Session 3: 9:38 – 9:48 am

Technique Video Presentations

How I Do a Brostrom Repair

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I. Outline
   a. Anatomy of lateral ligaments
   b. Evaluation and work-up
   c. Surgical Technique
   d. Complications
   e. My Treatment Algorithm

II. Anatomy
   a. Tibio-talar joint
i. Anterior talo-fibular ligament
   1. Lies within the capsular layers
   2. Distinct structure arthroscopically

ii. Calcaneofibular ligament
   1. Crosses both ankle and subtalar joint
   2. Deep to peroneals
   3. Lies in line with the superior peroneal retinaculum

b. Subtalar joint stabilizers
   i. External restraints
      1. Calcaneofibular ligament
      2. Talocalcaneal ligament
      3. Extensor retinaculum
   ii. Internal restraints
      1. Fibulotalocalcaneal ligament
      2. Ligament of the anterior capsule of the posterior facet joint
      3. Cervical ligament
         a. Runs obliquely from anterior calcaneus to the superior talar neck
      4. Interosseous ligament
         a. Lies between the anterior and middle facets
   iii. Spring ligament may impart some medial stability

III. Clinical Evaluation
    a. History
       i. Acute inversion injury
       ii. Recurrent – even with ADLs
    b. Symptoms
       i. Foot rolls under the patient, particularly on uneven ground
       ii. During athletic activities when changing directions
       iii. Relatively benign actions like stepping on a pebble may induce
       iv. Rarely pain
          1. If so, think of other associated entities (numerous)
             a. OCD
             b. Tendon pathology
             c. DJD/impingement
d. Coalition

c. Clinical exam – compare to contralateral
   i. Anterior drawer
      1. Actually anteromedial rotatory maneuver
      2. Very subjective
   ii. Stress the foot into varus
      1. Foot in dorsiflexion - assessing the integrity of the CF and TC ligaments
         a. Look for subfibular "dimple"
   iii. Assess hindfoot alignment
      1. Varus
      2. Plantarflexed 1st ray
   iv. Always assess peroneal tendon
      1. Subluxation
      2. Dislocation
      3. Fullness
         a. Split tears- brevis
         b. Complete tears- longus
   c. Radiographs
      i. Plain views usually normal
      ii. Stress views of ankle
         1. I don't routinely obtain
         2. In normal ankle – <12 degrees of tibiotalar tilt or <5 degrees from contralateral
            a. Controversial – what is normal?
            b. User dependent
            c. Requires relaxation or anesthesia
      iii. Fluoroscopy
         1. Probably reasonable if significant hypermobility exists
         2. Dynamic evaluation
      iv. MRI
         1. Helpful in work-up of “painful” instability
            a. Assess for intra- and extra-articular abnormalities

IV. Treatment
a. Nonoperative
   i. 1st line of treatment
   ii. Proprioceptive training
   iii. Peroneal strengthening, Achilles stretching
   iv. Bracing
   v. Orthosis
      1. Semi-rigid
      2. Arch support, heel cupping, lateral heel wedge
   vi. Shoewear modifications
      1. High-top
      2. Lateral flare
      3.
b. Operative

i. Indications – in general
   1. Failure of nonoperative care
   2. Inability to brace (skin/work/dancer)
   3. Recurrent sprains with daily activities

ii. Consider mechanical axis
   1. Varus should be recognized and corrected to avoid risk of recurrence
   2. Options if varus
      a. Osteotomy
         i. Dorsiflexion 1st metatarsal
         ii. Valgus –producing Calcaneal
      b. Nonanatomic ligament reconstruction restricting subtalar motion (i.e. Chrisman-Snook)

iii. Arthroscopic exploration in cases of intra-articular pain or pathology (i.e. OCD)
   1. I will scope that vast majority of my patients at the time of reconstruction

iv. Anatomic reconstruction
   1. Modified Brostrom with imbrication of the extensor retinaculum (Gould modification)
      a. Technique
         i. General anesthesia with popliteal block
         ii. Bump under hip
         iii. Initial Arthroscopy typical
            1. Don’t dawdle!!
            2. Avoid extravasation
      iv. Incision
         1. Curvilinear if no Evans or peroneal pathology
      v. Identification and advancement of retinaculum
      vi. Imbricate ligaments at midsubstance
         1. I don’t use Anchors or Tunnels
   2. Modified Brostrom-Split Evans
      i. Popularized by Anderson/Davis- Charlotte
      ii. Augments primary repair with a slip of the peroneus brevis- anterior 1/3rd
         1. Rationale- anecdotal experience with the classic modified Brostrom was that it does not hold up well over time and is insufficient for large athletes, heavy laborers and obese
      iii. Studies showed no overtightening or loss of peroneal strength (Girard)
         a. FAI, 1999
         b. AOFAS score 98.2
   2. Add a Dwyer calcaneal osteotomy or dorsiflexion 1st metatarsal osteotomy for cavovarus foot
Surgical results
  c. Complications
    i. Sural neuritis/neuroma
    ii. Overtightening – loss of function or late arthritis – Rare
    iii. Recurrence – especially if hindfoot varus was not addressed

V. Author’s treatment algorithm
   a. Modified Brostrum-Gould
      i. Thin patients
      ii. Dancers
      iii. Low-activity levels
      iv. Skilled positions- football
   b. Modified Brostrum-Evans
      i. Heavy laborers
      ii. Workers compensation patients
      iii. Obese patients
      iv. Football linemen
   c. Modified Colville/Coughlin
      i. Revisions
      ii. Poor collagen
         1. multiple joint instability
         2. collagen vascular disease
**Bibliography**


