The “Sports Hernia”

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Why Should I Care?

• You may run into it
  – An athlete with groin pain not getting better
• You may read about it
  – An athlete may read about it
• It’s a difficult diagnosis to get right
Why Is It Tough to Get Right?

- Broad area for symptoms
- Many possible diagnoses
- Unfamiliar anatomy
- Interchangeable names for “sports hernias”
Today’s Purpose

• Explain the different pathologies that are described as “sports hernias”
• Teach clinicians how to identify sports hernias in their athletes
• Describe the effective treatments for sports hernias
  – Surgery
Where does it hurt?
Many Causes of Groin Pain
Groin Pain Pathologies

• Musculo-tendinous Injury
  – Hip flexors
  – Hip adductors
  – Abdominals
  – Enthesopathy
    • Adductor longus
    • Rectus abdominus
Groin Pain Pathologies

• Hip joint pathology
  – Sprain
  – Arthritis
    • OA
    • DJD
  – Acetabular labral tear
  – Femoral head/neck AVN
Groin Pain Pathologies

- Stress fractures
  - Pubic rami
  - Femoral head/neck
- Avulsion fractures
  - AIIS/ASIS
  - Lesser trochanter
  - Pubic symphysis
Groin Pain Pathologies

- Iliopectineal bursitis
- Osteitis pubis
- Pelvic girdle dysfunction
- Lumbar spine pathology
  - Facet joint injury
  - Disk protrusion
  - Spondylolysis/spondylolisthesis
Groin Pain Pathologies

- Nerve entrapment
  - Ilioinguinal
  - Genitofemoral
  - Obturator
- Prostatitis
- Varicocele testis
- Osteomyelitis at pubic symphysis
Groin Pain Pathologies

• “Sports hernias”
  – Gilmore’s groin
  – Athletic Pubalgia
  – Symphysis syndrome
  – Hockey groin syndrome
  – Hernia
    • Conventional
    • Occult (Sportsman’s)
Regional Anatomy
Figure 2-3. (Left body half) Superficial landmarks in the groin. (Right body half) Dissection of the subcutaneous tissues of the groin to the level of Scarpa's fascia.
Identifying Sports Hernias
Common History

- Gradual onset
- Unilateral pain, but not exclusively
- Males
- Pain in groin and lower abdominal regions
  - May extend into genitals
- Pain with activity and ceases with rest, only to return with activity
- Doesn’t “feel” like a muscle strain
Physical Exam

• Hip ROM
  – Flexion
  – Flexion and IR
  – Flexion, adduction, IR
  – IR and ER
  – FABERE’s
Physical Exam

• Resisted hip motions
  – Flexion (knee flexed/SLR)
  – Adduction
  – Diagonal adduction

• Passive hip motions
  – Hip extension
  – Abduction
Physical Exam

• Resisted abdominal movements
  – Sit-up
  – Sit-up with rotation
  – Pelvic curl-up
Physical Exam

• Palpation
  – Inguinal ligament as dividing line

• Special tests
  – Bilateral adduction
  – Bilateral adduction with fingertip pressure
Physical Examination

- No visible or palpable signs of “hernia”
- Pain with resisted bilateral hip adduction
- Provocative test
  - Fingertip pressure over inguinal canal
- Palpable tenderness
  - Inguinal canal
  - Adductor longus
Physical Examination

• Doesn’t fit with other pathologies
• Negative x-ray and MRI
  – Herniography?
  – Diagnostic US?
Diagnostic US
Diagnostic US
Diagnostic US
Types of Sports Hernias

SoccerAddicts.com
Gilmore’s Groin

• Pathology
  – Tear in external oblique aponeurosis
  – Conjoined tendon tears from pubic tubercle
  – Conjoined tendon splits from inguinal ligament
Gilmore’s Groin

- Identified by tenderness and dilation of external inguinal ring
- Repaired by suturing tears
- Return to full activity in 4 weeks
Athletic Pubalgia

- Chronic inguinal or pubic area pain
- Pain only on exertion
- No other medical diagnosis
- Biomechanical injury
  - Weak lower abdominals
  - Resulting in anterior pelvic tilt
  - Overuse of adductors and lower abs

Athletic Pubalgia

- Identified by tenderness in the region and frustration
- Surgical repair
  - Reinforce conjoined area with suturing and adductor release
- Full recovery in 3 months
Symphysis Syndrome

- Dilation of superficial inguinal ring
- “Weakness” of external oblique aponeurosis
- Deficiency of inguinal canal posterior wall
- Identified by tenderness in inguinal region
Symphysis Syndrome

• Surgical repair
  – Reinforce conjoined area
  – Release and denervation of rectus abdominus insertion
  – Release of adductor longus and gracilis
• Full recovery in 8-12 weeks
Hockey Groin Syndrome

- Tear of external oblique aponeurosis
- Entrapment of ilioinguinal nerve

Irshad K et al. Surgery. 2001. 130. 759-766.
Hockey Groin Syndrome

• Identified by
  – Tenderness in inguinal region
  – Dilated external inguinal ring
  – Gap in external oblique aponeurosis upon exertion

• Surgery
  – Repair tear with synthetic mesh
  – Excise nerve
  – Full Recovery in 8 weeks
Sports(man’s) Hernia

• “Conventional” hernias
  – Femoral
  – Obturator
  – Umbilical
  – Inguinal
    • Direct
    • Indirect
Indirect

Direct

Both

Femoral

Sports Hernia

- Occult hernia
  - Not visible or palpable
- Defect in the posterior wall of inguinal canal
  - A hole or a thinning of the tissue
  - Genetic?
Sports Hernia

- Identified by tenderness in inguinal region
- Herniography
  - Dye injected into peritoneum
  - Not common in US
- Diagnostic ultrasound
  - Exertion maneuver
  - Also not common in US
Sports Hernia

• Surgical repair same as “conventional” hernias
  – Suture posterior wall
  – Synthetic mesh over posterior wall
  – Laparoscope with mesh

• Full recovery in 4 to 6 weeks
Open Surgical Repair

- Modified Bassini procedure
- Shouldice technique
Open Surgical Repair
Open Surgical Repair
Open Repair with Mesh

- Lichtenstein technique
  - Tension-free procedure
Mesh Repair

Closed Surgical Repair

• Laparoscopic technique with mesh
• TAPP repair
  – TransAbdominal Pre-Peritoneal
Laparoscopic Repair
Laparoscopic Repair
Rehabilitation

• Conservative management
  – Get through season, then surgery
  – Post-operative rehab
Conservative Treatment

• Pain Control
  – NSAIDs
  – Therapeutic modalities
  – Cortico-steroid injections
  – Spica wrap or girdle

• Therapeutic Exercise
  – Muscle balancing about the pelvis
On a fixed leg, the pull from the hip adductors (RED) is resisted by the tension at the pubic symphysis (BLUE) and the pull of the muscles of the abdomen (GREEN).

**KEY:**
- **PS** - pubic symphysis
- **IL** - inguinal ligament
- **OE** - obturator externus
- **P** - pectineus
- **AM** - adductor magnus
- **AB** - adductor brevis
- **AL** - adductor longus
- **G** - gracilis
- **EO** - external oblique
- **IO** - internal oblique
- **T** - transversus abdominis
- **RA** - rectus abdominis
Therapeutic Exercise

• Leg raises (with draw-in)
  – Flexion
  – Abduction
  – Extension
  – Adduction
  – Horizontal abduction
  – Diagonal adduction
Therapeutic Exercise

- Core exercises
  - Partial sit-up
  - Sit-up with rotation
  - Pelvic curl-up
  - Side lifts
  - Opposite arm/leg lift
  - Double leg lifts
Therapeutic Exercise

• Flexibility exercises
  – Hamstrings
  – Adductors
  – Hip flexors
  – Posterior hip
  – Modified hurdler’s stretch
Post-op Rehab

• 0-2 Weeks
  – Rest
    • Allow incision to heal
    • Post-op pain to subside
  – After 1 week, begin walking
    • Not power walking
2 – 4 Weeks

• Begin strengthening/stretching exercises
  – Leg raises
  – Core activation (draw-in)
  – Passive hip stretches

• Stationary bike for fitness

• Wall squats
  – Without, then with, ball squeeze
4 – 6 Weeks

- Progress to more intense exercises
  - Partial sit-ups
- Begin skating or jogging
  - Progress to running
- Initiate sport-specific drills
  - Shooting, kicking, or throwing
- Continue with lower intensity weight lifting
6 Weeks

• Resume normal conditioning and weight lifting programs
• Return to full sports activity with asymptomatic:
  – Full speed sprint
  – Lateral movement
  – Cutting/pivotting
  – Shuttle sprint
Princeton’s Program

• Athlete presents to ATC with groin pain
• ATC evaluation raises suspicions
  – Begin conservative care
• Refer to MD
  – Early, if suspicions are high
  – After no progress
Princeton’s Program

• MD evaluation
  – Hernia check
  – Get x-ray and MRI

• General surgeon consult
  – Diagnostic US in office

• Schedule surgery
  – When schedule allows
Princeton’s Program

- Return to ATC for post-op rehab
- Return to full participation
  - Excellent results in 26/26 patients
Key Points

• Groin pain is fairly common in athletes
• Some problems are very resistant to getting better
• Keep in mind that these pathologies exist
• Realize there are very few ways to accurately identify their presence
• Very commonly identified outside US
Key Points

• Which pathology applies is very surgeon dependent
• All have in common a reinforcement of the inguinal region
• Recovery rates after surgery are excellent
Thank You
References

- Sports hernia
References

• **Gilmore’s groin**

• **Athletic pubalgia**

• **Symphysis syndrome**

• **Hockey groin syndrome**
References

- Herniography
References

• Diagnostic US
Literature Review

• Rates of full recovery
  – Gilmore’s groin – 1164/1200 (97%)
  – Athletic pubalgia – 152/169 (90%)
  – Symphysis syndrome – 24/24 (100%)
  – Hockey groin syndrome – 52/56 (93%)
  – Sports hernia – 219/243 (90%)
  – Combined - 1611/1692 (95%)