Femoral Anteversion Clinical Guidelines for Orthopaedic Practice

Definition
The angular difference between the femoral neck axis and the transcondylar axis of the knee (1)

Pathogenesis/Natural History
- Limb buds appear in the fifth week in utero, subsequent intrauterine molding causes external rotation at the hip and internal rotation of the tibia (1,3)
- At birth neonates have an average of 40 degrees of femoral anteversion. By age 8 years, average anteversion decreases to the typical adult value of 15 degrees (1,2,3,4,7,10)
- Femoral anteversion typically increases until age 5 years and then resolves by age 8, after this point no significant change in anteversion occurred (1,4,5,6,8,9,10,11)

Signs and symptoms
Clinical Presentation
- Parents report child is clumsy and trips frequently (1,11)
- Parents report children characteristically sit with their legs in the “W” position (1,3,4,11)
- Often familial (3)
- Typically bilateral (3,4)
- Affects females more than males (3)
- One in ten children “in-toe” between the ages of two and five years (4)

Evaluation
- Comprehensive birth history
- Family history
- HPI
- Height and weight
- Neuromuscular exam
- Gait evaluation
- Evaluate for hip dysplasia (11)
- Complete rotational profile (internal and external hip rotation, thigh-foot axis, trans malleolar axis, heel bisector angle, foot progression angle) (1,3)
Differential Diagnosis
a. Internal tibial torsion
b. Cerebral palsy
c. MTA
d. Spina bifida
e. Rickets
f. DDH

Diagnostic Tests
Radiographs
1. Short stature
2. Abnormal hip examination
3. Marked limb asymmetry
4. Pain

Treatment
• Observation, as natural history point to spontaneous resolution (1,2,4,5,6,9,10,11)
• Education
  o Treatment with splinting, shoe modifications, exercises and braces has proved to be ineffective (1,2,4,5,6,8,9,10,11,12)
  o Reassure families there is no association between increased femoral anteversion and DJD (1,4,10)
  o Surgical intervention may be indicated in a child older than 10 years with a marked cosmetic or functional deformity (1,3,6,10)

Follow up Recommendations
• Follow up with PA/NP prn
  o If rotation is physiologic and family would like follow-up
• Follow up with surgeon
  o If child is 10 years or older and family is interested in surgical intervention for cosmesis.
  o If child has marked functional or cosmetic deformity
  o If child has underlying bony or neuromuscular pathology
  o Second opinion
Evidenced Based Literature Review