Internal Tibial Torsion Clinic Guidelines - Orthopaedic Practice

Definition
Medially rotated tibia

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)
- Cause contributed to intrauterine position (1,3,4)
- Infants have an average of 40 degrees of internal rotation and 70 degrees of external rotation. By age 10 years, internal hip rotation averages 50 degrees and external rotation, 45 degrees (1)
- Strongly favors spontaneous resolution by age 4 (1,2,4,5,6,7,8)

Clinical Presentation
- Parents report child is clumsy and trips frequently (1,9)
- Often noticed when child begins to ambulate (2)
- Affects males and females equally (3)
- Often asymmetrical with L>R (3)

Evaluation
- Comprehensive birth history
- Family history
- HPI
- Height and weight plotted on growth chart
- Neuromuscular exam
- Gait evaluation
- Evaluate for hip dysplasia (9)
- Complete rotational profile (internal and external hip rotation, thigh-foot axis, transmalleolar axis, heel bisector angle, foot progression angle) (1,3,4)

Differential Diagnosis
- Femoral anteversion
- MTA
- Cerebral palsy

Diagnostic Tests
- Radiographs
  - Short stature
  - Abnormal hip examination
  - Marked limb asymmetry
  - Pain
**Treatment Options**
- Treatment with splinting, shoe modifications, exercises and braces has proved to be ineffective (1,2,3,4,5,8,9,11)
- Observation is the recommended treatment of choice (1,3,4,5,6,7,8,9)
- Provide parents with reassurance (1,3,4,7,8)
  - i. Resolves spontaneously in 95% of children between the ages of 5 and 8 years of age (4,8)
  - ii. Educate parents that internal tibial torsion is associated with increased running speed (9, 10)
- Surgical treatment reserved for children older than 8 years with marked functional or cosmetic deformity and a thigh-foot angle greater than three standard deviations beyond the mean (1,5,8)

**Follow up Recommendations**
- Follow up with PA/NP as needed
  - If age/developmentally appropriate, physiologic, family would like follow-up for reassurance
- Follow up with surgeon
  - If child older than 10 years of age
  - If child has marked functional or cosmetic deformity in which family would like surgical intervention
  - Abnormal neuromuscular exam or bony pathology
  - Second opinion

**Evidenced Based Literature Review**


