Calcaneal Fractures:
Lateral Extensile Incision

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Disclosures

- I have no financial disclosures

Mechanism- Falls from height/MVA
Pathoanatomy

Deformities

- Talar Collapse/Dorsiflexed talus
- Hindfoot Angulation (Varus)
- Lateral wall "blow out"
  - Peroneal dislocation
- Shortening

ALL HAVE TO BE ADDRESSED

Understanding the Fracture

Imaging
XRAYS
CT
Understanding the Fracture

- Type IIB
- Type IIIA/C
- Type IV

Operative Goals

- Restore anatomy
- Restore function
- Avoid complications

Surgical Treatment

- Traditional Extensile Lateral Approach
- Sinus Tarsi Approach
- Percutaneous Techniques
- External Fixation
Lateral Approach

Advantages
- Allows for direct visualization
  - Anterior and Posterior
- Easy to reduce lateral wall
- Calcaneocuboid
- Peroneal tendon repair

Extensile Lateral Approach

Disadvantages
- Have to wait for the soft tissues
- Not soft tissue friendly
- Requires indirect medial reduction
- Sural nerve issues
- Scarring/Stiffness

Evaluating the Patient

History
- Get to know them
- Know their risk factors
  - Smoking
  - Diabetes
  - Vascular disease
- Beware of pain
  - Both extremes
Evaluating the Patient

Physical Examination

- Skin
- Pulses
- Skin wrinkles

Timing of Surgery

Delicate Balance

- Ideal 7-21 days
- >4 wks difficult
  - Best to have plan beforehand

Positioning

- Lateral decubitus
- Bean Bag
- Tourniquet
- Bilateral
  - Prone
Setup

- Radiolucent table
- Fluoroscopy
  - Lateral
  - Broden
  - Harris view (Axial)
  - Contralateral

Technique
Operative Technique

- Incision
  - Full thickness soft tissue flap centrally
  - Beware of sural nerve proximally/distally
  - Protect peroneal tendons

- Exposure
  - Hands-free retraction

K wire retractors

Operative Technique
Operative Technique

Reconstruct Posterior Facet on back table

Operative Technique

Medial Wall Reduction
- Osteotome to free medial scarring/healing
- Lamina Spreader
Reduction Sequence

- Reduce the joint
- Reduce the angle of Gissane
- Reduce the Anterior process/CC joint
- Reduce Hindfoot Varus

Operative Technique

Minimum 2 points of fixation
Indications

- ORIF in displaced Type II and III fractures
- Relatively healthy patients
- Do not have a hard and fast age cutoff
What about Type IV Fractures

Operative Technique

UNRECONSTRUCTABLE?

FUSION!

Operative Technique

- Meticulous layered closure
- Drain
- Soft tissue friendly suture technique
Postoperative protocol

- Wound VAC?
- Wound will dictate advance of motion

ORIF
- Immobilize in splint and elevate
- Week 2 - Ankle ROM in fracture boot
- Week 4 - Subtalar ROM exercises
- Week 10 - Weight bear in boot with gradual return to shoes activities

FUSION
- Immobilize in splint and elevate
- Week 2-8 - NWB cast
- Week 8 - NWB with ankle ROMin boot
- Week 12 - Progressive WBAT return to shoewear/activities
Complications

- Subtalar arthrosis
  - Increased with nonoperative treatment
- Subtalar stiffness
- Compartment syndrome (10%)
- Wound healing (2-10%)
  - Smokers
  - Diabetics
  - Open fractures
  - Delay in treatment
  - Recommend immobilize until wound heals

Why Extensive Lateral Approach?

- Late Presentation
- Large Deformity
- Posterior articular comminution/stepoff
- Primary Fusion

Case

- 38 yo fireman who fell off of a ladder. Isolated injury to his R foot 17 days ago
Question

- What is the ideal surgical approach for this patient?
  1. ORIF through lateral extensile incision
  2. ORIF through sinus tarsi incision
  3. Percutaneous techniques
  4. Nonoperative treatment

Case  ORIF Extensile approach

Thank You