Primary Surgery for Grade III Ankle Sprain

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Don’t Miss: Bony Anatomy

• Varus Plafond and Vaus Hindfoot predisposed to ankle instability
  Myerson, 1993

• Varus Hindfoot
Unstable > Controls

CCVA angle  $\uparrow$ 4°
Van Bergeyk, F&A Int 2002
Don’t Miss: Subtalar Instability

• Dorsiflexion- inversion
• Difficulty with uneven terrain/ At night
• Tender sinus tarsi
• **Provocative Test:**
  0° Dorsiflexion/
  Forefoot adduction

Thermann et al, F&A Int 1997
Do Not Miss!!
Know: Ligamentous Anatomy

Lateral Ankle
Burks & Morgan AJSM 1994

- Anterior Talo-Fibular Ligament (ATFL)
  L 24.8mm, W 7.2mm, Center 10mm from tip of fibula
- Calcaneo-Fibular Ligament (CFL)
  L 35.8 mm, W 5.3mm, Center inferior to ATFL
- Posterior Talo- Fibular Ligament (PTFL)
Know: Ligamentous Anatomy

Lateral Subtalar

- Interosseous Talo-Calcaneal Lig. (ITCL)
  Tochigi & Amendola 2004
- Cervical Ligament
- Inferior Extensor Retinaculum
- Lateral Talo-Calcaneal Ligament (LTCL)
Know: Muscular Anatomy

• Lateral
  – Peroneal Tendons
  – Delayed recruitment in Unstable ankles
    Karlsson & Andreasson AJSM, 1992
  – 15% of Static stabilizers
    Hatch & Labib 2003

• Medial
  – Tibialis Posterior and Toe Flexors
MRI – Indications

• **Acute Sprain:**
  - Loose body
  - Occult fracture
  - Peroneal tears
  - Ligament disruption

• **Chronic Instability:**
  - Same + OCD
Stress X-rays

Stress views: AP/ LAT/ Broden

> 15 degrees of talar tilt angle
> 5 mm of anterior Talar translation
> 7 mm of Talo Calcaneal gapping

• compare with normal side
  Anterior drawer difference > 4 mm
  Talar tilt difference > 6 degrees

100 Normal Volunteers: 11% Asymmetric Ankle Laxity

Scranton et al F&A Int. 2000
Stress X-rays

Anterior Drawer

Lateral Tilt
When to operate?

• Chronic Instability:
  Symptomatic Mechanical instability
  Failed functional treatment for minimum 3 months.

• Acute Injuries (primary repair):
  Athletes with momentary dislocation/Associated fractures/Grade III better to operate

  Pijnenburg et al JBJS 2000


- Comparative study: Functional (PT) Treatment with and without surgery.
- 132 Patients: 2 groups
  - Non op group: 10% failure and Longer return to sports (16 wks versus 10 wks)
  - Operative group: Better Lateral Tilt and Anterior drawer.
- Other parameters No Difference.

- 27 Randomized, controlled trials (RCT) reported between 1966 and 1998
- Time lost from work, residual pain, and giving-way
- No-treatment strategy lead to more residual symptoms.
- Operative treatment > functional treatment > cast immobilization for six weeks.

• Challenged their conclusions.
• Agreed with Brostrom:
  “when conservative treatment fails, secondary operative reconstruction of the ruptured ligaments can be performed, with similar good results, even years after the initial injury.”

- 20 RCTs reviewed
- Methodological flaws in 8 studies
  - Return to pre-injury level of sports
  - Ankle sprain recurrence
  - Long-term pain
  - Subjective or functional instability

**Positive Trend - No Stat Significance**

- Acute repair in professional athletes improves objective measures (Talar tilt and Anterior Drawer).
- Season Management
- Type of Sport
- Athlete Expectations
- Time since injury
- Level of Surgeon Expertise
When: Natural History of Chronic ankle instability

Lofvenberg R et al: F&A Int. 1994

- 37 patients treated conservatively
- 18 - 23 years follow-up evaluation
- 60 % or 22/37 still unstable
- 10 unilateral and 12 bilateral involvement
- 6/37 had Degenerative changes but no correlation to age or instability.
When To Operate?

- High Level Athlete (Pro/College)
- History of Dislocation/Instability
- + Syndesmotic Injury
- + Fracture
- + Intra-articular Pathology (On MRI)
- Early Season
Surgical Protocol- 2015

• Diagnostic and Therapeutic Ankle Arthroscopy

• Do open “Anatomic” ATFL + CFL imbrication with non-absorbable suture +/- Anchors

• Tie sutures with the ankle in neutral

• Advance the Inferior Extensor Retinaculum to the distal fibula periosteum (3-4 Sutures)

• Splint Ankle in Neutral/ Eversion
Post – Operative Rehab

• Weight bearing cast for 2 weeks
• Walking Boot and ROM for 6 weeks
• Conditioning and agility for additional 6 weeks.
• Return to sports 4 months
22ys old Professional SkateBoarder

- 6 weeks post sprain
- Complains of left ankle instability and increased pain with recent sprain
- Multiple ankle sprains for 3 years;
  - Both inversion and eversion injuries
- Attempted physical therapy, brace with no improvement
Physical Exam

• Painful ROM of left ankle
• + anterior drawer, + lateral tilt, +posterior drawer, and + increased external rotation
  – All increased compared to contralateral side
• Tenderness to palpation over anterior talofibular ligament and deltoid ligament (medial gutter)
• Palpable Os distal to fibula
• Neutral hindfoot alignment
• No evidence of hyper-laxity in other joints
Imaging: Neutral

AP Ankle Joint
Imaging: Lateral Tilt

Lateral Stress View
Imaging: Medial Tilt

Medial Stress View
Imaging: MR
Imaging
Patient K.R.

- Patient surgically treated for lateral and medial ankle sprain/instability
- Procedure performed
  - Ankle arthroscopy with debridement
  - Excision of os subfibulare
  - Brostrum-Gould lateral ligament repair
  - Deltoid ligament repair
Ankle Arthroscopy Findings

• Post-traumatic synovitis
• Copious joint with talus able to tilt medial and lateral
• “Drive through” of both medial and lateral gutters possible
• ATFL and CFL attached to os subfibulare
• Complete superficial deltoid disruption, partial deep deltoid disruption
Os SubFibulare
Lateral Ankle Repair
Medial Ankle Repair
Medial Repair
Lateral Repair
Final Stress Radiographs
Final Radiographs
Post Op Rehab

- Splint in Neutral/ NWB
- 2 WKS: ROM/ PWB
- 6 WKS: FWB/ PF-DF
- 12 WKS: Activities AT
- Agility
- Sports Specific
New: Non Absorbable Tape Augmentation.

- Biomechanical Testing = ATFL
- Added Cost
- Potential for “Over-tightening”
- Early Results shows accelerated return to sports.
- Unknown Long Term Results.
THANK YOU

www.drsamlabib.com