Orthopaedic Considerations in the Lower Extremities and Spine in Patients with Arthrogryposis

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Outline

• General Considerations
• Lower Extremities
  • Hip
  • Knee
  • Feet
• Spine (Scoliosis)
• Case Examples
“Arthrogryposis”
Neurodevelopment

- Gross Motor
- Fine Motor
- Speech
Orthopedic Team Goal

- Maximal function
  - Maximal independence
  - Minimum “interventions”
    - Children not patients
Orthopedic Team Goal

- Maximal function
  - Maximal independence
  - Minimum “interventions”
    - Children not patients
• 50-80% have contracture at birth
  • 15-30% with dislocation

• Treatment of dislocation
  • Unilateral vs bilateral
  • Closed treatment (brace, cast) generally does not work
  • Unilateral generally treated with medial open reduction at 6 mos (adjusted)

• Dysplasia (Abnormal Growth)
  • May be treated with surgery between 3-18
• Dysplasia (Abnormal Growth)
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• Knee flexion contractures 45-85%
  • Move the arc of motion but rarely increase
    • Too much flexion – difficult to stand
    • Too much extension – difficult to sit / climb

• Most limiting aspect of lower extremity
• Range of treatment options often dependent on age of patient
Knee

- **Infant**
  - Non-operative: Casting; +/- Botox
- **2-6 years of age**
  - Non-operative: Casts, PT, braces
  - Operative: Soft tissue releases
- **6-14 years of age**
  - Operative: Soft tissue release, growth modulation, osteotomy
- **>14**
  - Operative: Ostetomy
Goal: “plantigrade platform”
• Traditionally thought to require surgery
• Increasingly treated with “Ponseti Casting”
Spine

• Scoliosis (“twisting” of the spine) up to 66% of patients
• More common in “non-ambulators”
• Treatment consists of observation, bracing and surgery
• Age of patient and magnitude of the curve important in determining treatment
• Posterior spinal fusion before the age of 8 may impair pulmonary function
Braces
• Large, stiff curves in young patients may be treated with casting, halo gravity traction and “growing techniques” (MAGEC rods)
Halo-Gravity Traction

- Introduced to TSRH via Prof. Klause Zielke
  - He attributed the technique to Prof. Pierre Stagnara

Bad Wildungen 1986
Halo-traction avoided by some because:

- Complications:
  - Neurological (Halo-femoral and halo-pelvic)
  - Logistical (bedsores, etc.)
- Ineffectiveness
  - Inadequate duration or poor tolerance
Halo-Gravity Traction

- Concept is Halo-Gravity Traction using a spring
- “Intermittent” traction appears to be much safer than halo-femoral or halo-pelvic traction

Manual distraction
NOT This:

- Unable to relieve by push up.....

- **Fixed** weight – explanation for neuro lesions, poor compliance?
Now This:

- Fish scale replaced with high load swivel and transverse loading spring
- Rope Excursion = 4:1 on double windlass: easy 1 hand adjustment
• Studying cyber security at local college
• Stands - doesn't walk b/c cant move the R leg (Muscle strength is the most important!)
• What should I tell them : "it gets easier"
• Best operation?: “feet, use them to propel myself”
• Wasnt sure what a scar on the thumb was from
Thank You