

# Compartment Syndrome of the Foot

# Introduction

- Definition
- Pathophysiology
- Etiology
- Clinical Presentation
- Treatment
- Long term sequelae

# Definition

- Increased pressure within a closed fascial compartment
- Sufficient magnitude to impede vascular inflow

# Pathophysiology

- Insult to muscle within a closed compartment
- Intracellular swelling/Hematoma
- Pressure rises and capillary perfusion drops
- Vicious circle

# Pathophysiology

- Tissues vary in susceptibility to damage
  - Nerve < 4 hours
  - Muscle < 8 hours
- After 8 hours irreversible damage

# Pathophysiology

- ? Critical pressure
- Proportional to systemic blood pressure
- Not a fixed number
- Experimentally
  - Within 10mmHg of diastolic pressure
  - Injured tissue 20 mmHg

# Fascial Anatomy of the Foot

- At least 9 separate compartments
- 4 are clinically relevant
- Medial, central, lateral, interosseous

# Etiology

- Crush injuries / trauma
  - +/- fracture





# Etiology

- Temporary vascular occlusion
  - Trauma, thrombus
  - Altered consciousness
    - CNS
    - Drugs, alcohol

# Clinical Presentation

- History of injury / energy absorbed
- Swelling
- Pain
- Passive stretch
- Pallor, paresthesia, pulselessness, paralysis

# Investigations

- Compartmental pressure measurements
  - Whiteside technique
  - Arterial line setup
  - Commercially available monitors



# Investigations

- 1 sample vs continuous monitoring
- Measure all four compartments
- Don't delay getting measurements if diagnosis is obvious

# What number to we use?

Fixed number (30 mmHg)

VS.

Variable (20 mmHG less than diastolic)

# Treatment

- Remove dressings
- Do not excessively elevate the foot
  - Level of the heart
- Analgesia
- Have low threshold to proceed surgically

# Treatment

- Emergency fascial release
- 3 incisions
  - 1 medial 2 Dorsal
- Blunt and finger dissection
- Divide fascia
- Delayed closure
  - +/- skin grafting
- Prophylactic releases

# Missed Compartment Syndromes

- Early
  - Myonecrosis
  - Renal concerns
- Late
  - Deformities from contracture of necrotic muscle
  - Nerve Injury
    - Ulcerations



# Summary

- High index of suspicion
- Careful with altered consciousness
- Be aggressive to prevent long term sequelae