



UNC
SCHOOL OF MEDICINE
CHARLOTTE CAMPUS

N ■ **NOVANT**[™]
■ **HEALTH**


Making It Through The Night

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I (and/or my co-authors) have something to disclose.

Detailed disclosure information is available via:

"My Academy" app; 

or

AAOS Orthopaedic Disclosure Program on the AAOS website at <http://www.aaos.org/disclosure>





The Golden Hour of Trauma

- R Adams Cowley - “The Golden Hour”
 - Recognized that patients that received definitive care soon after injury had a much higher survival rate than those whose care was delayed.
 - Due to maintaining organ function
-



- **The ACOS COT has used this concept to emphasize the importance of getting a patient to a facility where expert trauma care is available during a period of reversible shock**

Level 1 Trauma Center

- Trauma center levels go from I to V.
- Level I trauma centers are capable of providing total care for every aspect of injury from prevention to rehab.
- Where in NC?
 - Carolinas Medical Center—Charlotte
 - Duke University Medical Center—Durham
 - UNC Hospital—Chapel Hill
 - University Health Systems of Eastern Carolina—Greenville
 - Wake Forest University Baptist Medical Center—Winston-Salem

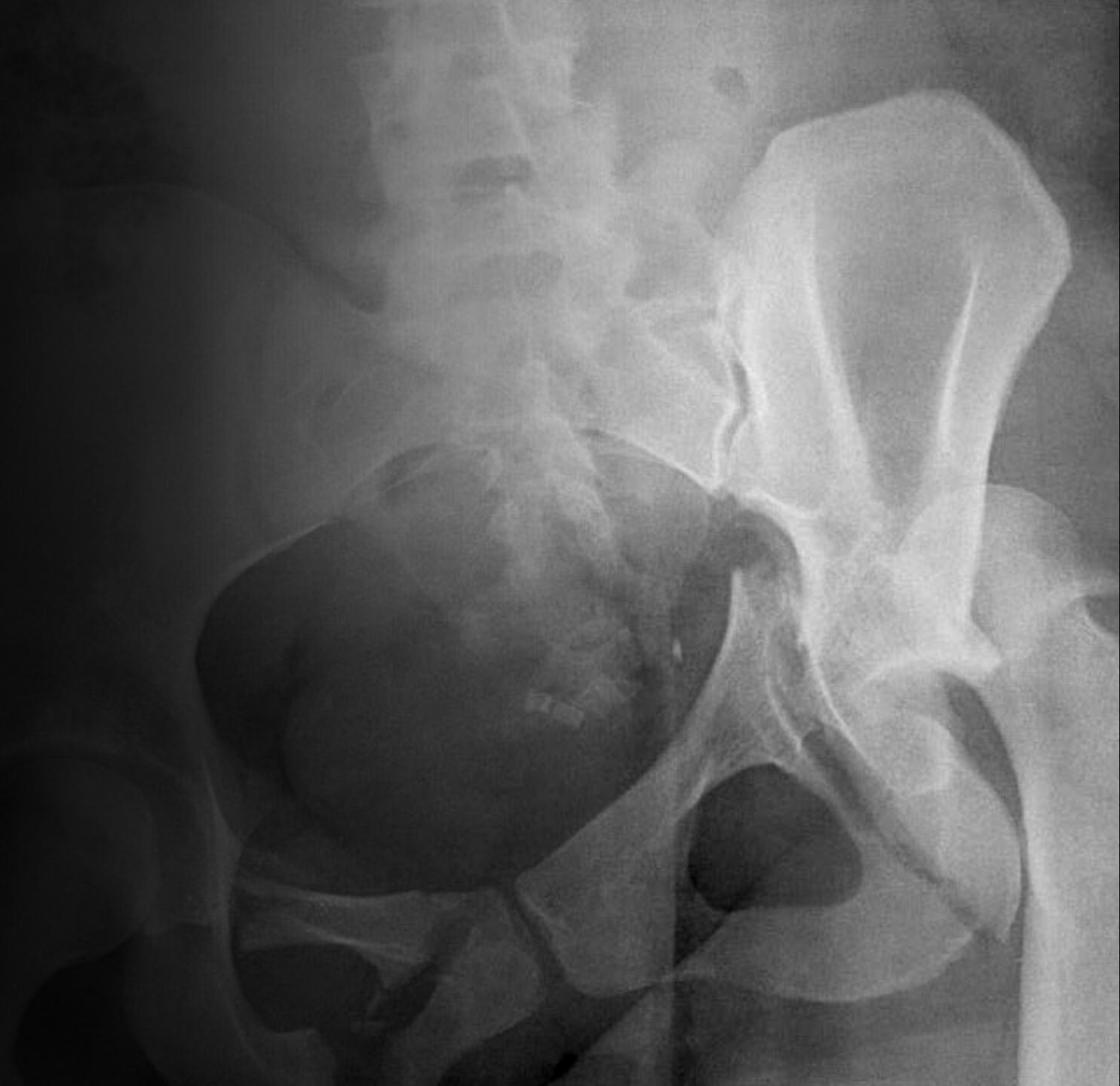


**Some Examples of
What Needs to be
at a Level 1
Trauma Center**



Pelvis

- **Unstable pelvic- ring disruption**
- **Pelvic ring disruption with:**
 - **Shock**
 - **Evidence of continuing hemorrhage**
- **Open pelvic injury**



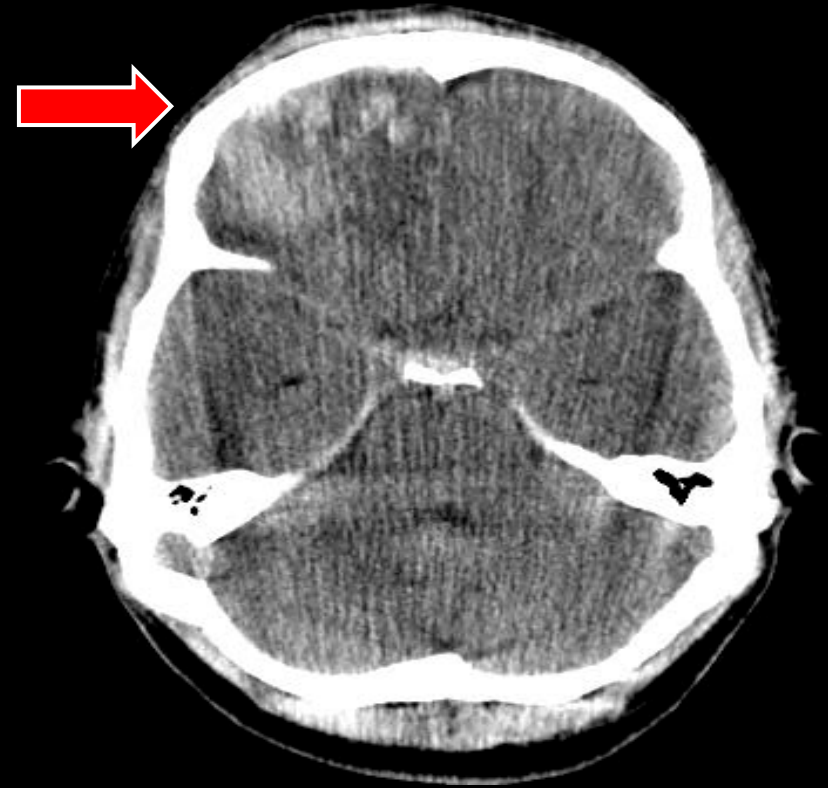
Extremity

- Severe open fractures
- Traumatic amputation
- Complex articular fractures
- Major crush injury
- Ischemic limb



Multi-system Injury & Co Morbidities

- Head injury
- Injury to more than two body regions
- Major burns
- Multiple long-bone fractures
- Co Morbidities



As Soon As Possible

- As soon as it is recognized that patient's needs exceed that of the institution
- Efforts to perform additional diagnostic tests:
 - Delay definitive care
 - Unproductive if one can't act on them

But It Happens...

Friday night

It's only you...

Blizzard, wildfire you name
it...keeps helicopter from flying



**What if You are
Stuck?**

A white, torn paper-like border runs along the bottom edge of the image, starting from the left and curving upwards towards the right. The rest of the background is solid black.

No Matter How
Bad It Seems

- *Survey the situation*





No Matter
How Bad
It Seems

Temporize





Example

No Matter How Bad It Seems

- *Don't miss the "small things...."*



No Matter How Bad It Seems

- *Ask 3 basic questions*



Basic questions

What can the patient tolerate?

- Unstable
- Bridge +/- minimal fixation
- Splint
- Stable
- Consider patient
- Your comfort level



Basic Questions

What can the limb tolerate?

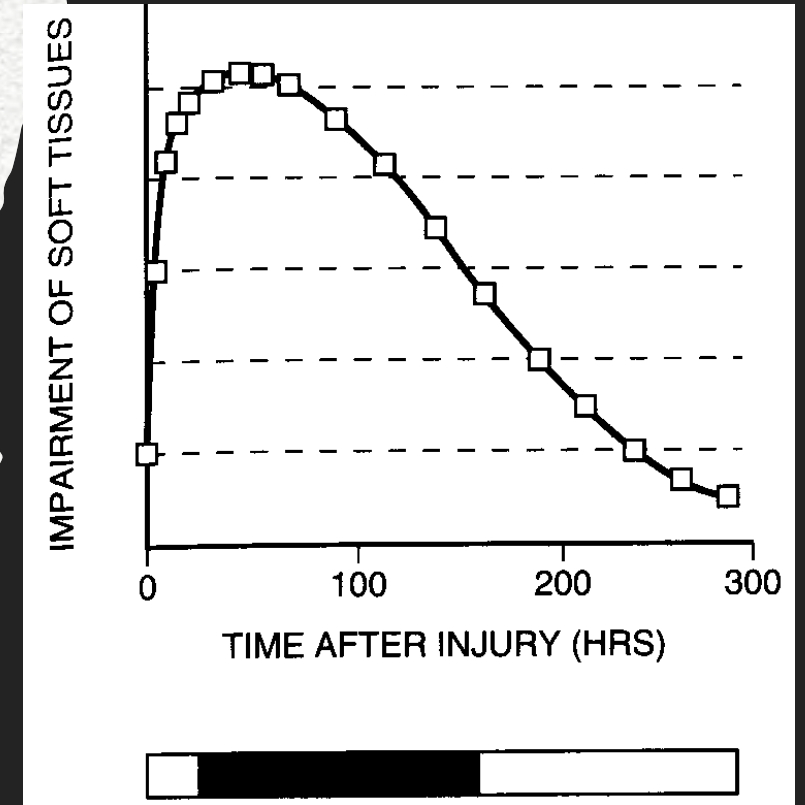
- Open wounds
- Fasciotomies
- Vascular repairs
- Consider other injuries
- Existing medical pathology



Basic Questions

What can the skin tolerate?

- Timing
- It can be an evolving process



Assess the Injuries

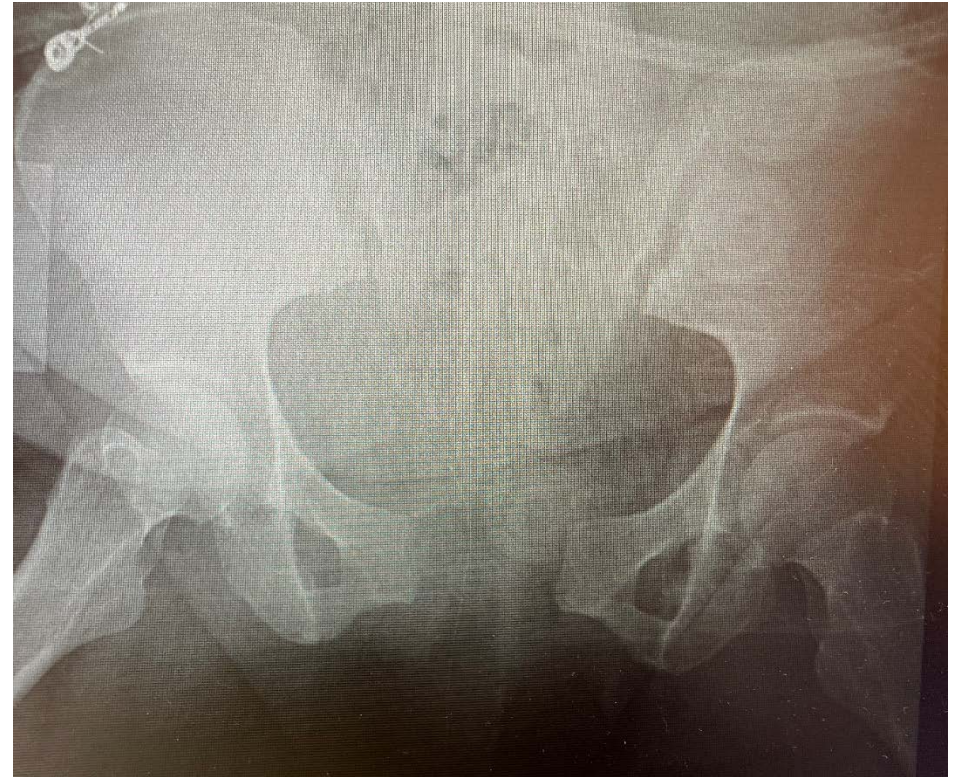
Life Threatening

Major pelvic fractures

Traumatic long bone amputations

Massive open long bone fractures

Bilateral femur fractures





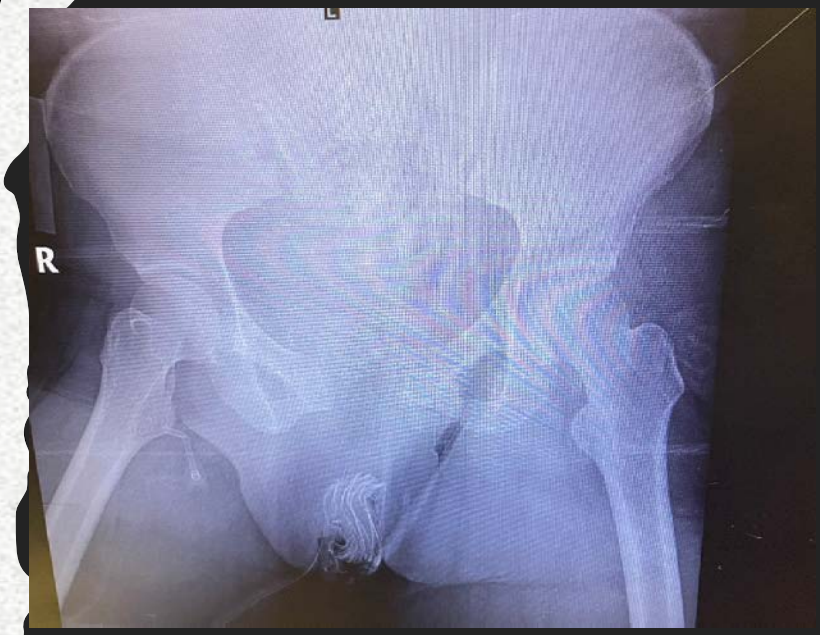
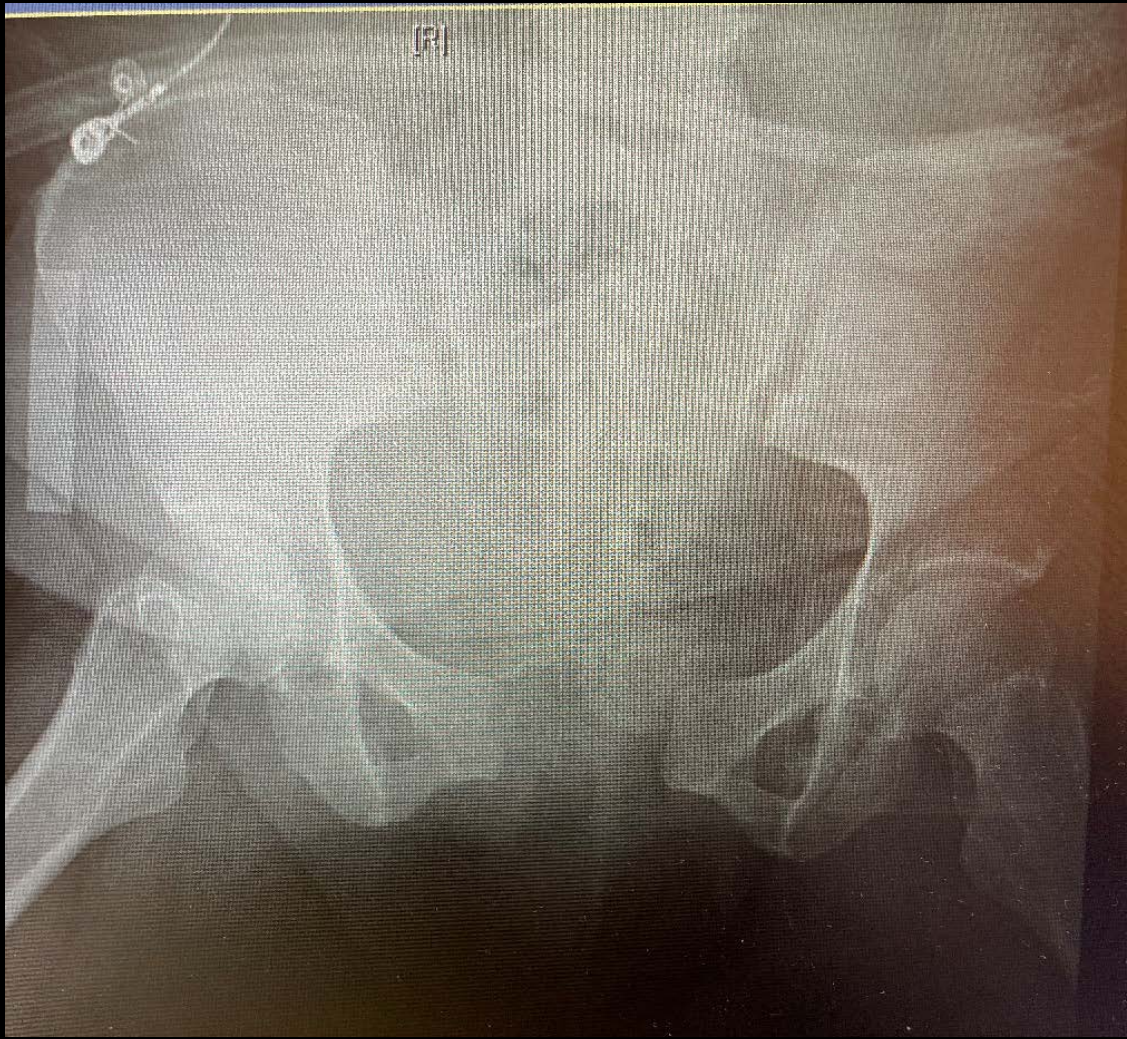
Sheet

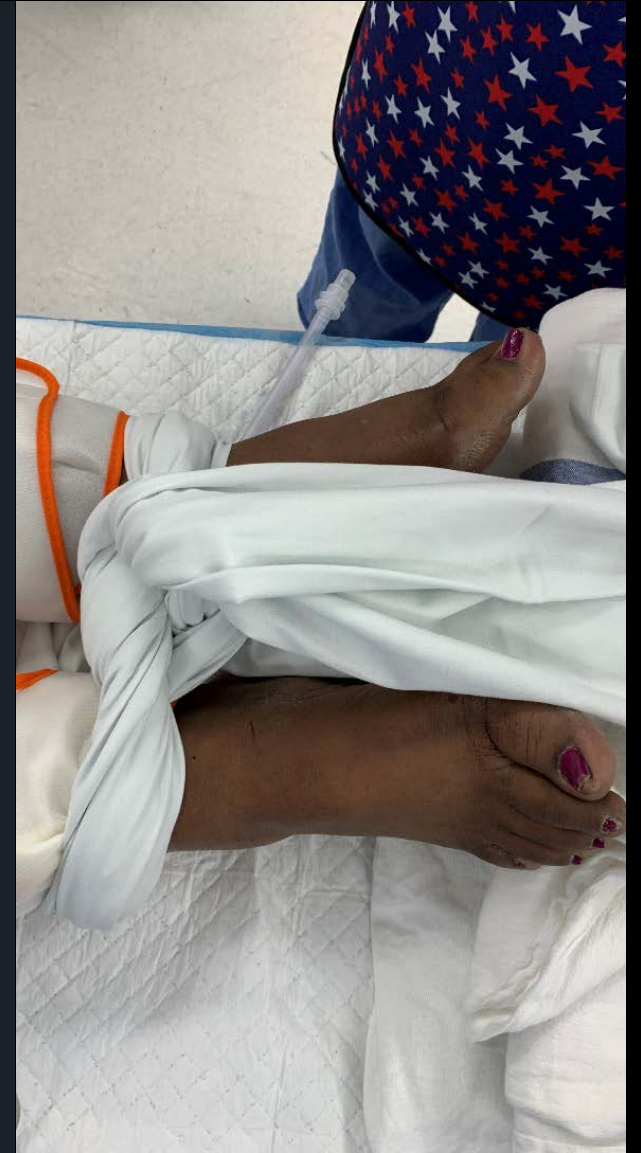


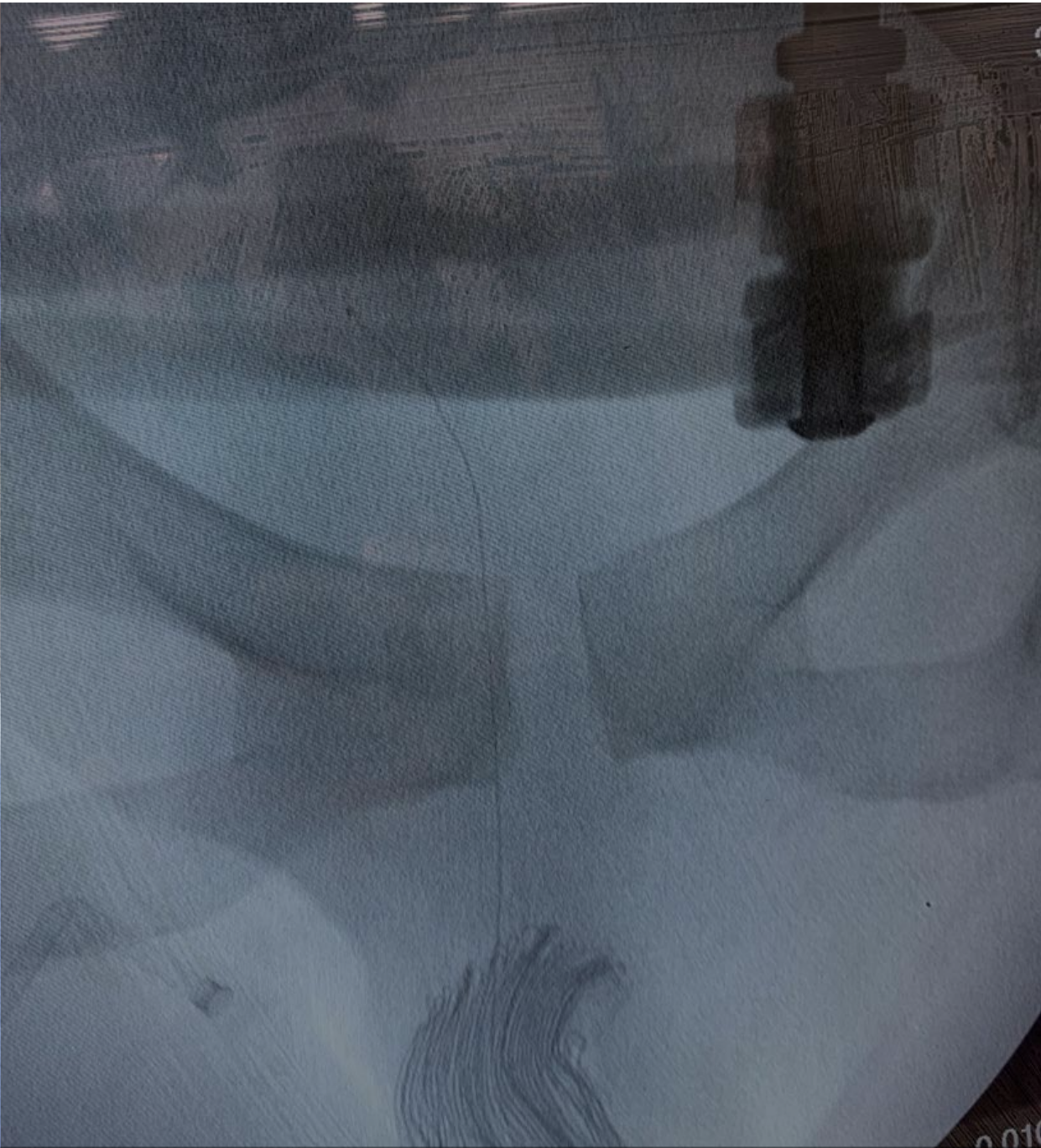
Pelvic Binder

Pelvic Binder Tips









Bilateral
Femur
Fractures



Retrograde Intramedullary Nailing in Treatment of Bilateral Femur Fractures

Lisa K. Cannada, MD,† Sascha Taghizadeh, MD,* Jothi Murali, MD,‡
William T. Obrebsky, MD, MPH,† Charles DeCook, MD,† and Michael J. Bosse, MD†*

- **Previous: 25 % mortality rate**
- **Largest study in the literature**
- **5.6% Mortality Rate**
 - **Thoracic injury associated**
- **Early OR important**

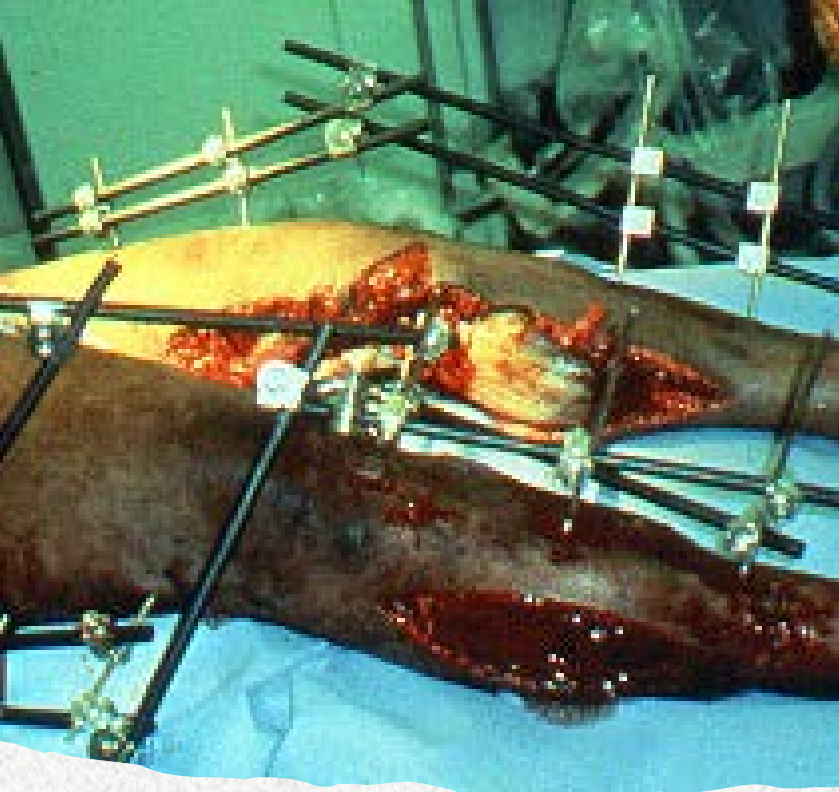
Skeletal Traction Versus External Fixation in the Initial Temporization of Femoral Shaft Fractures in Severely Injured Patients

Traction OK

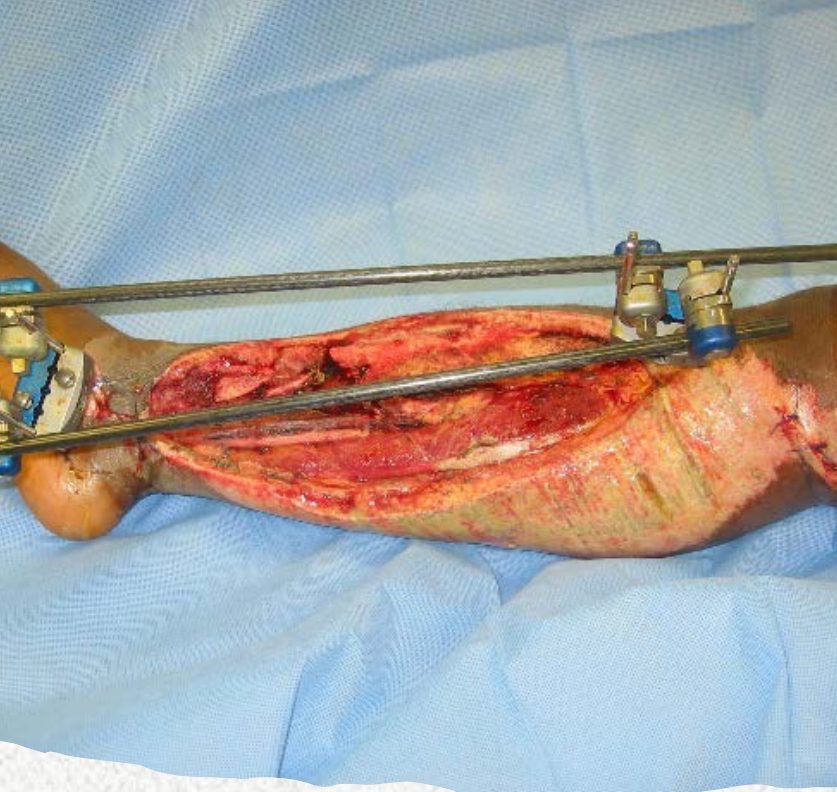
Limb Threatening

- Open fractures
- Fractures with vascular injury
- Crush injuries
- Compartment syndrome
- Dislocation (knee)





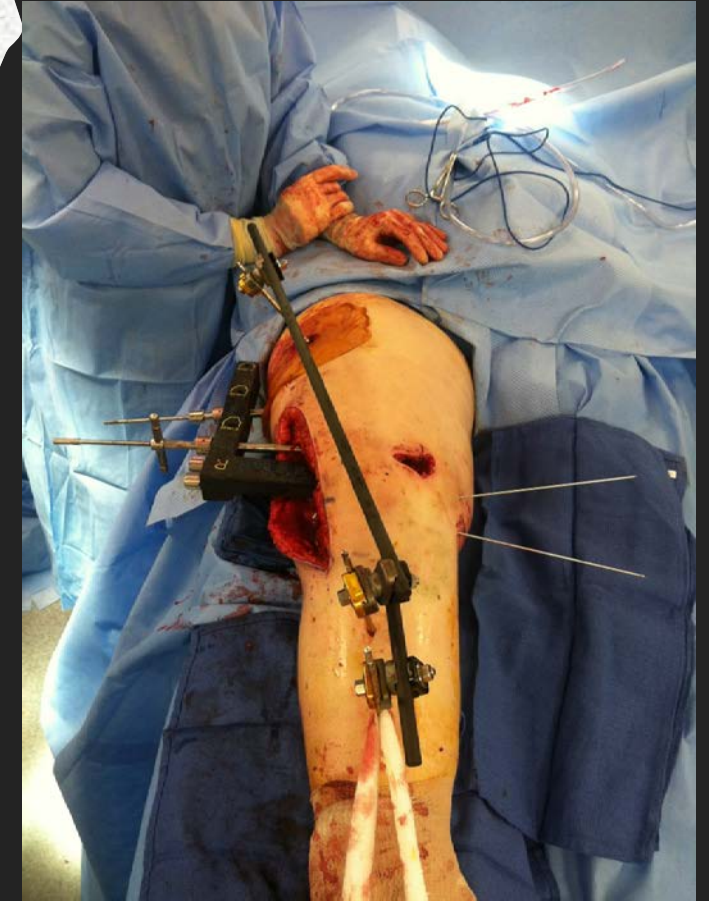
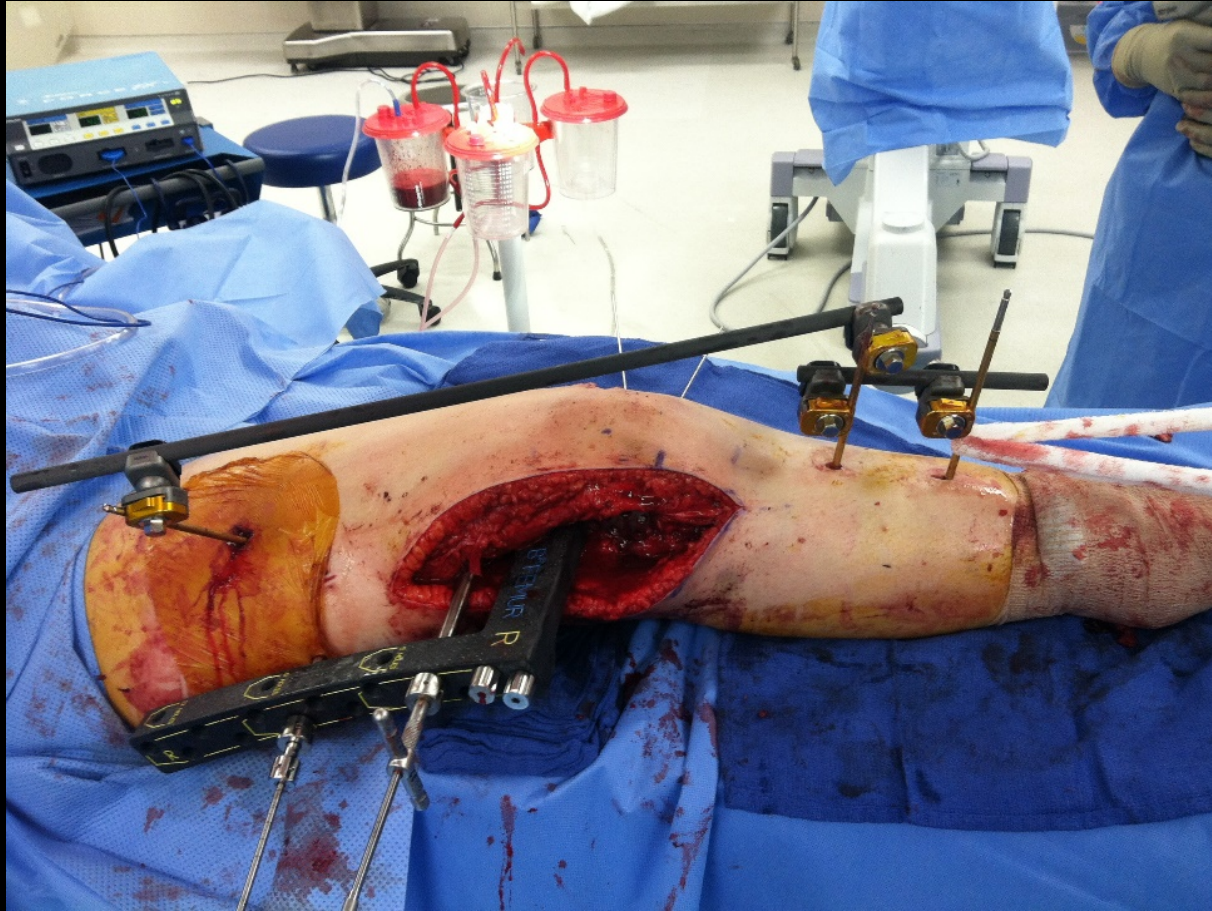
External Fixation is The Answer



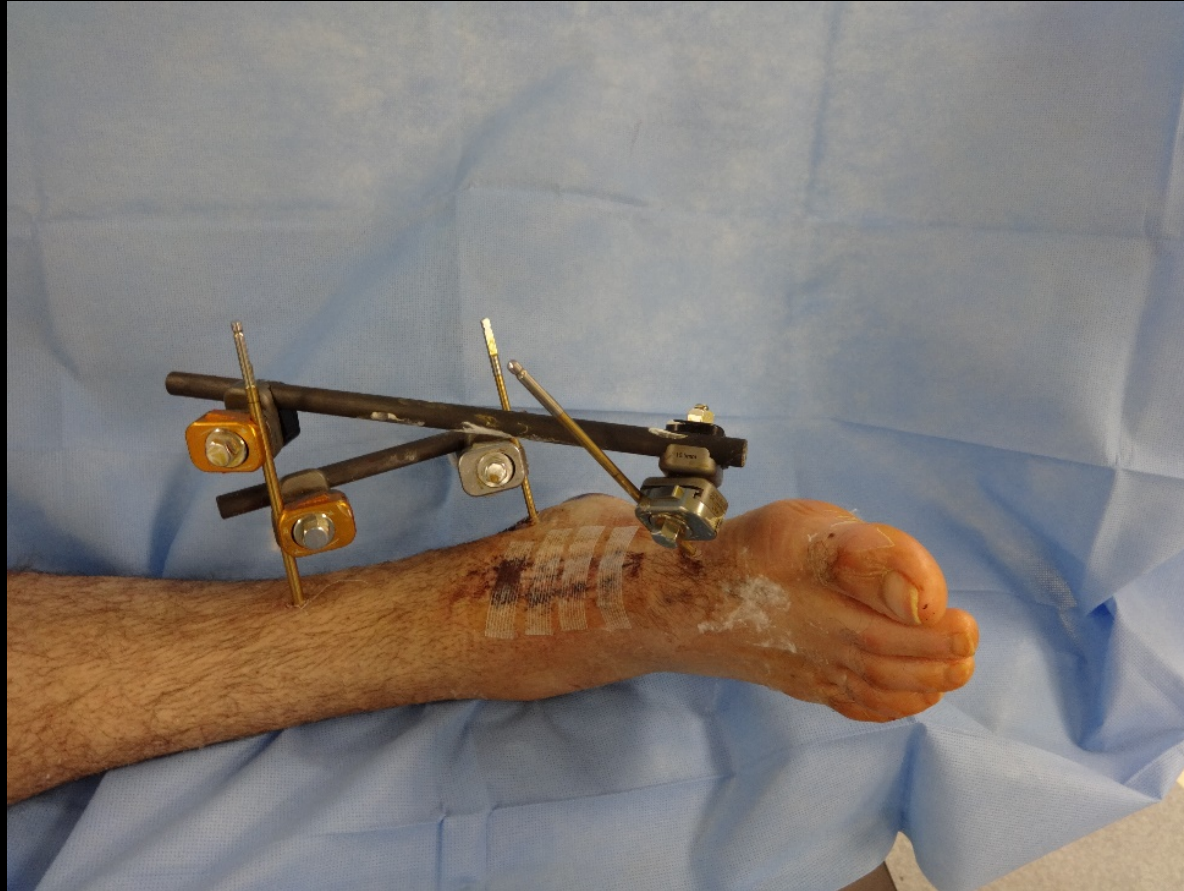
External Fixation: DON'T

External Fixation Examples

Maintaining Length for ORIF



Talus Fracture/Dislocation





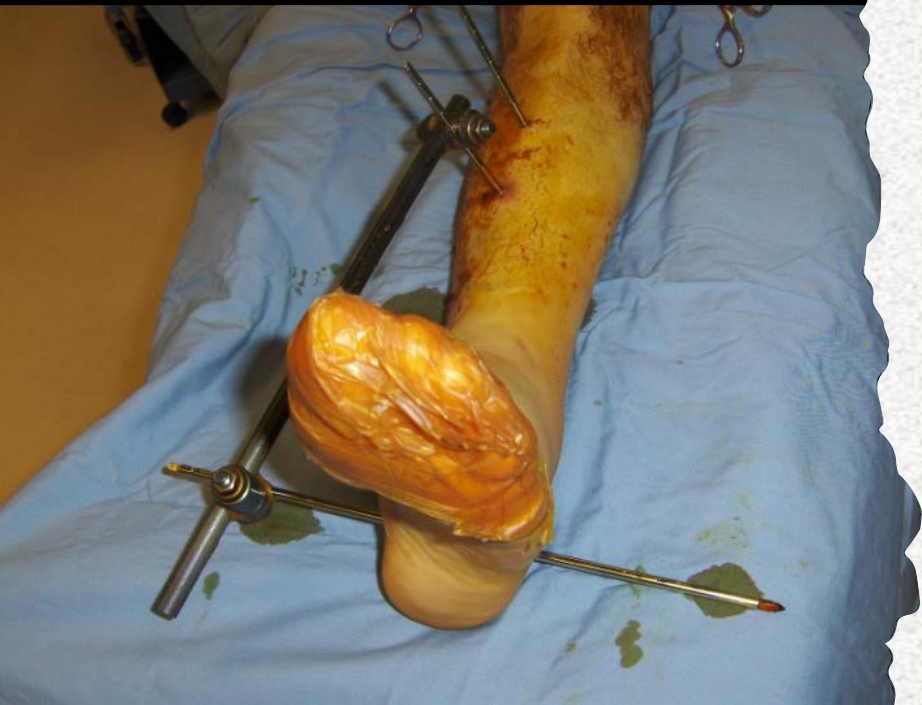
Tibial Shaft Fracture with Previous Hardware



Travelling Traction



Comminuted GSW Tibia with "Handle"



Typical Delta Frame

Knee Dislocation

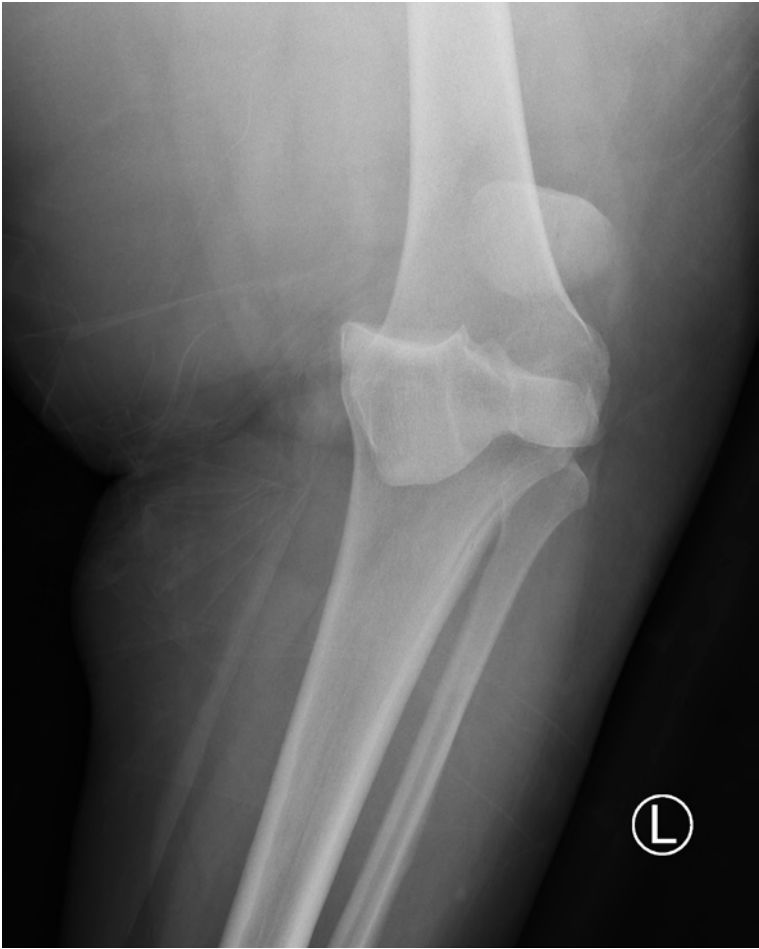
- Do not send home!
- ABI's SOC
- Ex fix
 - FX/DX
 - Unstable
- Monitor



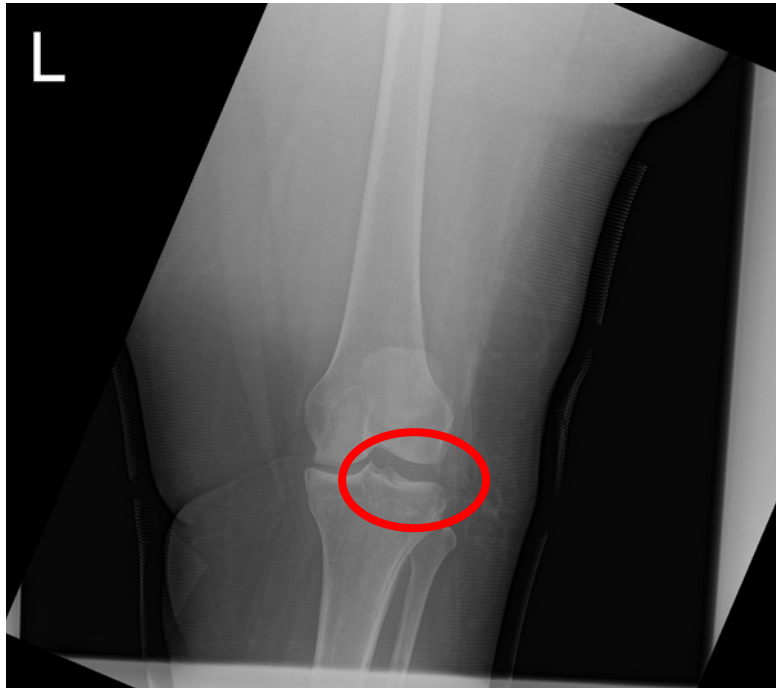
Knee Dislocations in the Obese

- **Obese patients with LE trauma were more likely to have associated *nerve injuries* (50% vs 6%; $P < .001$), *vascular injuries requiring intervention* (33% vs 9%; $P = .048$), and *vascular surgical repairs* (28% vs 6%; $P = .038$) than patients with HE traumatic dislocations**

Case Example



Always get Post Reduction X-Ray!



OR-Exam

*There was lateral widening on post reduction x-ray
This supports the instability and stress on vessels*



Compartment Syndrome

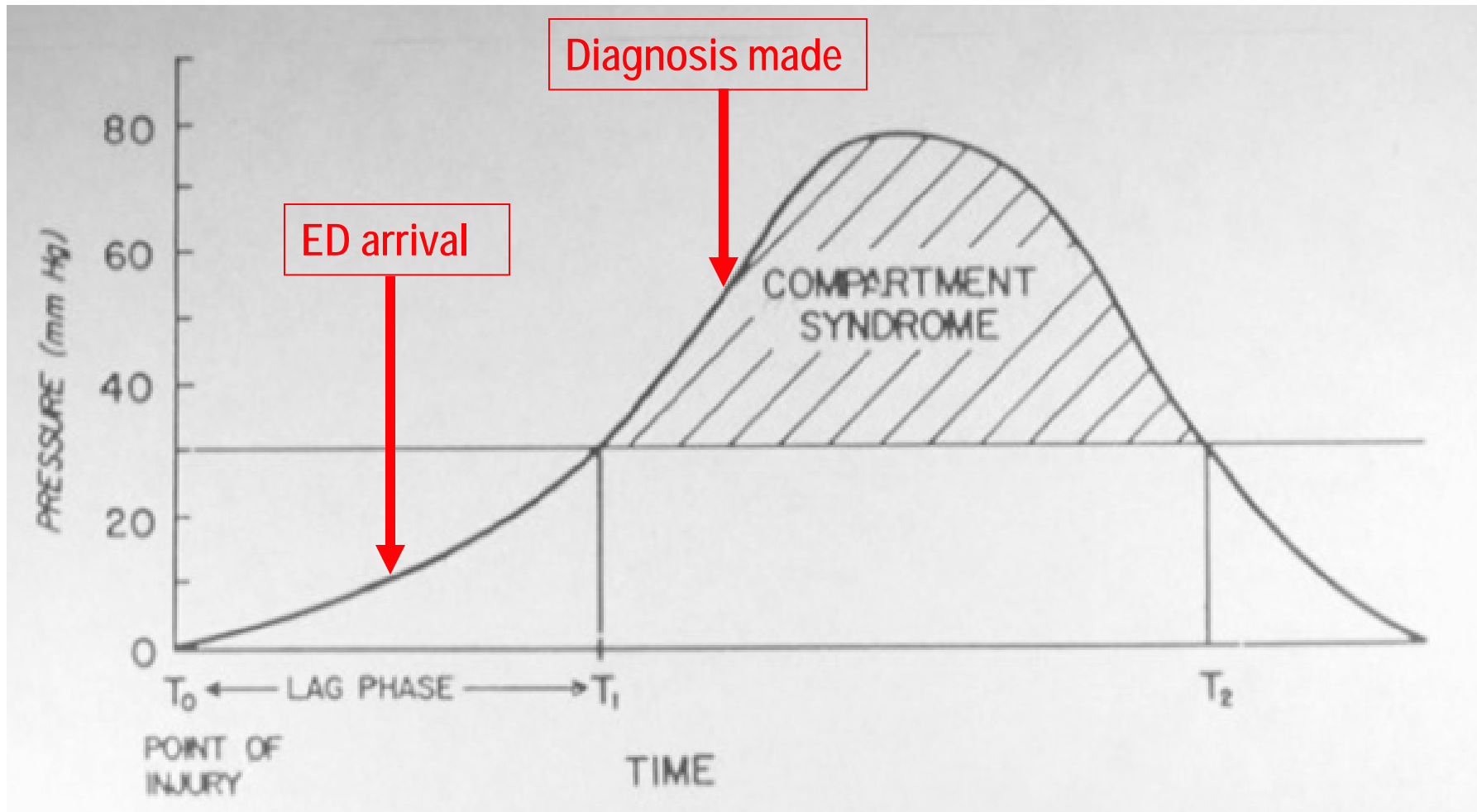
A white, torn-paper-like border runs along the bottom edge of the slide, starting from the left and extending towards the right, with a jagged, irregular edge.

Compartment Syndrome Diagnosis

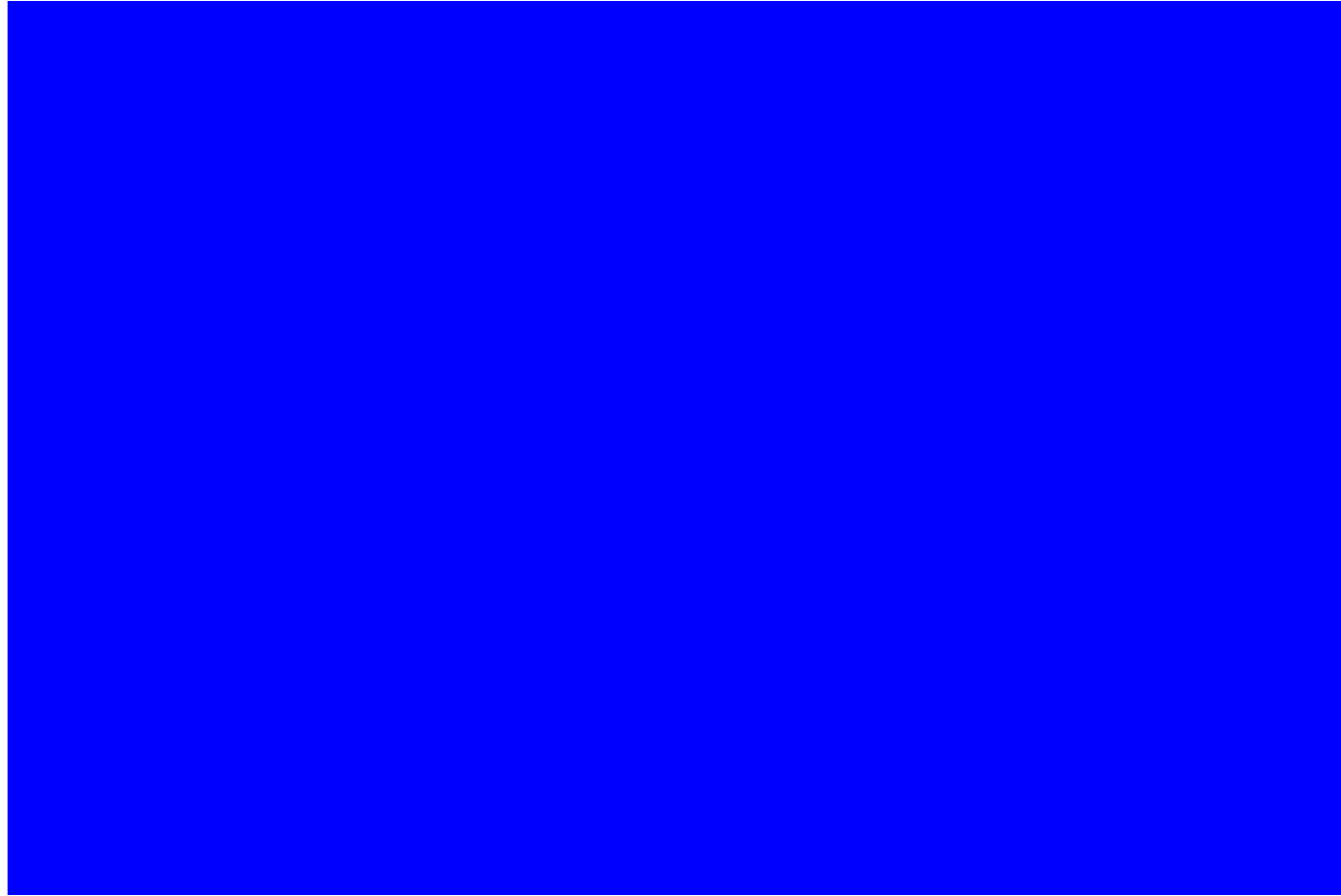
- Pain out of proportion
- Pain with passive stretch
- Paresthesia
- Paralysis
- Pulselessness/pallor

Do Patients Need Serial Exams?

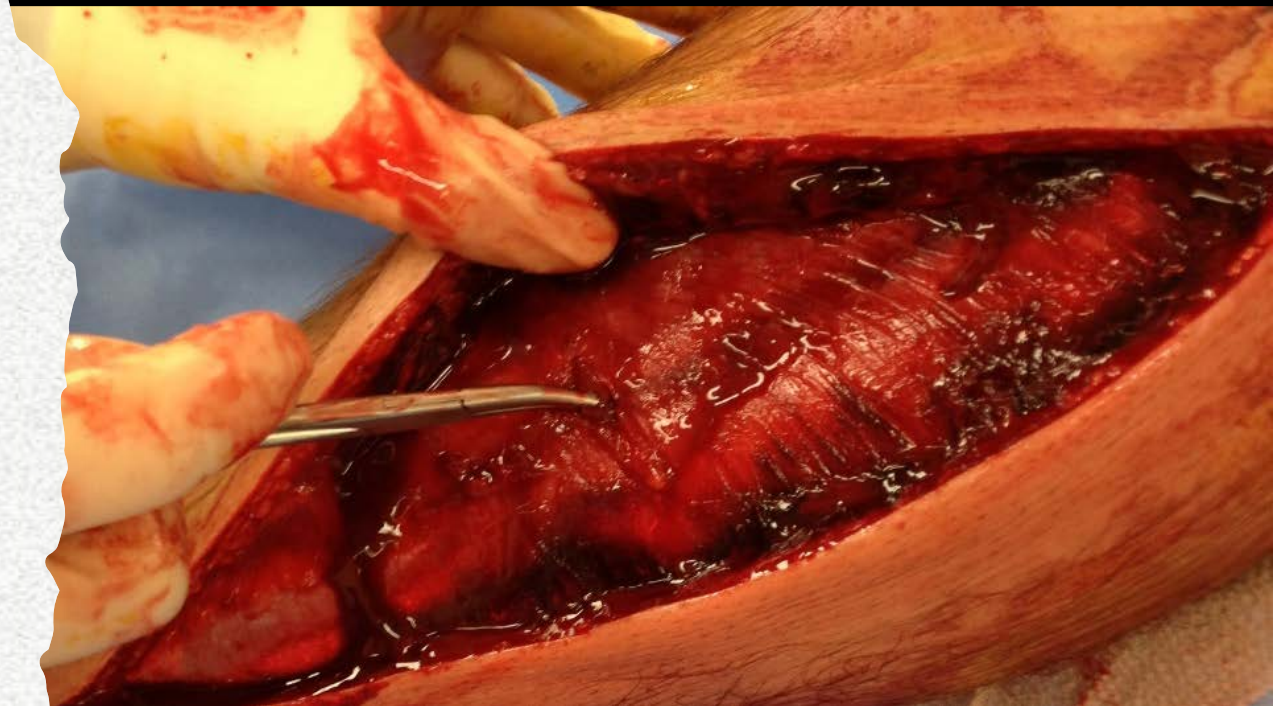
- Compartment syndromes develop over time



Two Incision Fasciotomy

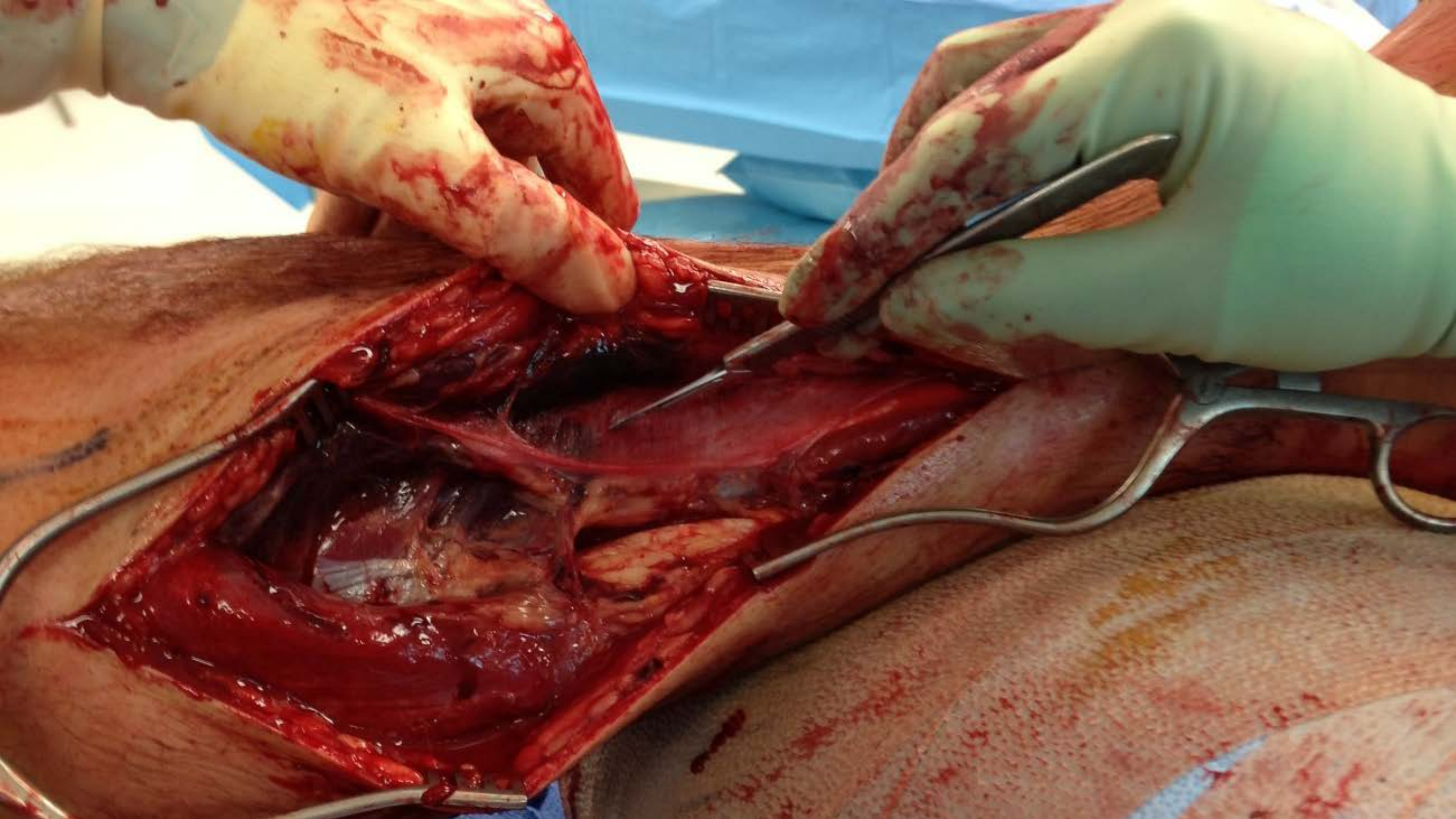


Case Example









Complete Release...OR





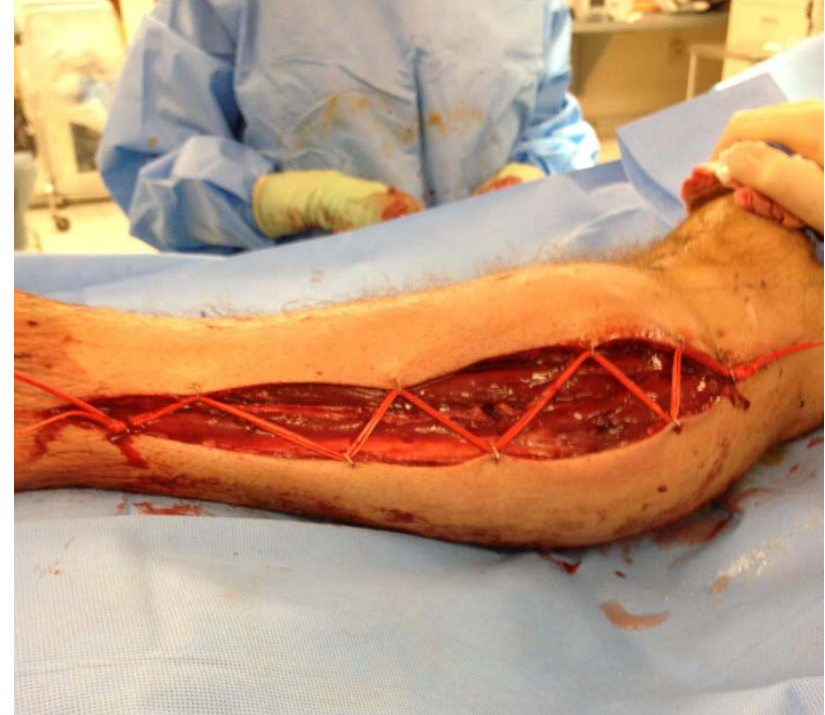
Don't Miss It



Even in the Upper Extremity

Aftercare

- **Vessel Loops**
- **Elevation of limb**
- **Second Look**

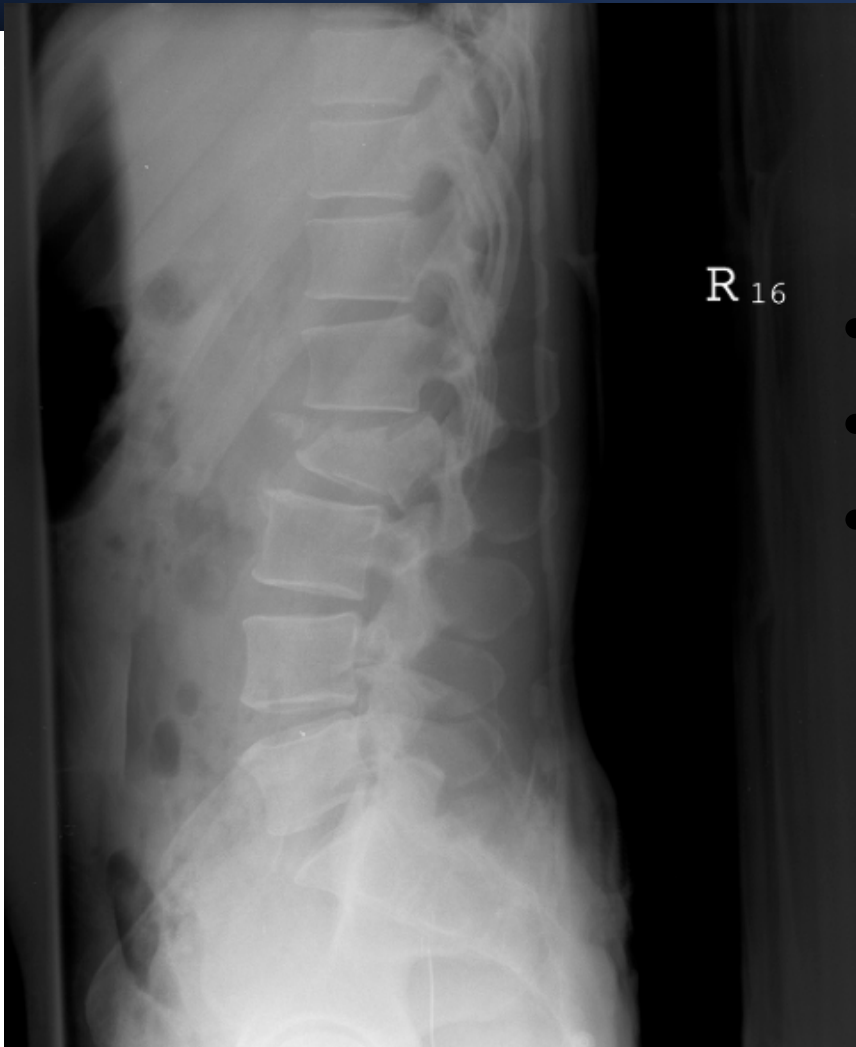


Should I?

- **If you are thinking about it...**
- **Big cause of malpractice claims**
- **Not benign..but saves the limb**



Function Threatening



- **Hip dislocation**
- **Spine fractures**
- **Intra-articular fx**





Other Dislocations

- **Shoulder**
- **Elbow**
- **Ankle**
- **Wrist**



Flip Flops and Motorcycles





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38 ☀
29 🌑

54 kVp
.05 mA





POD #2



6 weeks



6 week Debridement



4 Months



Orthopaedic Emergencies

- **Always put a patient to the x-rays**
- **Consider the whole picture**
- **Temporize what you can**
- **Transfer what is necessary-but not as an excuse**
- **Phone a friend**



Thank You!

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