Iliotibial Band Syndrome in the Cyclist

Background
1. General information
   - Freq dx in cycling and running sports which require repetitive flexion and extension of knee
   - Overuse injuries occur in cyclists who regularly ride, especially those involved in competition
   - Ensuring that bike fit is correct is major factor in preventing overuse syndromes

2. Definition:
   - Painful lateral knee condition due to:
     - Overuse
     - Friction
     - Pressure bursitis of lateral knee where posterior edge of iliotibial band (fascia) rubs against lateral femoral condyle

Pathophysiology
1. Pathology of dz
   - ITB: thick, fibrous band extending from iliac crest (hip) to lateral tibial tubercle
     - Runs on outside of leg from hip past knee
   - Position of ITB relative to femur changes as knee joint flexes and extends
     - In full extension ITB is anterior to lateral femoral condyle
     - During knee flexion, ITB slides posterior
     - Greatest friction of ITB against lateral femoral condyle occurs at 30° in "impingement zone"

2. Incidence/prevalence
   - Approx 15% of all overuse injuries of knee in cyclists

3. Risk factors
   - Repetition
   - Anatomical differences
   - Improper cycle set-up
   - Training habits
   - Any anatomic or bicycle setup issue that incr stretch or "pull" across lateral knee at impingement zone
     - Tight gluteal muscles
     - Wide pelvis may predispose athlete
     - Cleat fixation w/toes pointed
     - Narrow bottom bracket
     - Cranks w/too little offset
     - Excessive float/rotation of tibia d/t pedal cleats that allow rotation/float
     - Riding bike w/saddle height too low
       - Incr knee flexion
     - Pedaling big gears at low rpm
       - Creates higher forces across impingement zone

4. Morbidity
   - Pain and discomfort can limit optimal performance
Diagnostics

1. History
   - Lateral knee pain near lateral femoral condyle in cyclist
   - Swelling, warmth, or effusion
   - Symptoms freq resolve w/rest but recur w/return to activity

2. Physical examination
   - Knee exam
     - Evaluate LCL and lateral meniscus injuries
     - Measure leg length to check for significant difference
     - Ober test
       - Pt lies on side on exam table w/unaffected side down
       - Flex unaffected knee to 90°
       - Abduct and extend affected leg at hip
       - Attempt to adduct leg to table
       - Tightness in ITB and/or reproduction of symptoms indicate positive test
     - Noble test
       - Examiner's thumb is placed over lateral femoral condyle
       - Pts knee is extended from 90° of flexion
       - Positive if pain noted at 30° of flexion

3. Diagnostic testing
   - Generally not needed
     - Typical H&P are Dx
     - Consider if exam suggests LCL or Meniscal injury
     - Plain films usually not helpful
     - MRI not required
       - Can be used to eval alternate dx
   - Bone scan, may see "hot spot" on posterior lateral aspect of lateral femoral epicondyle

Differential Diagnosis

1. LCL injury
2. Lateral meniscus injury
3. Segond fracture
4. Proximal fibular dislocation or fx
5. Lateral femoral condyle injury
6. Extension of knee joint capsule into region between lateral femoral condyle and ITB

Therapeutics

1. Treatment
   - Identify predisposing factors
   - Leg length discrepancy
     - Correct by using cleat shims
   - Excessive in-toeing
     - Correct by moving shoe cleats to provide a more toe out position
   - Riders using fixed cleats may benefit from floating cleats that allow rotation
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Feet too close together
- Move shoe cleats to create a wider foot base
- Install longer bottom bracket on bicycle
- Pedal may be shimmed on crank arm

- Adjust saddle if too high or too set back
- Ask about gearing and pedaling rpm
  - Riders using too large a gear and/or pedaling w/low rpm may benefit from using lower gears w/higher cadence

2. Acute Tx
   - Ice
     - Avoid ice application to peroneal nerve
   - Anti-inflammatory medications
   - Avoid exacerbating activity
   - Studies in US Marine populations demonstrated benefit from complete non-wt bearing immobilization for 3 days

3. Subacute Tx
   - Incl stretching and strengthening
     - Direct ITB stretching
     - Deep friction massage
     - Strengthen gluteus muscle complex especially gluteus medius
     - Side-lying leg lifts
     - Physical therapy referral
   - Local steroid injections to the affected area
   - Surgery in recalcitrant cases

4. Medications
   - Ibuprofen 800 mg PO TID x 10 days

Follow-Up
1. Return in 2-6 wks to check progress
   - If immobilization used, athlete should return at end of immobilization period
2. Referral if
   - Failed conservative Tx
   - Refer to surgeon w/specialized experience in this area

Prognosis
1. May return to sport when pt can perform all strength exercises w/o pain
2. Incr distance and freq over 3-4 wks

References

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