Outpatient Physical Therapy Following Triple Arthrodesis Surgery: A Case Report

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Background
• Triple arthrodesis is the surgical fusion of the talonavicular, talocalcaneal, and calcaneocuboid joints of the foot.
• Joint surface preparation includes debridement, removal of cartilage, burring of subchondral bone, and fish scaling of the joint surfaces.
• The joints are then fused using screws.

Patient History
• 53-year-old male referred to physical therapy by his surgeon following right triple arthrodesis surgery 11 weeks prior
• Employed as a supervisor at a naval shipyard
• Work duties: prolonged walking and climbing multiple flights of stairs
• Past medical history: osteoarthritis of left knee and thumb and bilateral feet, 22-year history of bilateral foot pain.
• Past surgical history: tendon augmentation and a bony procedure to correct for left hindfoot collapse ten years prior
• Previous therapeutic interventions for right foot included cortisone injections, a foot orthotic, and use of a walking boot.

Purpose
To provide an overview of triple arthrodesis surgery and to report a case describing the specific outpatient physical therapy management strategies used following surgery.

Interventions
Soft tissue mobilization
Thermal modalities (hot and cold packs)
Talocrural joint mobilizations

- Manual posterior glide to promote dorsiflexion
- Manual anterior glide to promote plantarflexion

Stretches
- Plantarflexion, dorsiflexion, toe flexion and extension, and gastrocnemius/soleus

Therapeutic Exercises
- Recumbent bicycle, Total Gym® squats, resisted dorsiflexion and plantarflexion, toe raises, and rocker board

Neuromuscular re-education
- Anterior step over hurdle
- Step up/down step with right foot

Home Exercise Program: stretches listed above, resisted plantarflexion and dorsiflexion, toe raises, and riding a recumbent bicycle

Examination

<table>
<thead>
<tr>
<th>Initial Tests and Measures</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle dorsiflexion</td>
<td>3°-8°</td>
<td>33°</td>
</tr>
<tr>
<td>Ankle plantarflexion</td>
<td>31°</td>
<td>45°</td>
</tr>
<tr>
<td>First toe flexion</td>
<td>6°</td>
<td>36°</td>
</tr>
<tr>
<td>First toe extension</td>
<td>59°</td>
<td>45°</td>
</tr>
</tbody>
</table>

Manual Muscle Tests
- Ankle dorsiflexion
- Ankle plantarflexion
- First toe flexion
- First toe extension

<table>
<thead>
<tr>
<th>Figure 8 Ankle Measurement</th>
<th>58.9 cm</th>
<th>55.5 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>OPTIMAL</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>Numeric Pain Rating Scale: 3/10, at worst = 6/10</td>
<td>patient was able to walk long distances (1000 feet), walk outdoors, and climb stairs with little difficulty.</td>
</tr>
</tbody>
</table>

Outcomes
- Physical therapy sessions: 2 times per week for 8 weeks

<table>
<thead>
<tr>
<th>Active Range of Motion</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle dorsiflexion</td>
<td>21°</td>
<td>35°</td>
</tr>
<tr>
<td>Ankle plantarflexion</td>
<td>46°</td>
<td>47°</td>
</tr>
<tr>
<td>First toe flexion</td>
<td>36°</td>
<td>38°</td>
</tr>
<tr>
<td>First toe extension</td>
<td>50°</td>
<td>49°</td>
</tr>
</tbody>
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Discussion
As indicated by the patient’s improvements, the prescribed interventions appear to be a beneficial form of physical therapy management for patients following triple arthrodesis surgery.

This case was a challenge due to the scarcity of literature about physical therapy management following triple arthrodesis. It would be useful to conduct clinical trials, in order to obtain more data on the effectiveness of various treatment methods.