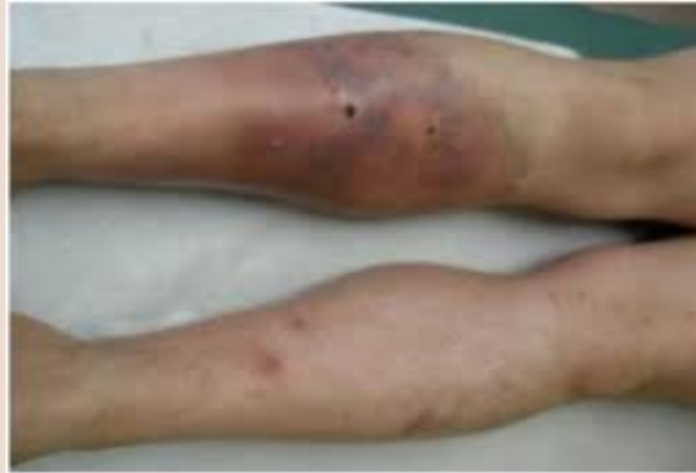
Compartment Syndrome



Robert Morgan, MD
OrthoCarolina - Concord

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What Happens

- Bleeding/Swelling within Fascial Comp.
- Pressure Increases within Fascial Comp.
- Decrease Blood Q to Muscles / Nerves
- Damage to Muscles / Nerves

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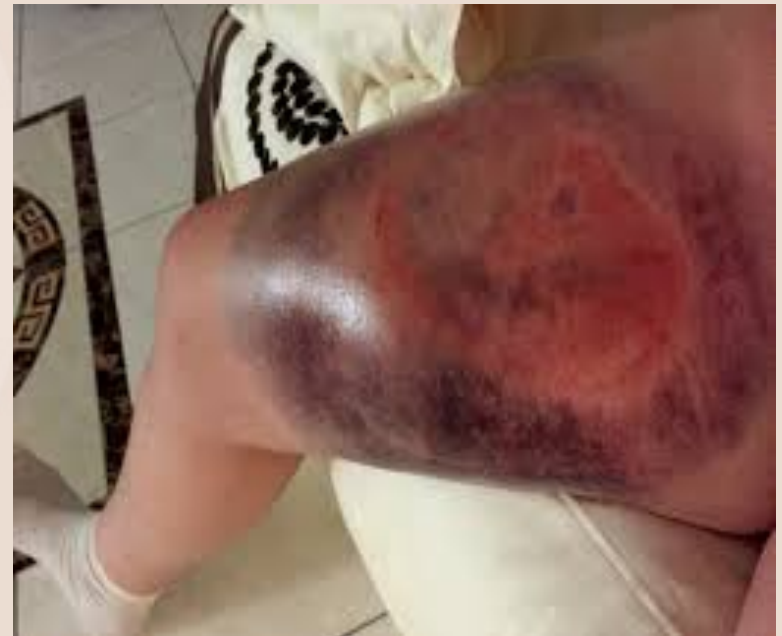
What Causes It

- Fractures
  - Open #'s still a concern
- Crush Injury
- Badly Bruised Muscle
  - Trauma
  - Blood Thinners
- Tight Bandages
- Reperfusion Vascular Surgery



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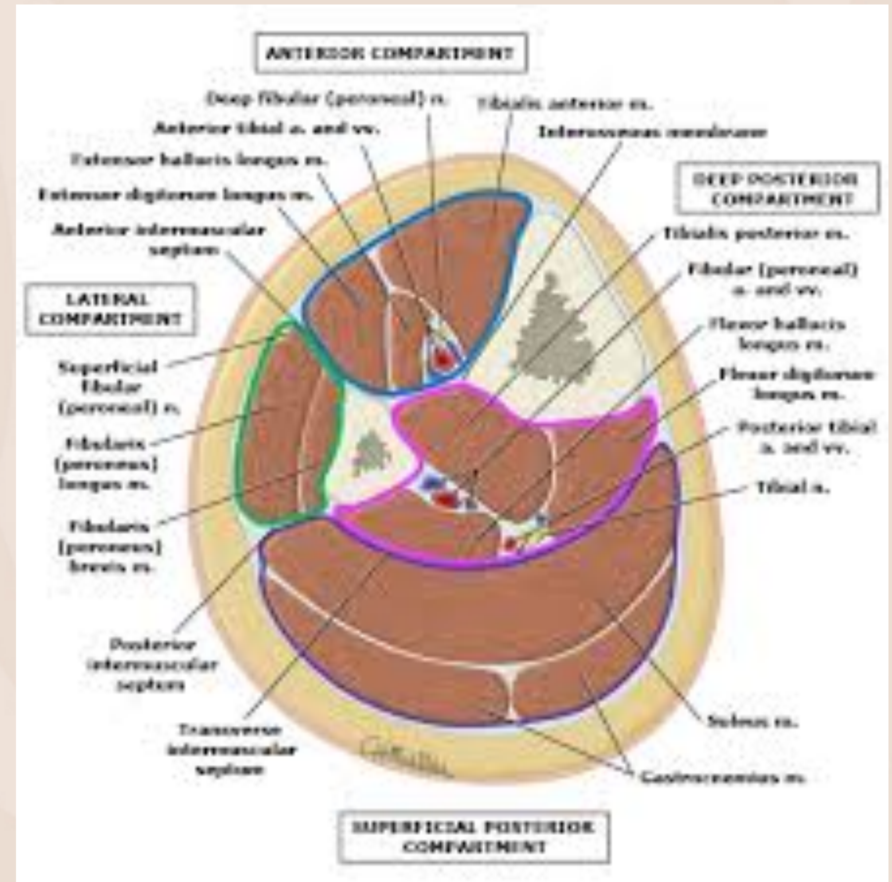
Where does it happen

- Leg
  - 4 compartments
- Forearm
  - 2 compartments
- Thigh
  - 3 compartments
- Hand
- Foot



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Symptoms – 6 P's

- Early
  - Pain
    - Out of proportion to the injury
    - Worse with passive stretch
  - Pressure
  - Pallor
- Late
  - Paresthesia
    - Numbness / Tingling
  - Paralysis
    - Motor Exam
  - Pulselessness
    - None or Diminished

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What to do when called

- Ask Nurse
  - Injury
    - When
    - What
    - How
    - Fixed
    - Splint / Cast
  - Pain Meds
    - How much received
    - Hx of abuse
- Tell Nurse
  - Remove Dressing
  - Extremity Heart Level
  - Pulse Ox
  - Nasal O2
  - BP support if hypotensive
  - Make NPO

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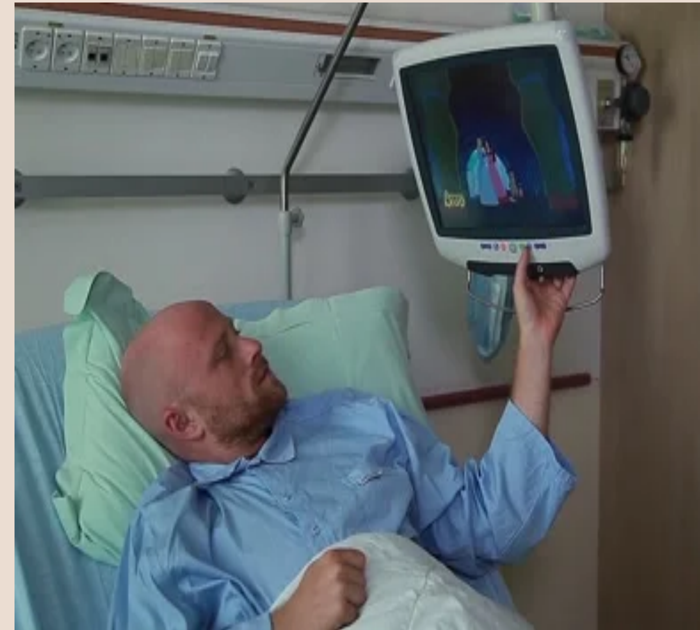
What to do when called

- **Go see and exam the patient**

- Call OR front desk to have Stryker monitor sitting out

- Time is Important!



Document

- Detailed Note
  - Paint Picture if they do or don't have it
  - Immediately came and evaluated pt
  - Say in note
    - Yes / No - signs / symptoms of comp syndrome

- S: Upon receiving communication about the pt from his floor nurse, I immediately came to the hospital to evaluate the pt. Pt states he has leg pain after his tibial IMN sx earlier today. States his pain med controls his pain for 4 hrs. States he can move his foot and denies paresthesia. Discussed pt with his nurse. The patient has taken 2 Oxycodone 5mg pills 4 hrs ago and received 2mg of IV Morphine at 9:30pm for breakthrough pain.

- O: When entering the pt's room, he was watching TV and appears comfortable in the hospital bed. Pt is alert and oriented. No signs of overt medical problems. BP is 120/80, O2 sats is 98% on operative extremity. Splint has been removed.

LLE – all thigh and leg compartments are soft and compressible, no palp cords, neg homan signs, no overt TTP, no increase pain on passive stretch of the ankle to dorsi and plantar stretch, incision intact, Motor – able to wiggle toes, able to actively dorsi and plantar flex the ankle. Sensation intact to DP/SP/S/S and plantar aspect of foot. Warm/pink/perfused. Palp DP & SP pulses.

- A: s/p L Tibial IMN earlier today due to MCC yesterday. There are no clinical signs or symptoms of compartment syndrome

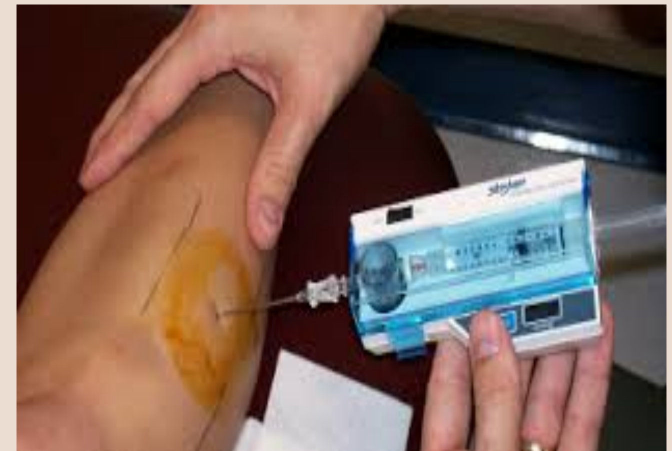
- P: Con't to monitor pt. Discussed case with nurse and told to call immediately with any changes or concerns. Leave bandage off, con't to keep leg at heart level. Will let the OTS team know about pt at 6am.

When Surgery

- PE confirms Compartment Syndrome

  And / Or

- Compartment Pressure
  - Greater than 30mmHg
  - Within 30mmHg of Diastolic Pressure
    - Delta P = DP – Comp P



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What Next

- Has It
  - Call OR immediately and state emergency & get wound vac
  - Tell floor nurse to get pt ready
  - Call anesthesia
    - See if can go directly to OR from floor
- Doesn't Have It
  - Talk with nurse what to look for and document it
  - Serial Exams
  - Let OTS know 1st thing in the am

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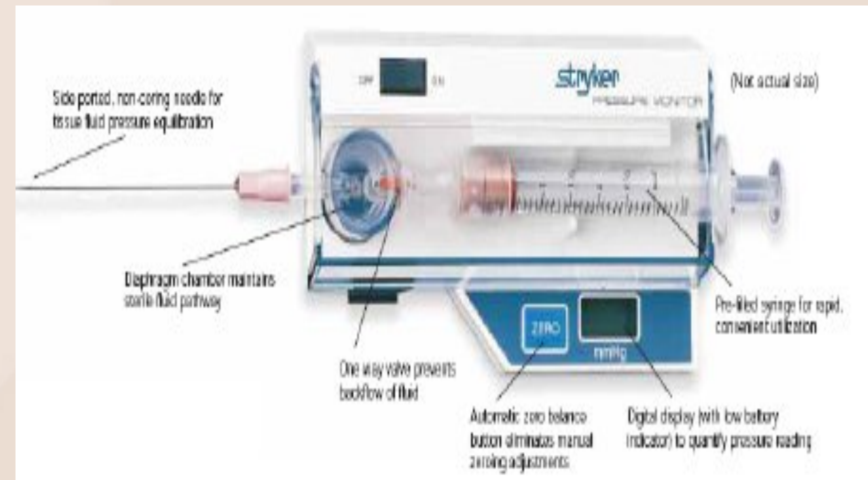
Other Items

- Surgical Technique
  - Textbooks in lounge
  - Google / YouTube
  - Debride necrotic muscle
  - Stabilize #
    - ORIF, IMN, Ex-fix
  - Incisions
    - Shoelace with vessel loops
    - Loosely close
    - Wound vac
    - Leave open
- Stryker Monitor
  - Google / YouTube



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