Introduction

- Uncommon Injuries
- Highly Variable Injuries
  - Trauma
  - Sports
- Associated with other injuries
Introduction

- “I always do ORIF, and then I take out my screws
- “I always do ORIF, but I leave my screws in”
- “I always fuse”

Impact of Injury

- Diagnosis is missed or delayed in up to 20% of cases
- It’s a Lisfranc until proven otherwise
Impact of Injury

- Diagnosis is missed or delayed in up to 20% of cases
- Litigation

Imaging of Lisfranc Injuries

- Weight Bearing
- Contralateral views
- Stress
- CT/MRI

Closed Reduction

- Urgent if tenting the skin
- Can be blocked by tendons, ligaments, bone
  - Lateral dislocations of 1st MT: Tibialis anterior
  - Peroneus longus tendon
  - Fleck from base of 2nd MT

NO/POOR REDUCTION LESS OF AN ISSUE FOR FUSION
Operative Treatment

Options
- ORIF
- Primary Arthrodesis

Results of ORIF
- Outcomes Fair
- Rapid progression of arthrosis
- Need for further procedures

Results of ORIF
- Good to Fair Results

- Most Important Parameter was Anatomic Reduction

Arntz et al. JHJS 1988
Kuo et al. JHJS 2000
Rajagopal et al. Injury 2006
Teng et al. PM 2002
Rationale for Fusion

- Kuo et al JBJS am 2000
  - Worse outcomes in primarily ligamentous injuries
- Komenda et al JBJS am 1996
  - Significant improvement after midfoot arthrodesis for PTOA
- Sangeorzan et al FAI 1990
  - Improved results with early fusion for PTOA midfoot
- Granberry Surg Gyn Obs 1962
  - Noted high incidence of PTOA post Lisfranc injury
  - Recommended primary fusion

Rationale for Fusion

- Medial column of the midfoot functions rigidly during gait for stability
- Lateral column (4th, 5th mts-cuboid) is the mobile midfoot segment
- One operation, one recovery period
- Eliminates need for hardware removal
- Fusion is more forgiving
- Fusion is not time sensitive

Osseous Stabilizing Structures
**Operative Technique**

- Where to start?
  - Medial to lateral
  - Lateral to medial
  - Least to most comminuted

- **My Preference**
  - Reduce any intercuneiform instability
  - Key in the second ray
  - 1st...3rd then 4th and 5th

**Intercuneiform instability**

**Operative Technique**

- Incisions
Operative Technique

- Dissection/Access

Operative Technique

Operative Technique

- Reduction/Temporary Fixation
Hardware

- What to use?
  - Screws
    - 3.5mm or 4.0mm cortical
  - Cannulated screws
  - Spanning Plates
    - comminution
  - Suture Bridge!

Hardware

- Screws

Fuse but Add Plates
Operative Technique

- Internal Fixation

Remove pins and debride one joint at a time
Screw Fixation

• Pin 4th and 5th if unstable, don’t fuse

Lateral Column

• Bone graft?
Post-Op

- NWB Short leg cast X 6-8 weeks
- Remove K wires at 4 weeks
- Boot, gradual WB over next 2-4 weeks
- PT or HEP

Complications

- Pain/neuritis
- Wound Problems
  - Should be less than ORIF
- Post-Traumatic Arthritis? - NO!
- Nonunion

Primary Arthrodesis (PA) vs ORIF

- Muller et al FAI 2002
  - Advocated for partial primary arthrodesis for medial column
- Ly & Coetzee JBJS 2006
  - Randomized prospective study, improved results in PA vs ORIF for ligamentous injuries
- Henning et al FAI 2009
  - Less secondary procedures and trends towards better outcomes in PA vs ORIF
My Experience

**ORIF**
- Low Energy
- Young
- Agility Athletes

**PRIMARY FUSION**
- High Energy
- Older, Low Demand
- BMI Champions
- Work Comp

Do I fuse everyone?
Benefits of Primary Surgery

1. Avoids late arthrosis
2. Avoids need for removal of hardware
3. One surgery, one recovery period

Summary

- Complex Injuries with potential for poor outcomes
- Do not miss subtle injuries
- Listen to the soft tissues
- Goal of fixation → Stable plantigrade foot

Thank You