr>
<tr>
<td>Fulfillment</td>
<td>-0.24924</td>
<td>0.0003</td>
</tr>
</tbody>
</table>
Results

Patient satisfaction

- Extremely satisfied (62 cases)
- Very satisfied (88 cases)
- Slightly satisfied (33 cases)
- Not at all satisfied (22 cases)
- Very dissatisfied (1 case)

Satisfied group (150 cases, 72.8%)

Not satisfied group (56 cases, 27.2%)
Results

- Patient satisfaction

![Bar chart showing patient satisfaction levels]

<table>
<thead>
<tr>
<th>LOT-R</th>
<th>Depression</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied(n=150)</td>
<td>60.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Not satisfied(n=56)</td>
<td>40.3</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>8.5</td>
<td>11.5</td>
</tr>
</tbody>
</table>
Psychological factors in lumbar spine surgery

- Patient who were classified as somatisizers using the DRAM (Distress and Risk Assessment Method) have less favorable outcome than others.


- There was no difference in ODI and VAS between patients classified through the DRAM.

Discussions

- In this study,
  - Evaluate the psychological status of degenerative lumbar disease patients with LOT-R and HADS
  - Patient with high optimistic, low depressive and anxious correlate with good surgical outcomes and improvement of functional activities
Discussions

Psychological factors in lumbar spine surgery

- Psychological distress and somatization have a role in the progression to chronicity in low back pain


- Patients with elevated levels of depression as measured by the MMPI had poor outcome after spinal surgery

Discussions

❖ In this study,

- Patient satisfaction: 72.8%

- In satisfied group
  - More optimistic
  - Less anxious
  - Less depressive
Conclusions

Preoperative psychological factors

- Optimism $\uparrow$
- Anxiety & Depression $\downarrow$

Postoperative satisfaction & clinical outcomes $\uparrow$

So, preoperative psychological assessment and proper management are needed !!!
Disclosure

- No conflict of interest