Anterolateral ankle pain is a common symptom treated regularly within a foot and ankle surgeon’s practice. However, including the correct diagnosis and a successful treatment plan can be challenging. Common etiologies of anterolateral ankle pain include ligamentous injury, soft tissue impingement, osteochon drairal lesions, loose bodies and arthritis. In addition, the peroneus tertius tendon is an understudied cause of pain, and peroneus tertius syndrome (PTS), a syndrome involving a symptomatic peroneus tertius tendon, which to the authors’ knowledge is a syndrome not previously described in the literature. Furthermore, we aimed to analyze patient outcomes following surgical management involving a case series.

Statement of Purpose

This study characterizes PTS as a peroneus tertius tendon that causes catching or locking over the anterolateral ankle or rearfoot with accompanying pain. This study aimed to describe the clinical presentation and surgical findings for patients undergoing a minimally invasive surgical technique. Prior to surgical intervention, we recommend obtaining an MRI to confirm the presence of a peroneus tertius, to rule out concurrent anterolateral ankle pain, and for preoperative planning due to variable anatomy.

In our study, patient post-operative outcomes were assessed via a standardized questionnaire and imaging studies to determine the prevalence of the condition, as well as long-term outcomes of surgical management. In conclusion, excision of a symptomatic peroneus tertius are unlikely to experience a significant functional deficit and will not have an increased risk of ankle sprains. Furthermore, the authors concluded that patients with a peroneus tertius demonstrated no significant difference in evasion or dorsi flexion strength. Therefore, we may conclude that patients who undergo excision of a symptomatic peroneus tertius are unlikely to experience a significant functional deficit and will not have an increased risk of ankle sprains. An inherent limitation to the present study is the retrospective nature of our series and a relatively small sample size. Furthermore, a non-validated questionnaire was used to assess post-operative outcomes. Despite these drawbacks, our initial results are very promising. To our knowledge, this is the first study to formally describe PTS and further studies are warranted to determine the prevalence of this condition, as well as long-term outcomes of surgical management. In conclusion, excision of a symptomatic peroneus tertius provides complete resolution of PTS symptoms, facilitates a quick return to activity, and has excellent patient outcomes.

Methodology & Hypothesis

A retrospective review was conducted from January 2016 to August 2017 involving three patients diagnosed with PTS. We defined PTS based on the patients’ presenting symptoms consisting of anterolateral ankle pain caused by catching or popping of the peroneus tertius tendon over the rearfoot/ankle. All three patients obtained transient numbness ranging 10% of their symptomatic ankle after initial plain film radiographs were obtained. The patients subsequently underwent excision of a symptomatic peroneus tertius for definitive treatment of PTS. The interval between symptomatic onset and surgical management ranged from one month to three years. Average patient follow-up was 11.6 months.

All surgeries were performed at a single institution by the senior author utilizing a minimally invasive approach as described in the procedures section. Post-operative follow-up care and a standardized questionnaire were used to evaluate patient outcomes and overall satisfaction. We hypothesized surgical excision of a symptomatic peroneus tertius tendon would provide significant clinical relief for the satisfied relief of anterolateral ankle pain in patients with PTS.

Literature Review

Literature reporting a symptomatic peroneus tertius is scarce. Available studies primarily focus on the functional significance and anatomy of the tendon. The peroneus tertius is a variably present muscle, which has been thought to play an evolutionary role in bipedal gait. Prevalence of the tendon ranges from 49% to 94% in anatomic studies. Functionally, the tendon is solely active in the swing phase of gait and helps assist in dorsi flexion and evasion. Varying literature considers the peroneus tertius as either part of the extensor digitorum longus muscle or an individual tendon and muscle complex.

To our knowledge, Samaano et al. is the only previously reported case of anterolateral ankle pain and snapping secondary to a hypoplastic peroneus tertius muscle. This hypoplastic muscle underwent arthroscopic myoplasty which included partial resection of the peroneus tertius muscle belly. The authors concluded that surgical management alleviated the patient’s symptoms with return to normal activities after eight weeks of surgery. McGoldrick et al. reported a case of an isolated peroneus tertius tendon tear resulting in lateral ankle pain! The patient ultimately underwent primary surgical repair of a full thickness tear of the peroneus tertius tendon. The authors reported it was pain free with full return to activities at nine months. Dennery et al. also reported on a longitudinal split tear of the peroneus tertius tendon with concomitant longitudinal tears of the peroneus longus and brevis tendon. Although the authors concluded on these findings, no mention of conservative or surgical care was noted as this was primarily a radiographic study.

Analysis & Discussion

All patients experienced complete resolution of PTS symptoms by the third post-operative week. No incisional dehiscence or post-operative infections occurred. One patient returned to full activities within three weeks of surgery and reported transient numbness to the dorsal aspect of the third and fourth digits, which resolved by final follow up. Overall patient satisfaction was 100% with improved functional status and no evidence of recurrent symptoms (Table 1).

Table 1. Patient Demographics

<table>
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<tr>
<th>Age</th>
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<th>Procedures</th>
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<td>18 year old male</td>
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<tr>
<td>43 year old male</td>
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Table 2. Patient Questionaries Results

<table>
<thead>
<tr>
<th>Post-operative Visual Analog Score</th>
<th>Overall Satisfaction*</th>
<th>Overall Status**</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1-decreased</td>
<td>2-same</td>
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Figure 1. Magnetic resonance imaging demonstrating presence of the peroneus tertius muscle and tendon in multiple views, including T1 axial (A), T1 axial (B), T1 coronal (C), T1 sagittal (D).

Figure 2. Minimally invasive two incision approach for peroneus tertius resection (A-C). Excision of peroneus tertius tendon and incision (D).

Final Thoughts

No incisional dehiscence or post-operative infections occurred. One patient returned to full activities within three weeks of surgery and reported transient numbness. The surgical sites were copiously irrigated and then dressed and were permitted to bear weight as tolerated in an Anklizer boot or surgical shoe. Sutures were removed at two weeks post-operative. At three weeks post-operative, patients were transitioning into supportive shoe gear, and allowed to gradually increase activity as tolerated.

Results

In our study, patient post-operative outcomes were assessed via a standardized questionnaire and imaging studies to determine the prevalence of the condition, as well as long-term outcomes of surgical management.

This first study to formally describe PTS and further studies are warranted to determine the prevalence of this condition, as well as long-term outcomes of surgical management. In conclusion, excision of a symptomatic peroneus tertius tendon provides complete resolution of PTS symptoms, facilitates a quick return to activity, and has excellent patient outcomes.

References

3. Gundersen Medical Foundation, La Crosse, WI; Gundersen Health System, La Crosse, WI