

Accessory Soleus - A Case Report

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Abstract: *Accessory muscles are anatomic variants representing additional distinct muscles that are encountered along with the normal complement of muscles¹. In the vast majority of cases, accessory muscles are asymptomatic and represent incidental findings at surgery or imaging¹. During routine dissection in a male cadaver, an accessory soleus belly was noted arising from the deeper aspect of middle one third of soleus and getting inserted into tendo achilles just before the insertion of the latter into calcaneus.*

.Keywords: Accessory Soleus, Tendo Achilles

1. Introduction

First described by Cruvelhier [3], the accessory soleus muscle (also known as supernumerary soleus or soleus secundus) is a congenital anatomical variant with an incidence of 0.7–5.5% [2],[4]. The soleus lies deep to the gastrocnemius and arises from (a) the posterior aspect of the head and upper shaft of the fibula, (b) the soleal line of the tibia, (c) the middle third of the medial border of the tibia, and (d) a fibrous band bridging its fibular and tibial origins. The fibers converge on a short tendon, which normally joins the deep surface of the Achilles tendon.

An accessory soleus arises from the anterior (deep) surface of the soleus or from the fibula and soleal line of the tibia [5]-[7]. From its origin, The muscle descends anterior or anteromedial to the Achilles tendon [5],[7]. Five types of accessory soleus have been described on the basis of insertion characteristics. Insertion points include the Achilles tendon, the upper surface of the calcaneus with a fleshy muscular insertion, the superior surface of the calcaneus with a tendinous insertion, the medial aspect of the calcaneus with a fleshy muscular insertion, and finally, the medial aspect of the calcaneus with a tendinous insertion [5],[7],[8].

2. Case Report

During the routine dissection classes of lower limb, in the department of Anatomy, Government Medical College, Thrissur, Kerala, India, unilateral accessory soleus was found in the right lower limb of an unidentified dark-skinned male cadaver with an apparent age of between 50 and 60 years.

3. Observations

While dissecting out the accessory soleus it was found to be arising from the deeper aspect of the middle third of soleus and got inserted into the tendoachilles just before the insertion of Achilles tendon to the calcaneus. Both the soleus and accessory soleus were found in the same fascial slip [Figure 1].

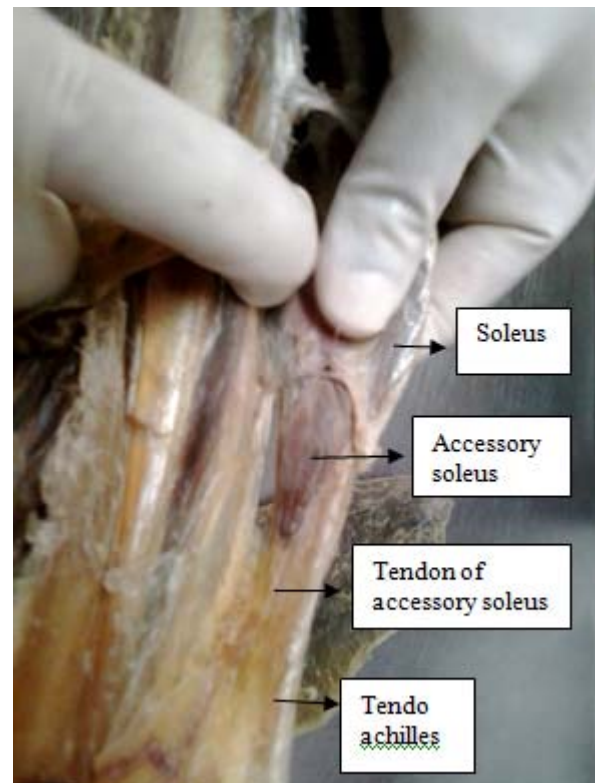


Figure 2: Accessory soleus along with soleus in the same fascial slip

4. Discussion

According to cadaveric studies, an accessory soleus has a prevalence of 0.7%–5.5%, with the muscle most commonly seen as a unilateral finding [6]. If it is seen bilateral, one muscle may be larger on one side and smaller on the other side [11], [12]. Accessory soleus muscle has the characteristic findings of a normal muscle in an abnormal location. Gruvelhier (cited by Percy and Telep [13]) first named this muscle “supernumerary soleus” in 1843, and in 1871 Pye Smith (cited by Brodie et al [14]) described an anomalous muscle in the leg named “soleus secundus” [15].

The embryological origin of the accessory soleus muscle is due to early splitting of a single anlage of the soleus muscle, with the development of an extra fasciculus or even a supernumerary muscle [15]. This accessory muscle (typical location) arises from the anterior surface of the soleus, which corresponds to our case, from the soleal line of the tibia or from the fibula and is attached with a separate tendon to the calcaneus anteromedial to the tendon Achilles or directly inserted into tendoachilles as is seen in the present case

An accessory soleus may manifest clinically as a soft-tissue mass in the posteromedial aspect of the ankle. Clinically evident accessory soleus muscles have a male predilection and commonly manifest in the 2nd and 3rd decades of life [6], a fact that may be attributable to the increase in muscle mass and activity during this period. The reported age at diagnosis of accessory soleus muscle varies from 3 months to 66 years, with a mean age of 19 years [16]-[19],[21]. There may be associated pain, which is typically exertional, with a higher prevalence in athletes [6],[8]. There are various explanations for pain associated with an accessory soleus, including development of a localized compartment syndrome due to an increase in intrafascial pressure [8],[10] or an inadequate blood supply from the posterior tibial artery [6]. Alternatively, accessory soleus hypertrophy may cause compression of the adjacent posterior tibial nerve. Fixed equinus and clubfoot deformities of the hindfoot have been described in association with an accessory soleus [22]. The diagnosis of an accessory soleus should be considered in patients with a palpable mass in the posterior ankle or those with a soft tissue density in Kager's triangle (pre-Achilles fat) at radiography [17]-[20]. MRI is currently essential in diagnosis and decision-making to confirm the benign nature of the mass, to describe in detail the anatomy of the accessory soleus and to rule out any differential diagnosis (such as tendonopathies, muscle tears or soft tissue tumours). If patient is asymptomatic and diagnosis of accessory soleus muscle is made, only observation is recommended. If symptomatic, fasciotomy or excision is recommended [13].

5. Conclusion

Even though Accessory soleus is a rare congenital anomaly it must be considered in the differential diagnosis of soft tissue mass in the postero-medial region of the ankle like ganglion, lipoma, hemangioma, synovioma and sarcoma and should be treated accordingly [24].

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