Pediatric Orthopedic Update for Primary Care Providers

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(thanks Ryan Farmer, MD!)

Ochsner Hospital For Children

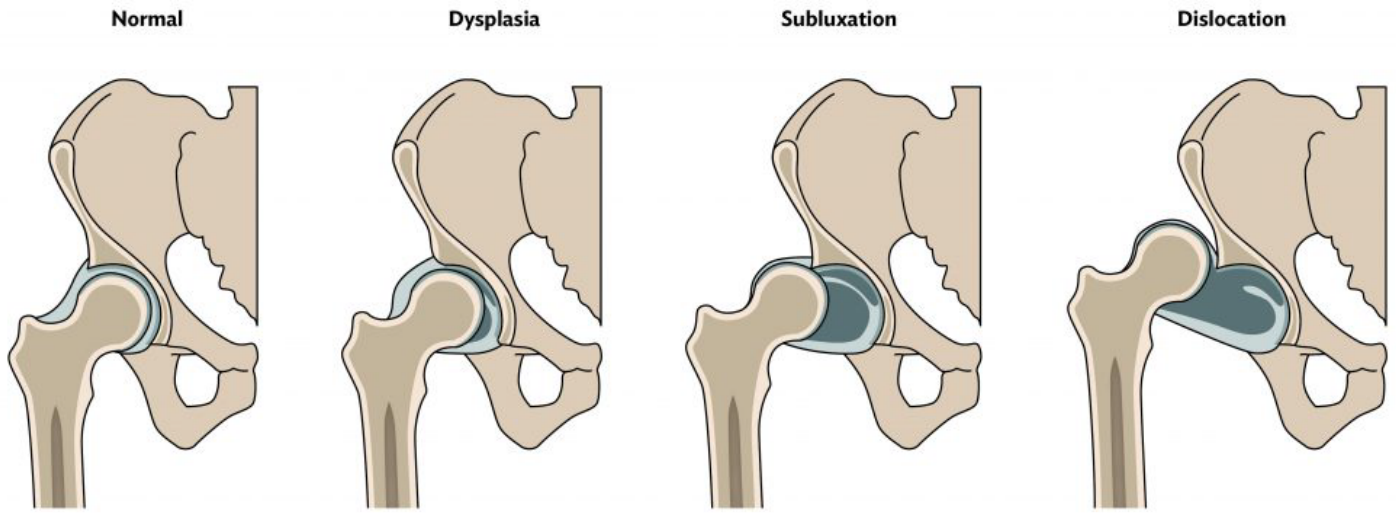
TOPICS:

- Hip Dysplasia
- Lower Limb Angular Growth & Development
- In-Toeing
- Toe-walking
- Flat Feet
- Scoliosis
- Fractures

Developmental Dysplasia of the Hip (DDH)

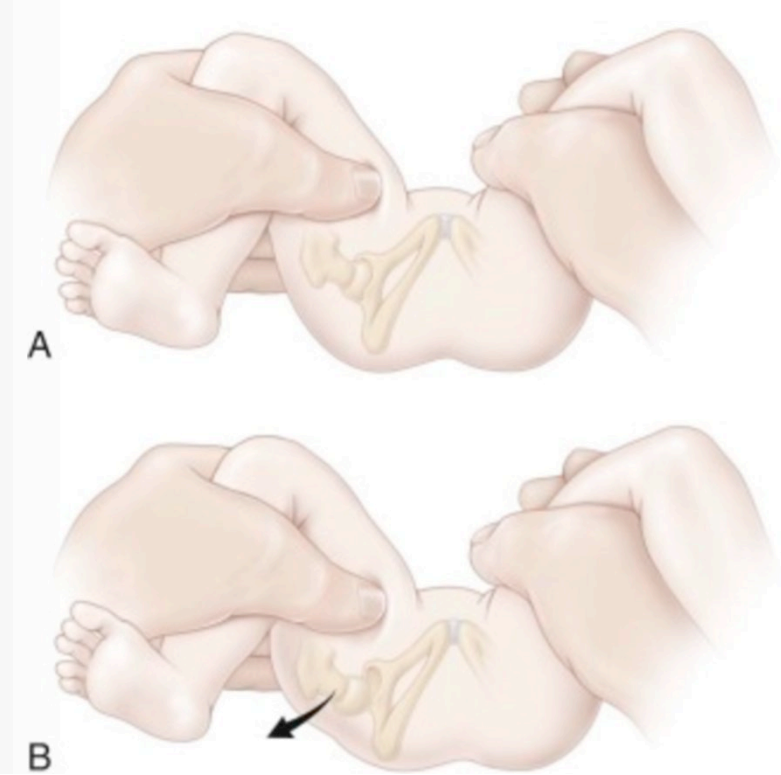
- Abnormal acetabular development
- The most common orthopedic disorder in newborns
  - ~1/100 births

- Risk factors
  - Breech position
  - Family history of dysplasia
  - First born child
  - Female sex

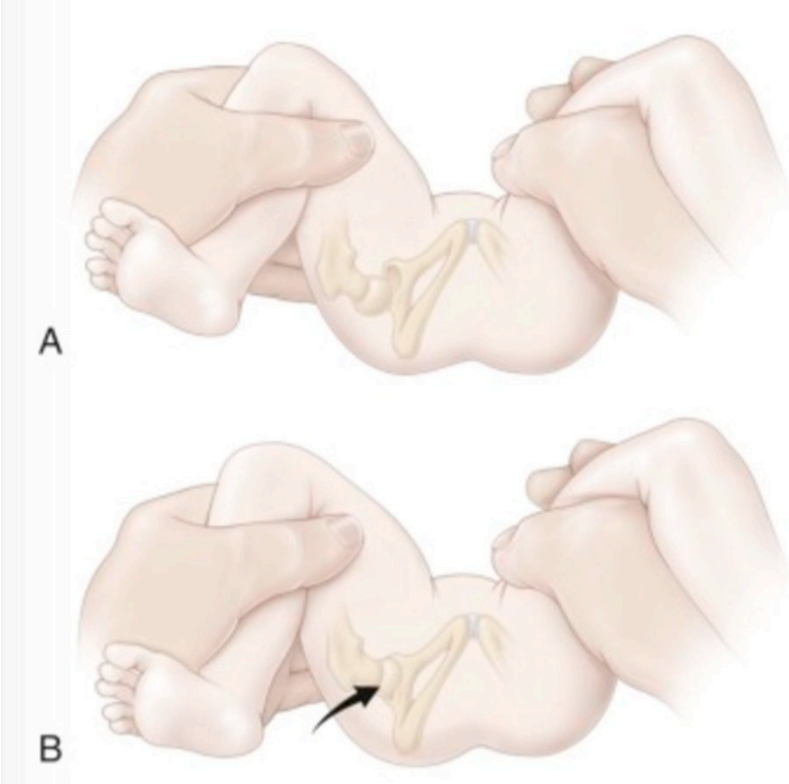


Developmental Dysplasia of the Hip (DDH): Exam

Dislocatable (Barlow)

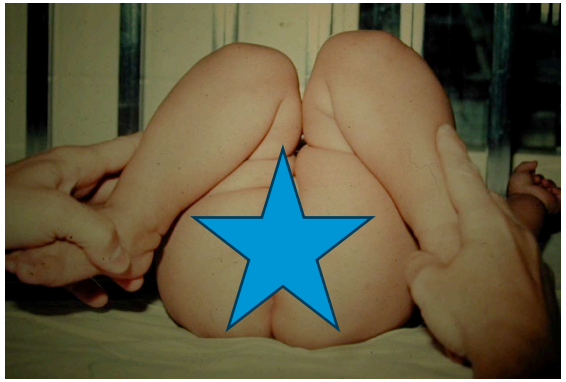


Reducible (Ortolani)



Developmental Dysplasia of the Hip (DDH): Exam

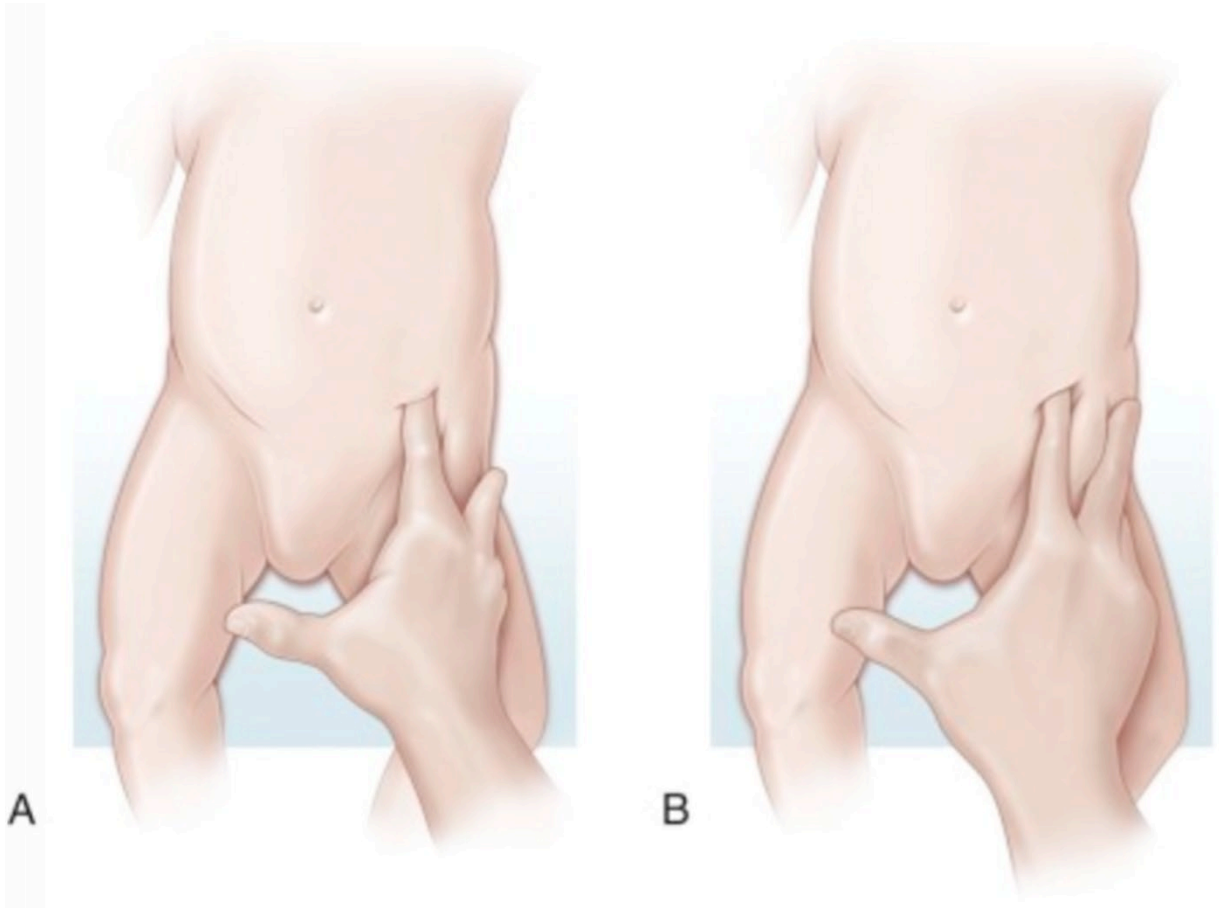
Galeazzi sign



Asymmetric thigh folds

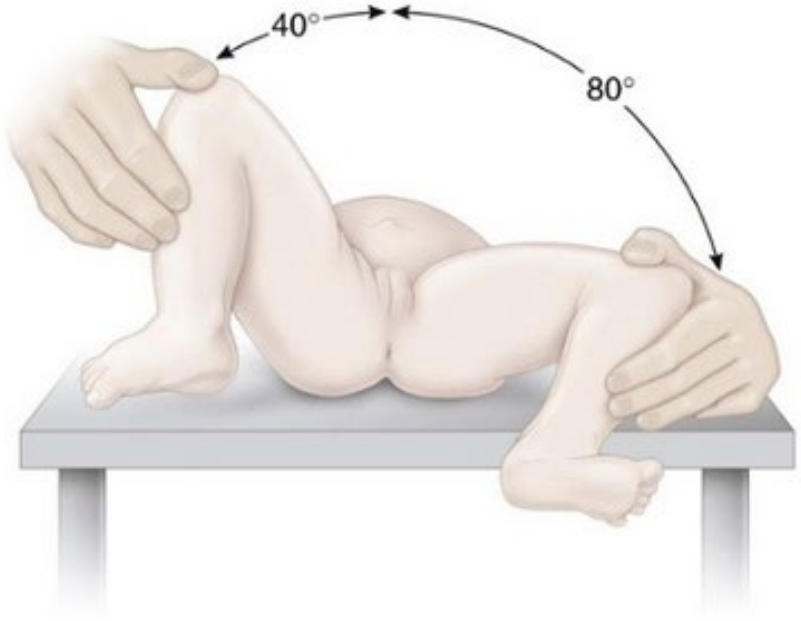
Developmental Dysplasia of the Hip (DDH): Exam

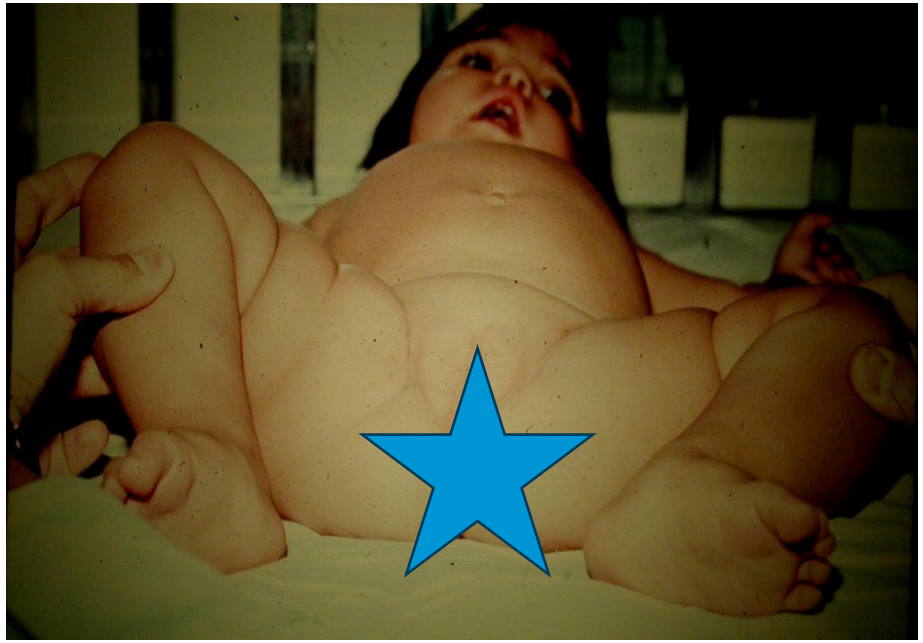
Klisic sign



Developmental Dysplasia of the Hip (DDH): Exam

Asymmetric or limited abduction



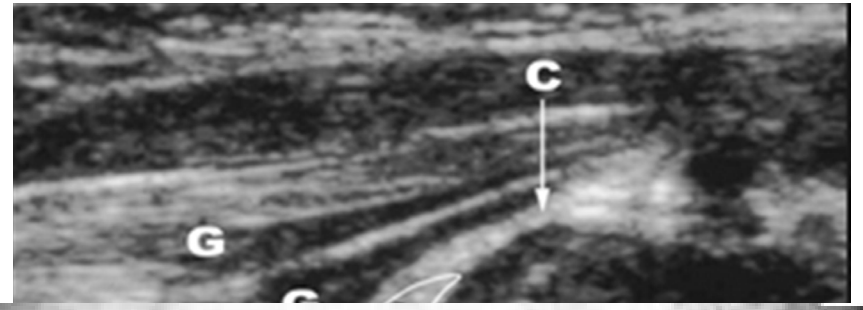


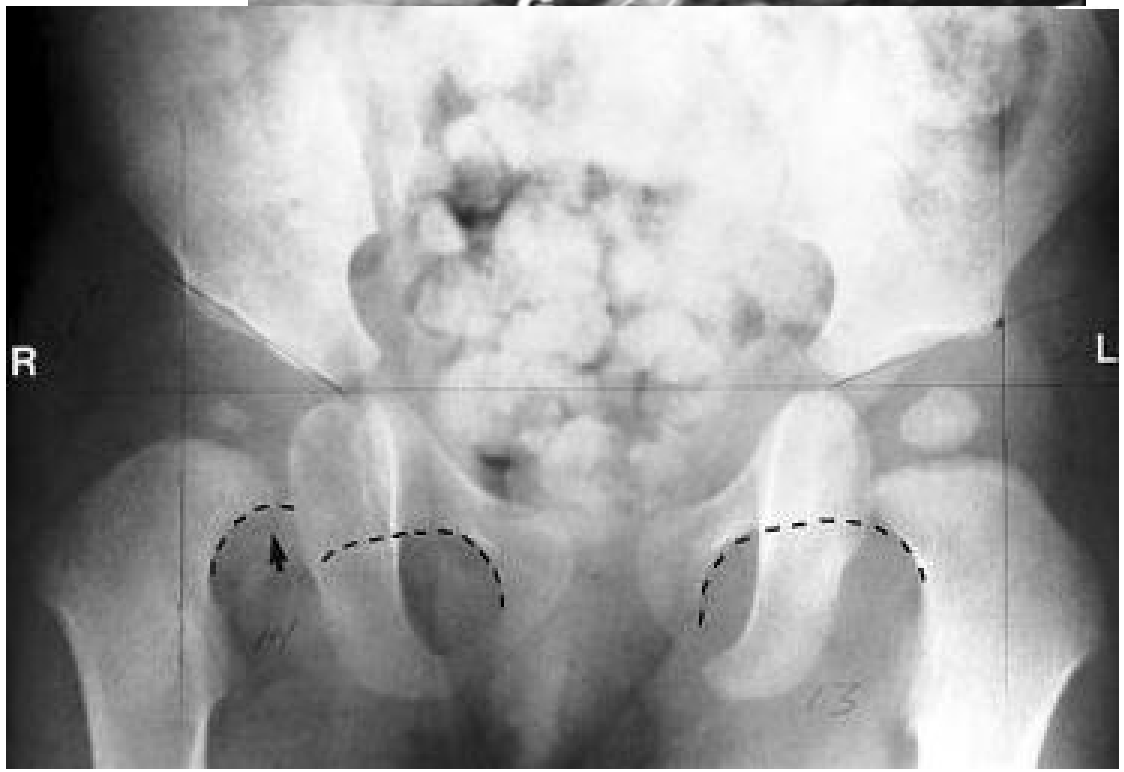
Developmental Dysplasia of the Hip (DDH): Exam

Hip clicks may be associated with increased risk of DDH (Morris, JPO 2023)

Developmental Dysplasia of the Hip (DDH): Imaging

- <6m: ultrasound
  - Alpha angle: >60deg
  - 50% of femoral head should be covered by acetabulum
- >6m: xray
  - Acetabular angles of <25deg after 6 months
  - Shenton's line intact
  - Symmetric ossific nuclei





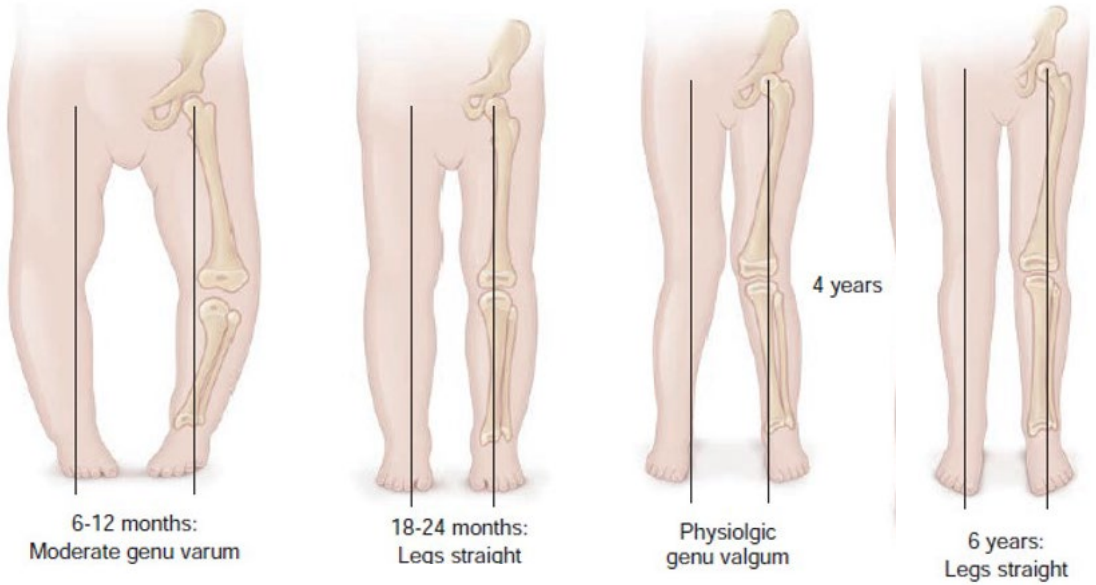
Developmental Dysplasia of the Hip (DDH): What should I do if I'm concerned for DDH?

- Newborn at risk (breech, family history, etc) but normal exam:
  - Ultrasound at 6 weeks old
  - If abnormal --> refer to ortho
  - If normal → +/- XR at 6m
- Abnormal exam:
  - Under 4-6m old: ultrasound and ortho referral
  - 4-6m old or older: ortho referral
  - Don't need to wait for ultrasound to see ortho

Lower Limb Angular Development

- Typical development:
  - Genu varum (1 year) →
  - Straight →
  - Genu valgum (4 years) →
  - Straight (7-8 years)

- No treatment indicated



Lower Limb Angular Development: Blount's Disease

- Blount's disease
  - Proximal medial tibial growth plate dysfunction
  - 50% bilateral; unilateral almost always pathologic
- Often requires bracing or surgical intervention
- Risk factors:
  - Obesity; >95% nl BMI
  - Hispanic and African American populations

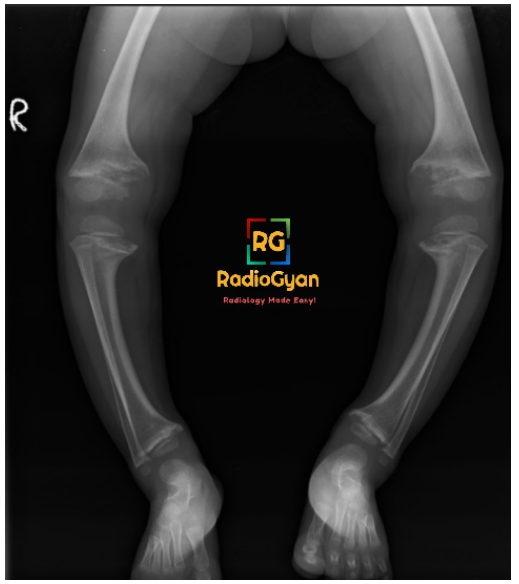
Lower Limb Angular Development: Blount's Disease

- Cover up test can help differentiate between physiologic and pathologic tibia vara
  - Neutral or genu valgum is a negative test

Lower Limb Angular Development: Other Pathologic Variants

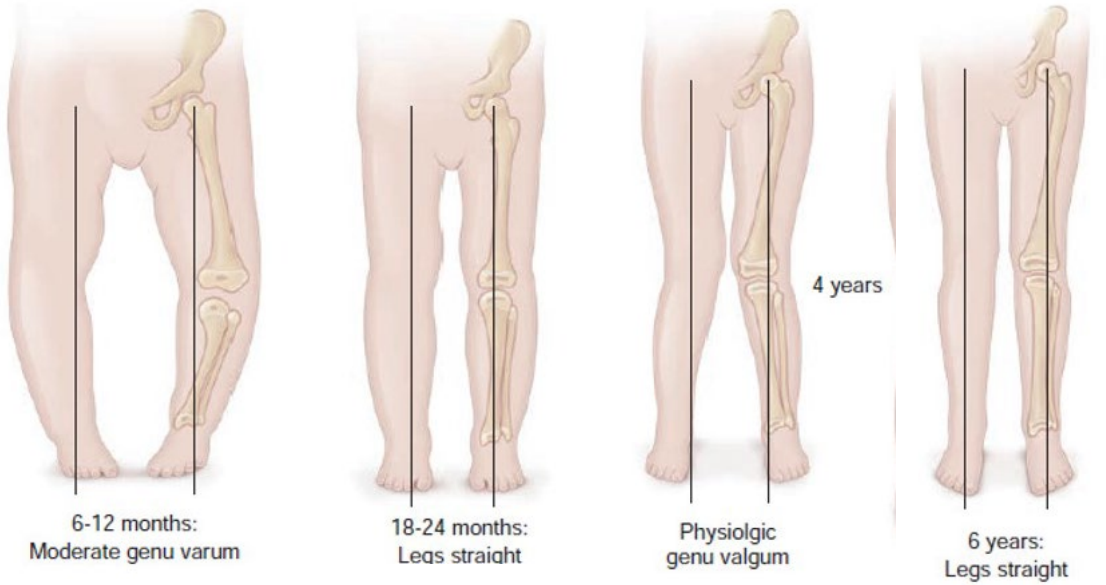
- Ricket's
- Skeletal dysplasias
- Growth arrest/injury

- What to look for:
  - Severe
  - Persistent past typical age
  - Asymmetric
  - Other abnormal limbs
  - <1% height



Lower Limb Angular Development

- When to refer:
  - Severe
  - Asymmetric
  - Doesn’t line up with typical timeline
  - Persistent past 7 years old



In-Toeing

- Metatarsus Adductus
- Internal Tibial Torsion
- Femoral Anteversion

In-Toeing

- Metatarsus Adductus
- Internal Tibial Torsion
- Femoral Anteversion

"W" sitters – due to femoral ant
NOT a cause of femoral anteve

In-Toeing

- Through normal growth and development lower limb will externally rotate up to 25 degrees by 8-9 years of age
- Mild persistent intoeing in adult hood has not been shown to cause dysfunction or degenerative joint disorders
- Symptomatic intoeing at 8-9 years of age treated surgically with derotation osteotomy
  - No intervention needed (or possible) prior to 8-9 years old for tibial torsion or femoral anteversion

In-Toeing

- When to refer:
  - 8-9 years old and causing functional problems

Toe-Walking

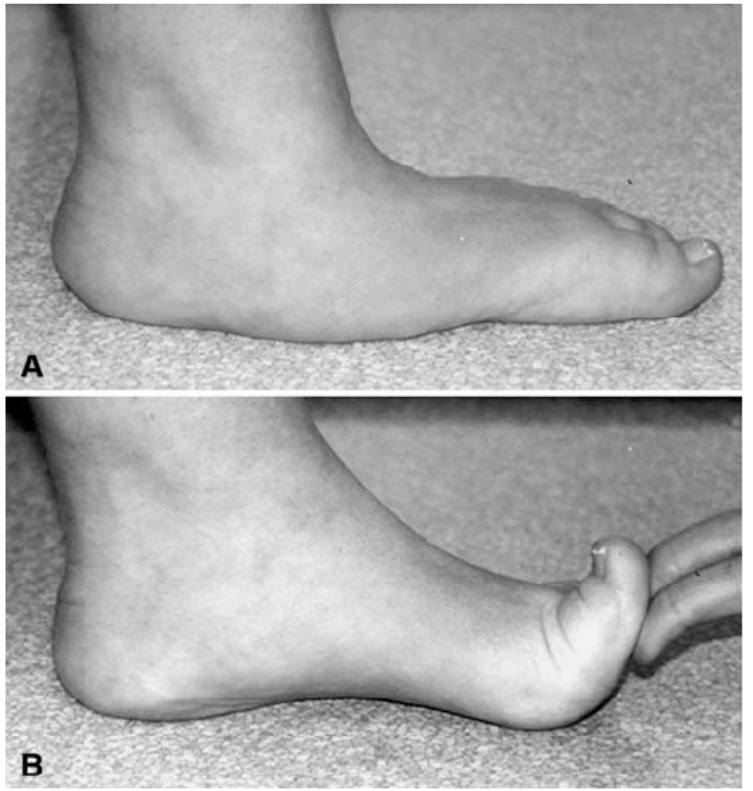
- Idiopathic toe-walking – toe-walking in the neurotypical population
  - Also common in ASD
  - Resolves in >80% of kids without treatment
  - Goal: prevent contracture (PT, stretching, daytime AFOs to “break habit”, night-time braces to help stretch
  - Treatment of contracture:
    - Serial casting
    - Surgery only if nonoperative measures fail
- Red Flag Signs:
  - Kids who walk flat footed and then start walking on toes
  - Asymmetry
  - Abnormal neurologic exam

Toe-Walking

- When to refer:
  - Red flag signs (ortho or neuro)
  - Contracture (can’t get to neutral)

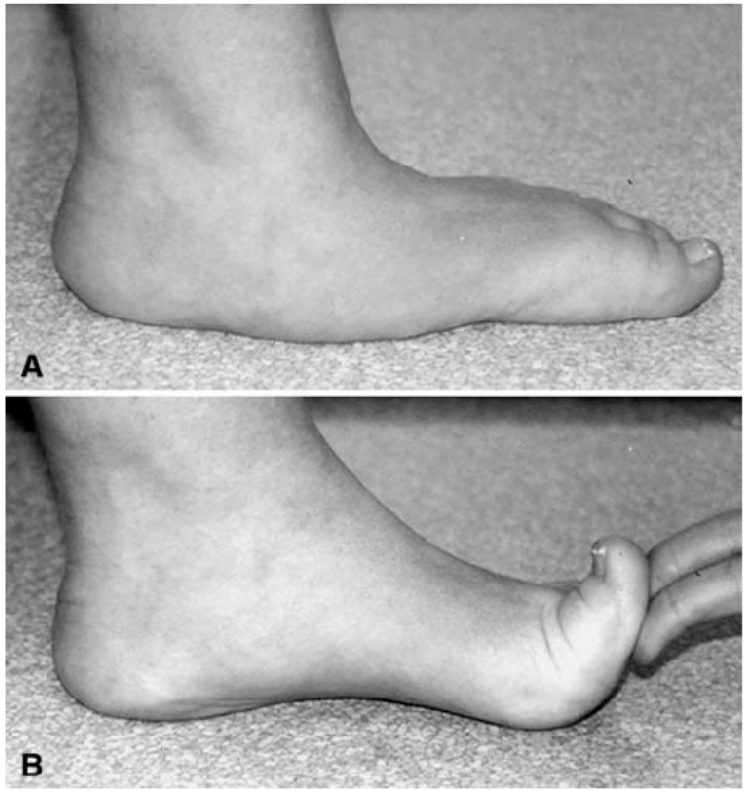
Flat Feet

- Very common in children
  - Arch doesn't develop until 4 years old
- Will often improve with growth
- No known long term dysfunction
- Flexible: arch with toe extension/standing on toes
  - Often needs no treatment
- Rigid: no arch with toe extension/standing on toes
  - Sometimes needs treatment
- Treatment:
  - Only if symptomatic (pain)
  - OTC inserts
  - PT (often have tight calves)
  - Rx inserts
  - Surgery only if 1-2 years of failed nonoperative measures



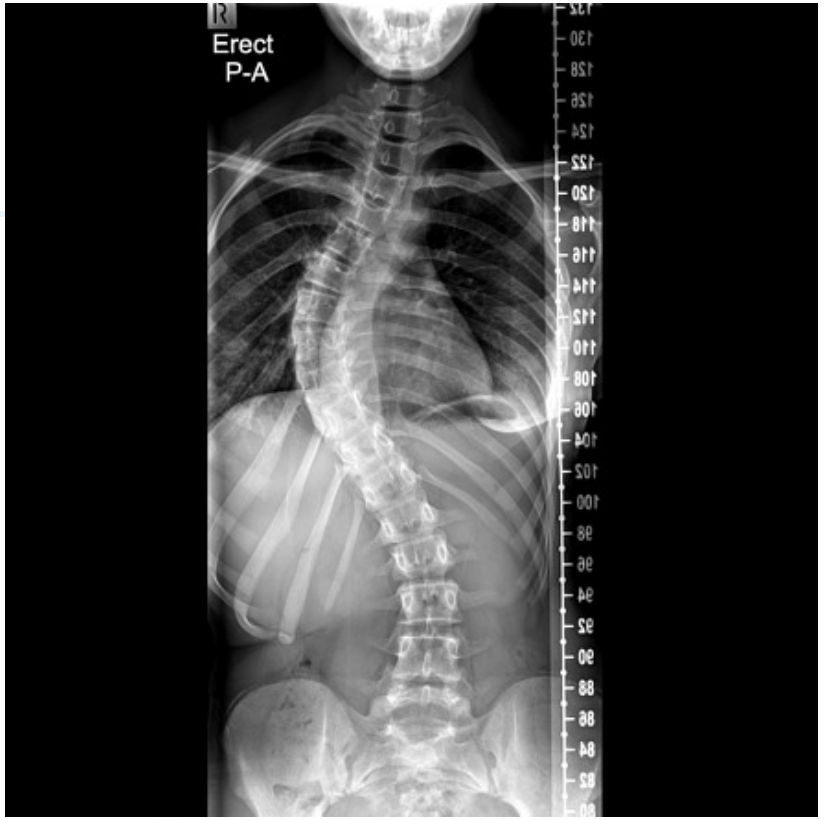
Flat Feet

- When to refer:
  - Painful and failed nonoperative treatment



Scoliosis

- 3-dimensional curvature of the spine in the AP plane of >10deg
  - <10deg diagnosed as spine asymmetry
- 10% of population with scoliosis
  - 3% of that with surgical magnitude curve
- Adam's forward bend test with >7degrees rib prominence



Scoliosis

- Does not cause back pain
  - Most back pain is musculoskeletal in nature
  - 75% of US population will have 2 weeks of back pain at any one time in a year
  - Poor ergonomics – laptop, phones, tablet
  - Lack of flexibility and poor core strength

Scoliosis

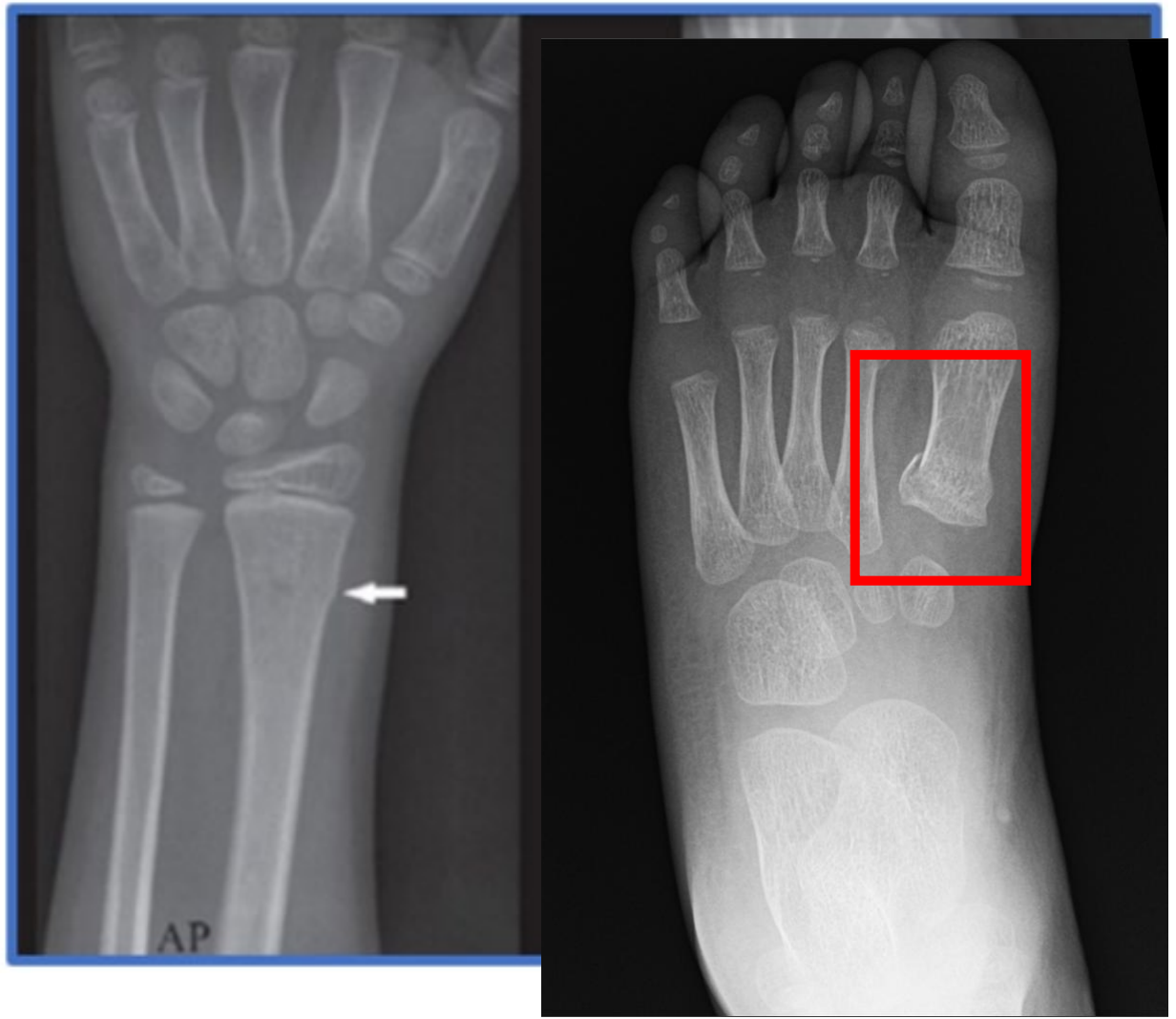
- Treatment is based on age of patient and size of the curve
  - <25 degrees treated with serial surveillance in skeletally immature population
  - 25-40 degrees treated with brace until skeletal maturity
  - >45 degrees surgical intervention is generally recommended
- Schroth protocol physical therapy
  - PT protocol aimed at improving curve magnitude
  - Data is equivocal currently but low down-side to pursuing treatment (esp for small curves)

Scoliosis

- When to refer:
  - Curve >20 degrees
    - If unsure of curvature, can submit e-consult

Fracture Update

- Many fractures are amenable to PCP treatment
  - Wrist buckle fractures
    - Velcro wrist brace
    - 3 weeks
  - Toe fractures
    - Nondisplaced
    - Extra-articular
    - Buddy-taping
    - Hard shoe

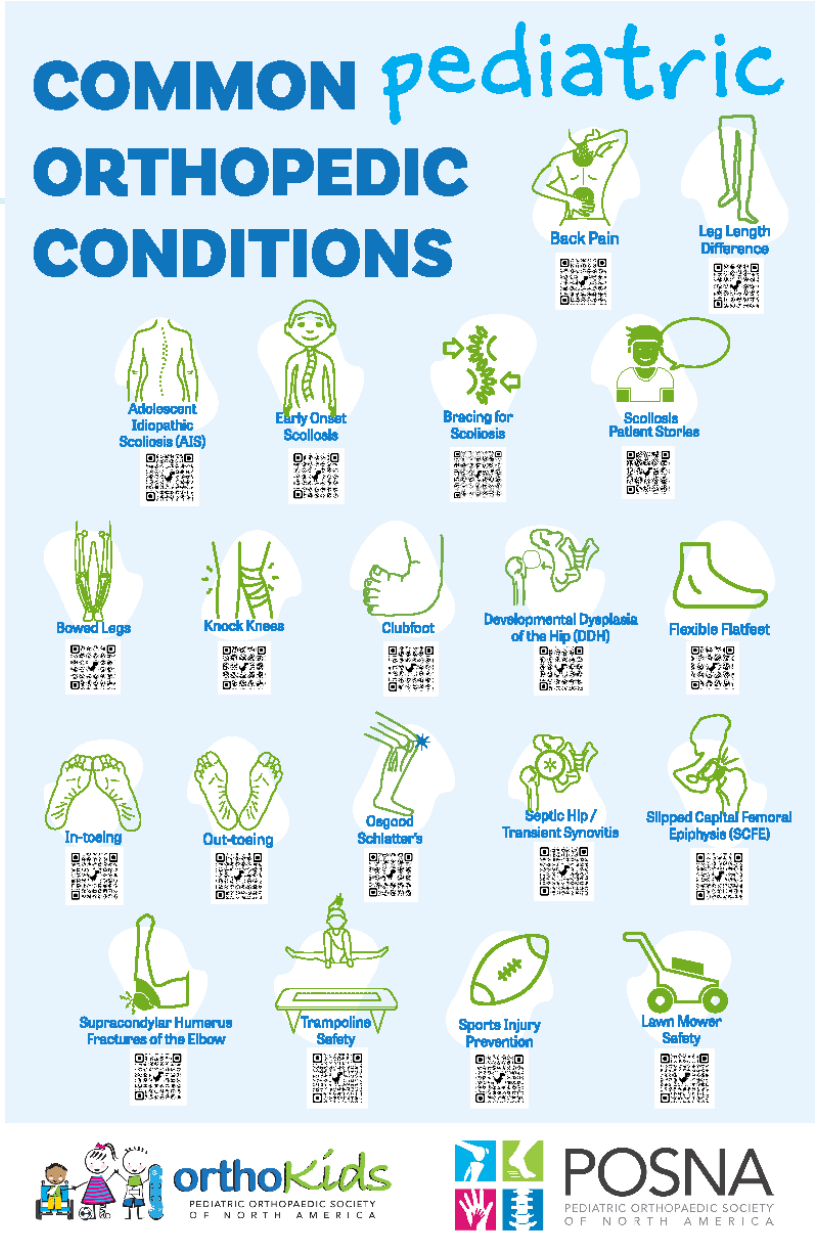


Fracture Update

- Many fractures are amenable to PCP treatment
  - Questions about patient care can be addressed through the E-consult system
  - Answered within 72h

Resources

- www.orthokids.org
  - Clinic chart available
- www.orthoinfo.org
- www.orthobullets.com



THANK YOU

Questions?

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