Clinical result of surgical intervention for the patient with Charcot Marie Tooth disease

Akira Taniguchi, Yasuhito Tanaka, Takenori Matsuda, So Kameda, Kiyonori Tomiwa, Hiroaki Kurokawa, Tsukasa Kumai, Yoshinori Takakura

Department of Orthopaedic Surgery, Nara Medical University
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My disclosure is in the Final AOFAS Mobile App.
I have no potential conflicts with this presentation.
Introduction

Charcot Marie Tooth (CMT) disease is one of the progressive neuropathy affecting the lower motor neurons. The most common presentation is bilateral pes cavovarus deformities. Patients have a variety of complaints, including metatarsalgia, claw toes, tarsal prominence and recurrent ankle sprains. The purpose of this study is to investigate the clinical result of surgical treatment for the patients suffering from CMT disease.
Material

Eight patients (12 feet) suffering from CMT disease treated surgically during 1996 to 2010.

Male 5 cases 8 feet, Female 3 cases 4 feet

Av. Age 26.8 (10～40)

Mean follow up 111Mos (48～205Mos)

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## Surgical Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple Arthrodesis;</td>
<td>7 feet</td>
</tr>
<tr>
<td>Combined with</td>
<td></td>
</tr>
<tr>
<td>Achillea’s tendon lengthening</td>
<td>1 foot</td>
</tr>
<tr>
<td>Posterior tibial tendon transfer</td>
<td>1 foot</td>
</tr>
<tr>
<td>Both</td>
<td>3 feet</td>
</tr>
<tr>
<td>Posterior tibial tendon transfer and</td>
<td></td>
</tr>
<tr>
<td>Achillea’s tendon lengthening</td>
<td>2 feet</td>
</tr>
<tr>
<td>Achillea’s tendon lengthning alone</td>
<td>2 feet</td>
</tr>
<tr>
<td>Correction with Taylor Spatial Frame</td>
<td>1 foot</td>
</tr>
</tbody>
</table>
Clinical evaluation

JSSF Ankle-Hindfoot Scale

Pain (40)
Function (50)
Activity (10)
Gait (5)
Road surface (5)
Craudication (8)
Sagittal motion (8)
Hindfoot motion (6)
Stability (8)
Alignment (10)
Total (100)

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Result
# Clinical (JSSF A/H Scale)

<table>
<thead>
<tr>
<th></th>
<th>Pain</th>
<th>Function</th>
<th>Alignment</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre OP</td>
<td>26.3</td>
<td>23.6</td>
<td>0</td>
<td>49.9</td>
</tr>
<tr>
<td>Post OP</td>
<td>35</td>
<td>38.3</td>
<td>7.5</td>
<td>80.8</td>
</tr>
</tbody>
</table>
Clinical (JSSF A/H Scale)

- Pre OP
- Post OP

- Stability
- Hindfoot motion
- Sagita motion
- Caudication
- Road surface
- Gait
- Activity

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Clinical (JSSF A/H Scale)

- Pain: 33
- Function: 33
- Alignment: 7.5
- Total: 73

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Bony</th>
<th>Soft Tissue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>33</td>
<td>37.5</td>
</tr>
<tr>
<td>Function</td>
<td>33</td>
<td>43.5</td>
</tr>
<tr>
<td>Alignment</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>88.5</td>
</tr>
</tbody>
</table>

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Case 1  26 M

Mid foot and hindfoot deformities were appeared since he was 10 years old. He didn’t consult any clinic for years, however pain increased gradually, and he consulted to our institute.
1996 March triple arthrodesis for rt. ankle
  July triple arthrodesis for lt. ankle
1998 March revision arthrodesis of rt. subtalar joint
2007 April lt. revision triple arthrodesis
Case 2  12  M

【Present history】
- 2yrs  Acute Lymphatic Leukemia (ALL)
  → Chemotherapy with oncobine induced tetraplegia
- 3yrs  Varus deformity of the rt. ankle
  DX for CMT → Orthosis (no-effect)
- 7yrs  Varus deformity of the lt. ankle
- 10yrs  Progression of rt. foot deformity
  → Tendon trans of PTT + Length. of Achille’s tendon + Partial resec. of plantar fascia
- 12yrs  Progression of lt. foot deformity
① Correction of deformity
→ distraction osteogenesis with external fixator
② regain power source of dorsi flexion of the ankle
→ lateral transfer of the Tibialis ant.
Discussion
In elder patients suffering from CMT disease tended to require triple arthrodesis because of progression of the rigid deformity. In those patients, restoration by the operation was limited because of functional deterioration. Patients treated by tendon transfer were relatively young, that lead to better recovery of the function and favorable satisfaction. It is important to treat the patients with CMT disease before the deformity turns to rigid.
Distraction osteogenesis of the calcaneus make the distance from fulcrum to the point of lead, that leads to maintaining and increasing of power of plantar flexion.
References

Conclusion

• Triple arthrodesis, tendon transfer or lengthening for the patients with CMT disease achieved favorable results, however from the point of maintaining of flexion power source, correction of pes cavus and foot length by distraction osteogenesis with external fixator is an ideal surgical option.