Athletic Pubalgia: Diagnosis, Management and Outcomes
2012 NWATA Meeting

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Disclosures:
• I have no disclosures to report

Outline:
• History/Definition
• Diagnosis
• Management
• Outcomes
• Surgical Techniques
• Rehabilitation
Groin Pain??

• Athletic related groin pain: Many sources
  - Genitourinary
  - Intra-abdominal process
  - Lumbar spine
  - Muscle strain
  - Hip joint pathology

• Other causes of groin pain: Chronic
  - Pubic bone stress injury
  - Nerve entrapment
  - Sports hernia

What is “Athletic Pubalgia”

• Other Terms:
  - Sports Hernia/Sportsman’s Hernia
  - Gilmore Groin
  - Athletic Pubalgia

• Simple Definition:
  - Activity-related groin pain which improves with rest

• Moving Forward (“Best”) Definition:
  - Chronic, activity-related groin pain, often unresponsive to conservative therapy and improved with a directed focused rehabilitation program or surgical repair.

The Stats...

• Occur more often in men
• Onset can be acute, but often thought as a gradual
• Athletic activities that involve cutting, pivoting, kicking, and sharp turns
• More common in soccer, ice hockey, football
• Incidence of 5%-18% in athletes

Kachongwe J, of Orth & Sp Phy Ther 2008
Mechanism

- Shearing forces from the strong pull of the adductors, against the underconditioned abdominal muscles
- Can lead to attenuation or tearing of the transversalis fascia
- Similar mechanisms may lead to osteitis pubis
Clinical Presentation

- Exercise-related pain in lower abdomen and groin
- Typically relieved with rest, but returns with resumption of activity
- Usually present for a few days after strenuous activity
- Pain with getting out of bed the following AM

Kachingwe’s Cluster of 5

1. Subjective complaint of deep groin/lower abdominal wall pain
2. Pain that is exacerbated by sport specific activities
3. Palpable tenderness over the pubic ramus at the rectus insertion
4. Pain with resisted adduction at 0°, 45°, and/or 90° hip flexion
5. Pain with resisted abdominal curl up
Physical Exam

• Tenderness or looseness of the external inguinal ring
• Pain with resisted adductor testing or tenderness over the adductor origin
• Pain with resisted testing of the rectus abdominus
• Pubic symphysis tenderness

Imaging

• MRI:
  – Attenuation of the rectus abdominus
  – Preperitoneal fat bulging
  – Tears in the insertion of the rectus
  – Adductor pathology

• Dynamic Ultrasound:
  – Operator dependent
  – Not available at all centers

Treatment

• Non-surgical:
  – Rest, physical therapy/ATR rehab, NSAIDS, Corticosteroids, PRP
  – Often utilized initially, especially in season

• Surgical:
  – Open (Sutured vs mesh)
  – Laparoscopic (either transabdominal preperitoneal (TAPP), vs totally extraperitoneal (TEP))
Literature

- 19 Open repair articles
- 12 Laparoscopic repair articles

(as of 3/7/2012)

- Success criteria = Return to sports activity
- Comparable results open vs. laparoscopic (92.8% vs. 96.0%)
- Role of adductor

Single Physician Experience

- 29 cases (2 female)
- 20 chronic
- 9 acute
- Combination PT/Surgery
- Hockey, Softball, Soccer, Basketball, Running, Skiing, Tennis, Equestrian
- 1 Adductor tenotomy
- 100% return to sport

Lessons Learned

- Key “hurdle” in rehab is isometrics
- Unable to pass beyond isometrics is good indication for surgery
- Try to rehab the adductor first before surgery to see if tenotomy needed
- Post- op rehab should begin immediately
Definition of Sports Hernia

- Best diagnosis by Harmon:
  - “the phenomena of chronic activity-related groin pain that is unresponsive to conservative therapy and significantly improves with surgical repair.”

  Caudill Br J Sports Med 2009

Sports Hernia

Universally thought to be a weakness of the posterior floor
Disruption of the transversalis fascia or conjoined tendon

Diesen Adv Surg 2007
Athletic Pubalgia: Myers
- 8490 patients
- 5460 operations

The concept of the pubic joint
Rectus abdominus injury with strong pull of adductors with anterior tilt of the pelvis against the lip of the inferior pubic ramus
17 different nonhip, soft-tissue structures as cause for primary pain


Surgical Options
- Open approaches
- Laparoscopic approaches

Open approach: advantages
- Evaluation of the insertion of the rectus
- Evaluation of the external oblique aponeurosis
- Evaluation of the conjoint tendon
- Entrapment of the ilioinguinal, iliohypogastric, or genital branch of the genitofemoral nerve
- Can be done under local
- Can avoid the use of mesh
Open surgery: types
- Modified Bassini
- Modified Shouldice
- “Minimal Repair Technique” Muschaweck and Berger
- Litchenstein repair

Laparoscopic Approach
- Transabdominal preperitoneal (TAPP)
- Total Extraperitoneal (TEP)

Laparoscopic repair: advantages
- Earlier return to activity
- Better visualization of the defect
- Repair of bilateral defects in one operation
- "Tension-free" repair
- Superior evaluation of occult direct hernia, indirect hernia, and lipoma
Laparoscopic repair: disadvantages

- General anesthesia
- Urinary retention: as high as 22% in some series
- Need for mesh
- Expense
Single surgeon experience with athletic pubalgia

- N=68
- Majority collegiate athletes but include professional athletes, high-level athletes, and "weekend warriors"
- Surgery between 6/2007 and 1/2012

Single surgeon experience: Preoperative findings

Deep lower abdominal pain or groin pain which improves with rest but returns with activity
Tenderness along the medial inguinal floor or Hesselbach's triangle
Tenderness along symphysis pubis
Loose in the external or superficial ring
Tenderness at the insertion of the adductor longus on the pubis
Most consistent MRI finding: osteitis pubis

Single surgeon experience: OR findings

- All had mesh placed
- All performed laparoscopic total extraperitoneal (TEP)
- Bilateral findings in 67/68 (98.5)
- Weakness or attenuation in the posterior floor
- Extension of the weakness in anterior direction or medial/lateral direction
Results

• All performed outpatient
• Follow-up 7-10 days post-op, 4 weeks post-op, and 3/6 months post-op
• 100% return to athletics (66/66)

Athletic Pubalgia Rehabilitation

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March 31, 2012

SPU experience

• 2008-Current
  – 7 cases total 6 male, 1 female
  – 4 cases presented as chronic
  – 3 cases presented as acute
  – 6 soccer, 1 basketball
Management considerations

- Non surgical
- Surgical
- Competitive season – Goal is ongoing participation
  - Functional Performance assessment
  - Limit practice participation, x-train
- Non-competitive season – rehab prior to start of season

<table>
<thead>
<tr>
<th>WEEK ONE</th>
<th>NON-SURGICAL IN SEASON</th>
<th>NON-SURGICAL OFF-SEASON</th>
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<tbody>
<tr>
<td></td>
<td>Supine Hip Ab/Adduction Isometric w/ knees at 90 &amp; 0 degrees (15 sec hold, 3 X 10)</td>
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<tr>
<td></td>
<td>Isometric Quad/Ham sets</td>
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<td></td>
<td>Hip Flexion Isometrics w/ knees at 90 degrees</td>
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<td>Abdominal Brace in Hooklying (3 sec hold, 3 X 15)</td>
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<td>Pushups- 25/day</td>
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<td>Stationary Bike- no resistance</td>
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SPU management

- 2 athletes were managed non-surgically
- 5 athletes were managed surgically
- Of the non-surgical patients one was managed in season and one non-competitive season
- All 7 outcomes returned the athletes from essentially unable to participate to full return without restriction.
WEEK 2

**NON-SURGICAL IN SEASON**
Maintain Exercises from week 1
- Increase 15 sec holds to 25 sec.
- Increase 3 sec holds to 10 sec.

**NON-SURGICAL OFF SEASON**
Maintain Exercises from week 1
- Increase 15 sec holds to 25 sec.
- Increase 3 sec holds to 10 sec.

**Add**
- Flexion only SLR (3X5) to 4 way SLR's (3X15)
- Add Hip Extension with knee at 0 and 90 (3 X 15, 15 sec)
- Hip Hiking (3 X 15, 3 sec)
- Single Leg balance exercises (3 X 30 sec)
- Bridging (3-5 sec hold, 3X 15)
- Wall Squats (45-90 degrees 3 X 15)

WEEK 3

**NON-SURGICAL IN SEASON**
Maintain Hip Flexion and Adduction Isometrics
- Knees at 90 degrees, 15-25 sec hold, 2X10, 2-3 sets a day

**NON-SURGICAL OFF SEASON**
Continue WEEK 1 and 2 rehab plan through 1 month.

**WEEK 3 (cont.)**

**NON-SURGICAL IN SEASON**
Add:
- Pool Workouts if available
- Core stabilization exercises
- Resistance walking, pushing, pulling
- Return to jumping and running (single plane movements)

**NON-SURGICAL OFF SEASON**
Continue Week 1 and 2 rehab plan through 4 weeks.
Week 4

NON-SURGICAL IN SEASON
Continue with week 3 exercises progressing to sport specific training and multiplane exercises
Progress Core Stabilization Exercises
Progress resistance to tolerance
Attempt return to sport through progressive practice time adjustments.

NON-SURGICAL OFF SEASON
Continue Week 1 and 2 rehab plan through 4 weeks.

WEEK 5-6

NON-SURGICAL IN SEASON
Return to play

NON-SURGICAL OFF SEASON
Maintain Hip Flexion and Adduction Isometrics
- Knees at 90 degrees, 15-25 sec hold, 2X10, 2-3 sets a day
Progress SLR's to standing
Progress Bridges to single leg
Add:
- Pool Workouts if available
- Core stabilization exercises
- Resistance walking, pushing, pulling
- Return to jumping and running (single plane movements)

WEEK 7-10

NON-SURGICAL IN SEASON
Return to play

NON-SURGICAL OFF SEASON
Continue with week 3 exercises progressing to sport specific training and multiplane exercises
Progress Core Stabilization Exercises
Progress resistance to tolerance
Attempt return to sport through progressive practice time adjustments
NON-SURGICAL OFF SEASON SUMMARY

• In-season (IS) and Off Season (OS) protocols match weeks 1-2
• OS protocol deviates from IS protocol by
  – stretching week 2 IS plan out to 1 month.
  – Week 3 IS plan out to 4-6 weeks
  – Week 4 IS plan out to 7-10 weeks

SURGICAL PATIENT
Week 1-2

• Supine Hip Ab/Adduction Isometric w/knees at 90 & 0 degrees (15 sec hold, 3 X 10, 2-3X day)
• Isometric Quad sets (3X 15, 2-3X day)
• Pushups- 25/day
• Open chain
  – Resisted Hip Flexion Isometrics w/knees at 90 degrees
  – Hip Adduction Isometric w/knees at 0 and 90 (30 sec X 10)
  – Stationary Bike- no resistance (5-20 min)
  – Pool workout up to 1 hour

Surgical Patient
Week 3

• Maintain quad and Hip Adduction Iso’s
• Standing hip 4-way w/resistance and balance (3 X 10)
• Crunches- variety to fatigue
• Prone Hip Internal/External Rotation-resistance 3X10
• Bike or elliptical (5-15min)
• Pool workout- 1 hour plus
Surgical Patient
Week 4
• Bike/Elliptical w/ resistance (10-20 min)
• Wall Squats- 45-90 degrees (3 X 15)
• Bridges- Bilateral or single (2 X 15)
• Lunges- w/abdominal brace (2 X 15)
• Core stabilization exercises
• Resistance walking/pushing/pulling
• Jumping, Running- single plane movements

Surgical Patient
Week 5
• Sport Specific Training- multi plane exercises
• Progress core stabilization exercises to tolerance
• Progress resistance to tolerance
• Attempt return to sport

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