

COMMON PEDIATRIC SPORTS MEDICINE DIAGNOSES

NCAFP Sports Medicine for the Active Patient

August 8, 2020

Ryan Draper, D.O, ABFM, CAQSM

Program Director

Cone Health Sports Medicine Fellowship

Associate Clinical Professor

UNC School of Medicine, Dept of Family Medicine

Disclosures

- Neither I, nor my family, have any disclosures as it pertains to this lecture

- A big Thank You to
Drs. Caroline
Iskander and Tiffany
St. Claire!!



Objectives

- Discuss some of the most common overuse pediatric sports injuries
- Learn how to identify some of the most common pediatric fracture patterns
- Discuss pediatric hip conditions (both sports and non-sports related)



Left elbow with normal growth plate no widening.



Right elbow with growth plate widening.

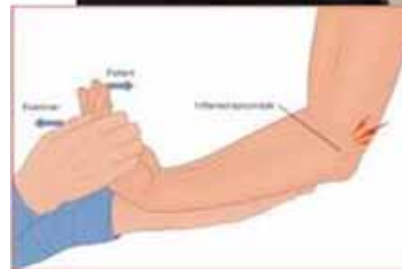
Little League Elbow (Medial Epicondyle Apophysitis)

- Due to high Valgus stress
- Repetitive motion leads to injury to the apophysis in the skeletally immature
- Tend to occur in younger children
 - present with more insidious onset than an avulsion fracture (seen in older children, high school)



Medial Epicondyle Apophysitis

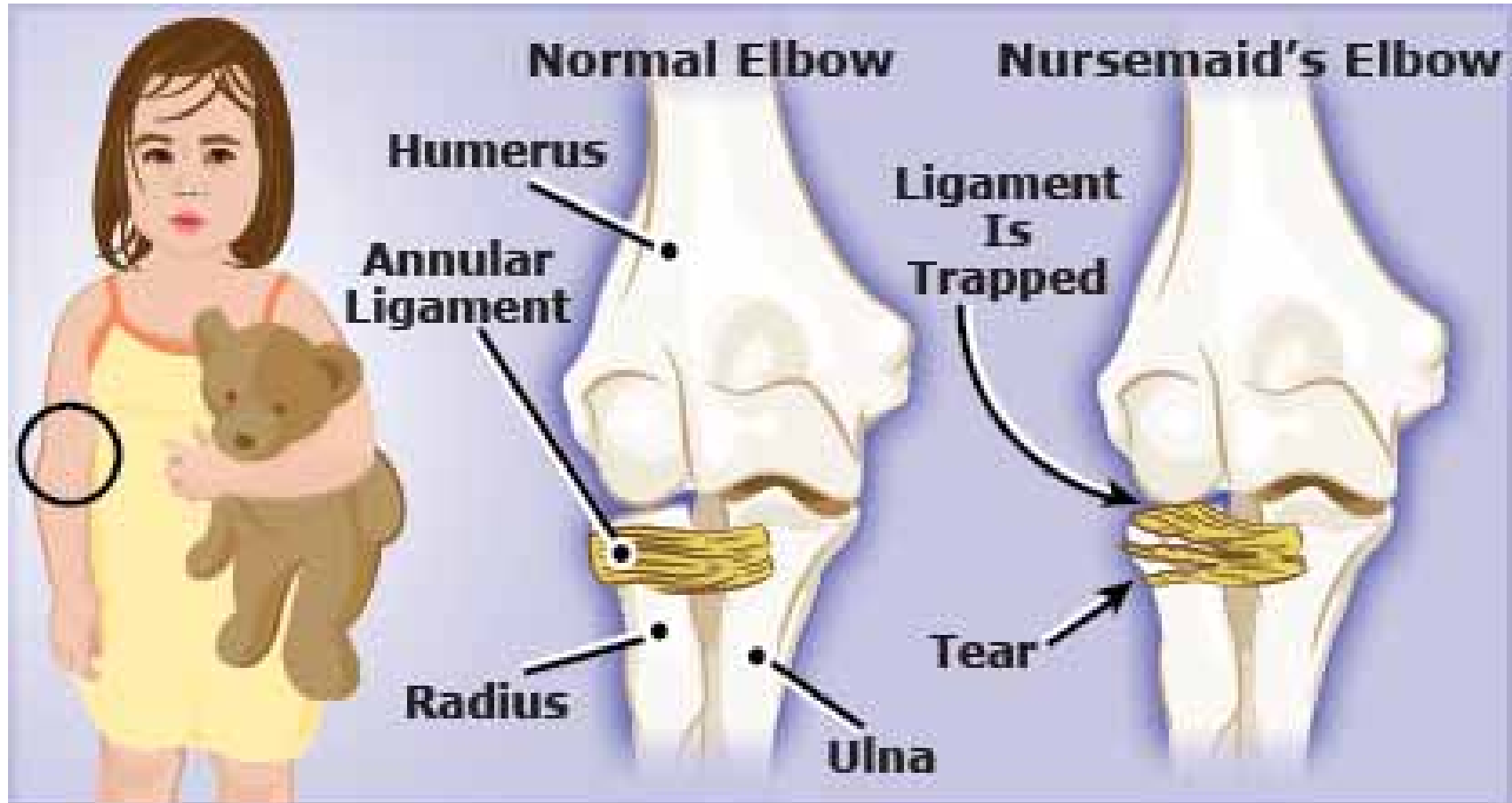
- Physical exam:
 - Neurological exam to assess for ulnar nerve involvement
 - Assess stability of elbow
 - May have dislocated and spontaneously reduced as youths have less inherent stability
 - Valgus with 25 degrees of flexion
 - *looking for pain or laxity*





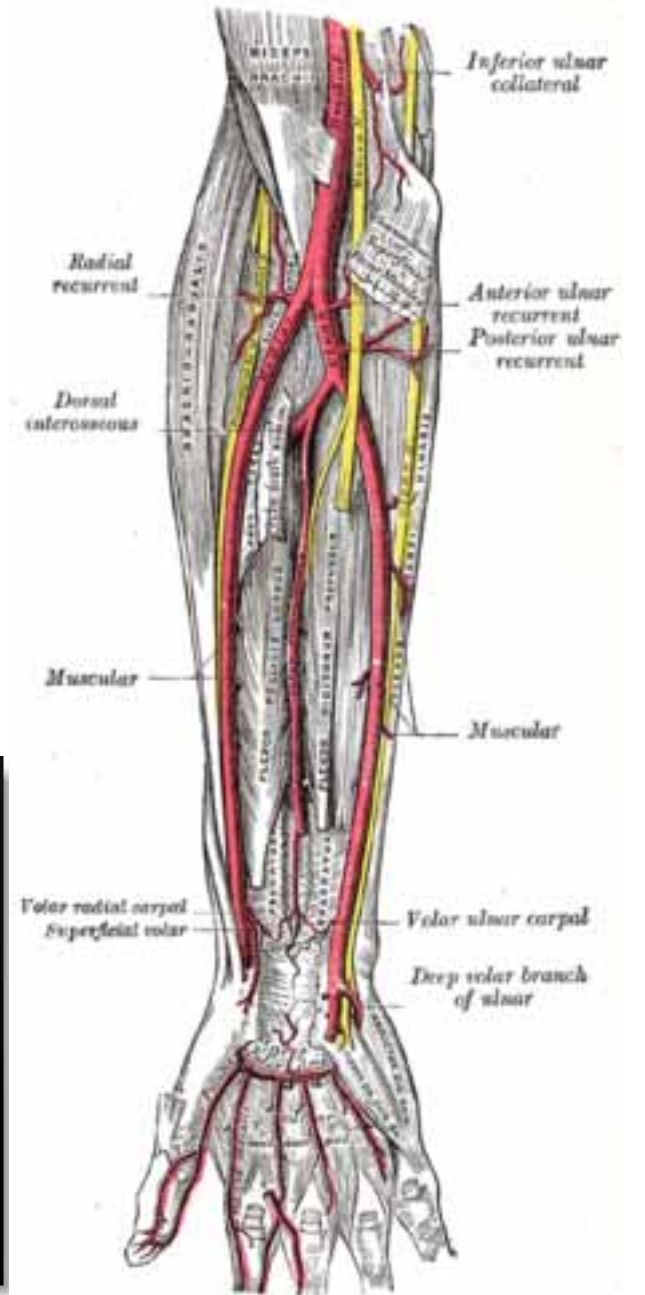


Nursemaids elbow

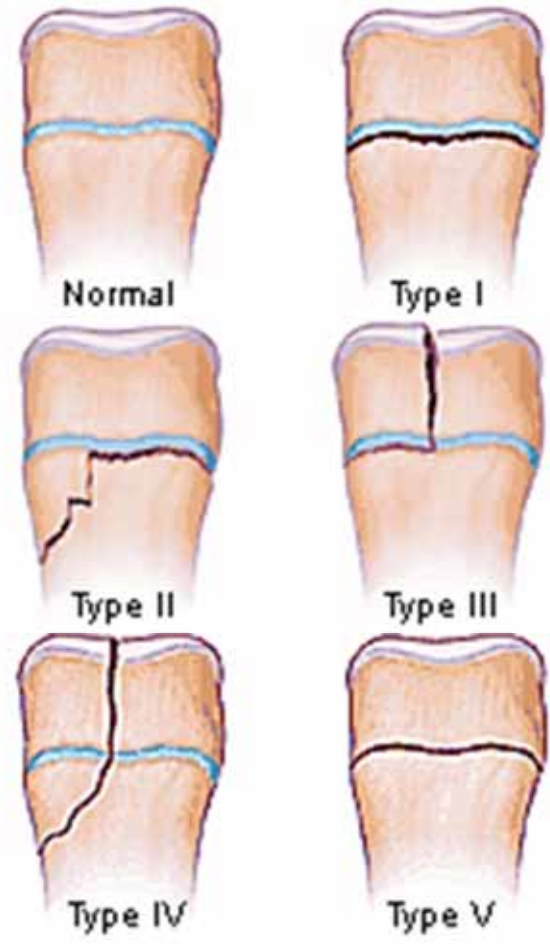


Supracondylar Fractures

- Usually the result of falling onto an outstretched hand (FOOSH) with elbow in extension
- Will usually present with a large elbow effusion
- Can result in injury to the brachial artery, radial nerve, median nerve, or ulnar nerve
- Can also be associated with Volkman's Ischemia (induration of forearm flexors and pain on passive finger extension)



Salter Harris Fracture Classification



© 2003 S. SCOTT BODELL







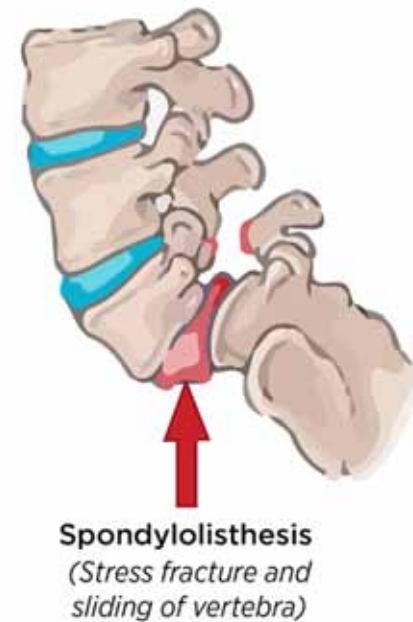
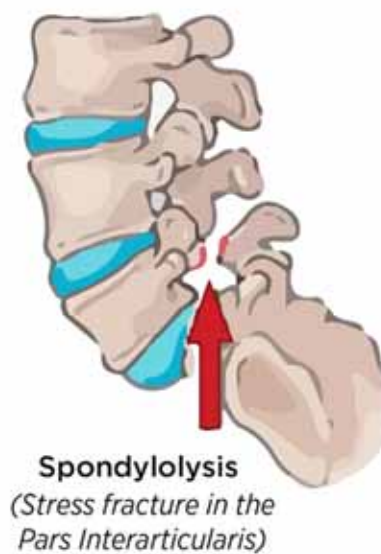
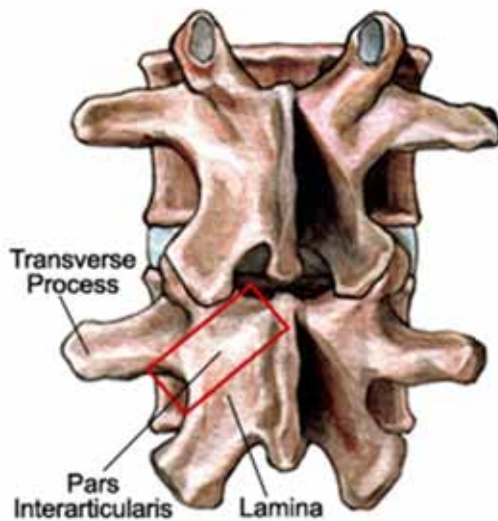
Spondylolysis

- Most frequent identifiable source of back pain in pediatric athletes
- Incidence is 6% by end of childhood
- Chronic back pain if not managed appropriately



Spondylolysis/Spondylolisthesis

Fatigue fracture of the lumbar pars interarticularis.





Spondylolysis

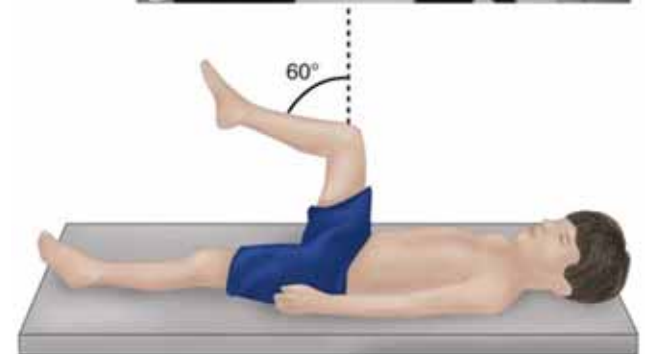
- L5 85-95% of the time
- Bilateral ---> spondylolisthesis
- Extreme spinal motion: dancers, gymnast, skaters, lineman, divers, wrestlers
- Commonly occurs during adolescent growth spurt (increase in lordosis leading to greater compressive forces on posterior spine)

Spondylolysis: History

- Usually insidious but can be acute
- Pain especially worse with extension
- Spondylolisthesis: may present with radicular pain, weakness

Spondylolysis: Exam

- Pain with deep palpation
- Stork Test - pain on weight bearing side
- Manual resistance to back extension while lying prone with forearms propped
- Hamstring tightness



Diagnosis

- Can be made clinically
- If pain for more than 3-4 weeks despite rest, lumbar XR (AP and lateral)
- If XR negative and still high suspicion, MRI



Management

- Relative rest until pain subsides
 - length depends on symptoms and activities
 - average length is 90 days
- PT once pain subsides
- Gradual return to play

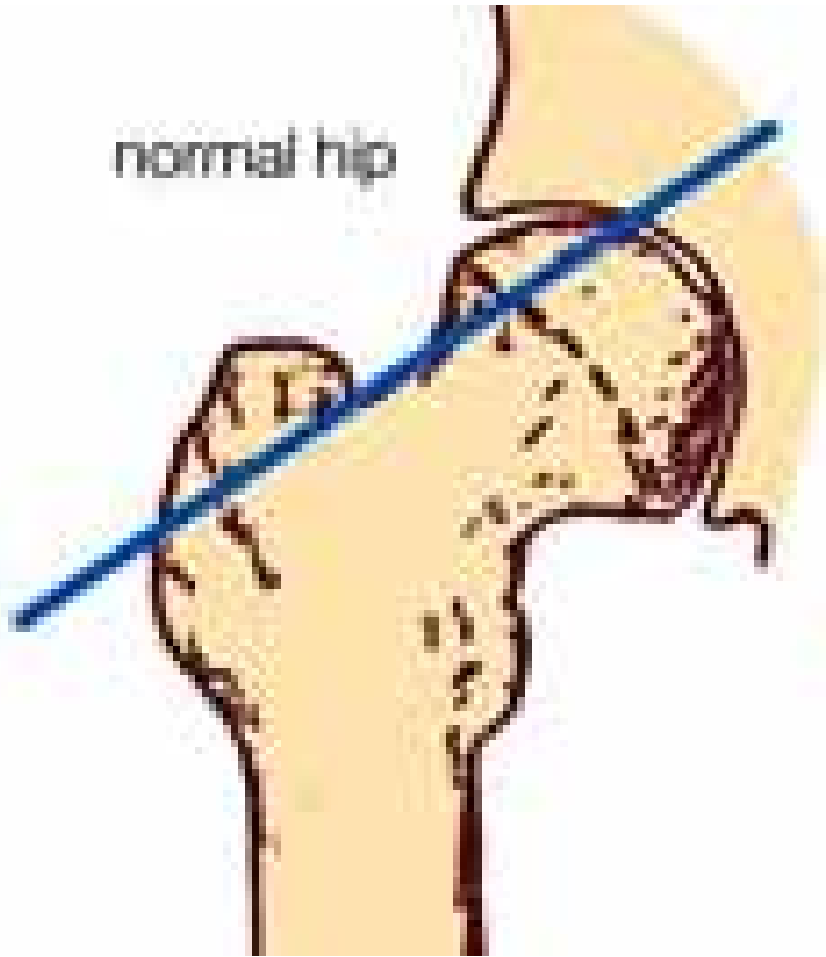
Pediatric Hip

- Slipped capital femoral epiphysis (SCFE)
- Legg-Calve-Perthes disease
- Hip apophysitis
- Hip avulsion fractures

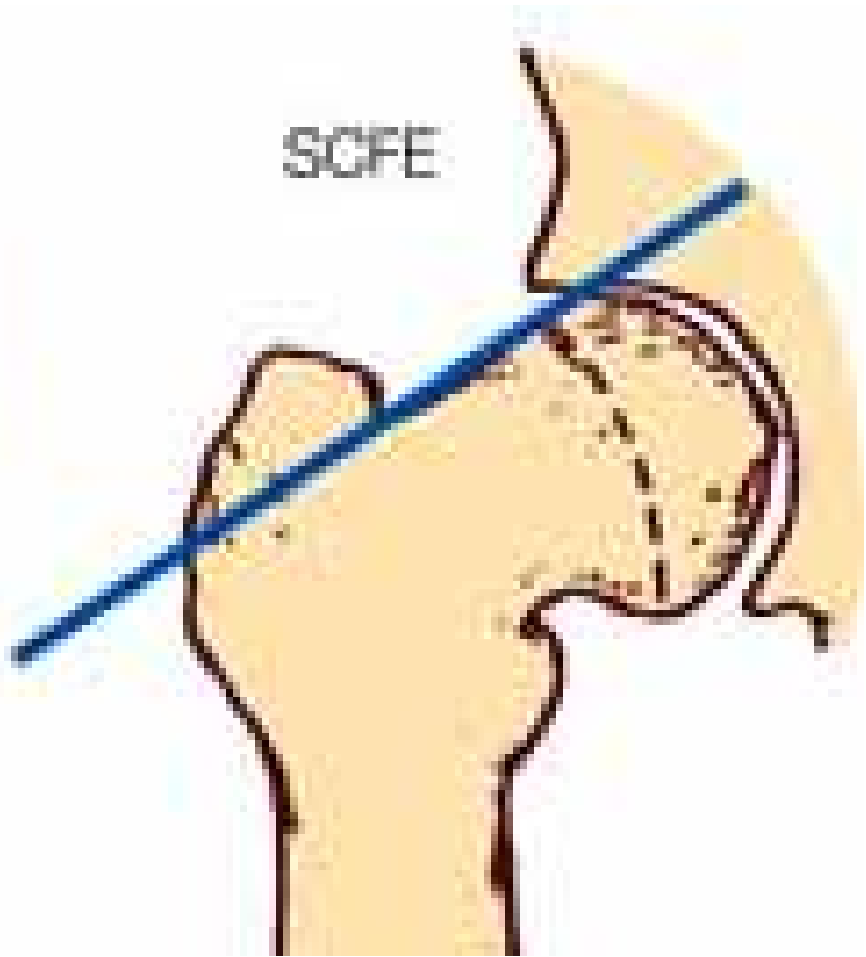
Slipped Capital Femoral Epiphysis

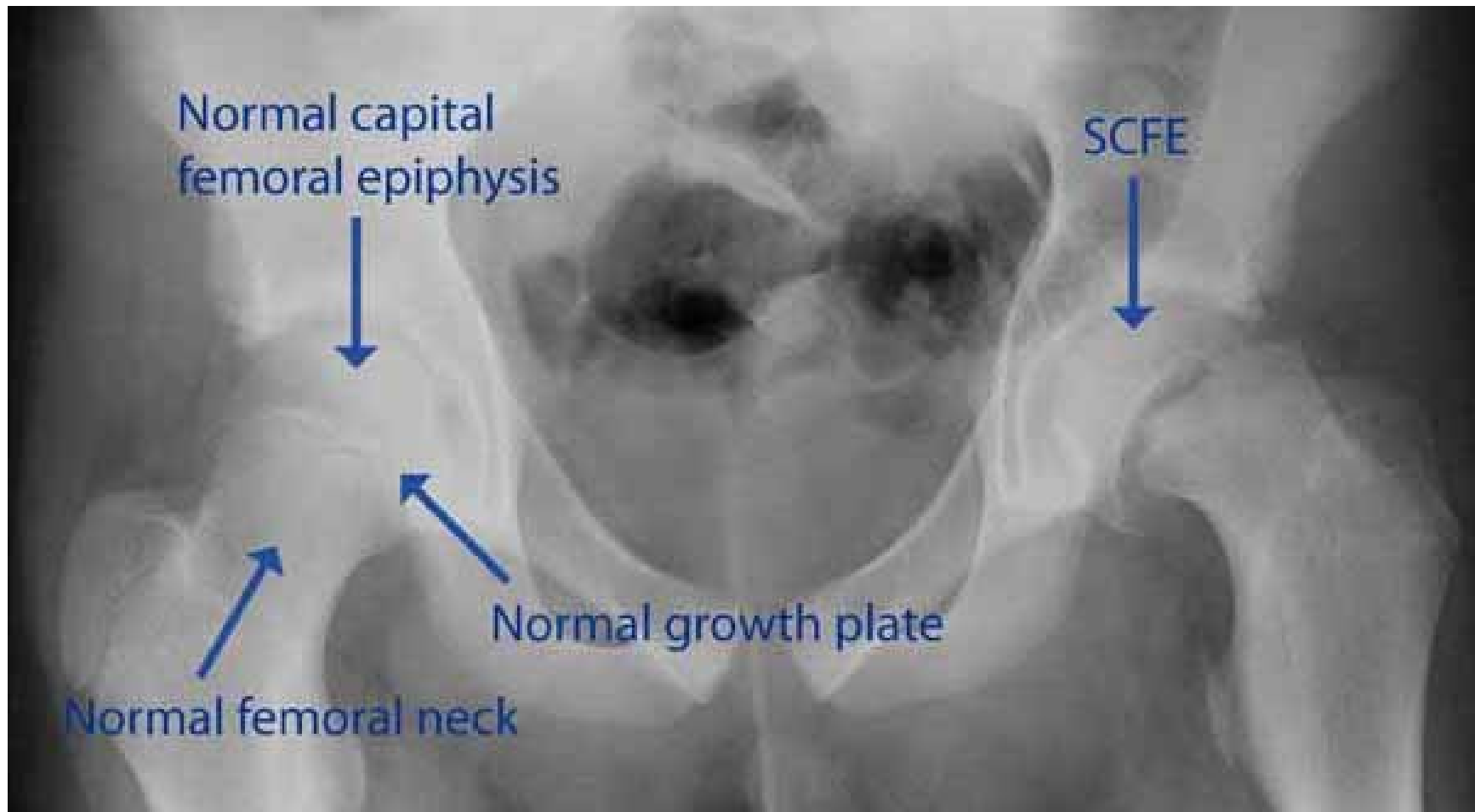
- Salter Harris type I fracture
- Results in slippage of metaphysis and femoral neck
- Most common hip disorder in adolescents
- Obese, 10yo AAM with insidious onset of hip, thigh, or knee pain
- Often bilateral
- PE will show limited hip ROM and reproducible pain
- Will walk with a limp and externally rotated foot
- This is an orthopedic emergency
- Treatment is surgical pinning

normal hip



SCFE







Legg-Calve-Perthes Disease

- Boys age 4-8
- Painful limp
- Limited ROM
- Refer to orthopedic surgery



Pelvic Apophysitis/Avulsion Fractures



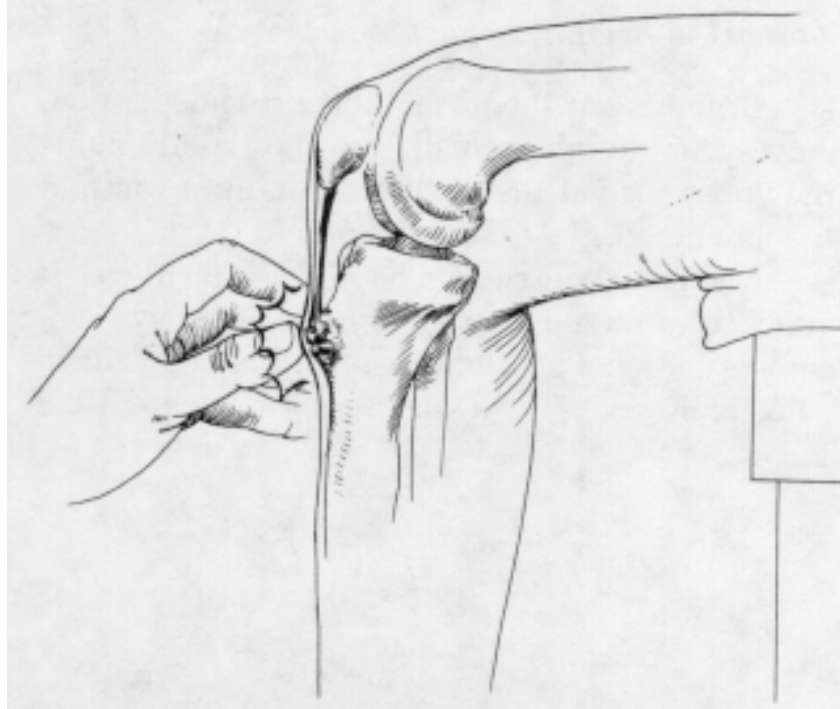
- Apophysitis treated with rest
- Avulsions <3mm heal well with conservative treatment
- Avulsions >5mm may need surgery





Osgood-Schlatter Disease

- Most common traction apophysitis
- Incidence greatest at time of growth spurt (boys 13-14yo, girls 10-11yo)
- *Sxs*: achy pain over tib. tubercle
- *Exam*: tenderness over tib. tubercle
- *X-rays*: none, clinical dx
- *Treatment*: relative rest 2-3 wks, icing, knee sleeve for comfort, use NSAIDS only for pain control



Sinding-Larsen-Johansson Syndrome

- Overuse traction apophysitis at inferior pole of patella
- Most common in 10-14 yo
- *Sxs*: may be traumatically induced, pain worse w/ jumping or running
- *Exam*: tenderness over inf. patella
- *X-rays*: ? elongation of distal patella
- *Treatment*: usually self-limited, same as Osgood-Schlatter

Ankle sprain vs Ankle fracture



Sever Disease (Calcaneal Apophysitis)

- Pain at the insertion of achilles on the calcaneus, or medial/lateral aspect of calcaneal body
- Associated with growth spurts: age 8-12 yr
- Common in gymnastics, soccer
- Sxs: insidious, pain with activity
- Dx: point tenderness over apophysis, calcaneal compression test
- Rx: ice, heel cups, can take months to resolve



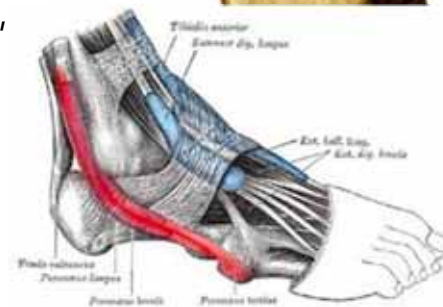
Calcaneal Apophysitis



Iselin's Disease

Apophysitis of insertion site of peroneus brevis tendon on lateral aspect of the base of the fifth metatarsal

- Children (8-13 yo) during rapid periods of growth
- Traction of peroneus brevis tendon at attachment site
- Common in sports involving inversion: soccer, gymnastics, basketball, dancing



Iselin's Disease: Presentation & Exam

- Pain and swelling over area without hx of trauma
- Pain during activity, usually goes away at rest
- Exam:
 - TTP over 5th metatarsal, +/- redness, swelling
 - may limp or walk on inside of foot
 - pain with resisted eversion, extreme plantar flexion



Iselin's Disease

Imaging (not required):

- Xray: Widening of apophysis on the inferior lateral base of the 5th MT

Treatment:

- Rest, ice, NSAIDs
- Stretch calves
- Insert in shoe may help



Freiberg's Disease



© 2001 Elsevier Inc.

Kohlers Disease



In Summary...

- Many pediatric injuries are the result of overuse and can be successfully treated with rest and a gradual return to sport
- Pediatric fractures should be identified early for optimal treatment outcomes
- SCFE is often missed early on and should be high on your index of suspicion for a limping child

Citations

- McTimoney CA, Micheli LJ. Current evaluation and management of spondylolysis and spondylolisthesis. *Curr Sports Med Rep*. 2003;2(1):41.
- Kurd MF, Patel D, Norton R, Picetti G, Friel B, Vaccaro AR. Nonoperative treatment of symptomatic spondylolysis. *J Spinal Disord Tech*. 2007 Dec;20(8):560-4.
- Klein G, Mehlman CT, McCarty M Nonoperative treatment of spondylolysis and grade I spondylolisthesis in children and young adults: a meta-analysis of observational studies. *J Pediatr Orthop*. 2009 Mar;29(2):146-56.
- Wilson, J. Rodenberg, R. Apophysitis of lower extremities. *Contemporary pediatrics* June 01 2011
- Schiller, J. DeFroda, S. Blood, Travis. Lower extremity avulsion fractures in the pediatric and adolescent athlete. *Journal of the American Academy of Orthopaedic Surgeons*. 25(4):251–259, APR 2017
- Jones, C. Wolf, M. Herman, M. Acute and Chronic Growth Plate Injuries,, *Pediatrics in Review* Mar 2017, 38 (3) 129-138; **DOI:** 10.1542/pir.2015-0160