Focused patient history and workup

• 5 year old male
• Presenting with bowing of his right leg that his parents have noticed since he began walking around one year of age
• Intermittently complains of pain along lateral knee
• He is still able to be active and plays soccer with his brothers
• Patient’s two brothers both had bowing of bilateral legs that resolved as they grew
List of imaging studies

- XR Hip Knee Ankle Bilateral
- XR Tibia Fibula Right
- MRI Lower Extremity Joint Right Wo Contrast
- CT Lower Extremity Right Wo Contrast
XR Hip Knee Ankle Bilateral

- Right proximal tibial metaphysis is flattened and fragmented
- Medial beaking and downward slope of the proximal tibia
- Thickening of medial tibial cortex
- Leg length discrepancy (patient is standing on a 2 cm block)
XR Hip Knee Ankle Bilateral

- Varus angulation of the right knee
- Tibiofemoral angle > 180° (normal = 170°-175°)¹
- Proximal tibial metaphyseal-diaphyseal angle (normal < 16°)¹
XR Tibia Fibula Lateral Right

- Radiographically normal
MRI Lower Extremity Joint Right Wo Contrast

- Proximal tibial physis is discontinuous along portions of medial tibial plateau
- Heterogenous marrow signal along medial physis (could be from altered growth patterns or altered biomechanics)
MRI Lower Extremity Joint Right Wo Contrast

- Increased T2 signal along medial meniscus, otherwise intact
CT Lower Extremity Right Wo Contrast

- Presurgical workup included CT scan to check for physeal bar (not found in this patient)

Example of distal femoral physeal bar (bony bridge crossing the physis)
Blount Disease

• Pathologic varus deformity from disruption of normal cartilage growth at medial aspect of proximal tibial physis

• Infantile Blount disease: diagnosed before age four and bilateral (80 percent of cases)

• Adolescent Blount disease: diagnosed later and more likely to be unilateral

https://orthoinfo.aaos.org/
Physical Exam Findings

• Asymmetric alignment of lower extremities
• Focal angulation of the proximal tibia
• Lateral thrust during stance phase of ambulation
Langenskiold classification

- Six progressive stages as age of patient increases
- Stage 1 – medial beaking begins
- Stage 4 – epiphysis slopes over medial beak
- Stage 5 – “double epiphysis”
- Stage 6 – formation of bony bar

https://emedicine.medscape.com/article/406458-overview
Typical Treatment

• Conservative approach: bracing before age 3 (effective in 50-80% of patients if started in time)\(^1\)

• Surgical approach\(^3\):
  • Hemiepiphysiodesis (arrest of the growth plate on the apical side of the deformity)
  • Tibial osteotomy and realignment
Patient treatment or outcome

- Osteotomy of proximal tibia
- Right proximal tibia lateral hemiepiphysiodesis

- 3 months s/p surgery – patient is doing very well, no adverse events, transitioning to weightbearing in cam boot
Wrap Up

• Disruption of the cartilage growth along the medial aspect of the tibia leading to varus deformity

• Two types:
  • Infantile (occurs before age four and usually bilateral)
  • Adolescent (occurs later and childhood and more often unilateral)

• Characteristic radiographic findings:
  • Metaphyseal beaking
  • Thickening of medial tibial cortex

• Treatment:
  • Infantile: bracing often effective
  • Adolescent: surgical (hemiepiphysiodesis)
References

