Outcomes of Heterotopic Ossification Excision Following Revision Hip Arthroscopy

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Disclosures

- American Hip Institute\textsuperscript{a}, AANA Learning Center Committee\textsuperscript{a}, Amplitude\textsuperscript{c}, Arthrex\textsuperscript{b,c,d}, ATI\textsuperscript{b}, Breg\textsuperscript{b}, DJO Global\textsuperscript{d}, Orthomerica\textsuperscript{d}, Pacira\textsuperscript{b,c}, Stryker\textsuperscript{b,c}

- \textsuperscript{a} – boardmember; \textsuperscript{b} – research support; \textsuperscript{c} – consulting; \textsuperscript{d} – royalty; \textsuperscript{e} - stockholder
Background

Heterotopic ossification (HO) is a known complication after hip arthroscopy, and its incidence has been reported in up to 44% of individuals who were not prescribed prophylaxis therapy.

Methods to reduce HO following hip surgery have historically involved postoperative radiation or chemoprophylaxis with nonsteroidal anti-inflammatory drugs (NSAIDs) but HO still persists.

HO has the potential to be a pain generator and could affect patient negatively in the post-operative period. Performing an excision may improve the patients overall outcome.
Purpose

• To clinically evaluate patients undergoing revision surgery for HO excision via patient reported outcomes two years from surgery
Methods

- Study period: 2008 - 2014
- Retrospective review of prospectively collected data
- 2379 arthroscopic procedures around hip
- 68 (3%) had revision surgery for HO excision
  - >1cm HO ossification size, eliminated 45 patients
  - 23 (1%) met criteria for inclusion
- Two fellows assessed radiographs for inclusion
- Patient with previous hip conditions excluded:
  - Avascular Necrosis
  - Legg Calves-Perthes
  - Dysplasia
Patient Reported Outcomes (PROs)

• The protocol included pre and post operative administration of:
  o Modified Harris Hip Score (mHHS)
  o Non-Arthritic Hip Score (NAHS)
  o Hip Outcome Score
    ➢ Activities of Daily Living (HOS-ADL)
    ➢ Sports Specific Subscale (HOS-SSS)
  o Visual Analog Scale (VAS)
  o Satisfaction
# Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
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<tbody>
<tr>
<td>Count</td>
<td>23</td>
</tr>
<tr>
<td>Follow-Up</td>
<td>15</td>
</tr>
<tr>
<td>THR</td>
<td>3</td>
</tr>
<tr>
<td>Outside Revision</td>
<td>1</td>
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<tr>
<td>Opted out of study</td>
<td>2</td>
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<tr>
<td>Lost To Follow Up</td>
<td>2</td>
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<tr>
<td>Follow-Up %</td>
<td>82.61%</td>
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<tr>
<td>Mean Follow-Up Time (years)</td>
<td>1.52</td>
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<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Male</td>
<td>10</td>
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<tr>
<td>Female</td>
<td>13</td>
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<tr>
<td>Laterality</td>
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<tr>
<td>Left</td>
<td>12</td>
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<tr>
<td>Right</td>
<td>11</td>
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<tr>
<td>Age</td>
<td>38.66</td>
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### Patient Reported Outcomes (PROs)

<table>
<thead>
<tr>
<th>Patient Outcome Score Reporting</th>
<th>mHHS</th>
<th>HOS ADLS</th>
<th>HOS SSS</th>
<th>NAHS</th>
<th>VAS</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Primary</td>
<td>54.71</td>
<td>62.51</td>
<td>38.27</td>
<td>59.28</td>
<td>6.37</td>
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<tr>
<td>Pre HO Excision</td>
<td>53.36</td>
<td>51.38</td>
<td>24.48</td>
<td>50.28</td>
<td>6.71</td>
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<tr>
<td>Lastest Post-Op Follow-Up</td>
<td>73.62</td>
<td>68.88</td>
<td>58.51</td>
<td>70.83</td>
<td>4.33</td>
<td>7.60</td>
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</table>

<table>
<thead>
<tr>
<th>T-Test Evaluation</th>
<th>mHHS</th>
<th>HOS ADLS</th>
<th>HOS SSS</th>
<th>NAHS</th>
<th>VAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Primary to Latest</td>
<td>0.002</td>
<td>0.312</td>
<td>0.004</td>
<td>0.030</td>
<td>0.002</td>
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<td>Pre Primary to Pre HO Excision</td>
<td>0.800</td>
<td>0.048</td>
<td>0.051</td>
<td>0.078</td>
<td>0.518</td>
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<tr>
<td>Pre HO Excision to Latest</td>
<td>0.001</td>
<td>0.023</td>
<td>0.000</td>
<td>0.001</td>
<td>0.000</td>
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</tbody>
</table>
Patient Reported Outcomes (PRO)

- 23 patients had revision surgery and HO removal, 19 (83%) were available for follow-up at 1.5 years
  - Average scores prior to revision: mHHS 53.4, HOS-ADLS 51.4, HOS-SSS 24.5, NAHS 50.3, VAS 6.7
  - Average score after revision with HO excision: mHHS 73.62, HOS-ADLS 68.88, HOS-SSS 58.51, NAHS 70.83, VAS 4.33
- The majority had improvement in each category from before to after revision
  - Two (13%) patients had a decrease in the mHHS, two (13%) had a decrease in their HOS-ALDS, four (27%) had no change in their VAS, one (7%) had an increase in their VAS
  - Satisfaction scores varied from 0-10 with an average of 7.6
- Out data indicates that the majority of patients will receive pain relieve (67%) from revision surgery with HO excision
- PROs improved in all categories, but the improvements fell short of good/excellent range
  - Only three patients had mHHS > 80
Patient Reported Outcomes (PROs)

mHHS

Pre Surgery 1  Pre Surgery 2  Latest After Surgery 2

HOS - SSS

Pre Surgery 1  Pre Surgery 2  Latest After Surgery 2

HOS - ADLS

Pre Surgery 1  Pre Surgery 2  Latest After Surgery 2

NAHS

Pre Surgery 1  Pre Surgery 2  Latest After Surgery 2
Conclusions

• Patients undergoing revision hip surgery with HO excision demonstrated improved outcome scores and pain resolution; however, few patients achieved a good or excellent result.

• Conversion to THA or subsequent revision was seen in 21% of patients.

• Revision hip surgery with HO excision should be approached cautiously because of the modest results in this patient group.
References

Partial undersurface tears of the abductor tendons can be treated successfully with endoscopic trans-tendinous repair preserving the intact attachment of superficial fibers of the abductor tendons. We recommend this treatment for partial undersurface tears recalcitrant to non-operative treatment.

Thank you.