POSTERIOR MALLEOLUS FRACTURES: Should I Fix Them? How?

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Anatomy

- PITFL (Volkman’s)
- Triangular ligament with broad attachment
  - 2-3cm insertion

Introduction

- Reduction of a large posterior malleolar fragment can stabilize the syndesmosis

Importance

- Better Healing: bone to bone
- Improved reductions
  - Up to 40% malreductions
Introduction

- Posterior malleolar fractures are common
  - Variable in size
  - Significance?

- Indications for surgical treatment
  - Size of fragment?
  - Stability?
  - Displacement?
  - Articular involvement?
  - 20-30%
Introduction

- Little agreement on indications
- Little agreement on method of fixation

- Agreement on ~ 50% and less than 20%
- Stability was the highest determining factor
- 20-25% fragment → 44% ORIF
  - 72% TS – Open vs. 53% F&A

Gahrer et al. FAI 2017
11/28/2017

Case - 46 yo male MCC

CT scan?

1 Yes
2 No

Role of CT

- Fracture patterns are often complex
- 72 patients with fx/dislocation
  - 35% had entrapped fragments or impaction
  - 7% (5) had >3 fragments
  - 30 of 72 (42%) underwent posterior approach

*OTA Annual Meeting 2016*
Methods of Fixation

- Screws
  - Anterior
  - Posterior
- Plate
Case – 63 yo Female Fall

What Approach and Fixation to the Posterior Malleolus

1. Posterolateral with a plate: 59.09%
2. Posterolateral P to A screw: 9.09%
3. Supine with percutaneous A to P screw: 31.82%
4. Supine with percutaneous P to A screw: 0%
Posterior Malleolar Fractures

- Percutaneous
  - Anterior incision
  - Large clamp from anterior incision
- Within 1-5 days
- Smaller fragments

Posterior Malleolar Fractures

Delayed Fixation > 1wk

Lose the ability to indirectly reduce
Posterior Malleolar Fractures

Plate fixation
- Good for comminution
- Larger fragments

Case – 33 yo F fell hiking

What Approach and Fixation to the Posterior Malleolus

1. Posterolateral with a plate 94.44%
2. Posterolateral P to A screw 0%
3. Supine with percutaneous A to P screw 5.56%
4. Supine with percutaneous P to A screw 0%
Ankle Fractures
- Posterolateral approach
  - My preferred technique
  - Larger fragments
  - Prone
    - Also allows for ORIF medial malleolus
    - ORIF fibula through same approach

Ankle Fractures
- Posterolateral approach
  - Interval between Peroneals and FHL

Case
Case – 12 mo

Case

- 36 yo female nurse

What Approach and Fixation to the Posterior Malleolus

1. Posterolateral with a plate 53.85%
2. Posterolateral P to A screws 38.46%
3. Posteromedial with plate 7.69%
4. Posteromedial with P to A screws 0%
Case

Posterior Malleolar Fractures in Pilon Fractures?
Technique

- Fixation of posterior fragments +/- fibula
- Application of external fixator
- Prone
- Posterolateral incision

Case

- 46 yo male s/p MCC
Case

Case – 3 mo went to jail

Summary
- Multiple factors play into determining ORIF
- Select best technique/incision for fixation on an individual basis
- Anatomic reduction for larger fragments
- Goal is to provide stability and articular reduction