Pediatric Orthopaedic Sport-Related Injuries

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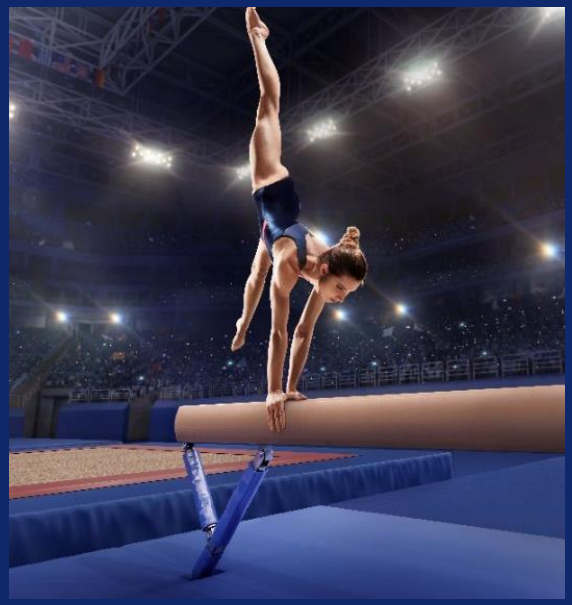
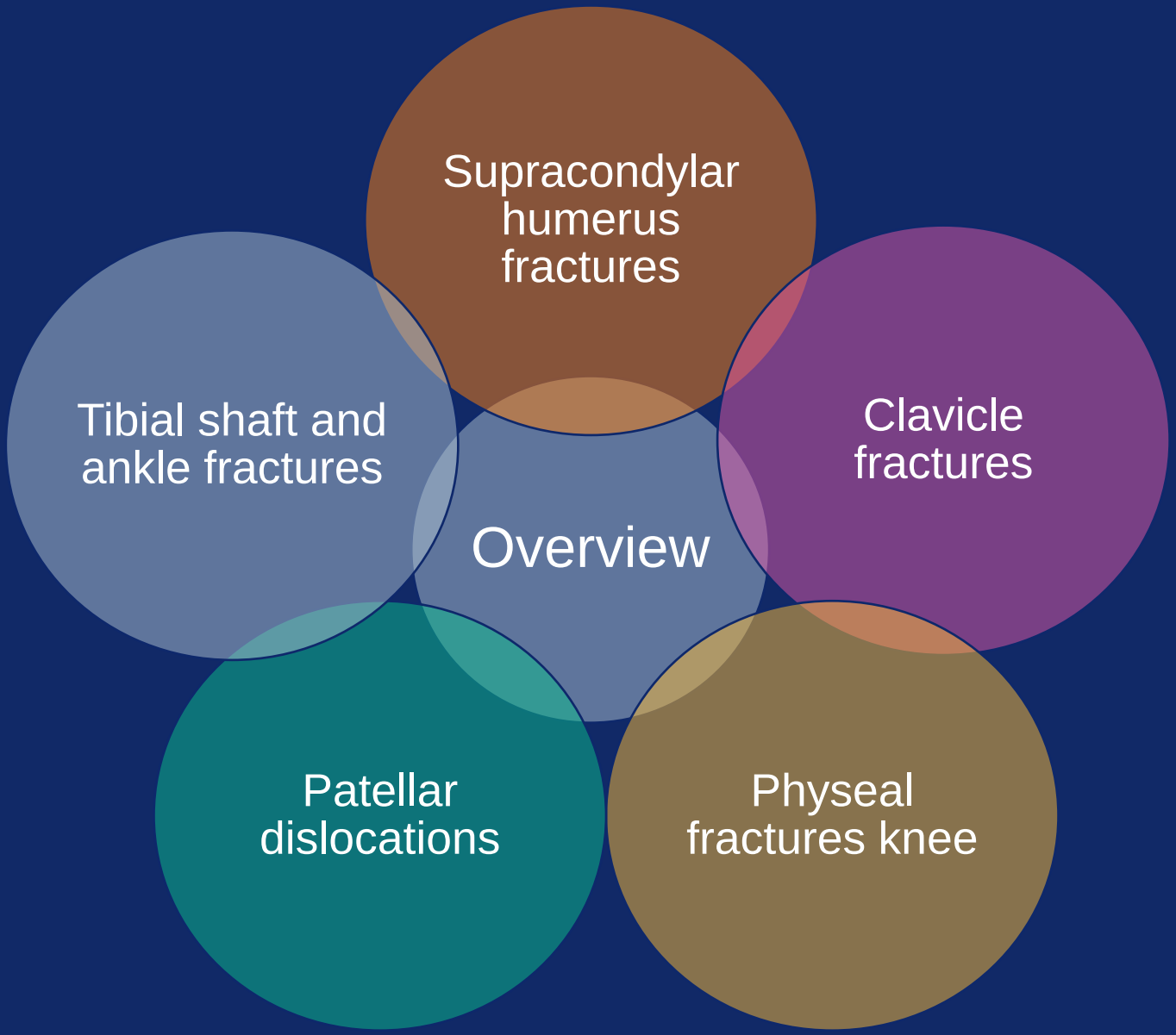
For starters

- Unique MSK features
  - Body composition
  - bony considerations
- Skeletal immaturity
  - Males: ages 15-17
  - Females: ages 14-16
- Importance of *accurate injury diagnosis* in field and *prompt transfer* if limb compromised or open wounds



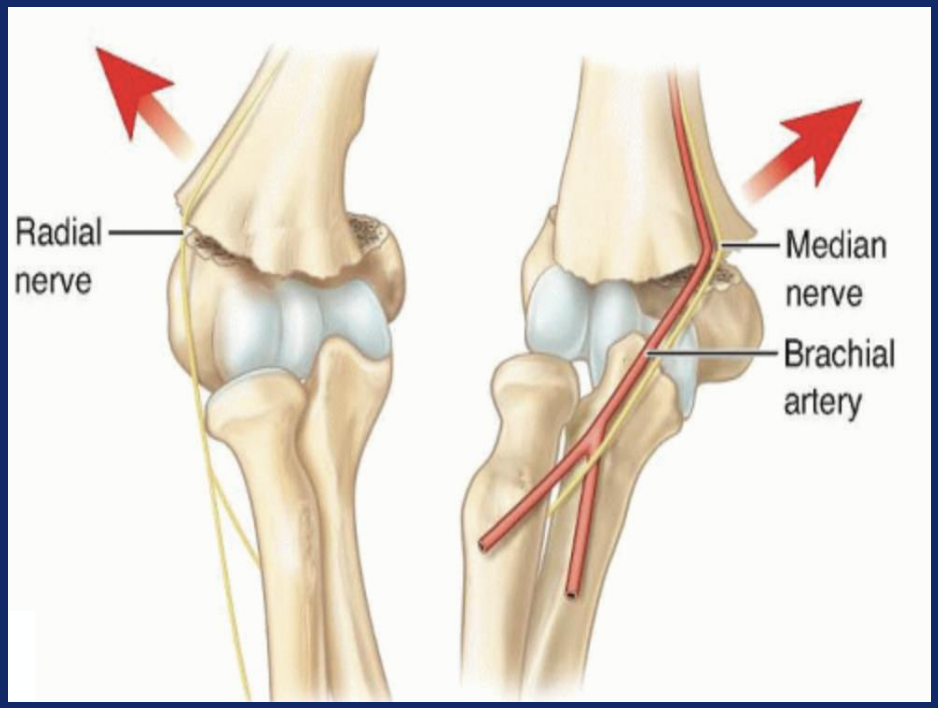

Supracondylar humerus fractures
Tibial shaft and ankle fractures
Clavicle fractures
Overview
Patellar dislocations
Physeal fractures knee

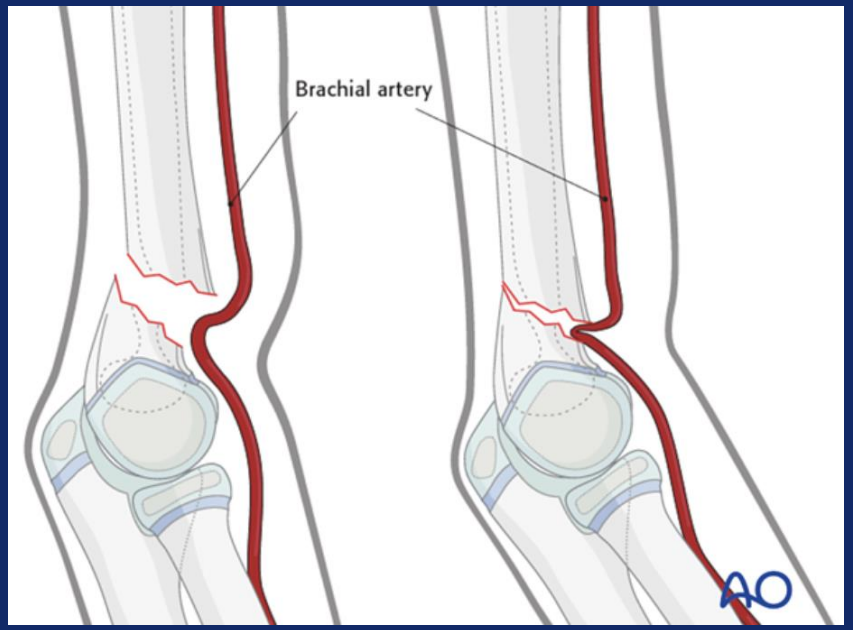
Supracondylar Humerus Fractures

- **Prevalence:** 2nd most common fracture pattern in kid
- **Age group:** Typically 5–8 years old
- **Mechanism**: Fall on outstretched arm
- **Common in:** Playground falls, gymnastics, trampoline injuries

Supracondylar Humerus Fractures

- **Relevant anatomy**: brachial artery, median nerve, radial nerve, risk of compartment syndrome





Supracondylar Humerus Fractures

EMS Management:

Immobilize in position found

Monitor pulses and sensation

- Radial pulse absent ~10%

Assess for open wounds

ED Treatment:

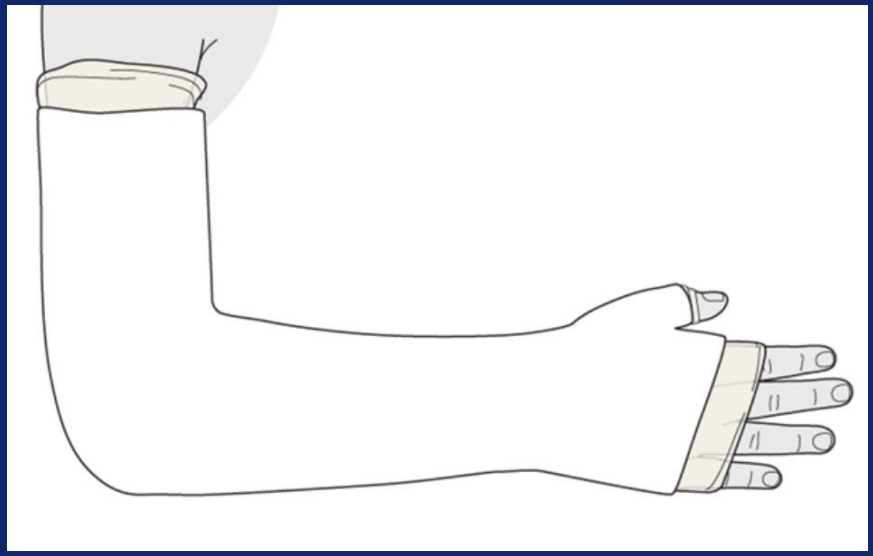
Neurovascular check

X-ray

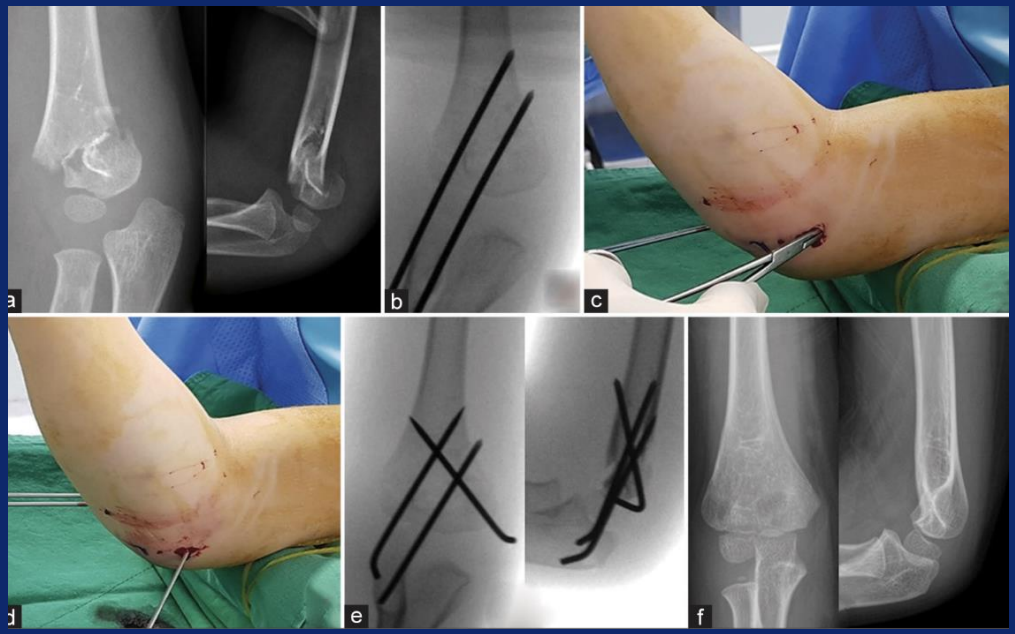
Ortho consult if displaced (urgent if no pulses)

Monitor for compartment syndrome

Definitive Treatment

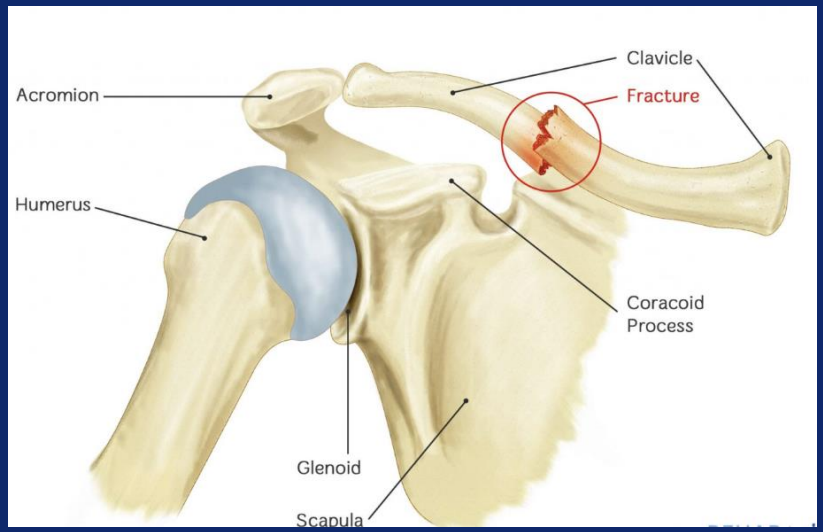


- non-displaced → cast
- displaced → pinning



Clavicle Fractures

- **Prevalence:** Among the most common pediatric fractures (~8–15% of all pediatric fractures)
- **Mechanism**: Fall onto shoulder or FOOSH
- **Age group:** Broad age range, more frequent in younger children
- **Common in:** Cycling accidents, football, soccer, wrestling



Clavicle Fractures

EMS Management:

watch for tenting, skin compromise

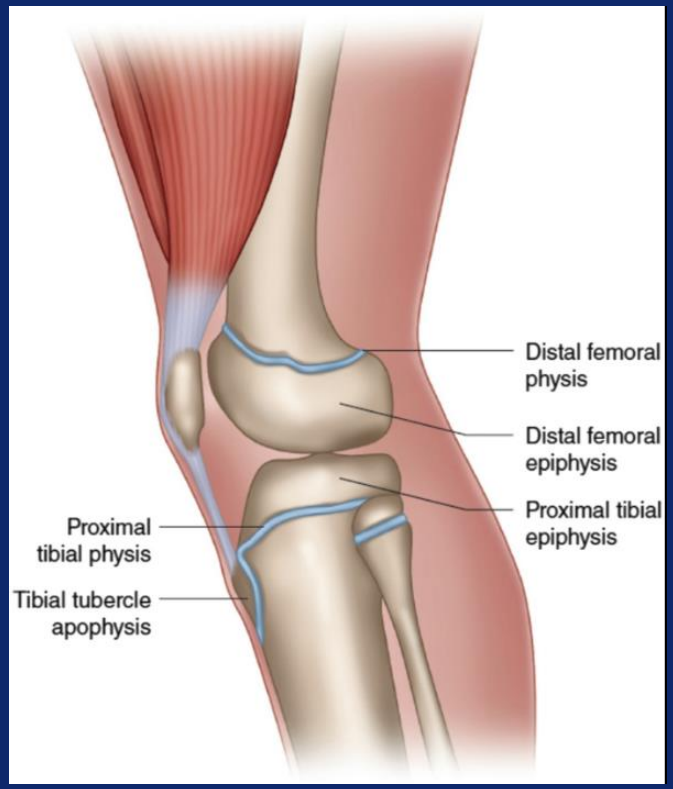
Sling, pain management

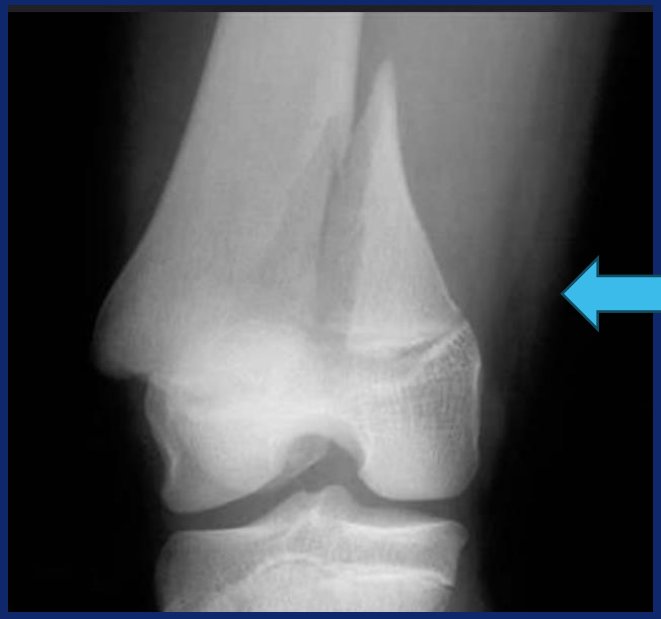
ED Treatment:

X-ray, sling or figure-of-eight brace, ortho follow-up

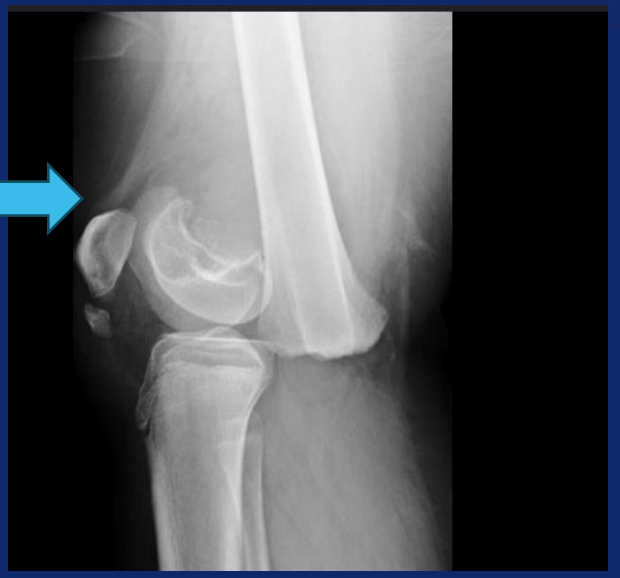
Physeal Fractures of the Knee

- **Prevalence:** rare, but can cause vascular injury
- **Age group:** Adolescents during growth spurts
- **Mechanism:** Direct trauma or twisting; high-energy sports
- **Common in:** Football, basketball, skateboarding





Distal femoral physis



tibial apophyseal avulsions

Proximal tibial physis

Physeal Fractures of the Knee

EMS Management:

Immobilize in position

avoid manipulation

neurovascular assessment

ED Treatment:

Imaging, NV check, ortho consult

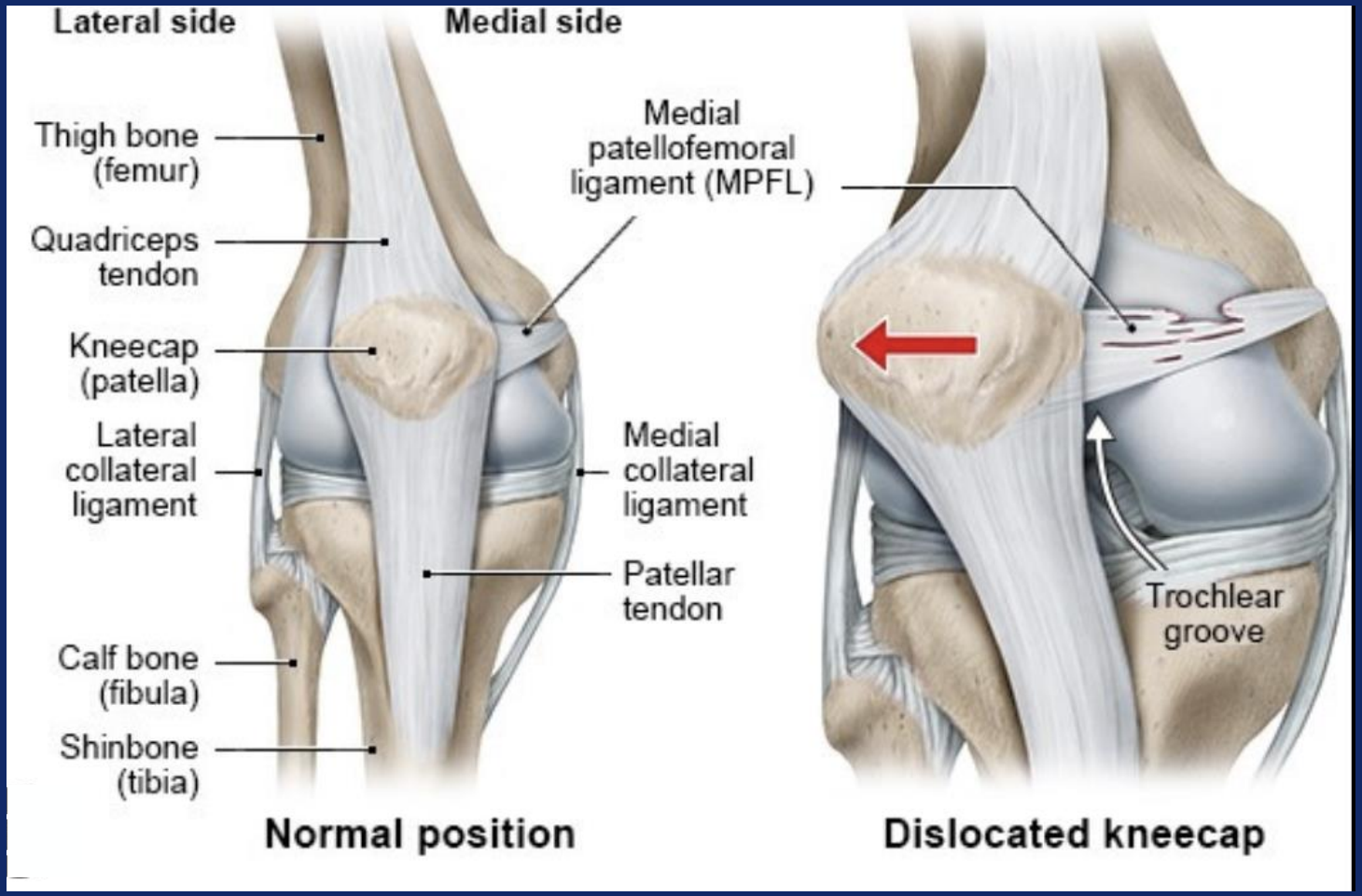
Operative if displaced

Monitor for compartment syndrome

Patellar Dislocations

- **Prevalence:** Less common, but increasing in active adolescents (especially females)
- **Age group:** Adolescents, especially ages 10–17
- **Mechanism:** Twisting on a planted foot with knee in valgus/flexion
- **Common in:** Dance, soccer, basketball, gymnastics

Patellar Dislocations



Patellar Dislocations

EMS Management:

- Knee flexed - stuck
- Patella visualized laterally
- Try to encourage knee extension to reduce
- If not, support in position, transport

ED Treatment:

- Sedated reduction if needed
- Knee immobilizer, WBAT
- Ortho follow-up

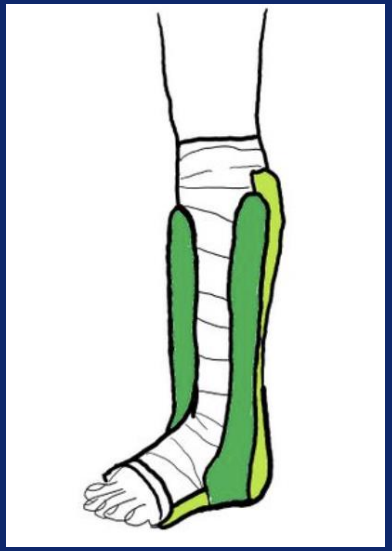
Other Lower Extremity Fractures: **Tibial Shaft and Ankle**

- **Tibial shaft fractures:** 3rd most common long bone fracture in children (~15% of long bone fractures)
- **Ankle fractures:** ~5–10% of pediatric fractures
- **Age group:**
  - tibial shaft: all ages, esp 4-10
  - ankle: school age and adolescents
- **Mechanism:** Twisting injuries, especially with cutting or jumping, direct blow
- **Common in:**
  - tibial shaft: Skiing, football, trampoline falls, motor vehicle collisions
  - ankle: Soccer, basketball, skateboarding

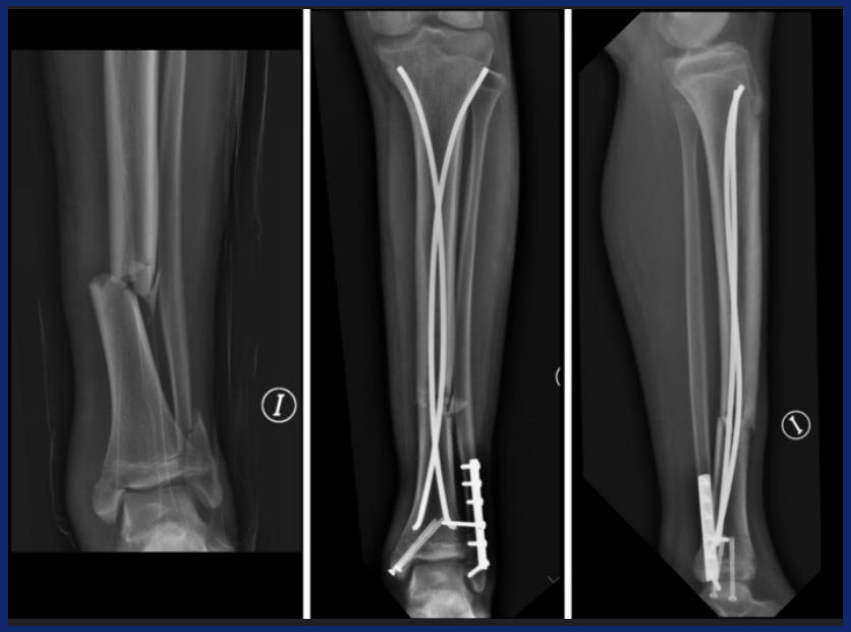
Tibial Shaft and Ankle Fractures

- **EMS Management:**
  - Assess NV status, deformity, open wounds
  - Immobilization
    - tibia fracture: long leg splint
    - ankle: short leg splint
  - Transport for imaging

Tibia Shaft and Ankle Fractures



- **ER Management:**
  - X-rays, ortho consult: splinting vs surgery
  - Tibia fractures:
    - High risk **compartment syndrome**
    - Open fractures, administer antibiotics ASAP



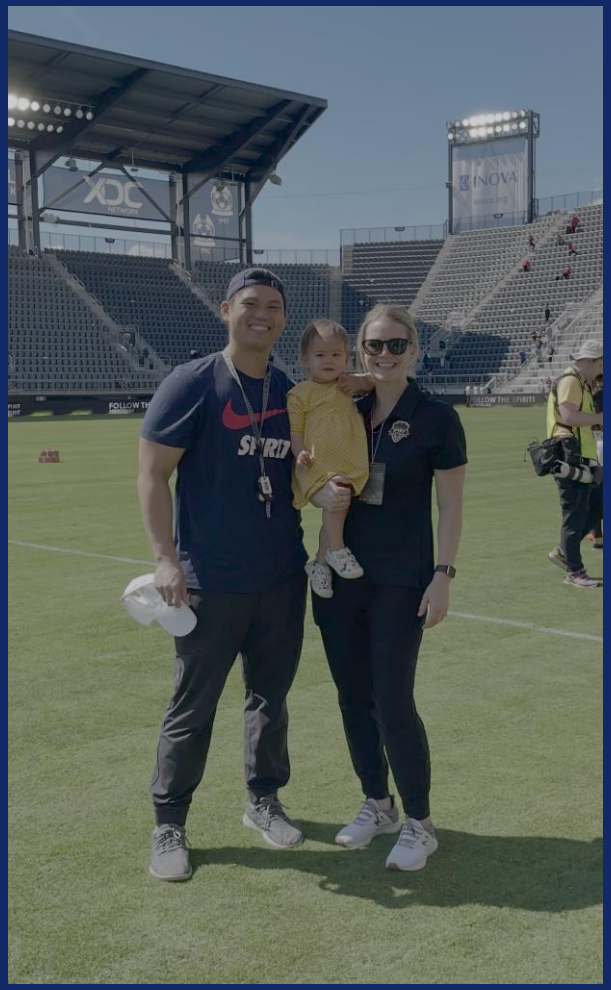
Summary

Recognize and stabilize common injuries

Pediatric anatomy affects treatment

Early recognition of NV complications = better outcomes

Thank you!



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