APPROACH TO THE DIAGNOSIS OF GROIN PAIN

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OVERVIEW

Review the entities that may contribute to groin pain
Discuss the approach to making an accurate diagnosis when a patient has groin pain
Discuss modalities that are useful in diagnosis of groin pain
Discuss treatments for groin pain
OBJECTIVES

By the end of the lecture, the learner will be able to do the following for a patient with groin pain:

- Perform a thorough physical exam
- Develop a differential diagnosis
- Order imaging modalities helpful in diagnosis
- Direct a treatment plan
GROIN INJURY

Paucity of literature regarding incidence of groin injury

Non-specific or multi-factorial diagnosis

Limited data available for review

- 10-18 groin injuries per 100 soccer players/year
- Anywhere from 9-57% of hockey players will suffer a groin strain during their career
GROIN - WHAT DOES THAT MEAN?

The groin is a very general term that is often misused

It encompasses the following:

- The hip joint
- Musculature including: adductors, hip/lumbar flexors, knee extensors, abdominal wall
- GU and GI organs
- Bony pelvis
- Nerves originating from the lumbar spine
Anatomy of the Groin Area

Superficial Muscles

- Rectus abdominis
- External oblique
- Inguinal ligament
- Tensor fascia latae
- Gracilis
- Sartorius
- Rectus femoris
- Iliotibial band

Deep Muscles

- Transversus abdominis
- Iliopsoas
- Gluteus medius
- Pectineus
- Adductor longus
- Adductor brevis
- Adductor magnus
- Vastus lateralis
- Vastus medialis
HOW TO APPROACH DIAGNOSIS

Take a thorough history

MOI
• Was there an incident? Or gradual onset?

Aggravating factors
• Cutting? Kicking?

Associated symptoms

Exercise history
• Sport(s)
• Hours/week

Previous back/LE injuries
HOW TO APPROACH DIAGNOSIS

Do a thorough exam

Gait analysis

Palpate the L spine, bony pelvis, lower abdomen, musculature - *be very specific*

PROM/AROM L spine and ipsilateral hip, SI jt

Test for muscle strength in multiple planes

- Try to isolate the muscle(s) that you think are contributing to the pain
APPROACH TO DIAGNOSIS

Special Testing
  FABERE’s
  Thomas
  Trendelenburg
  Stork
  Ober’s
HOW TO APPROACH DIAGNOSIS

Keep an open mind
Know that your “working diagnosis” may be superficial
There may be multiple diagnoses and several modalities of treatment may need to be employed
IMAGING

X-ray
  Acute injuries
  Obvious deformity

Ultrasound
  Prolonged pain
  Useful in delineating exact location of pain

CT
  Trauma

MRI
  Prolonged pain
  Hip joint evaluation
## DIAGNOSES

<table>
<thead>
<tr>
<th>Soft Tissue</th>
<th>Bony Pelvis/Femur</th>
<th>Intra-articular</th>
<th>Neuropathic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle strain</td>
<td>Avulsion fracture</td>
<td>Labral tear</td>
<td>Iliohypogastric</td>
</tr>
<tr>
<td>Tendonitis/osis</td>
<td>Apophysitis</td>
<td>FAI</td>
<td>Ilioinguinal</td>
</tr>
<tr>
<td>Bursitis</td>
<td>Stress fracture</td>
<td>OA</td>
<td>Genitofemoral</td>
</tr>
<tr>
<td>Inguinal disruption (prev called sports hernia)</td>
<td>Fracture</td>
<td>Hip dysplasia</td>
<td>Inguinodynia</td>
</tr>
<tr>
<td>Osteitis pubis</td>
<td></td>
<td>AVN</td>
<td>CRPS</td>
</tr>
<tr>
<td>“Groin pain in athlete”</td>
<td></td>
<td>LCP</td>
<td>Post-surgical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCFE</td>
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</table>
## DIAGNOSIS

<table>
<thead>
<tr>
<th>Infectious</th>
<th>Gastrointestinal</th>
<th>Genitourinary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synovitis</td>
<td>Femoral or inguinal (direct/indirect) hernia</td>
<td>Testicular pathology</td>
</tr>
<tr>
<td>Septic Arthritis</td>
<td>Diverticulitis/osos</td>
<td>Ovarian pathology</td>
</tr>
<tr>
<td>Discitis</td>
<td>Appendicitis</td>
<td>Varicocele</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>IBS/IBD</td>
<td>UTI</td>
</tr>
</tbody>
</table>
SOFT TISSUE

Muscle strain
  acute
Tendonitis/osis
  chronic
Bursitis
  Chronic, positional
Inguinal disruption (prev sports hernia)
  Diagnosis of exclusion
Osteitis pubis
Snapping hip
SOFT TISSUE

Treatment
- Relative rest
- NSAIDs
- Physical Therapy
- Acupuncture
- OMT
- US guided injections
BONY PELVIS AND FEMUR

Avulsion fracture
  Pediatric, acute
Apophysitis
  Pediatric, acute vs chronic
Hip pointer
  Acute trauma
Stress fracture
  overuse
  Eating disorders
Fracture
  Trauma, acute severe pain
AVULSION FRACTURE AND APOPHYSITIS

- Sartorius from the ASIS
- Adductor magnus from ischial tuberosity
- Gracilis and adductor brevis from pubic ramus
- Rectus femoris from AIIS
- Transversus abdominus, QL from the iliac crest
- Iliopsoas from the LT
AVULSION FRACTURE AND APOPHYSITIS

Treatment
- Rest
- Non-weight bearing for fractures (short term)
- Progressive PT

Indications for surgery (fractures)
- Non-specific guidelines
- Consider if there is significant displacement of the avulsed fragment
HIP POINTER

Treatment
  Relative rest
  NSAIDs
  Ice
  PT
STRESS FRACTURE

Treatment

Evaluate underlying cause
  • Overuse
  • Change in training habits

Look for eating disorders and/or vitamin deficiencies

Consider the biomechanical factors leading to the stress fracture
FRACTURE

Treatment
   *Referral to orthopedics*
   Remember to identify “distracting” injuries
INTRA-ARTICULAR

Labral tear
  Chronic, certain sports
FAI
  Gradual onset
OA
  40 + and those with CHD
Hip dysplasia
AVN
  Suspect in those who have no trauma or overuse
LCP and SCFE
  Pediatric, overweight, usually not athletic
LABRAL TEAR

Treatment
  PT
  Intra-articular injection
  Relative rest
  If fails consider surgery
FAI

Treatment
  PT
  Intra-articular injection?
  Relative rest
  If fails consider surgery
OA

Treatment
- PT
- Activity modification
- NSAIDs vs Tylenol
- Intra-articular injection
- If fails consider surgery
HIP DYSPLASIA

Treatment
  Activity modification
  PT
  Intra-articular injection?
  Refer to orthopedics to discuss possible surgical interventions
AVN

Treatment

No actual treatment for the disorder
Mediate the symptoms

- PT
- NSAIDs
- Activity modification
- Likely will need THA
LCP AND SCFE

Treatment
- Refer to orthopedics
- Remember to check the contralateral hip
- Examine/screen the rest of the family
NEUROPATHIC

Iliohypogastric
Ilioinguinal
Genitofemoral
   All 3 originate from the L spine and traverse the groin
Inguinodynia
CRPS
   Usually with long history of pelvic/groin pain, diagnosis of exclusion
Post-surgical
   Hip, abdominal, groin
NEUROPATHIC PAIN

Treatment
Steroids
US guided injection
Consider general surgery referral

CRPS
Rule out contributing factors

Post-surgical
Steroids
Injection
General surgery referral
INFECTIOUS

Synovitis
  Pediatric, associated viral syndrome

Septic Arthritis
  Any age
  Post-procedural

Discitis
  Rare, difficult to diagnose

Osteomyelitis
  Very similar to septic arthritis
INFECTIONOUS

Diagnosis and Treatment
- Labs (CBC, ESR, CRP, synovial fluid analysis)
- Imaging
- Re-examine frequently
- Consider hospitalization

Due to the potential morbidity associated with these entities be quick to order labs and hospitalize for IV antibiotics
GASTROINTESTINAL

Femoral or inguinal (direct/indirect) hernia
  Common in those who do heavy lifting (laborers, Olympic weight lifters)
Diverticulitis/osis
  Fever, diarrhea, hematochezia
Appendicitis
  Fever, N/V/D
IBS/IBD
  Chronic, intermittent
HERNIA

Diagnosis
   Advanced imaging - MRI vs CT vs US

Treatment
   Referral to general surgery

Exercise restrictions
   Athlete specific
GENITOURINARY

Testicular pathology
  Thorough history and exam
Ovarian pathology
  Same
Varicocele
  Common
UTI
  Common
GROIN PAIN IN ATHLETE

“Athletic pubalgia” or “Inguinal Disruption” or “Sports Hernia” (terms discouraged)

*No actual hernia*

Abnormal tension in the groin, around the inguinal ligament attachment

May have disruption of the external oblique, edema of surrounding tissues

Posterior inguinal wall weakness (transversalis fascia and parietal peritoneum)
GROIN PAIN IN ATHLETE

Rectus abdominus, conjoint tendon, and external oblique merge to form the pubic aponeurosis.

Pubic aponeurosis is confluent with adductor and gracilis origin.

Conjoint tendon = fusion of internal oblique + transversus abdominus.
GROIN PAIN IN ATHLETE

Diagnosis of exclusion
Likely has failed PT, relative rest, activity modification
Imaging may show edema of the pubis, partial or full thickness tears of the rectus abdominus, tendonitis/ositis of the inserting structure
GROIN PAIN IN ATHLETE

DOHA agreement: separation of groin pain into categories
- Adductor-related groin pain
- Iliopsoas-related groin pain
- Inguinal-related groin pain
- Pubic-related groin pain
- Hip-related groin pain
- “Other causes of groin pain in athletes”
GROIN PAIN IN ATHLETE

Adductor-related groin pain
  Adductor tenderness AND
  Pain on resisted adductor testing
GROIN PAIN IN ATHLETE

Iliopsoas-related groin pain
  Pain on resisted hip flexion AND/OR
  Pain on stretching the hip flexors
GROIN PAIN IN ATHLETE

Inguinal-related groin pain
  Pain location in the inguinal canal AND
  Tenderness of the inguinal canal
  Absence of inguinal hernia
GROIN PAIN IN ATHLETE

Pubic-related groin pain
  Local tenderness of the pubic symphysis and the adjacent bone
  No special testing
GROIN PAIN IN ATHLETE

Hip-related groin pain
  FAI vs labral tear, etc.
  Encompasses all hip causes of groin pain
GROIN PAIN IN ATHLETE

Other causes of groin pain
  All of the medical causes of pain in the groin not previously described
GROIN PAIN IN ATHLETE

Treatment
  PT
  OMT
  Acupuncture
  Localized US guided injection (diagnostic vs therapeutic)
  Referral to general surgery
  Surgical repair varies widely: laparoscopic vs open, mesh vs no mesh.
  Most studies claim a high return to sport rate after surgery
QUESTIONS?

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