Predictors of Extended Postoperative Opioid Use in Patients Undergoing Hip Arthroscopy For FAIS

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Disclosures

I (and/or my co-authors) have something to disclose.

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http://www.aaos.org/disclosure
Study Objectives

• **Objective 1**: Compare two-year outcomes in patients requiring an opioid refill postoperatively to patients who do not require a refill

• **Objective 2**: Identify preoperative predictors for requiring a postoperative opioid refill
Background

• As of 2015, orthopaedics is among the top opioid analgesic providers of all specialties

• A rapidly growing field, hip arthroscopy has little to no reliable information on the use of opioids before and after surgery

• Understanding why certain patients become more dependent on opioids after surgery will allow providers to better assess patient risk
Inclusion Criteria

- Diagnosis of FAIS based on radiographic and clinical presentation
- Failed conservative treatment (physical therapy, injection, NSAID)
- Underwent hip arthroscopy
- Record of standard postoperative opioid prescription
Exclusion Criteria

- History of ipsilateral or contralateral hip surgery
- Concomitant procedures for extra-articular hip pathology
- History of pediatric congenital hip conditions
Functional Outcomes

• Patients completed the following patient reported outcome measures **preoperatively** and at a minimum of **2 years postoperatively**:
  • Hip outcome score (HOS)
    • Activities of daily living subscale (HOS-ADL)
    • Sports subscale (HOS-SS)
  • Modified harris hip score (mHHS)
  • International hip outcome tool (iHOT-12)
  • Visual analog scale
    • Pain (VAS Pain)
    • Satisfaction (VAS Satisfaction)
Statistical Analysis

• An independent samples t-test was used to compare differences in PROs and radiographic measurements between patients with and without postop narcotic refills.

• A linear regression model was used to identify predictors of prolonged opioid use following surgery for FAIS.
  • Any preoperative variable with significant correlation to postoperative opioid use was tested in the final regression model.
  • A receiver operating curve (ROC) was used to determine accuracy of the model (area under curve greater than 0.70 indicating good accuracy*).
Demographics

- **775 total patients** included in the analysis
  - 141 patients required postoperative opioid refill (18.2%)

<table>
<thead>
<tr>
<th></th>
<th>Opioid Refill Group</th>
<th>Non-opioid Refill Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>35.9±11.6</td>
<td>33.5±12.4</td>
<td>0.030</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>102 (72.8%)</td>
<td>422 (67.1%)</td>
<td>0.185</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>27.2±6.1</td>
<td>25.1±9.0</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Note: All boldface values indicate statistical significance at minimum 0.05 level
## Radiographic Analysis

<table>
<thead>
<tr>
<th></th>
<th>Opioid Refill Group</th>
<th>Non-opioid Refill Group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preoperative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha Angle</td>
<td>65.3±11.5</td>
<td>64.2±11.6</td>
<td>0.430</td>
</tr>
<tr>
<td>Lateral Center Edge Angle</td>
<td>30.8±6.7</td>
<td>31.6±6.1</td>
<td>0.277</td>
</tr>
<tr>
<td>Anterior Center Edge Angle</td>
<td>31.9±6.8</td>
<td>33.2±6.7</td>
<td>0.149</td>
</tr>
<tr>
<td>Tonnis Angle</td>
<td>7.2±4.9</td>
<td>6.2±4.5</td>
<td>0.060</td>
</tr>
<tr>
<td>Tonnis Grade (% &gt;0)</td>
<td>12 (11.3%)</td>
<td>25 (6.1%)</td>
<td>0.099</td>
</tr>
<tr>
<td><strong>Postoperative</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha Angle</td>
<td>41.6±10.5</td>
<td>40.8±9.4</td>
<td>0.468</td>
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<tr>
<td>Lateral Center Edge Angle</td>
<td>28.3±6.5</td>
<td>29.1±5.7</td>
<td>0.268</td>
</tr>
<tr>
<td>Anterior Center Edge Angle</td>
<td>29.5±6.9</td>
<td>31.0±6.5</td>
<td>0.053</td>
</tr>
</tbody>
</table>
Preoperative PRO

- In a comparison of preoperative PRO scores, all functional measures are significantly higher for non-opioid refill group (P<0.01)
- However, VAS Pain scores did not differ between groups preoperatively

Note: All boldface values indicate statistical significance at 0.05 level
Postoperative PRO

- Similar to preoperative PRO scores, all postoperative scores including VAS Pain and Satisfaction Scores were statistically different between groups (P<0.01)

Note: All boldface values indicate statistical significance at 0.01 level
Logistic Regression Analysis

- Preoperative predictors of postoperative refills include:
  - History of opioid use prior to surgery
  - Larger preoperative alpha angles

- Comparing **historical** versus **active** (time of surgery) opioid users, **active opioid use** predicts requiring an opioid refill

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>Standard Error</th>
<th>95% Confidence Interval</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative Opioid Use</td>
<td>4.040</td>
<td>0.360</td>
<td>1.99-8.19</td>
<td>&lt;0.001</td>
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<td>Preoperative Alpha Angle</td>
<td>1.035</td>
<td>0.016</td>
<td>1.01-1.07</td>
<td>0.030</td>
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<tr>
<td>Sub-analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Opioid use (TOS)</td>
<td>3.12</td>
<td>0.552</td>
<td>1.06-9.21</td>
<td>0.039</td>
</tr>
<tr>
<td>History of Opioid Use</td>
<td>0.825</td>
<td>0.259</td>
<td>0.497-1.370</td>
<td>0.825</td>
</tr>
</tbody>
</table>

Note: All boldface values indicate statistical significance at minimum 0.05 level
ROC Curve Analysis for Logistic Regression

- Area under curve: 0.718
  - Indicates good accuracy*
- Standard error: 0.03
- P-value: <0.001
- 95% confidence interval:
  - Lower bound: 0.659
  - Upper bound: 0.778
Discussion

• Patients requiring at least one opioid refill following hip arthroscopy demonstrated lower baseline and postoperative PRO scores.

• Higher alpha angles and preoperative opioid use strongly predicted a patient’s likelihood of requiring an opioid refill after surgery.
Conclusion

• This study allows physicians to better counsel patients on the effects of opioid use before and at the time of surgery

• Further research must address how to help patients eliminate or lessen preoperative opioid use in at-risk patients
Thank you