Choosing Wisely: 5 Things Physicians Should Question

Dorothy Harris Beauvais, MD
Assistant Professor of Orthopedic Surgery
Texas Children’s Orthopedic Hospital
Baylor College of Medicine

DEVELOPMENTAL DYSPLASIA OF THE HIP

Do I need to order an Ultrasound???
DDH

- Occurs at birth or early infancy: 1-7 per 1000 births
- Spectrum of disease
  - Unstable
    - Subluxated
    - Dislocated
  - Malformed acetabula

DDH: Risk Factors

- Breech
- Female
- First born
- Family history
- Fetal anomalies (Oligohydramnios)
- Incorrect swaddling
DDH: Diagnosis

Physical Exam
- Asymmetric range of motion

Galaezzi Test
Asymmetric leg lengths

Barlow Maneuver
Up to age 3 months

Ortolani Maneuver
Up to age 3 months

Possible Scenarios

Scenario 1: Normal physical exam/No risk factors

Scenario 2: Abnormal physical exam
Referral to Orthopedics

Scenario 3: Normal physical exam + risk factors
Normal Physical Exam + Risk Factors

• Consider ultrasound

• Perform after 6 weeks of age
  – High false positive rates of DDH in infants < 6-8 weeks

• Infants > 4-6 months require X-ray (2-view pelvis) for evaluation

What about Universal Screening with Ultrasound?
Universal Ultrasound Screening

For clinically stable/normal hips

• Negligible positive yield
• Substantial false positive rate
  – Increased treatment rate
  – Costly
  – Time-intensive
  – Risk of Pavlik treatment

2016 AAP/AAOS Recommendations

1

DO NOT order screening hip ultrasound to rule out DDH if baby has NO risk factors and clinically stable hip exam
Concerns

• What if I don’t trust my physical exam?
• What if family is demanding imaging?
• How quickly should referral be initiated?
In-toeing

- Very common

- Causes
  - Metatarsus adductus
  - Tibial torsion
  - Femoral anteversion

Femoral Anteversion

- 3-10 years of age
- Females > Males
- Worse when running or fatigued

- Natural History: 99% Resolution
  - Birth: 40 degrees anteversion
  - Adolescent/Adulthood: 10-15 degrees anteversion
Femoral Anteversion

No Role/Efficacy

- Special shoes
- Twister cables
- Bracing
- Physical therapy

Tibial Torsion

- In-toeing: 2-4 years of age
- Often bilateral
- Natural history
  - Spontaneous resolution by 6
  - Not changed by bracing/orthotics
Metatarsus Adductus

- Convexity of lateral border of foot
- 1-3/1000 children
  - Most common foot deformity in children
- Majority are flexible
  - Passively correctable to neutral
- Natural history:
  - 90-95% spontaneous resolution by age 4
- Associated conditions
  - DDH (10-15%)
  - Torticollis

2016 AAP/AAOS Recommendations

DO NOT

order radiographs or advise bracing or surgery for a child less than 8 years of age with simple in-toeing
When is In-toeing Not Simple

- > 8 years of age*
- Pain
- Leg length discrepancy
- Family history: rickets/skeletal dysplasia
- Rigid metatarsus adductus
- Neuromuscular disorder
Flexible Flat Feet

- Normal physiologic variant
  - Arch develops > 5 years of age
  - Childhood Incidence: unknown
  - Adults: 15-23%

- Etiology
  - Physiologic ligamentous laxity

- Orthotics do not alter natural history

Flexible Flat Feet

- Usually asymptomatic
- Foot flat when standing
- Arch present
  - Toe walking
  - Great toe dorsiflexion
  - Nonweight bearing
Flexible Flat Foot: Treatment

- Asymptomatic/minimally symptomatic
  - No bracing or orthotics
  - Reassurance

- Painful
  - Assess with imaging
  - Assess for heel cord tightness
  - Consider orthotics
  - Consider referral

2016 AAP/AAOS Recommendations

DO NOT

order custom orthotics
or shoe inserts for a child with minimally symptomatic or asymptomatic flat feet
ADVANCED IMAGING: MRI OR CT
FOR MUSCULOSKELETAL CONDITIONS

Advanced Imaging: MRI or CT Scan

• Costly
• Frequently require sedation (< 5 years of age)
• Require clinical correlation
• Require specific protocols/sequences
• Can involve radiation
• USE SPARINGLY if at all
Musculoskeletal Conditions

• Common pediatric MSK conditions
  – Injury/pain (back, knees, ankle, legs)
  – Infection
  – Deformity

• Primary diagnostic modalities
  – History
  – Physical exam
  – Appropriate radiographs
  – Appropriate laboratory assessment

2016 AAP/AAOS Recommendations

4

Do Not order advanced imaging studies (MRI or CT) for most musculoskeletal conditions in a child until all appropriate clinical, laboratory, and plan radiographic examinations have been completed.
BUCKLE/TORUS FRACTURES FOLLOW-UP IMAGING?

Buckle/Torus Fractures

- Common fracture pattern
- Metaphyseal region
- Only ONE side of bone is compressed and buckles
- The other side is completely intact
Buckle/Torus Fractures

- Inherently stable
- Metaphyseal region reliably remodels
- Treat with removable splint or brace for 4 weeks
- Consider cast
  - Severe pain
  - Unable to comply with brace wear/activity restrictions
2016 AAP/AAOS Recommendations

5

**DO NOT** order follow up X-rays for buckle/torus fractures if there is no longer pain or tenderness at 4-week follow-up

Pitfalls: Torus/Buckle Fracture

- Ensure only ONE side compressed
  - Should not see a fracture line

- If severe pain, swelling, or deformity initially
  - Consider another diagnosis


