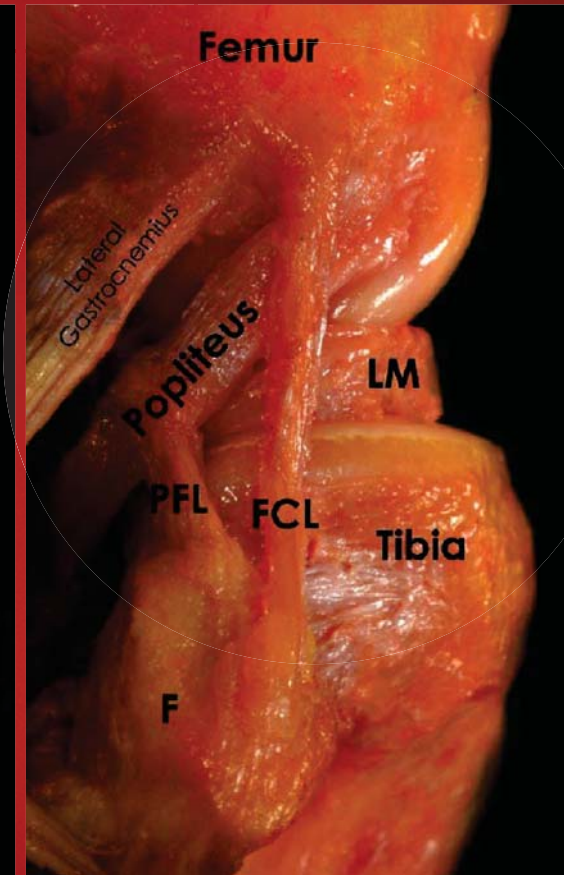
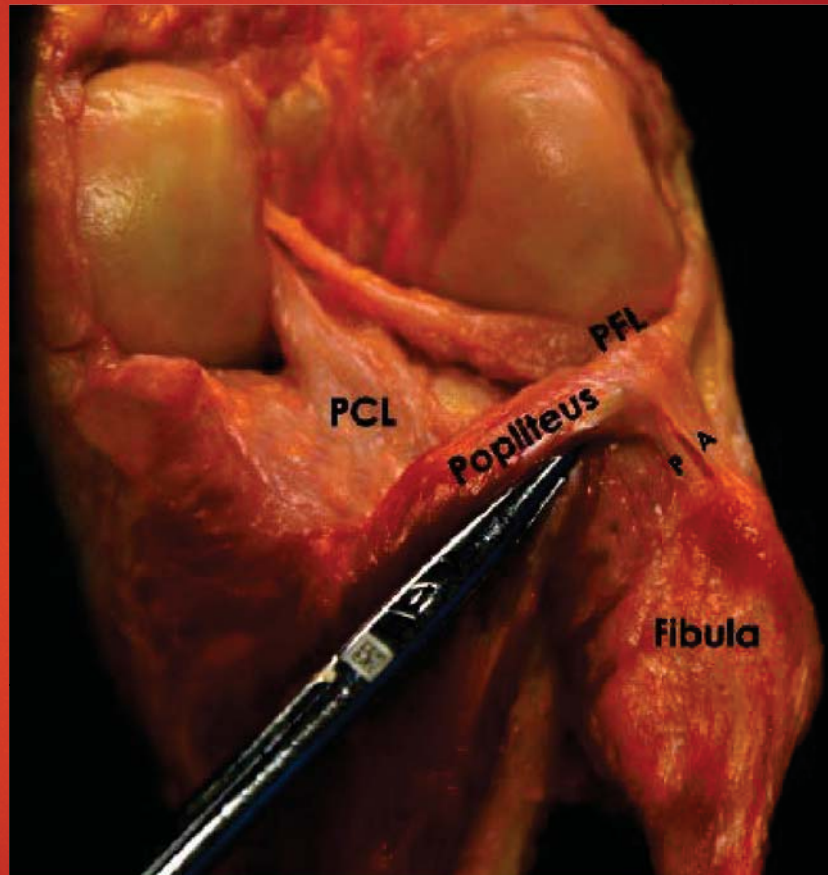


# LCL (Posterolateral corner)

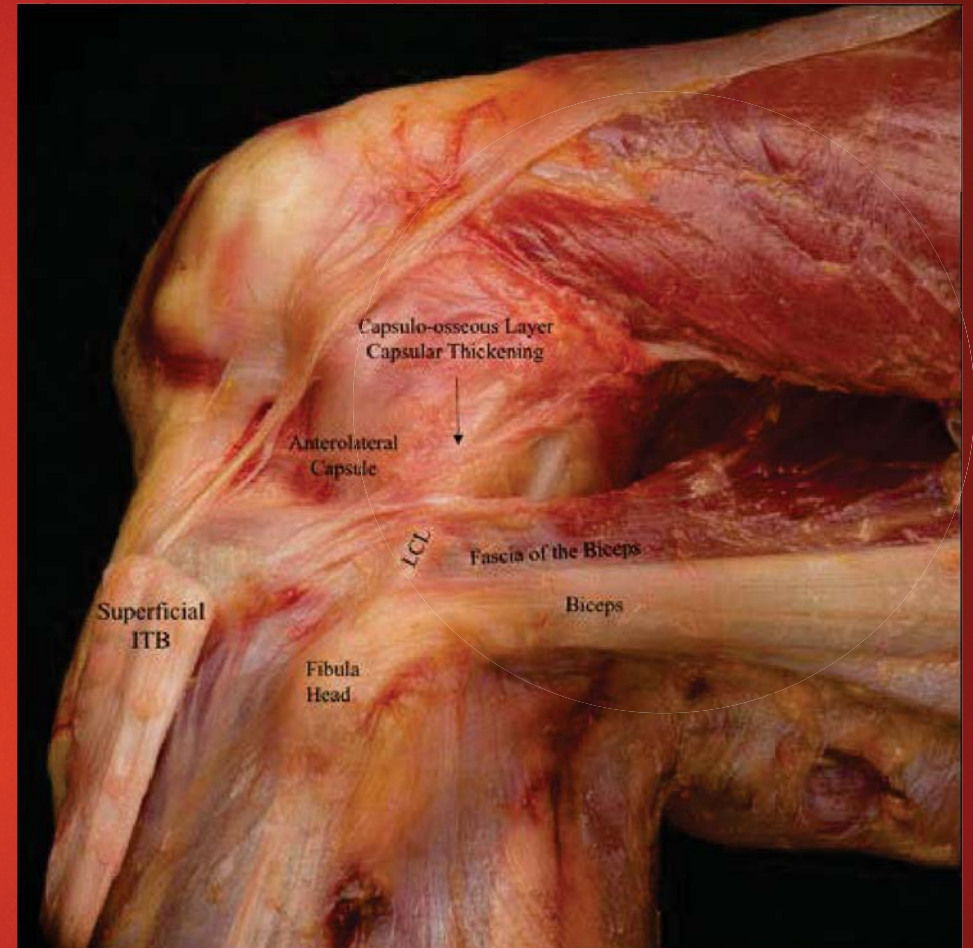
## ▶ Anatomy

- ▶ LCL
- ▶ Popliteus
- ▶ Popliteofibular ligament
- ▶ Arcuate ligament
- ▶ Fabellofibular ligament
- ▶ Biceps femoris



# LCL (Posterolateral corner)

- ▶ Anatomy
- ▶ Function
  - ▶ Static stabilizers
    - ▶ LCL
      - ▶ primary varus restraint
    - ▶ Popliteofibular ligament
      - ▶ primary external rotation restraint at 30 degrees flexion
    - ▶ Arcuate ligament
    - ▶ Fabellofibular ligament
    - ▶ Iliotibial band
  - ▶ Dynamic stabilizers
    - ▶ Popliteus
    - ▶ Biceps femoris
    - ▶ Lateral gastrocnemius



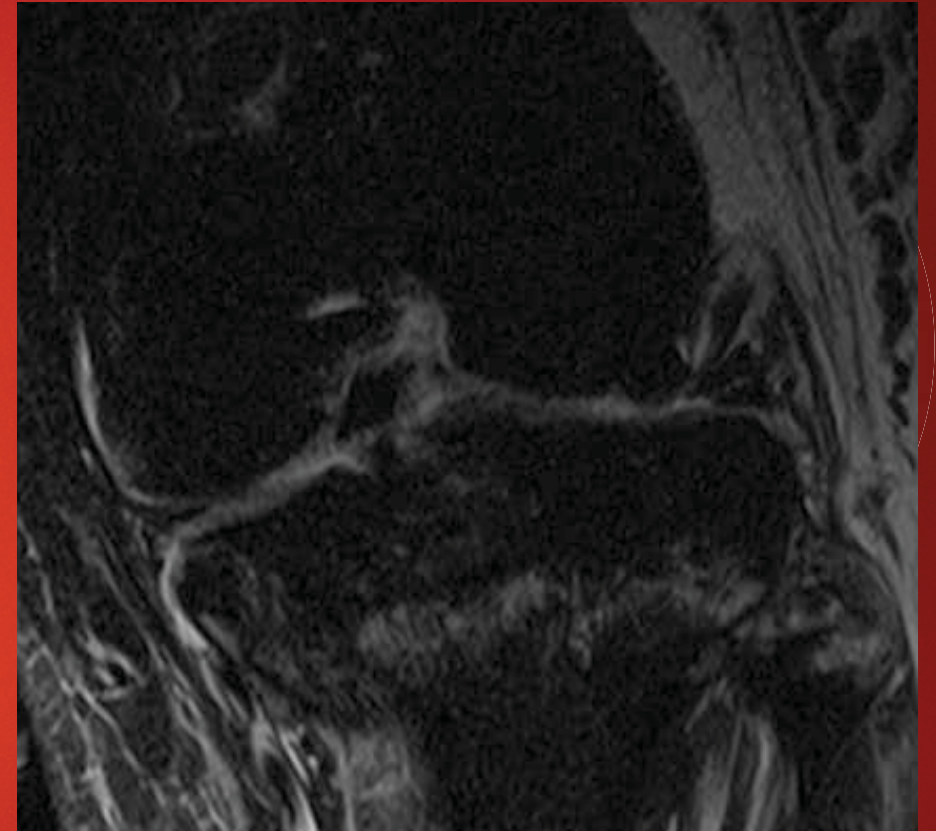
# LCL (Posterolateral corner)

- ▶ Anatomy
- ▶ Function
- ▶ Mechanism of injury
  - ▶ Direct blow to the anteromedial knee
  - ▶ Hyperextension varus noncontact



# LCL (Posterolateral corner)

- ▶ Anatomy
- ▶ Function
- ▶ Mechanism of injury
- ▶ Other injuries with the same mechanism
  - ▶ Frequently (3/4) combined injuries with ACL or PCL
    - ▶ MRI indicated
  - ▶ Peroneal nerve



# LCL (Posterolateral corner)

- ▶ Anatomy
- ▶ Function
- ▶ Mechanism of injury
- ▶ Other injuries with the same mechanism
- ▶ Diagnosis
  - ▶ Varus testing at 30 and 0 degrees
  - ▶ Dial (external rotation of >10 degrees at 30 and 90 degrees of knee flexion)
  - ▶ Reverse pivot
  - ▶ Extension recurvatum



# Dial Test



10 degree difference

30 and 90 degrees of knee flexion

Prone

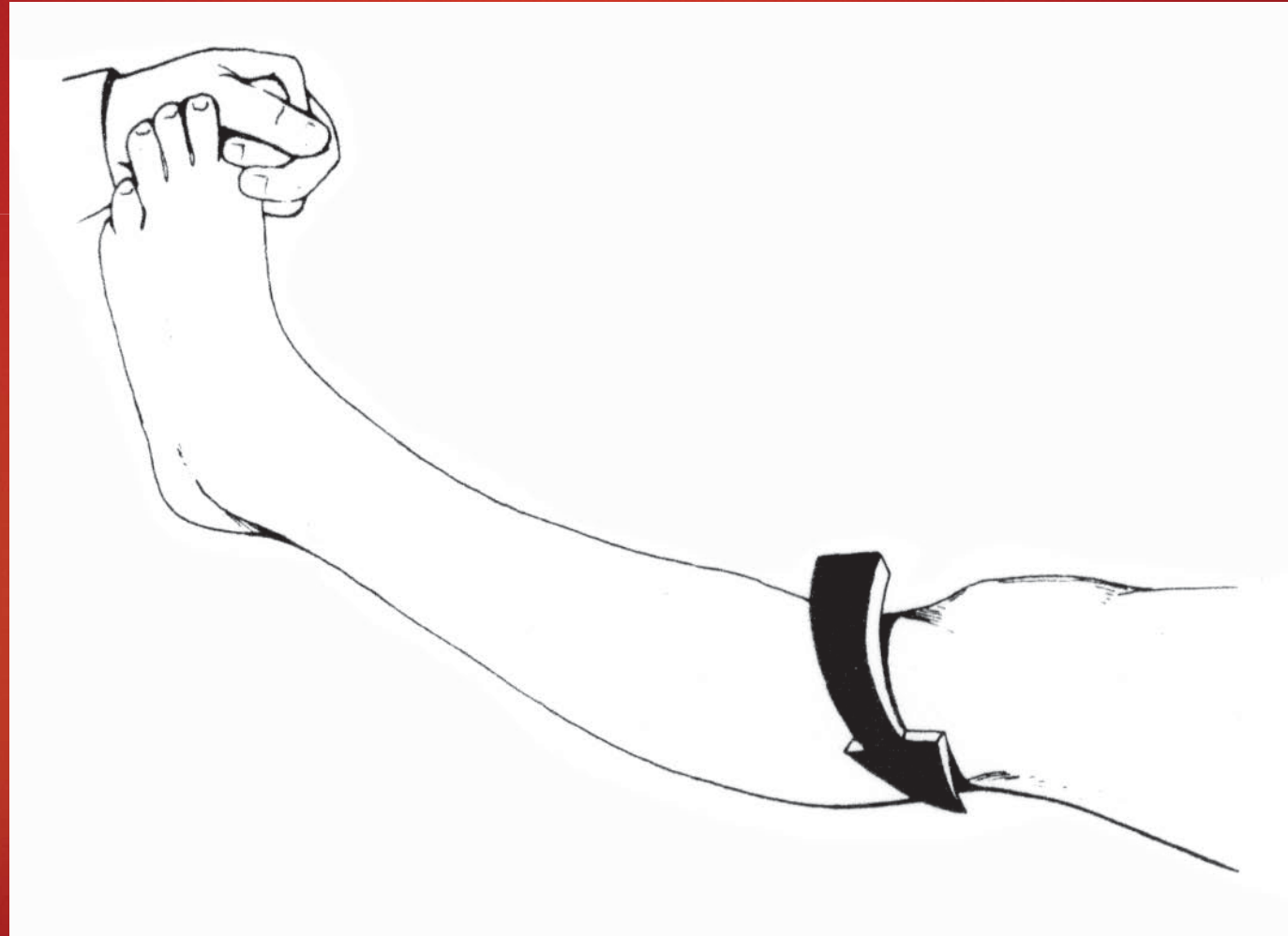
Supine with and assistant

# Reverse Pivot Shift

Tibia subluxed in flexion, reduced in extension



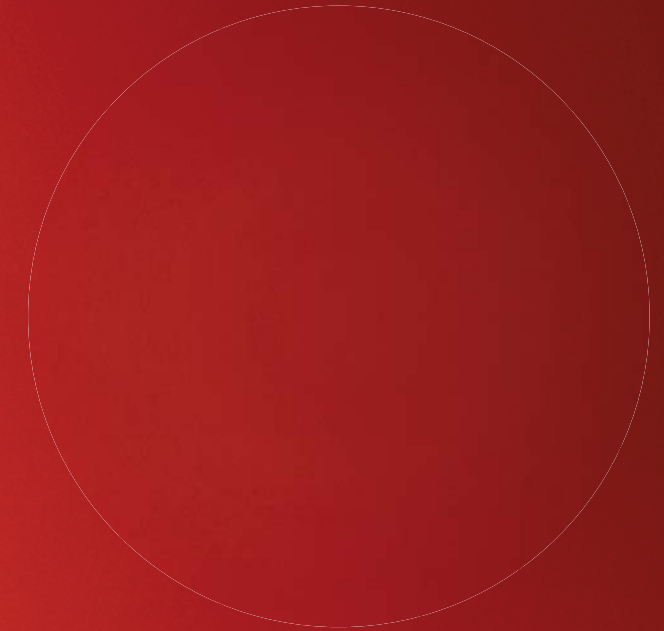
# External Rotation Recurvatum





# LCL (Posterolateral corner)

- ▶ Anatomy
- ▶ Function
- ▶ Mechanism of injury
- ▶ Other injuries with the same mechanism
- ▶ Diagnosis
- ▶ Other things in the neighborhood
  - ▶ Lateral meniscus tear
  - ▶ ITBFS iliotibial band friction syndrome
  - ▶ Peroneal nerve entrapment



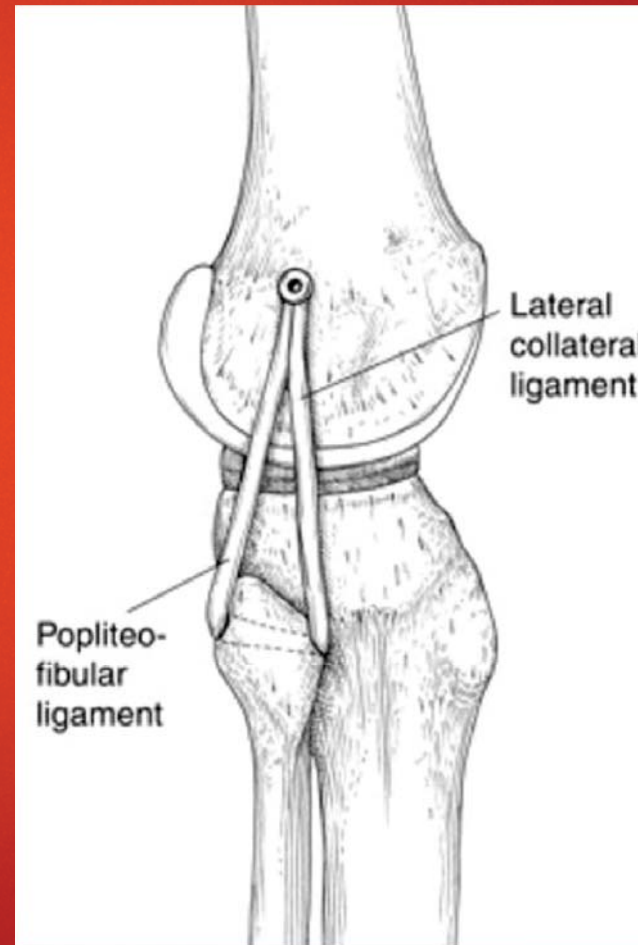
# Treatment of Posterolateral Corner Injuries

- ▶ Consideration of varus/valgus limb alignment
- ▶ Isolated low grade LCL in valgus knee (no rotational laxity)
  - ▶ Conservative treatment with hinged knee brace
- ▶ Fibular sided LCL/popliteofibular/biceps tear in valgus knee
  - ▶ Acute repair
- ▶ Other acute PLC injuries
  - ▶ PLC reconstruction
- ▶ Chronic PLC with varus limb alignment
  - ▶ Osteotomy and PLC reconstruction



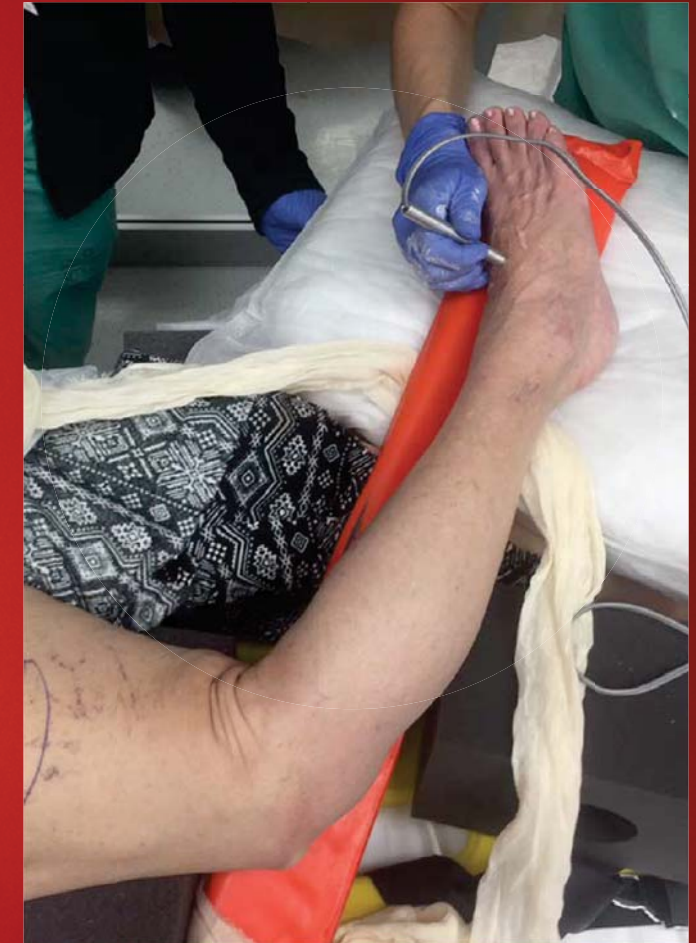
# PLC (Posterolateral Corner) Reconstruction Modified Larson Technique

- ▶ Semitendinosis (allograft)
  - ▶ Through fibular head
    - ▶ Under biceps posterior
    - ▶ Under iliotibial band anterior
    - ▶ Into lateral epicondyle
  - ▶ Versatile
    - ▶ Fibular tunnel angle
    - ▶ Double femoral tunnel



# Is this a Knee Dislocation?

- ▶ 8050 reported from 2005-2009 (Arom et al. CORR 2013)
- ▶ Estimated 50% present to the ER already reduced
- ▶ High index of suspicion with more than one injured ligament
  - ▶ Popliteal artery injury 18%
    - ▶ Most frequent with posterior dislocation
    - ▶ 80% repaired
    - ▶ 12% amputation (2% of all knee dislocations)
  - ▶ 25% Nerve injury
    - ▶ Peroneal nerve
      - ▶ Medina et al CORR 2014
- ▶ Knee dislocations should go to an emergency room.
  - ▶ Ideally, a facility that has vascular surgery capabilities



# ER Management High School Football Injury

- ▶ No pulses, gross knee deformity
- ▶ Reduce knee
- ▶ Symmetric pulses
- ▶ ABI = 0.9
- ▶ Pick up the foot – minimal sag
- ▶ Now what?



# ER Management Low energy Injury

- ▶ Thigh high TEDs
- ▶ Hinged knee brace
  - ▶ locked at 0 extension
  - ▶ posterior tibial pad
- ▶ 1 pillow under leg
- ▶ Post reduction x-ray
- ▶ Admit for observation



# Floor Management

- ▶ NPO
- ▶ Neurovascular checks
  - ▶ Q 1 hour x 4 then Q 2 hours
- ▶ Elevate on one perpendicular pillow
- ▶ Foot pumps
- ▶ Ice
- ▶ PT for crutch training
  - ▶ Non-weightbearing
  - ▶ Quad sets, straight leg raises, ankle pumps
- ▶ MRI
- ▶ RE-EVALUATE IN 4 HOURS
  - ▶ Repeat ABI, pulses, foot



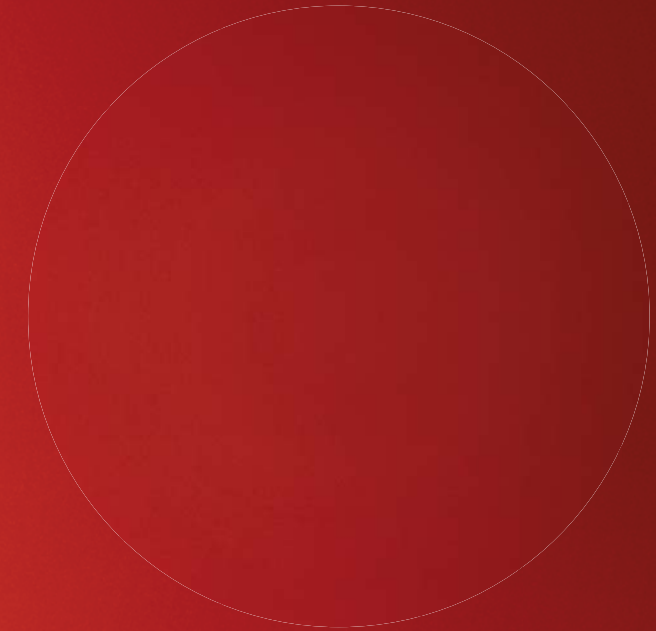
# Floor Management

- ▶ Experienced orthopaedic floor nurse calls back in two hours and thinks he is developing compartment syndrome.
- ▶ You haven't been eating all your breakfasts so don't have the strength to carry equipment for both compartment testing and ABI. Which do you bring?
- ▶ If you see compartment syndrome in knee dislocation patient, think popliteal artery injury first



# Discharge

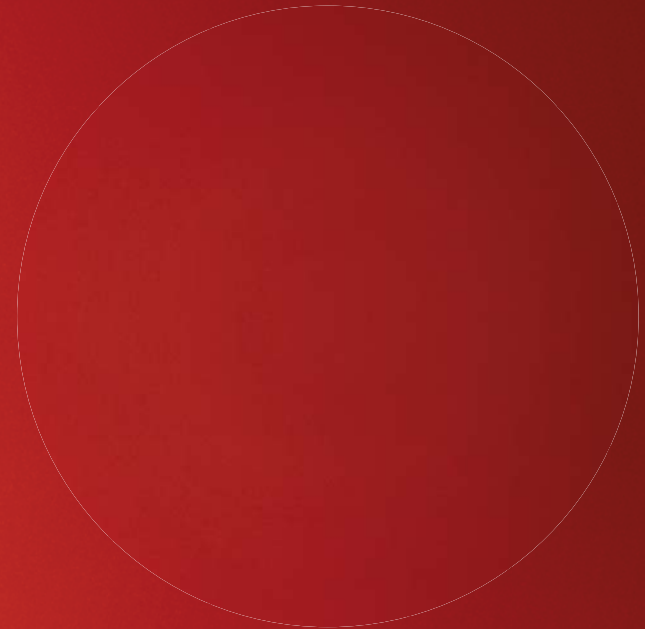
- ▶ Start NSAID
  - ▶ Plan narcotic wean over next 2-3 days
- ▶ Follow up in one week
- ▶ Elective surgery (Outpatient)
  - ▶ 10-20 days
  - ▶ Optimize 12 priorities
    - ▶ Home
    - ▶ Help
    - ▶ Ability to rehab





# Thank You





**UT Health**  
San Antonio

# Knee Trauma Priorities (After the ABCs)

1. Reduction
2. Vascular
3. Bone/articular cartilage
4. Skin
5. Extensor mechanism
6. Meniscus
7. Brain
8. Nerves
9. Ligaments
10. Weight-bearing
11. Modifiable medical
12. Other medical



# Pivot Shift

Tibia subluxed in extension, reduces in flexion

