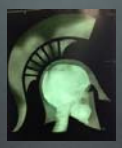
Lis Franc Injuries- ORIF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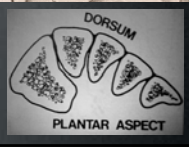
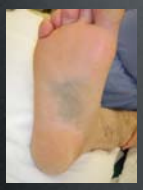
Anatomy

- Tarsometatarsal
- Roman Arch
- 2nd metatarsal keystone
- Inherently stable

Diagnosis

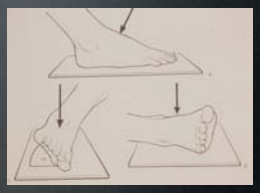
- Increased index of suspicion
- Swelling in midfoot
- Pain
- Deformity
- Palpation
- Radiographs



Radiographs

- AP – angle beam 15-20 degrees

- 45 degree lateral oblique
- True lateral



Radiographic Features

- Fracture of 2nd metatarsal base
- Dorsal displacement of metatarsals
- 2nd and 4th metatarsal borders
- Diastasis in 1st – 2nd MT interspace
- "Nutcracker"

Anatomic Relationships

- 1st metatarsal- medial cuneiform
- Medial border 4th metatarsal – medial border cuboid
- Talus –first metatarsal axis

Soft Tissue Injury

- Timing is critical
- Compartment syndrome
- Open fractures
- Compromised skin – deformity or injury

Initial Management

- Close reduce
- Bicolumnar external fixator
- Disimpaction / obtain length
- Relieve skin tension

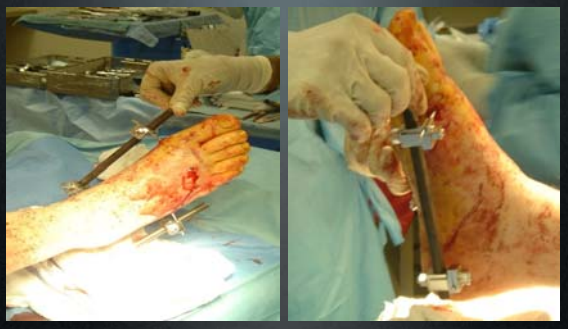
If too sick or swollen..ex fix

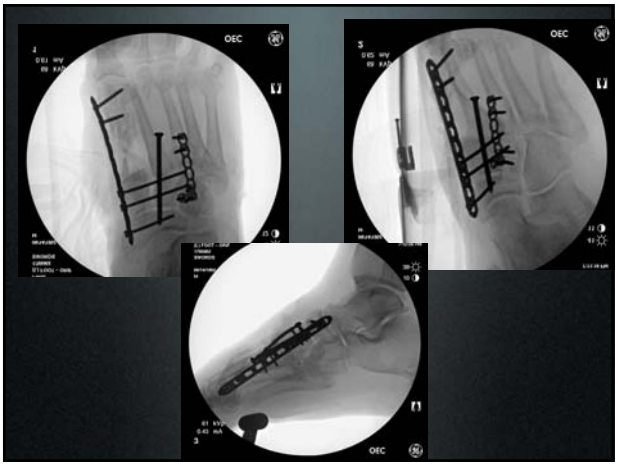
- MVA
- Swollen foot
- Perfusion in jeopardy

Pain

swollen

Bicolumnar ex-fix





ORIF Techniques

- Dorsal incisions
- 1,2 interspace
- 3,4 interspace
- Maintain thick soft tissue flaps

ORIF Techniques

- Reduce 1,2 then 3,4,5
- Remove entrapped ligament, small chondral fragments
- provisional fixation
- Confirm accurate reduction (AP,Lat, Oblique)

For best outcomes

- Reduction must be anatomic
- Fixation must be stable

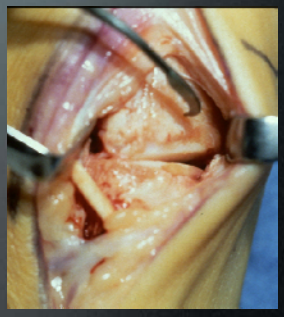
Plates

- Used in cases of comminution
- peds
- Or to add additional stability to rotationally unstable injuries
- Associated fractures of the MT close to the TMT joint

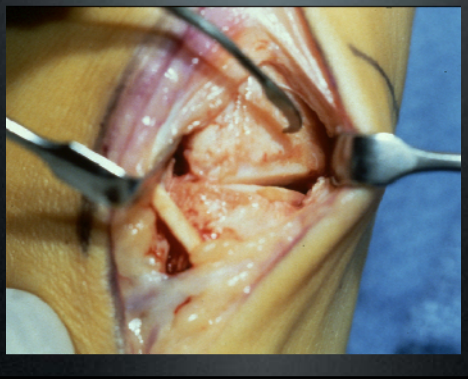
ORIF Techniques

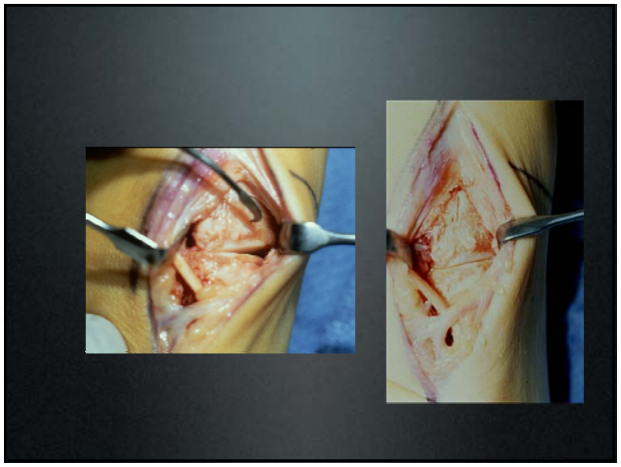
•Disruption is always obvious

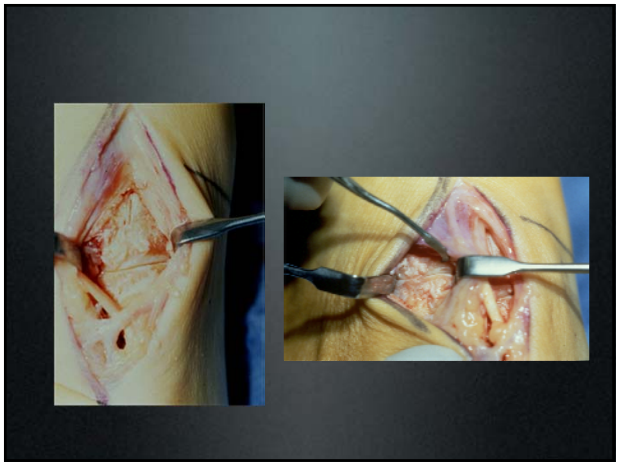
•Look medial at 1st MT, cuneiform relationship

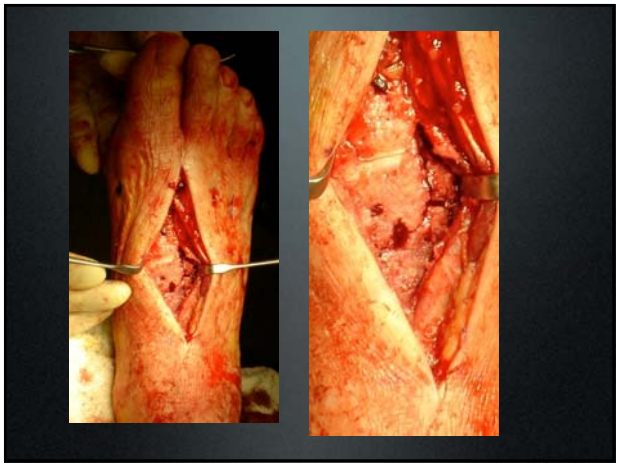


Reduce 1st TMT

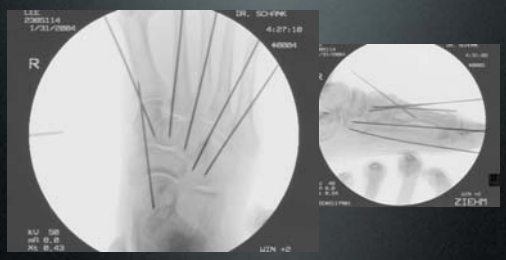








Reduce/provisional wires



Replace with rigid fixation

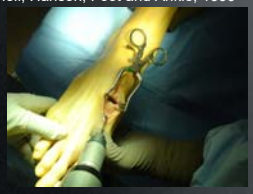
ORIF Technique

- DO NOT put screws across lateral column
- Maintains ablility to pronate / supinate
- Preserves gliding nature of 4,5 / cuboid

Notching

•Decreases bone splitting risk

•Manoli, Hansen, Foot and Ankle, 1990



Beware cuneiform instabilty

If present must find stability proximally

60 year old man MVA

Closed injury

Injury films

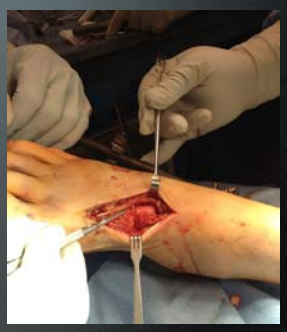
CT midfoot

CT cuboid

Ex fix, perc fixation night of injury

What is stable?

- 1st MT base
- 2nd MT base
- NO



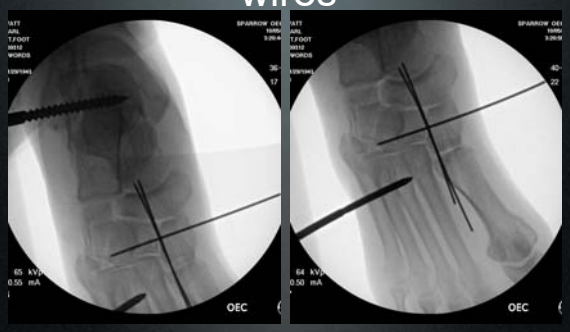
What is stable?

- Intercuneiforms?
- NO

What is stable?

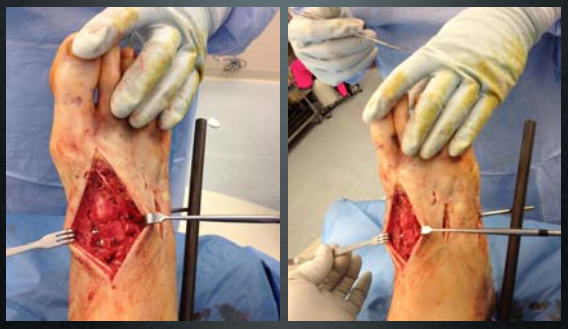
- NC joints?
- NO

Provisional fixation with k wires

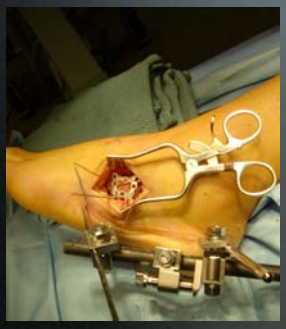


Replace with rigid fixation

Fix unstable to stable



cuboid



6 months post op

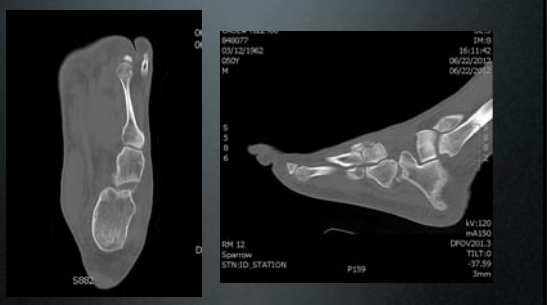
54 year old MVA

Open medially

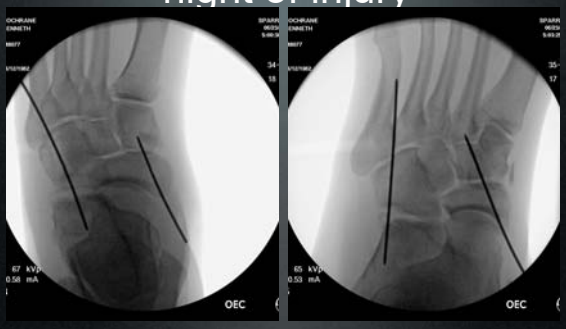
Injury films

midfoot

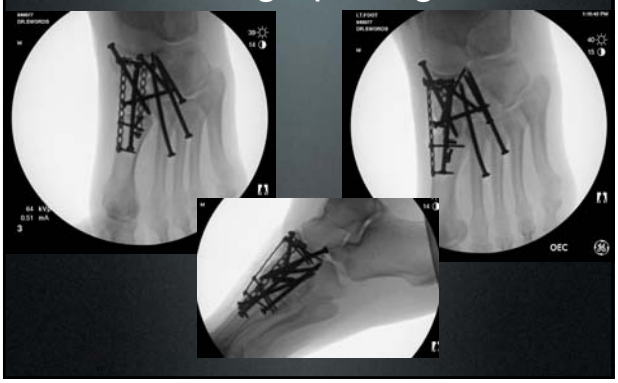
Lateral column

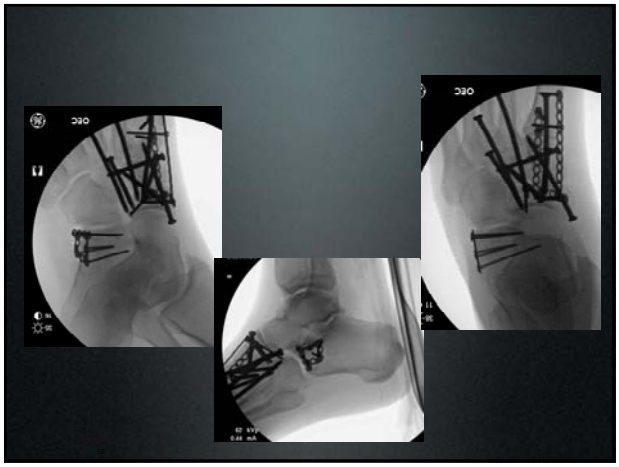


Reduction, perc fixation night of injury



Bridge plating





Follow up

1 year

summary

- Look for injury patterns
- Reduce in anatomic fashion
- Fix rigidly to maintain reduction over time

Thank You