

Evaluating the Pediatric Hip

Identifying Problems and When to Refer

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Speaker Disclosures

- I have nothing to disclose



Learning Objectives

- 1 Perform a hip exam for infants, children, and adolescents. Recognize red flags.
- 2 Determine when and what imaging to order.
- 3 Build comfort with common pediatric hip disorders
- 4 When to refer to orthopaedic surgery.



Part 1

The Pediatric Hip Exam

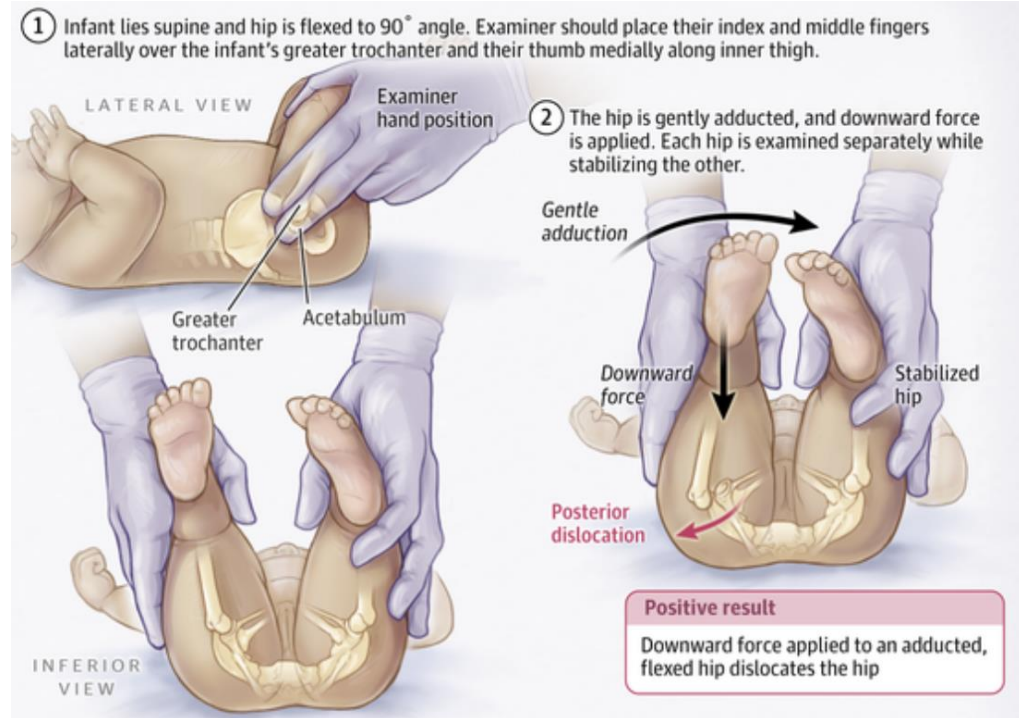
General Exam Principles

- Comparison is key—look for asymmetry
- Observe first
- Keep everyone calm!
- Examine the entire limb every time



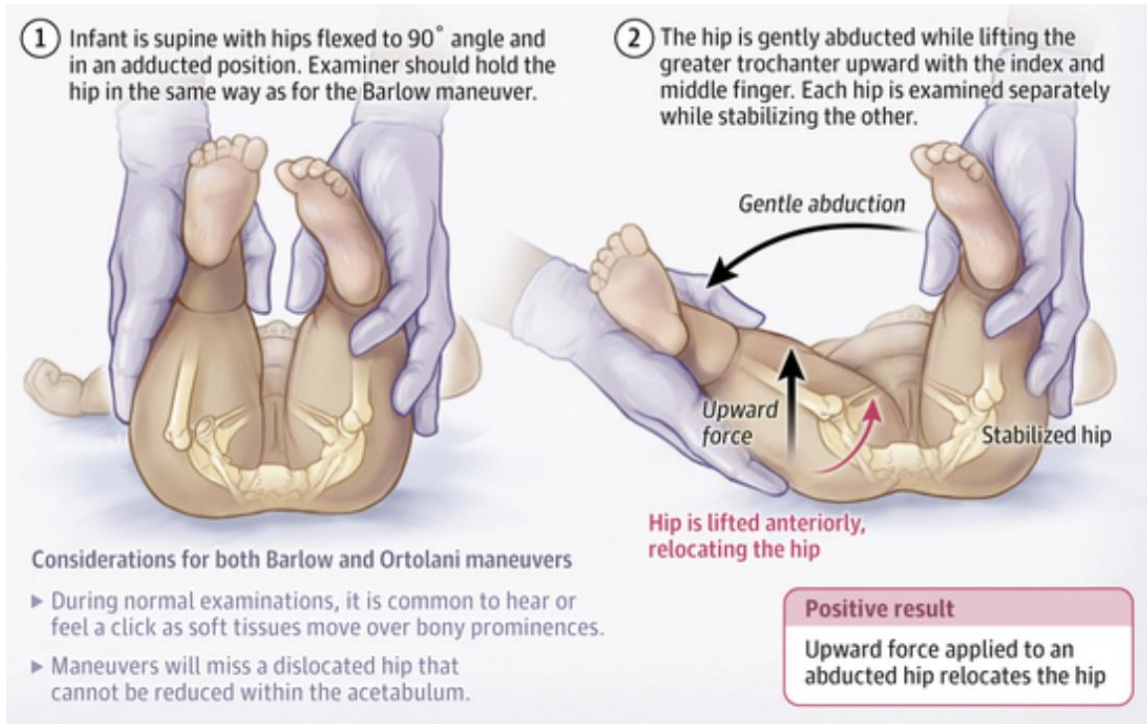
Infant Exam

- Make sure they're relaxed!
- Barlow



Infant Exam

- Make sure they're relaxed!
- Barlow
- Ortolani



Infant Exam

- Make sure they're
- Ortolani
- Barlow
- Galeazzi



Infant Exam

- Make sure they're
- Ortolani
- Barlow
- Galeazzi
- Asymmetric and/or limited abduction



Infant Exam

- Bonus: look at the feet, neck, and back



Infant Exam

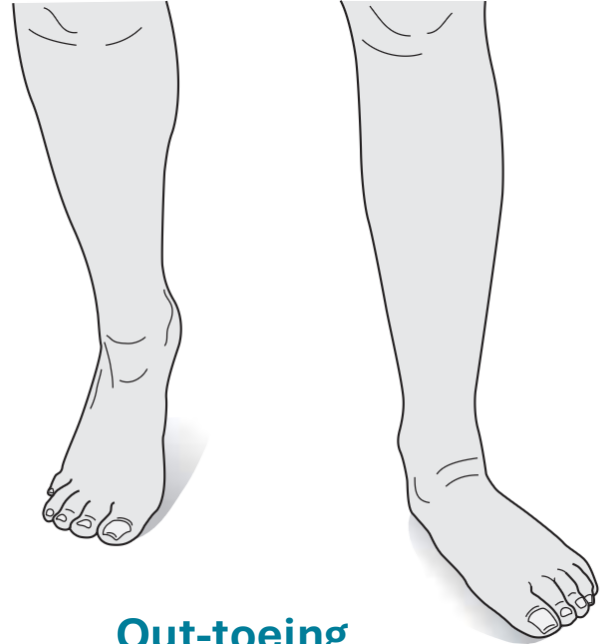
- Ask about risk factors:
 - First born female
 - Breech presentation in third trimester
 - Family history



Child and Adolescent Exam

- Observation first—how do they move
- Gait—antalgic, Trendelenburg, toe walking, etc.
- Range of motion
- Limb length
- Pain





Out-toeing

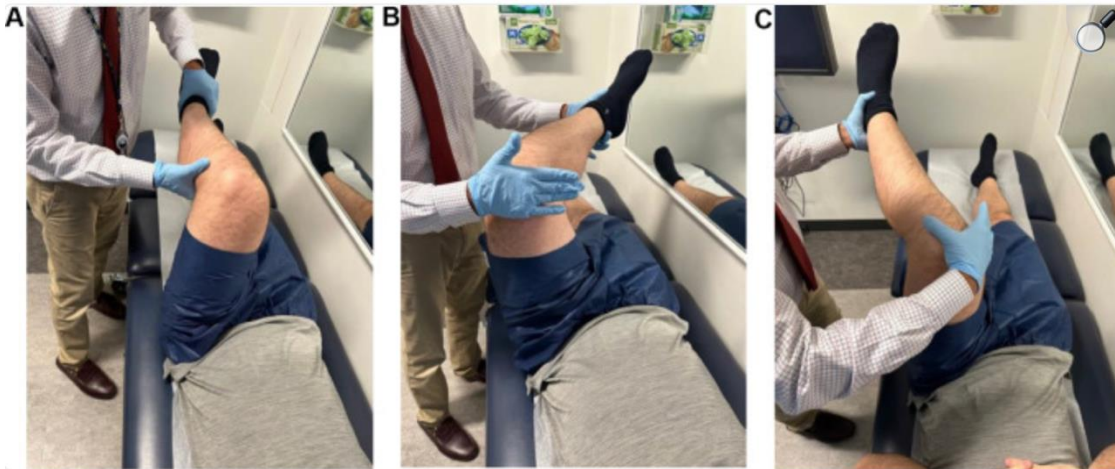


Toe walking

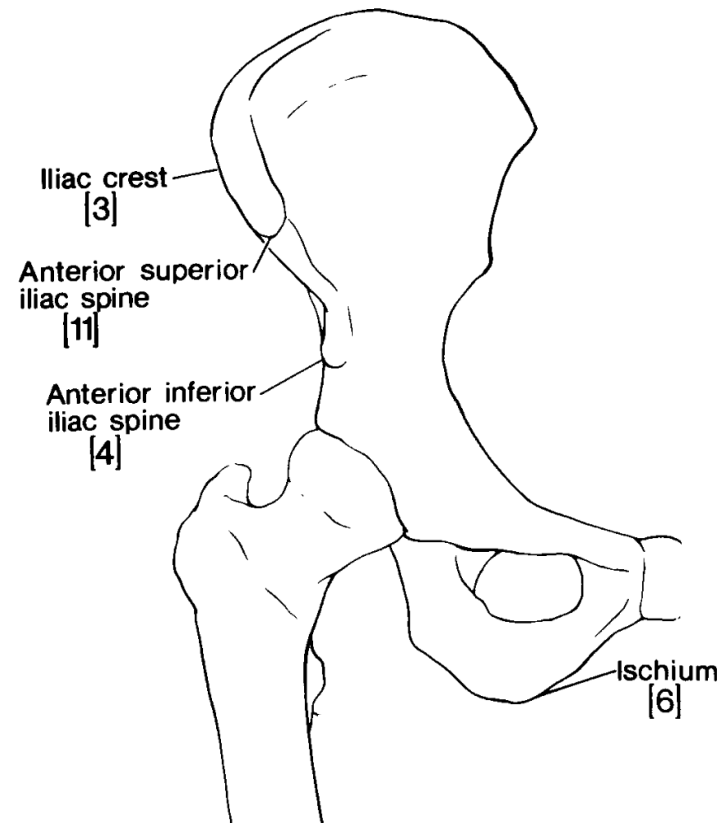


Trendelenburg





Hip flexion, internal and external rotation



Bony landmarks for palpation—muscle insertions, sites of avulsion fractures



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Bach et al.; Metzmaker et al.

Red Flags—Any Age

- Fever with a painful limb/joint
- Inability to bear weight
- Rapid-onset or progressive limp
- Night pain
- Systemic symptoms



Classic septic arthritis posturing



Part 2

Imaging: When and What

General Imaging Principles

- Two views
- Comparison image when possible
- Imaging can be operator dependent
- When in doubt—ask







General Imaging Principles

- Two views
- Comparison image when possible
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General Imaging Principles

- Two views
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Part 3

Hip Disorders to Know: DDH

Developmental Dysplasia of the Hip (DDH)

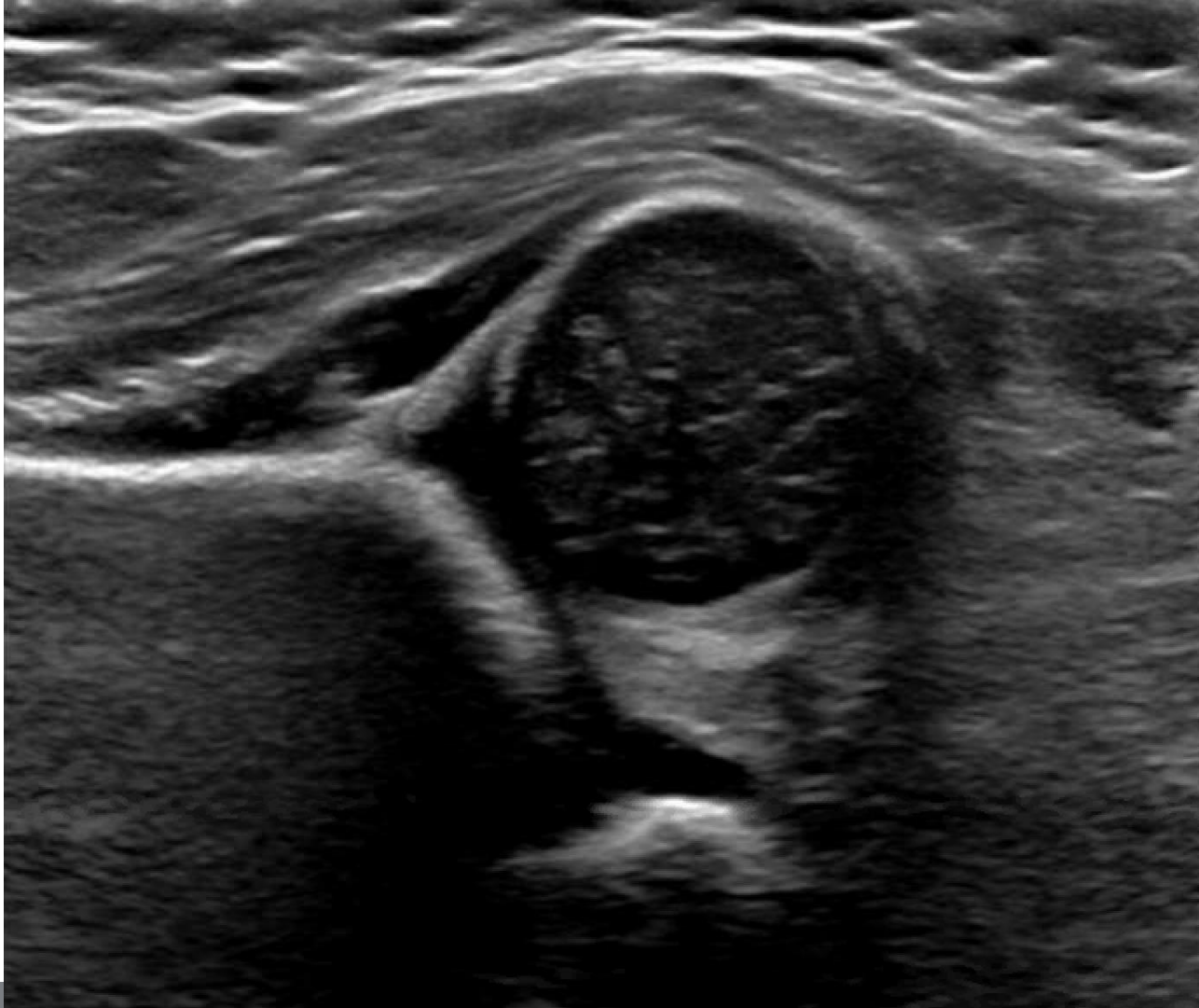
- What: Spectrum from mild acetabular dysplasia to frank dislocation



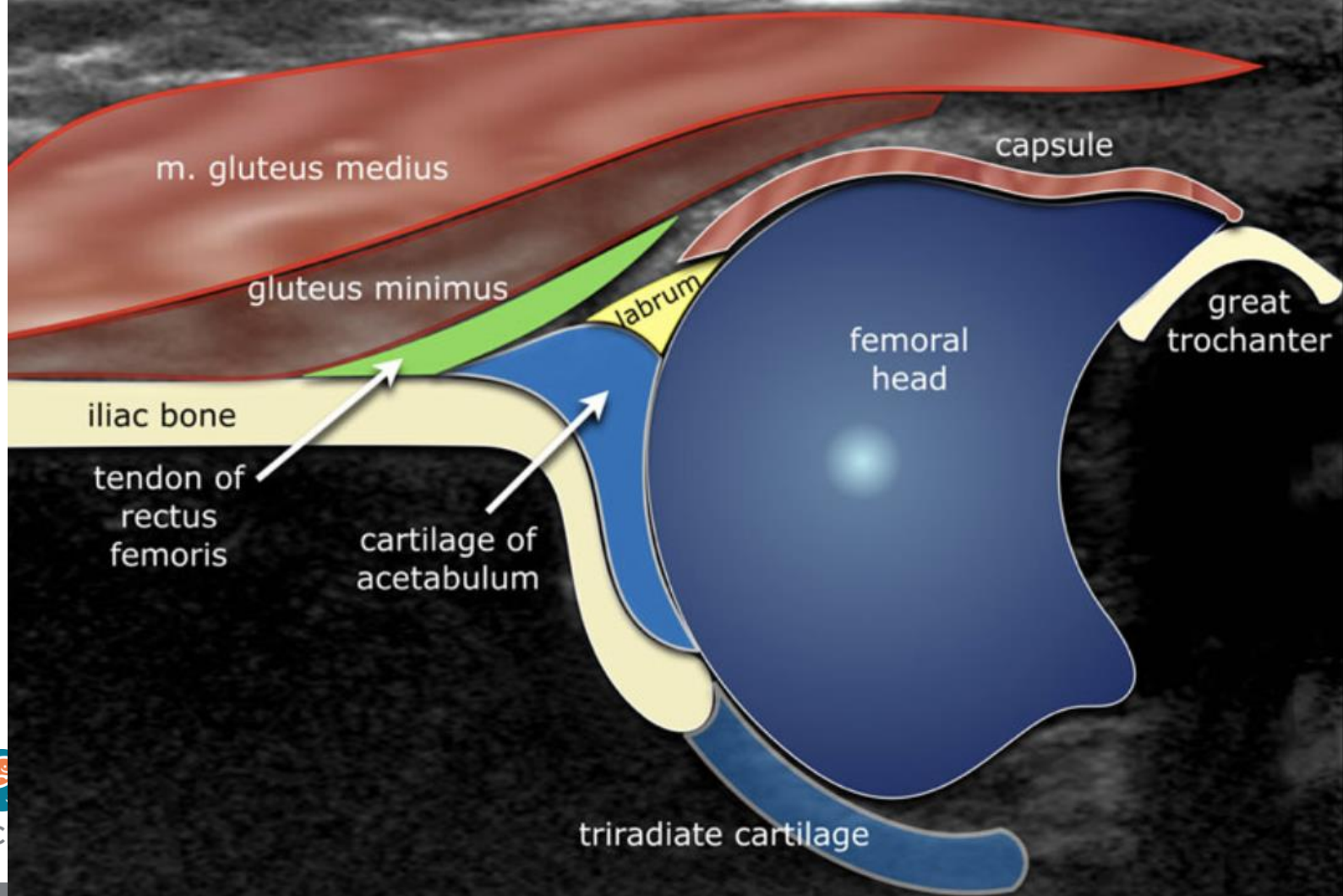
Developmental Dysplasia of the Hip (DDH)

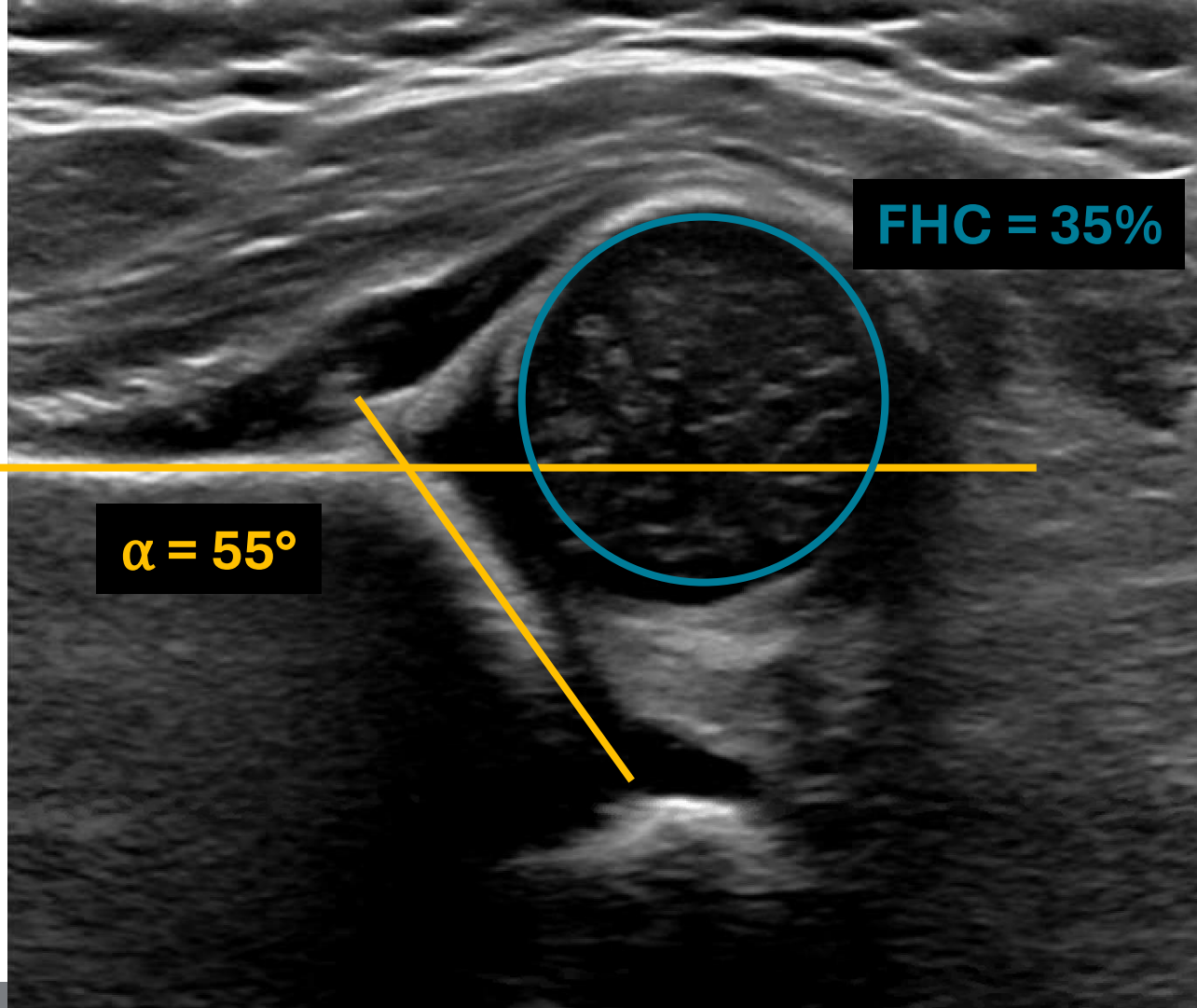
- Risks: breech, female, family history, swaddling
- Exam: limited abduction, leg lengths, ortolani, barlow, Galeazzi, lumbar lordosis, gait
- Imaging: ultrasound under ~4-6 months; x-ray after





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FHC = 35%

$\alpha = 55^\circ$



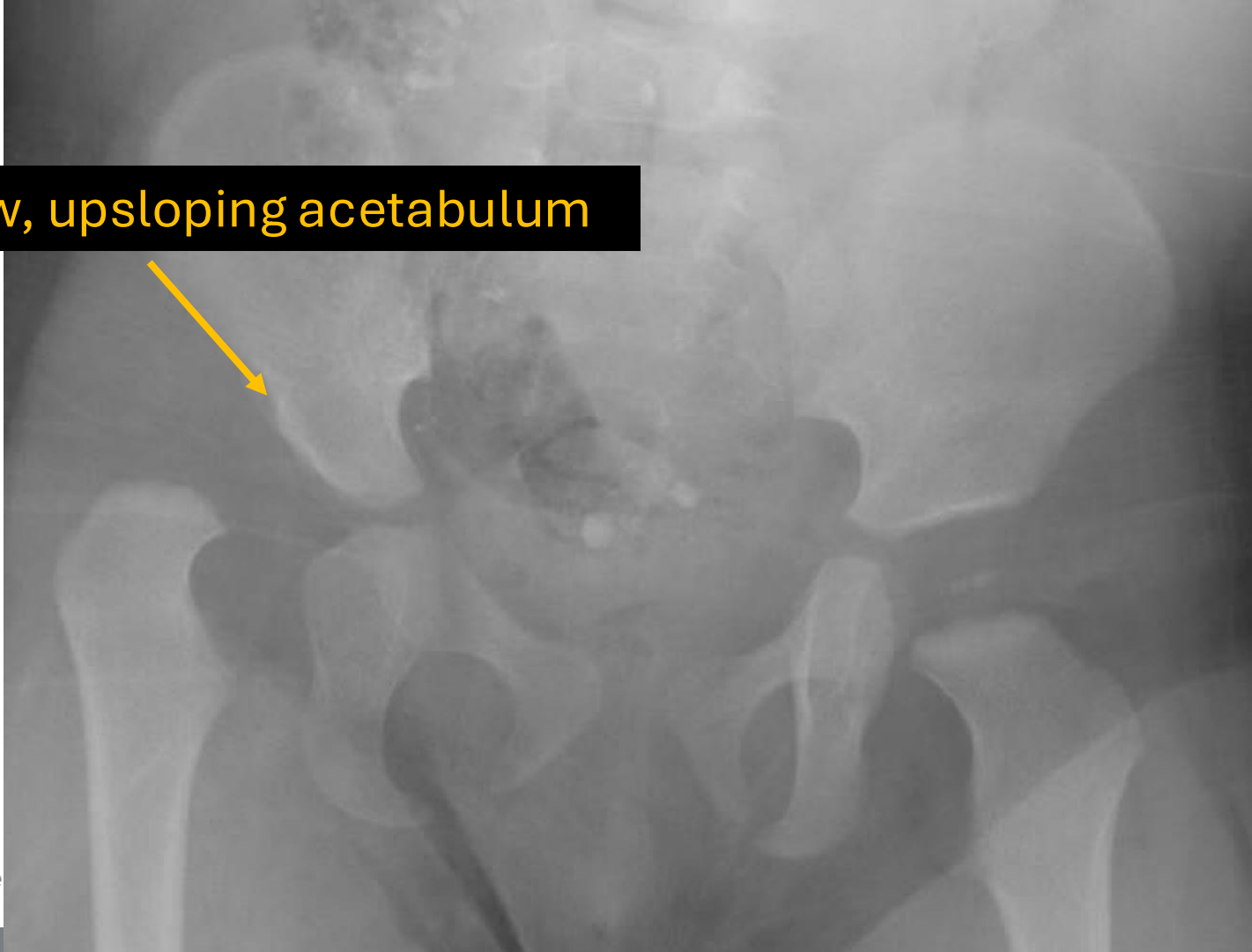
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Underdeveloped femoral head
High and outside



Shallow, upsloping acetabulum



Developmental Dysplasia of the Hip (DDH)

- To tell families: Safe swaddling, hip safe carriers



Developmental Dysplasia of the Hip (DDH)

- Treatment:
Pavlik harness
vs rhino brace
for infants
- Surgery if
bracing fails



Developmental Dysplasia of the Hip (DDH)



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Statements of Consensus from IHDI and Product Development Teams

- Normal infant hip development relies on continuous coupled motion between the growing components in a typical infant.
- Developmental dysplasia is caused by anomalies such as a shallow acetabulum, increased femoral anteversion, and/or a shallow femoral head.
- Based on the best available evidence, IHDI maintains that no baby carrier can cause or prevent hip dysplasia.
- IHDI affirms, based on the best available evidence, that products allowing unrestricted motion do not cause hip dysplasia.



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Developmental Dysplasia of the Hip (DDH)

- Resources: International Hip Dysplasia Institute

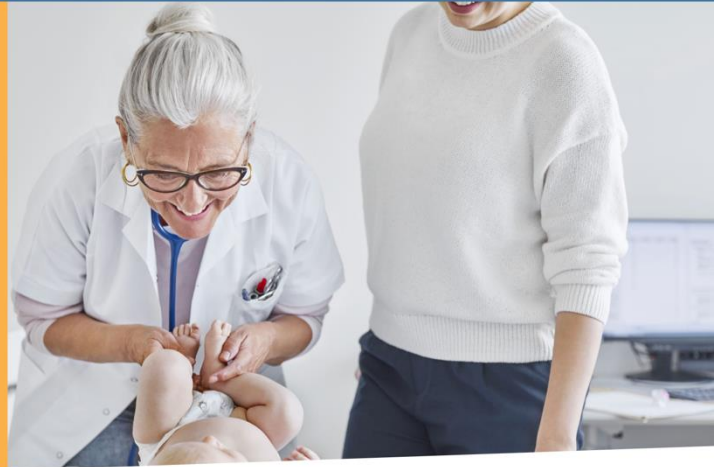


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Professional Resources

Pediatric and Primary Care Providers



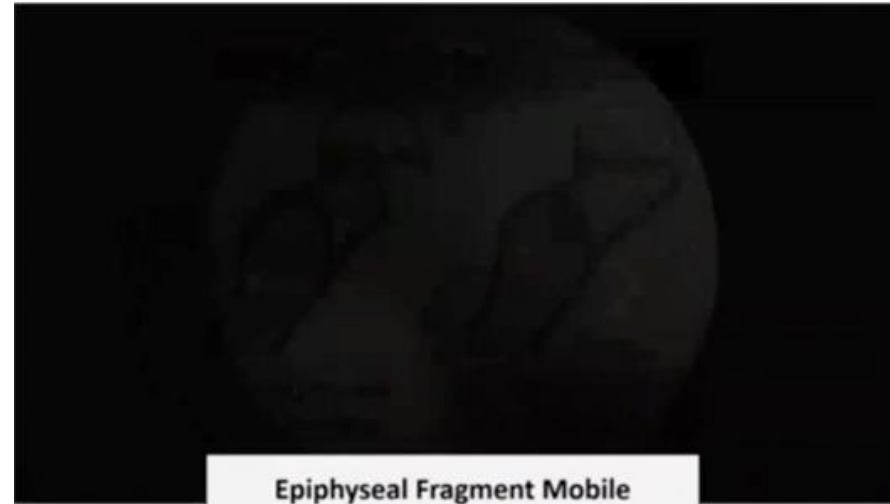
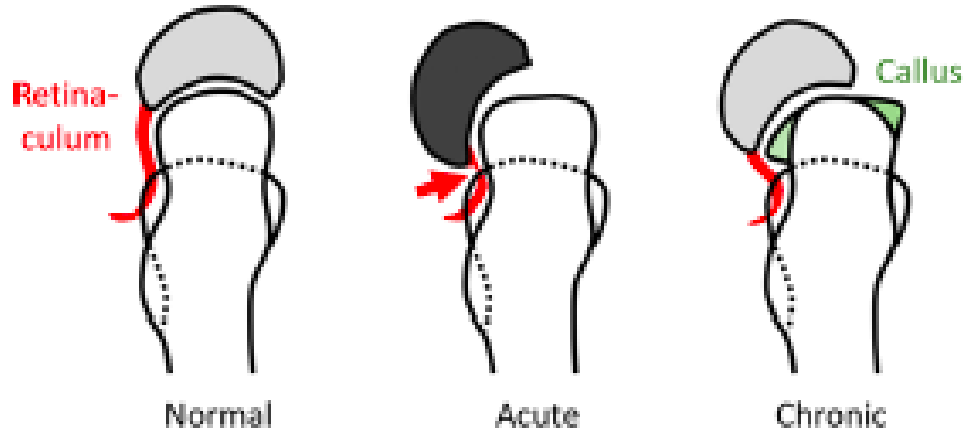
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Part 4

Hip Disorders to Know: SCFE

Slipped Capital Femoral Epiphysis (SCFE)

- What: The femoral epiphysis slips posterior relative to femoral neck

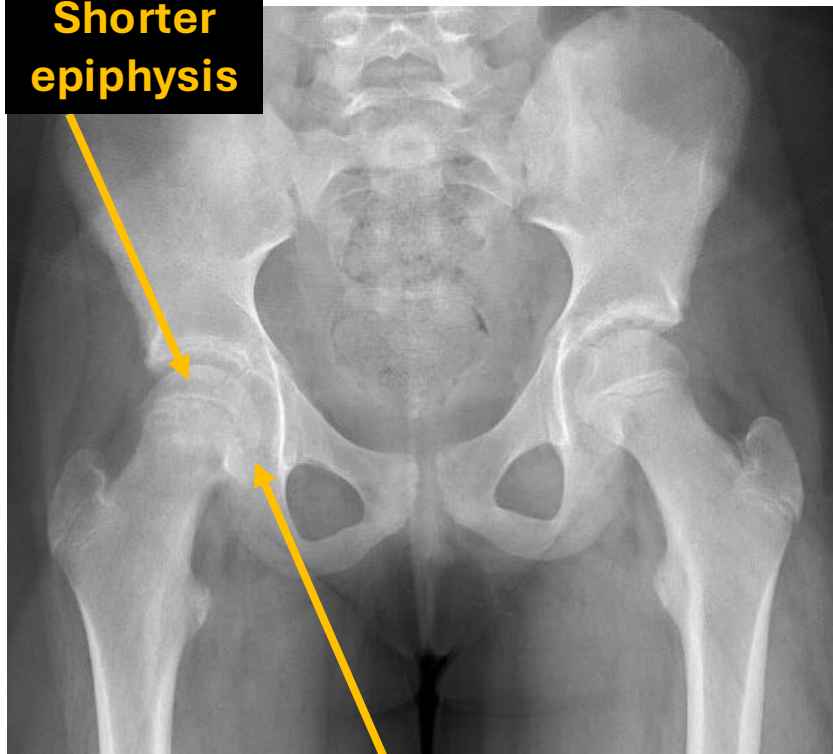


Scenario: SCFE

- XR AP and frog lateral vs cross table if too painful
- Adolescents with knee pain—image the hips!

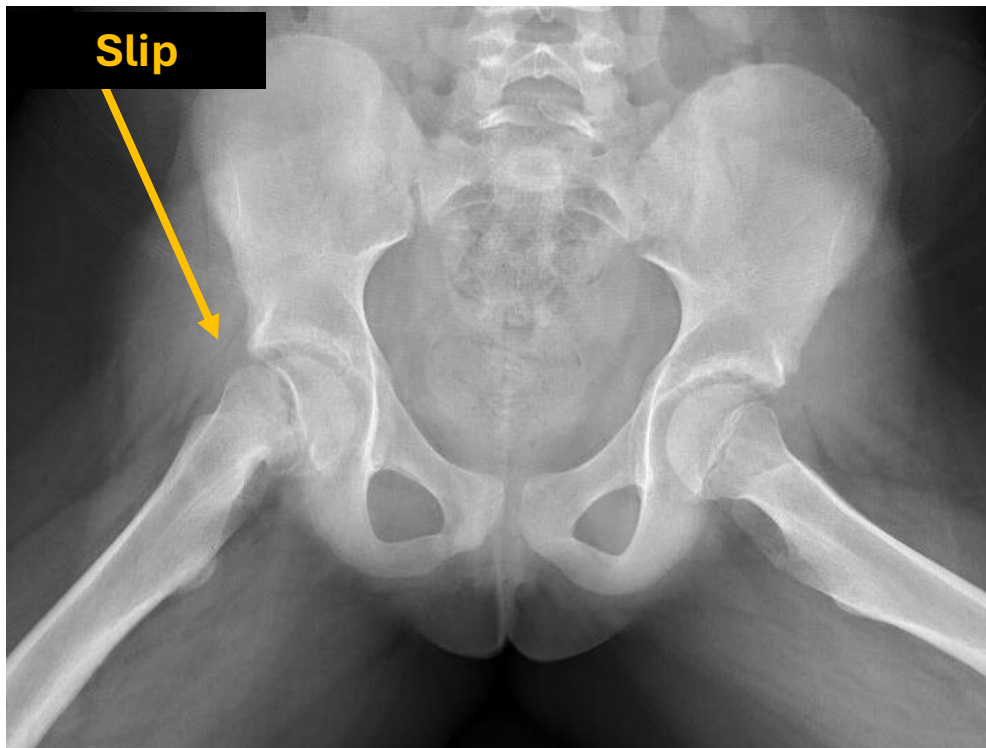


**Shorter
epiphysis**



**Wider
physis**

Slip





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Slipped Capital Femoral Epiphysis (SCFE)

- Typical patient: Adolescent, often overweight
- Other risks: Renal disease, radiation, thyroid disease



Slipped Capital Femoral Epiphysis (SCFE)

- Presentation: Hip, groin, thigh, and/or KNEE pain with a limp. Limited internal rotation.





Slipped Capital Femoral Epiphysis (SCFE)

- Presentation: Hip, groin, thigh, and/or KNEE pain with a limp. Limited internal rotation.
- Things to ask: Can they bear weight? How long? Acutely worse? Any trauma?



Slipped Capital Femoral Epiphysis (SCFE)

- Treatment: Surgery



Part 5

Hip Disorders to Know: The Irritable Hip

The Acutely Irritable Hip

- What: Broad differential! Transient synovitis, septic arthritis, Perthes, SCFE, fracture, osteomyelitis, reactive arthritis.



The Acutely Irritable Hip

- What: Broad differential! Transient synovitis, **septic arthritis**, Perthes, SCFE, fracture, osteomyelitis, reactive arthritis.



The Acutely Irritable Hip

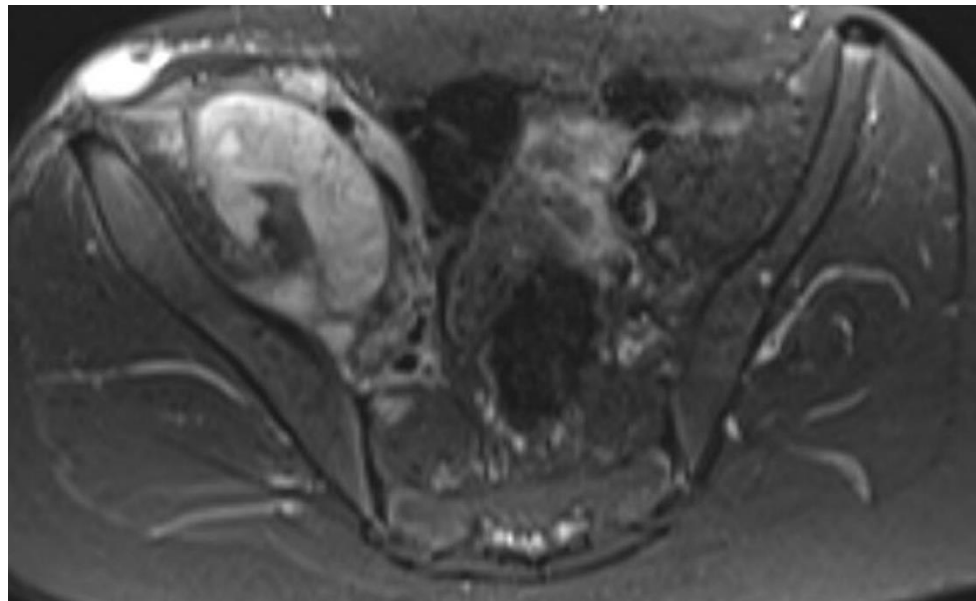
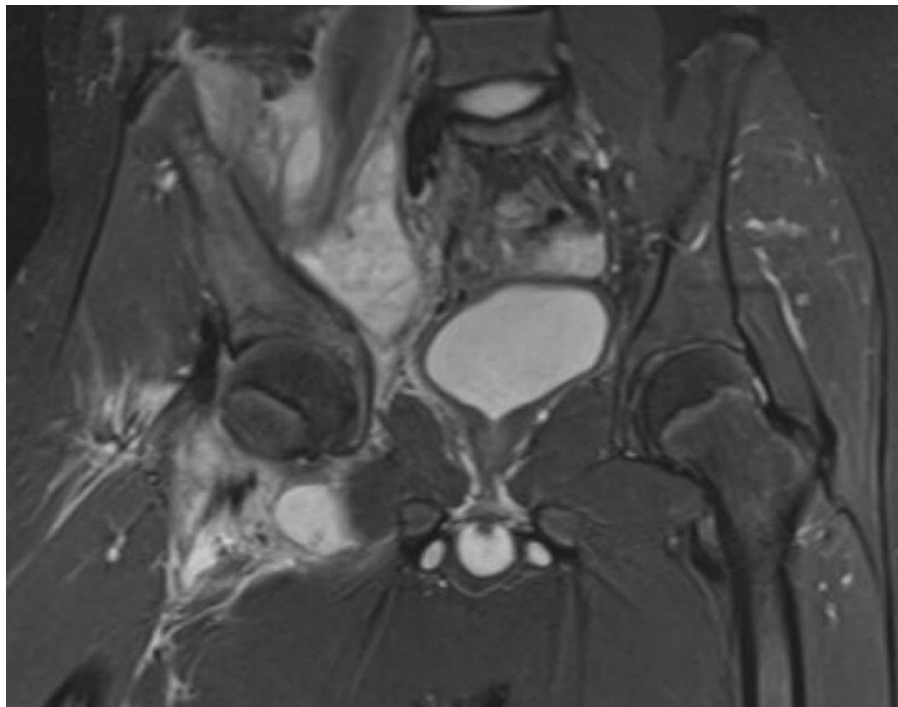
- Kocher criteria:
 - Non-weight-bearing
 - ESR ≥ 40 mm/h
 - Fever $\geq 38.5^{\circ}\text{C}$
 - WBC $\geq 12,000$
 - CRP > 20 mg/L (modified criteria)
- 0 predictors $\approx <3\%$ vs 5 predictors $\approx 98\%$



The Acutely Irritable Hip

- Start with XR to rule out fracture
- Ultrasound to look for effusion
- MRI to look for other infection—usually leave up to orthopaedist





The Acutely Irritable Hip

- Any suspicion for septic arthritis warrants same-day orthopaedic/ED evaluation



Part 6

When to Refer

Referral Urgency Triage

EMERGENT

Same day

- Infection
- Unstable SCFE
- Acute trauma

URGENT

Day - Week

- Stable SCFE
- Irritable hip, not septic
- New dysplasia*

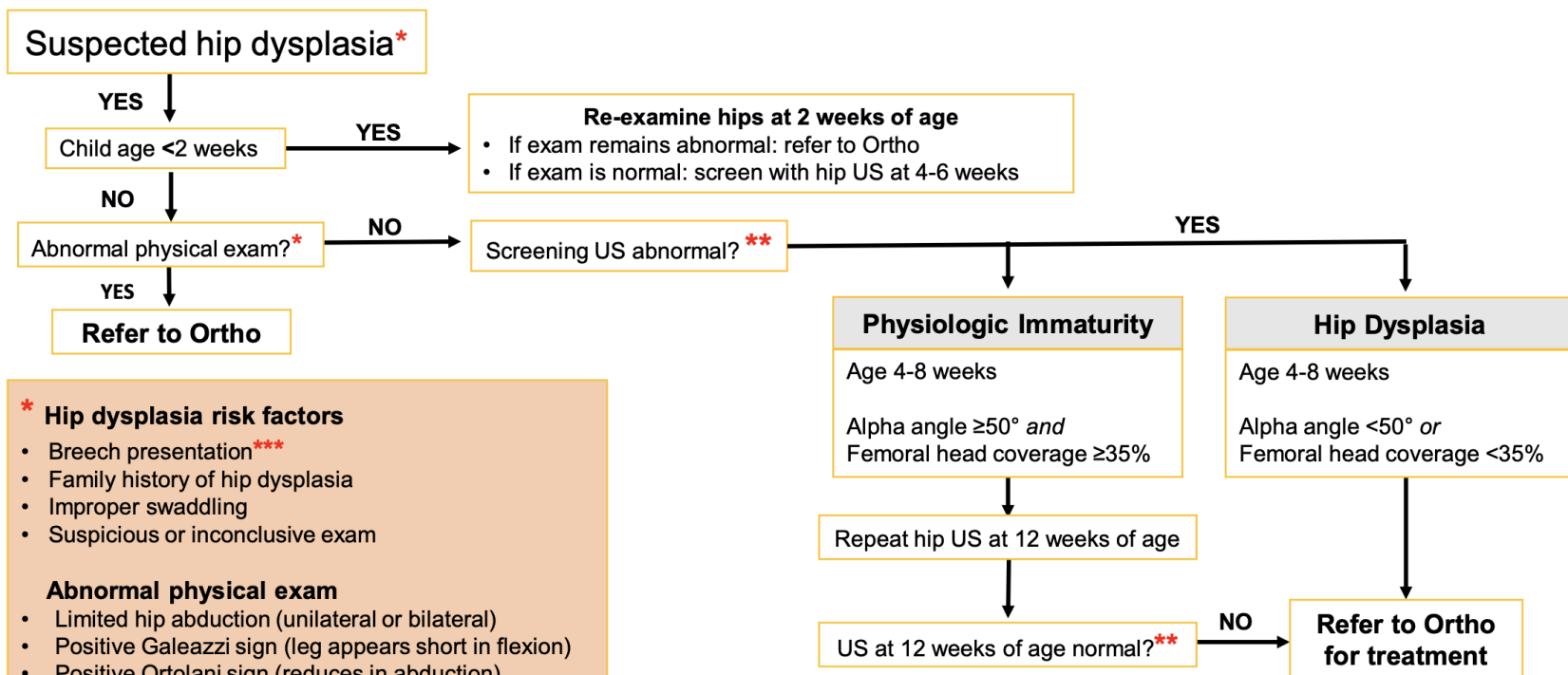
ROUTINE

1+ Weeks

- DDH risk factors*
- Mild Perthes
- Chronic/improving



Algorithm: Infant Hip Dysplasia (0-3 months of age)



* Hip dysplasia risk factors

- Breech presentation***
- Family history of hip dysplasia
- Improper swaddling
- Suspicious or inconclusive exam

Abnormal physical exam

- Limited hip abduction (unilateral or bilateral)
- Positive Galeazzi sign (leg appears short in flexion)
- Positive Ortolani sign (reduces in abduction)
- Positive Barlow maneuver (dislocates in adduction)

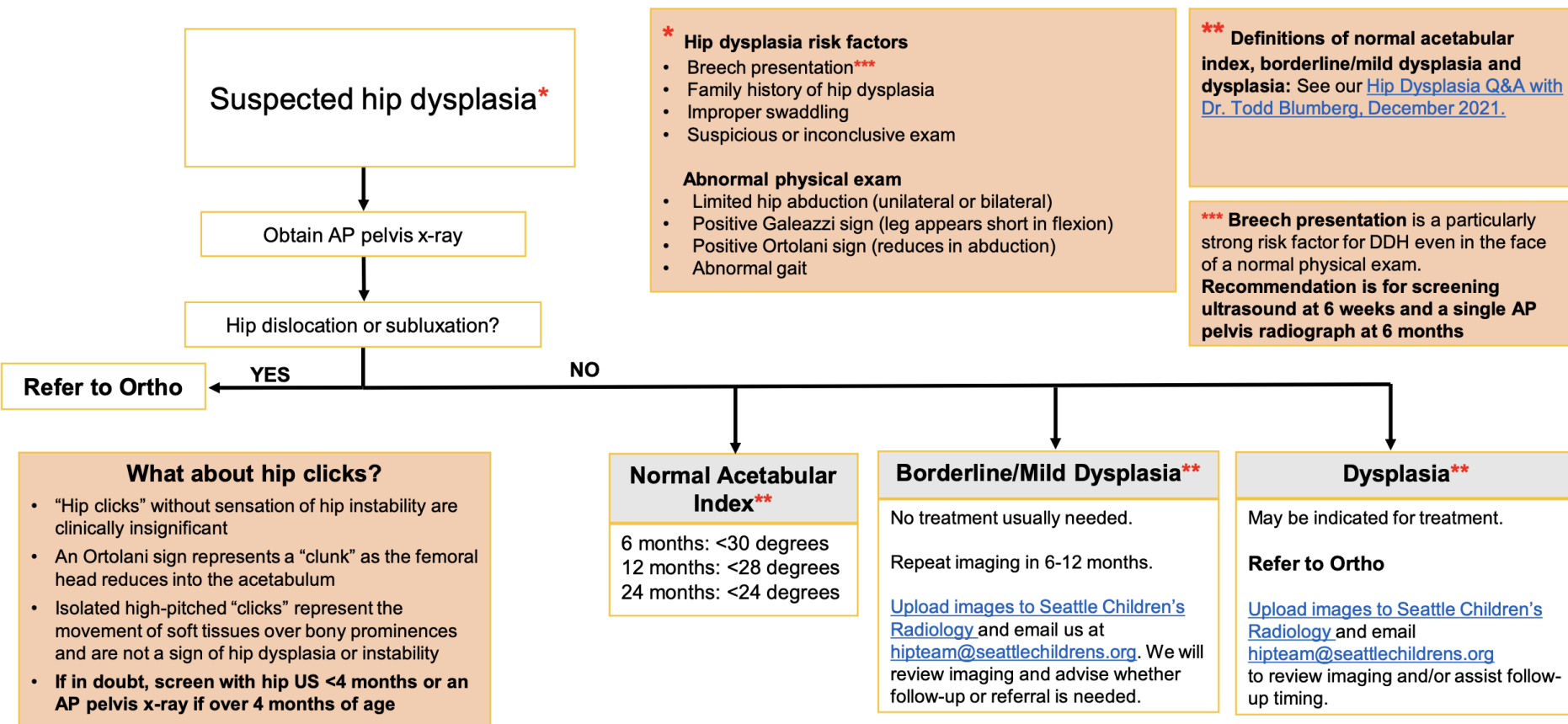
** Ultrasound: Obtain screening hip US at 6 weeks of age. If <37 weeks term, screen at corrected age.
(As a reminder: US preferred up to 4 months; after 4 months of age, x-ray is normally recommended.)

Normal hip US metrics: Alpha angle $\geq 60^\circ$, Femoral head coverage $>45\%$

*** Breech presentation is a particularly strong risk factor for DDH even in the face of a normal physical exam.
Recommendation is for screening ultrasound at 6 weeks and a single AP pelvis radiograph at 6 months



Algorithm: Infant Hip Dysplasia (4-24 months of age)



Practical Referral Tips

- Try and send images, lab results
- Weight bearing status
- Neurovascular status
- If SCFE or fracture suspected → non-weightbearing
- If unsure → call!



Resources from Seattle Children's

- Infant hip dysplasia: [Algorithm](#)
- Back pain: [Algorithm](#)
- Bowed legs: [Algorithm](#)
- Chronic recurrent multifocal osteomyelitis (CRMO): [Algorithm](#)
- Concussion
 - [Algorithm: Referring Your Patient With Concussion or Traumatic Brain Injury](#)
 - About [concussion](#)
- Growing pains: [Algorithm](#)
- Hypermobility: [Algorithm](#)
- Limb Differences:
 - CME Recording: [Common Pediatric Hand Problems: Yours, Mine, Ours](#) ▶
- Scoliosis:
 - [Algorithm: Scoliosis](#)
 - [Adolescent Idiopathic Scoliosis \(AIS\): Case Studies](#)
 - [Adolescent Idiopathic Scoliosis \(AIS\): Services at Seattle Children's \(Flyer\)](#)
 - [Adolescent Idiopathic Scoliosis \(AIS\): A Q&A With Dr. Jennifer Bauer](#)
 - CME Recordings:
 - [Non-AIS Scoliosis: What's the Difference?](#) ▶
 - [Tried, True and New in Adolescent Idiopathic Scoliosis](#) ▶



Key Takeaways

- Compare sides, watch them move, check rotation
- Hip pain often presents as thigh or knee pain
- Fever + non-weightbearing = urgent evaluation for septic arthritis
- When in doubt about urgency, just call!



References

- Singh A, Wade RG, Metcalfe D, Perry DC. Does this infant have a dislocated hip? The Rational Clinical Examination systematic review. JAMA. 2024;331(18):1576-1585. doi:10.1001/jama.2024.2404
- Metzmaker J, Pappas, A. Avulsion fractures of the pelvis. AJSM. 1985; 13(5): 349-358. doi: 10.1177/036354658501300510
- Bach K, Coufal S, Kelly N, Teal A, Swarup I. The pediatric hip physical exam. Curr Rev Musculoskelet Med. 2025; 18(4):103-114. doi: 10.1007/s12178-025-09945-y



Thank You! Questions?

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