



## Case Reports and Series

## Minimally Invasive Tendon Release for Symptomatic Accessory Soleus Muscle in an Athlete: A Case Report

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## ABSTRACT

The accessory soleus muscle can pose a diagnostic dilemma for exertional ankle pain, especially in athletes. Once diagnosed, the current treatment options require an extensile approach and can be associated with substantial risk and a slow recovery. We describe a minimally invasive, safe method that has proved successful in our practice.

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The accessory soleus is a commonly recognized anatomic variant, present in 1.9% to 5.5% of the population (1–4) (Figs. 1 and 2). According to a review of the published data describing 70 cases of accessory soleus, one third of the patients were asymptomatic or reported painless swelling (3). A bilateral occurrence was recognized in 10 of 60 patients (16.7%) (3). Increasingly, however, an accessory soleus muscle is being recognized as a cause of exertional ankle pain, the clinical manifestations of which include exercise-induced compartment syndrome, tarsal tunnel syndrome, and Achilles tendinopathy (5–7). Athletes, in particular, are at risk owing to muscle hypertrophy in response to increased physical activity (5,6,8,9). The current recommended surgical treatment is fasciotomy or muscle belly excision, both requiring extensive soft tissue dissection using an extensile exposure (2,3). We report a much simpler surgical technique, with excellent outcomes.

## Case Report

We report the case of a 25-year-old professional Australian Rules Football player, who presented with medial-side ankle pain in December 2013. He had no history of surgery to the ankle, no medical history of any significance, no allergies, and he used no regular medications. The patient history was reported as medial-side ankle pain that worsened the more he ran. On physical examination, the patient had medial

hindfoot fullness, with a palpable accessory soleus tendon that was maximally tender at the musculotendinous junction (Fig. 1). He was examined with magnetic resonance imaging scans, which showed the accessory soleus belly and tendon (Fig. 2), consistent with the clinical examination findings. Initial therapy consisted of corticosteroid and local anesthetic injections at the tendon insertion and the musculotendinous junction, which resulted in temporary symptomatic relief. However, his pain and swelling returned, and in January 2014, the decision was made to operate using the surgical technique we describe.

## Surgical Technique

The accessory soleus tendon inserts into the calcaneum, anteriorly and medially to the Achilles tendon (Figs. 2 and 3). Under general anesthesia, the patient was positioned supine, with a sandbag under the contralateral buttock and a thigh tourniquet on the operative side (Supplemental Video S1). The insertion of the accessory soleus was palpated, and a longitudinal incision was made approximately 1 cm medial to the medial border of the Achilles tendon. Blunt dissection was continued down to the accessory soleus tendon insertion, with care taken to inspect for any subcutaneous branches of the medial calcaneal nerve emerging from the tarsal tunnel. The tendon was then sectioned distally and placed under tension such that it could be isolated proximally. The tendon, which is usually quite short, was then exposed as far proximally as the musculotendinous junction, where it was sectioned, allowing the muscle to retract proximally into the wound. Layered wound closure was performed using an absorbable braided suture to the deep dermis and subcuticular absorbable monofilament suture in the skin. The wound was dressed with an adhesive absorbent dressing and wool and crepe bandage materials.

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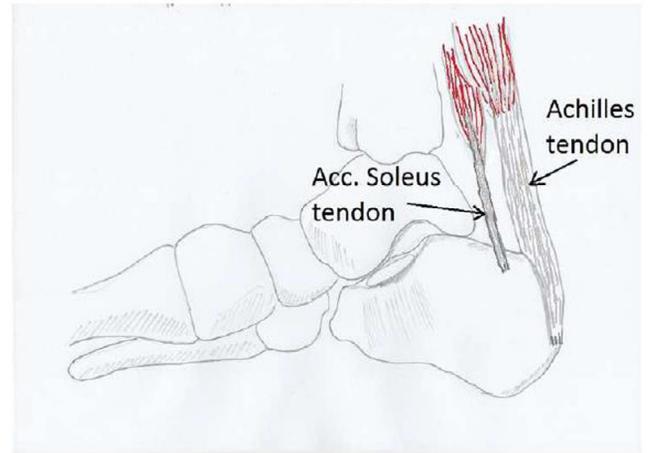
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**Fig. 1.** Clinical photograph showing a symptomatic accessory soleus in an elite athlete.



**Fig. 3.** Illustration demonstrating the typical distal anatomy of an accessory soleus tendon in relation to the Achilles tendon (illustration by D. Marsland). Acc., accessory.

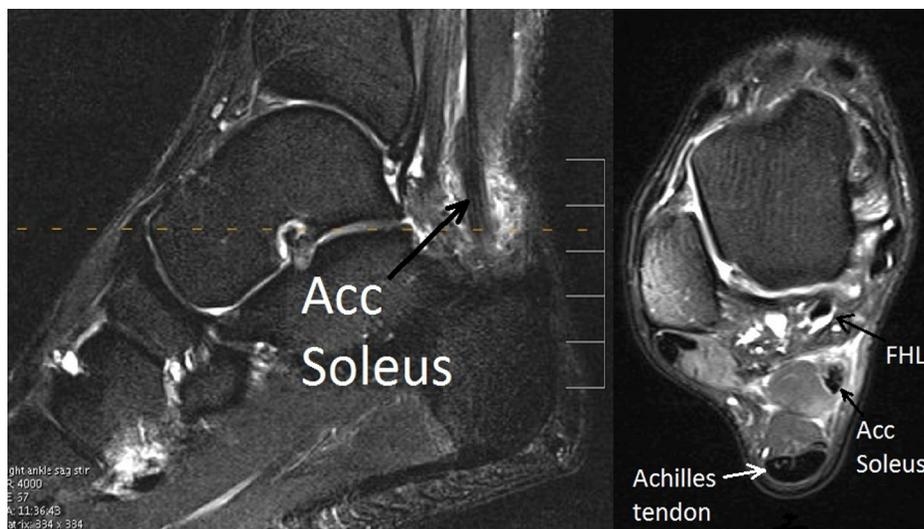
exercises were allowed with the leg out of the CAM walker. The CAM walker was also removed for sleeping. After wound healing at 2 weeks, the patient was allowed to return to running on an altered gravity running apparatus. The athlete had returned to game play by 5 weeks and to full competition by 3 months postoperatively. No complications were noted in this case, and the patient was asymptomatic after 3 years of periodic follow-up examinations.

**Discussion**

The potential causes of pain associated with an accessory soleus include tendinopathy, localized compartment syndrome because the muscle is contained within its own fascia, and compression neuropathy of the tibial nerve (10). We propose that decommissioning the accessory muscle by detaching it from its insertion leads to muscle atrophy, thereby reducing the symptoms related to the space-occupying effect of the muscle as well as the other aforementioned causes of pain. We believe that this minimally invasive approach is innovative compared with the more traditional extensile dissections that entail complete or partial excision of substantial portions of the accessory soleus belly and

*Postoperative Protocol*

Postoperatively, the patient was immobilized in a controlled ankle movement (CAM) walker and allowed to weight bear as tolerated for the first 7 days. During this period, non-weightbearing range of motion



**Fig. 2.** Sagittal and axial magnetic resonance images showing a tendinopathic accessory (Acc) soleus tendon in a symptomatic professional Australian Rules Football player. The Achilles tendon, accessory soleus tendon, and flexor hallucis longus (FHL) tendon are labelled.

that the physiologic disuse atrophy of the muscle after excision of its tendinous component enables symptom resolution without extensive dissection and without denervation of the muscle proximally. Our surgical technique relieved the pain related to tendinopathy in the athlete described in the present report. Finally, we believe the limited dissection was associated with our patient's rapid return to athletic activity.

### Supplementary Material

Supplementary material associated with this article can be found in the online version at [www.jfas.org](http://www.jfas.org), <https://doi.org/10.1053/j.jfas.2017.11.015>.

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