Clinical outcomes and return to sport in competitive athletes undergoing iliopsoas fractional lengthening as a part of hip arthroscopy – minimum 2 year follow-up

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Background

• The iliopsoas is a hip flexor and stabilizer that may be associated with internal snapping believed to be created by the motion of the iliopsoas over the iliopectineal eminence or femoral head.

• First line of treatment includes conservative measures:
  o Physical therapy
  o NSAIDS
  o Corticosteroid injection to the iliopsoas bursa

• Second line of treatment (if conservative measures fail):
  o Hip arthroscopic iliopsoas tenotomy or iliopsoas fractional lengthening (IFL)
    ➢ Minimally invasive
    ➢ Shown to be safe and effective.

• Although flexion and stability are important in competitive athletes, painful internal snapping may be debilitating and may necessitate arthroscopic iliopsoas fractional lengthening (IFL)
Purpose

- To report athletes’ patient-reported outcomes (PROs), their returns to sports, and competitive abilities after undergoing IFL as a part of hip arthroscopy at a minimum of two years postoperatively.
Methods

• Data were prospectively collected and retrospectively reviewed for 1,682 patients undergoing hip arthroscopy between February 2008 and October 2013.

• Inclusion criteria:
  o high school, collegiate, or professional athlete, who underwent arthroscopic IFL
  o completed preoperative modified Harris Hip Score (mHHS), Non-Arthritic Athletic Hip Score (NAHS), Hip Outcome Score – Sports Specific Subscale (HOS-SSS), and Visual Analog Scale (VAS).

• All patients failed to improve with at least three months of conservative treatment, including physical therapy, anti-inflammatories, and rest.

• Exclusion criteria:
  o Patients under 16 years old
  o Tönnis grade > 1
  o Previous hip conditions (Legg-Calve-Perthes disease, hip fractures, slipped capital femoral epiphysis, avascular necrosis of the femoral head, hip dysplasia)
  o Previous surgical intervention for either hip.
The indications for an IFL included painful internal snapping of the hip in the patient’s history or physical exam and/or the presence of an iliopsoas impingement lesion defined as a labral tear at the 3:00 acetabular clockface position associated with hyperemia at the capsulolabral or chondrolabral junction (Figure 1).

**Figure 1:** Iliopsoas impingement lesion - labral tear (LT) and labral hyperemia (*) at the 3:00 acetabular clockface. L – Labrum. A – Acetabulum. FH – Femoral Head. P – Probe.

**Figure 2:** Iliopsoas fractional lengthening. 2A) The iliopsoas tendon (IPT) after interportal capsulotomy to expose the tendon. 2B) The IPT is split after cutting with beaver blade (BB). Medial to the split IPT is the intact iliopsoas muscle (IPM). L – Labrum. C – Capsule. FH – Femoral Head.
Results

- Fifty athletes were eligible for inclusion, 44 (88%) of which had minimum two-year follow-up. All PRO scores demonstrated significant improvements at latest follow-up ($p < 0.0001$).
- Mean improvements were as follows:
  - mHHS (65.1 to 83.7), NAHS (60.7 to 86.2), HOS-SSS (41.5 to 75.4), VAS (5.8 to 2.0). Mean satisfaction was 8.1.
- Painful snapping was resolved in 41 patients (93%).
- Six patients (14%) had non-painful snapping at latest follow-up.
Results

• Of the 44 athletes:
  o 6 (14%) did not return to sport due to their hip symptomatology
  o 29 (65.9%) returned to sports
  o 24 (54.5%) maintained or improved their competitive abilities.
  o 9 (20.5%) did not return to sports for reasons unrelated to their hip (e.g., loss of interest, aging, etc.).

• Complications: 2 (4.6%) superficial wound infections that resolved with topical treatment.

• There were no complaints of weakness in hip flexion.

<table>
<thead>
<tr>
<th>Table 6: Patient return to sports and ability based on preoperative competitive level</th>
<th>Returned to sport (n, %)</th>
<th>Ability remained the same or increased regardless of return to sport (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n = 44 patients)</td>
<td>29 (65.9%)</td>
<td>24 (54.5%)</td>
</tr>
<tr>
<td>High school</td>
<td>17 (68%)</td>
<td>11 (44%)</td>
</tr>
<tr>
<td>Collegiate</td>
<td>6 (66.7%)</td>
<td>6 (66.7%)</td>
</tr>
<tr>
<td>Professional</td>
<td>6 (60%)</td>
<td>7 (70%)</td>
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</tbody>
</table>
Strengths/Limitations

• **Strengths:**
  o This is the first study, to our knowledge, that examines the outcomes of IFL during hip arthroscopy in a competitive athletic population.
  o Utilized three PRO measurements (mHHS, NAHS, HOS-SSS), VAS, and patient satisfaction
  o Mean of 38.9 months postoperatively.

• **Limitations:**
  o We did not have a match-pair control group.
  o The return to sports rate was affected by many factors, including aging (e.g. from high school to the collegiate level), loss of interest, other symptoms excluding the hip (e.g. back pain), and other health conditions.
  o Larger studies are warranted to adequately assess the outcomes of this procedure based on individual sports and competitive levels.
• In competitive athletes, IFL during hip arthroscopy is safe and demonstrates favorable improvements in PROs and VAS, high satisfaction, and high rate of symptom resolution at a minimum of two years postoperatively. The majority of patients were able to return to sports and maintain or improve their competitive levels.
Thank You

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