How I Treat CMT Disease

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Etiology
“Primary” neuromuscular conditions
- Hereditary
- HMSN (CMT)
- Acquired
- Polio

Secondary
- Trauma
- CVA

HMSN Type 1 (CMT)
- Autosomal Dominant
- Chromosomes 1 and 17
- Motor weakness
- Decreased or absent reflexes
- Progressive weakness
- Slow Nerve conduction velocities
- Starts in 2nd decade

HMSN type 2 – less severe, 3rd decade

Symptoms and Signs
- Progressive weakness
- Hindfoot varus, forefoot cavus due to a plantarflexed first ray
- Lateral ankle instability
- Corns, calluses
- Sensory impairment
- Deformity
  - Rigid?
  - Flexible?

**Coleman block test**
Determine if it is a forefoot or hindfoot driven hindfoot varus

**Force couples**
- Peroneus brevis / Posterior Tibialis
- Peroneus longus / Anterior Tibialis
- EHL/ FHL
- FDL/ EDL

**Force couples**
<table>
<thead>
<tr>
<th>Plantarflexors</th>
<th>Dorsiflexors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroc, soleus, PTT, FHL, FDL</td>
<td>ATT, EHL, EDL, PT</td>
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</tbody>
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**What are the deforming forces?**
- ? Peroneus longus overpowering ATT?
- Fixed 1st ray plantarflexion?
- EHL and EDL work as ankle dorsiflexors?
- PTT vs PB
- Claw toes rigid or flexible?
- What is available for transfer?
- Is it an “in phase” muscle?
- Is it strong enough?
- Straight line pull?
- Are the joints mobile?
- How many joints?
- Is there a ligamentous ankle instability?

**Treatment principles**
- Correct deformity
- Maintain correction
- -muscle/soft tissue balancing
- Exhaust soft tissue procedures and osteotomies before arthrodesis unless if there is significant muscle weakness
- Recognize potential for progression

**Non-Operative**
- Extra depth shoes
- Orthotics
- AFO

**Operative: Flexible deformity**
Sequence of events
- Plantar fascia release - complete
- Gastrocnemius slide
- Restore dorsiflexion (and remove deforming force)
  - PTT transfer to dorsum
  - EHL – TAA
  - EDL – midfoot or PT
- Restore Eversion/inversion balance
  - Peroneus Longus to Peroneus Brevis
- FDL to PTT stump or navicular

Claw toes
- Already removed EHL and EDL
- ? PIPJ excisions
- ? FDL transfers

Lateral ligament instability
- Brostrom
- Modified Chrisman-Snook

Operative: Rigid Deformity
Forefoot cavus
- DF osteotomy 1st MT

Midfoot cavus
- Midfoot osteotomy

Hindfoot varus
- Calcaneal osteotomy
- ? Subtalar fusion

Post traumatic
- Usually knee dislocation
- Most common deficit is Tibialis Anterior and Peroneus Longus
  - Drop foot deformity

Treatment
- PTT to dorsum of the foot
- FDL to PTT
- Gastroc slide
- ? PL to PB

References

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