Groin Pain / Pubalgia in the Athlete

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Goals of the Presentation

- Systematic analysis and treatment of the athlete with groin / pelvic girdle pain based on
  - Anatomy
  - Clinical Presentation
  - Physical Exam
  - Patient management

Anatomy

Tissue type = pain generator
- Muscle
- Tendon
- Ligament
- Enthesis
- Nerve
- Bone
- Joint
- Referred pain
  - Lumbar
  - sacroiliac
  - Visceral
Abdominal attachments to the Pelvis/Confluence with adductors

Dermatomes Around the Hip and Pelvis

Peripheral Nerves Around the Hip
Key elements of the Patient History

- Onset of symptoms
  - Acute vs gradual
- Location of symptoms
- Provocative factors
  - Rotation
  - Stretch
  - With muscle activation
- Lumbar/neurologic symptoms ***
- Associated medical history ***
  - GI, Gyn, GU, rheum, endocrine

Clinical Evaluation: Physical Exam: Lumbosacral

- Overall: posture, facial expression, position
- Observation: gait, transitional movements, active tasks
- Inspection: curves, alignment, atrophy, symmetry
- Range of motion: flexion, extension, side-bend, rotation
- Palpation
  - Bony: spinous process, transverse process, ribs, trochanter, SI, iliac crest, iliac spine
  - Muscle: erector spinae, thoraco-lumbar fascia, quadratus, glutei, hip flexors
  - Careful neurologic examination. ***especially L5 reflex
- Special tests: one legged standing lumbar extension,
- Dynamic “athlete” testing: lunge, squat, step ups, clock

Physical Exam Pelvis

- Posterior:
  - SI tests
    - Standing stork
    - Ganslen’s
    - Pelvic rock
    - SI compression
  - Posterior Pelvic Ligaments
  - Posterior muscle attachments

- Anterior/medial
  - Pubic symphysis
  - Pubic rami
  - Adductor attachment
  - Hip flexor mechanism
- Lateral
  - Gluteal mechanism
  - Hip rotator cuff
  - Hip capsule
  - Intra-articular
  - Impingement/labral
  - Instability
Physical Exam: Special Tests

- Articular tests
  - Impingement tests
  - McCarthy. If done actively, can screen for snapping hip. Called the snapping hip test
- FAIR: non-specific
- Scour: add axial compression
- Stinchfield or active SLR test
- Log rolling
- Stability test
- Posterior and anterior glide
- Muscle and tendon tests
  - Thomas test for hip flexor tightness
  - Rectus femoris
  - Ober modified

Faber or Patrick test

Scour test
Stinchfield

FAIR test

Trendelenburg sign
Leg Length Testing

- True Leg Length
  - measure to medial malleolus
  - measure to lateral malleolus
- Weber-Barstow Maneuver
  - evaluates leg length asymmetry by comparing height of medial malleoli with legs extended

Thomas Test

- Tests for hip flexor contracture
- Mechanism:
  - flatten lumbar lordosis
  - flex hip against chest
  - check for ability of the extended leg to lay flat on the table.

Rectus Femoris Test

- Method 1
  - over the edge of examining table.
  - Knee should be flexible to 90 degrees
- Method 2
  - Ely's test
  - prone position
  - on knee flexion, check for ipsilateral hip flexion
Ober’s Test

- Assess for tensor fasciae latae (iliotibial band) contracture
- Can perform with knee:
  - flexed = greater stress on femoral nerve
  - extended = greater stretch on ITB.

Summary: Patient Evaluation

1. History: mechanism of injury, sport and chronicity
2. Careful assessment for referred pain sources: gyn, GI, spine, neuro
3. Targeted functional assessment. Identify abnormal biomechanics
5. Diagnostic imaging as needed and relevant
6. **Bedside MSK ultrasound
7. **Diagnostic/therapeutic injections
Summary: Treatment Options

- Physical therapy
- Manual therapy
- Rehabilitation
- Medication
  - Neuropathic pain
  - Nociceptive pain
  - Inflammation
  - Mood/sleep
- Injections
  - Corticosteroid
  - Prolotherapy
  - PRP
  - Trigger point
- Surgery
  - Hernia
  - Hip
  - Tendon
  - Bursa

Cases

Case TL: bilateral athletic pubalgia with “working out”

- 34 yo RH computer scientist and active cyclist/exerciser presents with >6 mos h/o “athletic pubalgia”. Feels it began after aggressive sit ups. PT of insufficient help
- PMH notable for
  - Hernia repair with mesh
  - L5 radiculard pain (L) secondary to DDD
- PE:
  - Neuro wnl
  - Hernia scar well healed
  - Pain with abdominal muscle activation and with palpation over superior public bone and adductor attachment
What to do next?

Treatment

- Prolotherapy: patient request based on research
  - 4 visits
  - Symptom resolution
- Additional core/pelvic/abdominal/hip girdle strengthening

Topol and Reeves. Arch PIMR 2005

Athletic pubalgia or sports hernia

- Most common in men with sports involving cutting, pivoting, kicking and sharp turns
- May represent posterior inguinal wall weakening from shear forces applied through the pelvic attachments of the hip adductors and abdominal muscles
- Imaging useful to exclude other diagnoses
- Physical therapy for hip and pelvic strengthening
- Prolotherapy or PRP
- Surgery: laparoscopic and minimally invasive techniques

**HPI:** 21 year-old R-handed varsity Wellesley College soccer player with pelvic pain for 16 months:
- Localized to left sacroiliac area → anterior, medial and posterior proximal thigh
- Started during soccer game.
- Rated 4-5 out of 10 on VAS.
- Worse with training, running.
- Denies numbness, tingling, weakness, bowel/bladder changes, fevers/sweats.
- Ice/heat, ibuprofen, of temporary benefit.

**CASE STUDY - SL**

- **PMH:**
  - Pelvic girdle pain since age 20 with increased soccer training
  - Seasonal allergies
- **Meds:** Zyrtec, ibuprofen prn, tylenol prn, Flexeril prn
- **ROS, FH, SoCh:** non-contributory.
- **Previous tx:** TFESI, S1 SNRB, facet and SI joint injections. PT, ATC, orthotics, OMT

**Physical Examination:**
- ROM: Lumbar flexion ROM mildly decreased. Hip ROM wnl. Increased lumbar lordosis
- Sensation, reflexes, strength: wnl.
- Negative FABER, Gaenslen, SI joint compression tests.
- Positive tenderness over left iliolumbar ligament and superior posterior sacroiliac ligament enthesis.
CASE STUDY - SL

Differential Diagnosis:
- S1 radicular pain
- Facet mediated pain
- Discogenic pain
- Iliolumbar and posterior sacroiliac ligament sprain and enthesopathy

CASE STUDY - SL

Treatment:
- Physical therapy, e-stim, osteopathic manipulative treatment minimal benefit.
- Left iliolumbar and sacroiliac ligament steroid injection with 100% relief for 2 months
- Season 2: treatment with platelet rich plasma injection
- Return to training 10 days
- Return to play 3-6 weeks
TENDON, LIGAMENT, ENTHESIS

Anatomy: Ligament and tendon attachments occur together

COMMON ENTHESOPATHIES

- Common enthesopathies of the spine/SI region:
  - Iliolumbar ligament
  - Posterior sacroiliac ligaments
  - Sacrotuberous ligament
  - Gluteal tendons
  - Hip adductor tendons

Clinical Presentation of Tendinopathy or Enthesopathy

- Trauma or repetitive overload.
- Pseudoradicular symptoms with negative imaging, EMG and/or poorly responsive to spinal injections.
- Prior short-term response to local steroid injection
- May have underlying hypermobility postural dysfunction or mechanical overload
MECHANISMS OF INJURY

- Repetitive trauma:
  - Each traumatic event damages tissue but is not enough to trigger the repair process.
  - Thus, damage accumulates resulting in degeneration of tissue, in this case tendons, ligaments and their enthesis attachments.

Neuromuscular control and “core strength”

- Dynamic testing
  - Squat
  - Lunge
  - Step ups
  - Unilateral hop

Case: Chronic back pain and stiffness non-responsive to prior treatment

- 37 yo software engineer, league soccer player and part time referee, presents with 2 year h/o non-relenting lower back/bilateral buttock, pelvic and groin pain
- Prior treatments included: Chiro, PT, ibuprofen (helped), epidural steroid injections for “discogenic LBP” (no sustained relief)
- PMH: Crohn’s disease. Mild hypothyroidism euthyroid on synthroid
Case: Physical examination

- Limited lumbar flexion
- Decreased internal rotation of hips R>L
- Pain with pelvic rock test and sacroiliac compression
- Minimal wrist / ankle synovitis
- Neuro exam WNL.

Case: Spondyloarthropathy associated with inflammatory bowel disease

Case: Treatment

- Rheumatology referral
- TNF agent
- Marked clinical improvement
Case: JP: 49 yo runner training for Boston marathon with Pelvis and gluteal pain

- 6 mos R gluteal, proximal posterior thigh pain.
- 2 week h/o incapacitating L inguinal pain.
- The gluteal and thigh pain has been insidious and slowly worsening as training regimen increases.
- Pelvic pain is acute
- Only PMH: small lumbar disc protrusion 20 years prior. No sequelae

Physical exam
- General medical and neuro exam wnl
- Mild pelvic obliquity. Mild restriction of lumbar flexion
- Minimal L5 weakness.
- Local pain to palpation and with resisted activation of hamstring and gluteal muscles. Tight TFL
- Pain with resisted L hip adduction and tender over the pubic ramus

MRI
- Edema in the L inferior pubic ramus, (near insertion of obturator internus insertion without discrete fracture line
- R greater trochanteric bursitis
- Mild bilateral hip arthritis
- Partial tears of R hamstring insertion at ischial tuberosity and gluteus minimus at the greater trochanteric insertion with bone marrow edema
Case: JP: 49 yo runner training for Boston marathon with Pelvis and gluteal pain

- No discrete fracture
- Low risk stress bone injury
- Managed with relative rest, cross training and prolotherapy
- Able to complete marathon. Did walk small sections.

Groin Pain / Pubalgia in the Athlete: Take Home Points

- Etiology is diverse
- Important to rule out visceral, inflammatory, hip, fracture and lumbar sources of pain
- Careful evaluation and treatment of the hip rotators, pelvic floor, adductors, abdominal attachments for enthesopathy/tendinopathy
- Restoration of joint mobility, flexibility, muscle balance, strength, endurance is critical
- Consider regenerative injection treatment for refractory cases

Thank you!!

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