The effect of preoperative opioid use on single level transforaminal interbody fusion for degenerative lumbar spondylolisthesis

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Competing Interests Statement
- The authors have no personal or institutional interest with regards to this study.
INTRODUCTION

- $55 billion in health and social costs associated with opioid abuse
- $20 billion in hospital care for opioid poisonings
- 2.4 million Americans have severe opioid-use disorder (OUD)
- On a given day:
  - 650,000 opioid prescriptions dispensed
  - 3,900 initiate non-medical use of prescription opioids
  - 78 people die from opioid-related overdoses
Opiate Induced Hyperalgesia

Paradoxical response wherein nociception is sensitized by exposure to opioids

“When dependence on opioids finally becomes an illness of itself, opposite effects like restlessness, sleep disturbance, hyperesthesia, neuralgia, and irritability become manifest.”

Rossbach, 1880
OBJECTIVE

- To determine whether the use of preoperative narcotics impact patient outcomes following single level transforaminal interbody fusion for degenerative lumbar spondylolisthesis.
Methods

- Consecutive series of patients undergoing L4-5 transforaminal lumbar interbody fusion (TLIF) for degenerative lumbar spondylolisthesis were retrospectively analyzed.

- Patients were categorized according to the presence or absence of prescribed preoperative oral morphine equivalent use for greater than 6 months. Outcomes included the Oswestry Disability Index (ODI), Visual Analogue Scale (VAS) and Short Form 36 Physical and Mental Summary Scores (SF36-PCS, SF36-MCS).

- Change values were calculated between postoperative and preoperative outcomes indices. Between-group comparisons were performed using analysis of variance.
**Patient Demographics**

- Total Patients: 63 (25 Male, 38 Female); 56.4 ± 12.3-years
- Mean Follow Up: 16.4 months (Range was 3-24 months)
- Number of Patients Prescribed Preoperative Opioids: 31 (49%)
- Mean Oral Morphine Equivalent Dose: 17.6 ± 15.3mg/day
- Mean hospital length of stay (HLOS) 2.7 ± 2.1-days for the non-opioid group and 3.8 ± 2.8-days for the opioid group (p=0.249)
# RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Opioid</th>
<th>Non-Opioid</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Preoperative ODI</td>
<td>44.5 ± 13.1</td>
<td>49.9 ± 14.3</td>
<td>p=0.201</td>
</tr>
<tr>
<td>Mean Postoperative ODI</td>
<td>28.2.5 ± 18.9</td>
<td>19.9 ± 9.8</td>
<td>p=0.016</td>
</tr>
<tr>
<td>Mean Preoperative VAS</td>
<td>7.19 ± 2.0</td>
<td>7.18 ± 1.8</td>
<td>p=0.988</td>
</tr>
<tr>
<td>Mean Postoperative VAS</td>
<td>3.9 ± 2.8</td>
<td>2.7 ± 1.1</td>
<td>p=0.085</td>
</tr>
</tbody>
</table>
## Results

Changes scores for SF36-PCS and SF36-MCS were not statistically significant by opioid use group.

<table>
<thead>
<tr>
<th>Change in Postoperative from Preoperative</th>
<th>Opioid</th>
<th>Non-Opioid</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS</td>
<td>-2.6±1.3</td>
<td>-4.45±2.4</td>
<td>p=0.145</td>
</tr>
<tr>
<td>ODI</td>
<td>-12.1±9.4</td>
<td>-27.6±13.4</td>
<td>p=0.043</td>
</tr>
</tbody>
</table>
We recommend that patients should be considered for preoperative opioid weaning.

Future studies may utilize our work as a model to evaluate preoperative morphine equivalent thresholds among specific populations within spine and other surgical disciplines.

Future studies should also evaluate the “washout” period necessary for patients to return to an opioid-naive physiologic state prior to surgery.
CONCLUSIONS

- Patients prescribed preoperative opioids may suffer increased postoperative lumbar pain disability and subjective pain compared to patients not on preoperative opioids when undergoing single level interbody fusion for degenerative lumbar spondylolisthesis
THANK YOU

Questions?