Short Term Functional Outcomes of Gastrocnemius Recession

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Disclosures

- **THE AUTHORS HAVE NO CONFLICTS TO DISCLOSE**

- **Short Term Functional Outcomes of Gastrocnemius Recession**
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- Our disclosures are in the Final AOFAS Mobile App.
- We have no potential conflicts with this presentation.
Short Term Functional Outcomes of Gastrocnemius Recession

- Isolated gastrocnemius and gastrocnemius-soleus contractures are commonly seen with chronic pathology of the foot and ankle
  - Plantar fasciitis, Achilles tendinopathy, metatarsalgia, plantar ulceration, hallux valgus

- Contracture prevalence
  - Symptomatic patients: 65-88%
  - Asymptomatic patients: 25%

- Normal gait requires $\geq 10^\circ$ ankle dorsiflexion
  - If lacking, increased strain on adjacent joints/soft tissues

Short Term Functional Outcomes of Gastrocnemius Recession

- Gastrocnemius recession useful for addressing contracture
- Performed both in isolation and as an adjunctive procedure
- Concern for biomechanical disadvantage
  - Gastrocnemius generates ~40% of plantar flexion strength
  - Recession could lead to potential residual weakness and subsequent difficulties with gait

Heather L. Barske et al. Foot Ankle Int 2012;33:915-921
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Methods

- 20 patients underwent an isolated gastrocnemius recession (modified Strayer technique) for foot and ankle conditions with associated gastrocnemius or gastrocnemius-soleus contracture

Two arms

- First arm
  - 8 patients prospectively completed functional outcome scores, range of motion testing, and strength testing, at preop, 3-months postop, and 6-months postop

- Second arm
  - 12 patients prospectively completed only functional outcome scores at preop, 3-months postop, and 6-months postop
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Methods

- Functional Outcome Score
  - Foot Function Index (FFI)
    - Pain, disability, and activity limitation subscales
- Range of Motion
  - Manual goniometer measuring peak dorsiflexion with knee extended and knee flexed
- Strength testing
  - Isometric and isokinetic testing, utilizing the Biodex System 3 (Biodex Medical Systems, Shirley, NY)
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Results

Clinical Diagnoses

Symptomatic pes planovalgus was the most common reason for surgery

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pes Planovalgus</td>
<td>45%</td>
</tr>
<tr>
<td>Achilles Tendinopathy</td>
<td>25%</td>
</tr>
<tr>
<td>Plantar Fasciitis</td>
<td>20%</td>
</tr>
<tr>
<td>Foot Drop</td>
<td>15%</td>
</tr>
<tr>
<td>Forefoot Overload/Metatarsalgia</td>
<td>10%</td>
</tr>
<tr>
<td>Forefoot Ulceration</td>
<td>5%</td>
</tr>
</tbody>
</table>
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- **Results**

  - **Subjective Functional Outcomes**
    - Total FFI score significantly improved at 3-months and 6-months post-op
    - All FFI subscale scores also improved significantly at 3-months and 6-months post-op

| Table 2. Foot Function Index (FFI) Scores Before and After Gastrocnemius Recession |
|---------------------------------|-----------------|-----------------|-----------------|
|                                  | Pre-Op | 3-Months Post-Op | 6-Months Post-Op |
| Foot Pain                        | 49.9   | 26.3             | 17.9             |
| Disability                       | 58.3   | 31.7             | 20.8             |
| Activity Limitation              | 27.0   | 13.9             | 6.5              |
| Total Score                      | 45.0   | 26.2             | 17.7             |

$p < 0.05$ for all 3-month and 6 month post-op scores compared with pre-op scores
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Results

Range of Motion

- Overall $11^\circ$ improvement in mean passive ankle dorsiflexion with knee extended at 6-months postop
- Similar improvement with mean passive ankle dorsiflexion with the knee in 90 degrees of flexion

* $p < 0.05$
Results

Strength testing

- Improvement noted post-op with both isokinetic and isometric testing, though not significant
- No significant difference when compared with contralateral control extremity
Discussion

- Isolated gastrocnemius recession is an effective procedure for treatment of gastrocnemius and gastrocnemius-soleus contractures associated with a variety of foot and ankle conditions.
  - Significant improvement in functional outcome scores and ankle dorsiflexion.
  - No significant deleterious effects related to isokinetic or isometric strength.
- Further studies necessary to adequately determine its long-term utility and efficacy.
Short Term Functional Outcomes of Gastrocnemius Recession

REFERENCES

- Vulpius O, Stoffel A. Tenotmie der end schnen der mm. gastrocnemius el soleus mittels rutschenlassen nach vulpius. In Edited, Orthopadische Operationslehre, Stuttgart, Ferdinand Enke. 1913; 29-31.