

The Accessory Soleus Muscle: Case Report and a Review of the Literature

El Músculo Sóleo Acesorio: Reporte de Caso y Revisión de la Literatura

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SUMMARY: An accessory soleus muscle was found in the left leg of a male cadaver in the dissecting room. The muscle was situated posteromedially, between the soleus muscle and the flexor digitorum longus and flexor hallucis longus. The origin of the muscle was in the superior third of the anterior fascia of the soleus muscle and the insertion, was attached with separate tendon, in the anteromedial surface of calcaneus bone.

KEY WORDS: Muscle; Accessory soleus muscle; Anatomical variation.

INTRODUCTION

The occurrence of an accessory soleus muscle seems to be the most frequent anatomical description among the variations in the calf muscles (Motto & Holloway, 1996). The first description of this variation is sometimes attributed to Cruveilhier (Testut, 1884; Brodie *et al.*, 1997) and sometimes to Turner, (Boisgard *et al.*, 1996).

Initially, the accessory soleus muscle was considered to be a supernumerary muscle or an anatomical variation of the plantar muscle. According to Pettersson *et al.* (1987), the incidence of the accessory soleus muscle ranges from 0.7 to 5.5%. Recently, Kouvalchouk *et al.* (2005) estimated that it was present in 10% of all individuals. Some authors, like Christodoulou *et al.* (2004) and Kendi *et al.* (2004), considered that the occurrence of an accessory soleus muscle was a rare anatomical variation. John & Borrelli (1999) stated that the accessory soleus muscle is infrequently observed and reported, clinically. According to Palaniappan *et al.* (1999), it was a chance finding that could be confounded with a soft-tissue tumor. Dunn (1965) was the first to demonstrate that the accessory soleus muscle was involved in painful syndromes of the lower limbs. These syndromes may occur in the calf (Garg & Kilcoyne, 1997), ankle (Vanek & Fourré, 1993) and leg (Pla *et al.*, 1996).

Downey *et al.* (1996) conducted a review of the literature, taking into consideration a 30-year period starting in 1965, and reported the occurrence of 70 cases. According to Boisgard *et al.*, between 1869 and 1995, there were reports of 100 symptomatic cases. The English-language literature has been the principal source of anatomical and clinical records regarding the accessory soleus muscle (Lorentzon & Wirrell, 1987; Chittaranjan *et al.*, 1994; Sekiya *et al.*, 1994; Pla *et al.*; Garg & Kilcoyne; Palaniappan *et al.*; John & Borrelli; Kendi *et al.*; Christodoulou *et al.*; Kouvalchouk *et al.*).

The medical literature demonstrates that the occurrence of the accessory soleus muscle is an important anatomical and clinical finding. In our environment, this type of finding may be rare or may not have received due attention yet, and for this reason we decided to put our present finding on the record.

CASE REPORT. In the dissection room of the Anatomy Laboratory of the Bahia School of Medicine, an accessory soleus muscle was found in the left lower limb of the cadaver of an unidentified dark-skinned male individual. with an

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apparent age of between 40 and 45 years. It was a thick, flat, elliptically shaped muscle mass that was located posteromedially in the lower leg, between the soleus muscle and, anteriorly, the flexor digitorum longus muscle and the flexor hallucis longus muscle (Fig. 1). The origin was into the upper third of the anterior fascia of the soleus muscle (Fig. 2). The insertion of the accessory soleus muscle was into the anteromedial surface of the calcaneus bone, by means of their own tendon (Fig. 3).

DISCUSSION

An accessory soleus muscle with well-defined anatomical characteristics regarding location, shape, volume and course was found. These anatomical characteristics are reminiscent of the descriptions by Faller (1942) and Sekiya *et al.*. The proximal and distal insertions of the muscle coincided with what had been described by most authors.

Dunn highlighted the clinical significance of the

accessory soleus muscle and, subsequent to that work, the anatomical and orthopedic literature became enriched with several other clinical records of its occurrence (Gordon & Matheson, 1973; Ayala *et al.*, 1982; Percy & Telep, 1984; Romanus *et al.*, 1986; Petterson *et al.*; Lorentzon & Wirell; Vanek & Fourré; Motto & Holloway; Pla *et al.*; Garg & Kilcoyne; Palaniappan *et al.*; Chotigavanichaya *et al.*, 2000; Dos Remédios & Jolly, 2000; Kendi *et al.*; Kouvalchouk *et al.*).

Even though descriptions of the accessory soleus muscle are infrequent in anatomy textbooks, Kouvalchouk *et al.*, recently accepted that it might be a finding in 10% of all individuals and that this would frequently be asymptomatic. Downey estimated that 2% of the cases could be asymptomatic. Thus, the frequent reviews of the literature seem to justify the reporting of cases of accessory soleus muscle. These reviews have suggested that clinicians and surgeons should include the presence of this muscle in the differential diagnosis for soft-tissue intumescence on the posteromedial face of the ankle region (Ger & Sedlin, 1976; del Sol *et al.*, 1989; Travis & Pitcher, 1995; John & Borrelli; Dos Remédios & Jolly; Kendi *et al.*).



Fig. 1. General aspect of the accessory soleus muscle (A) and the long flexor hallucis longus (B).

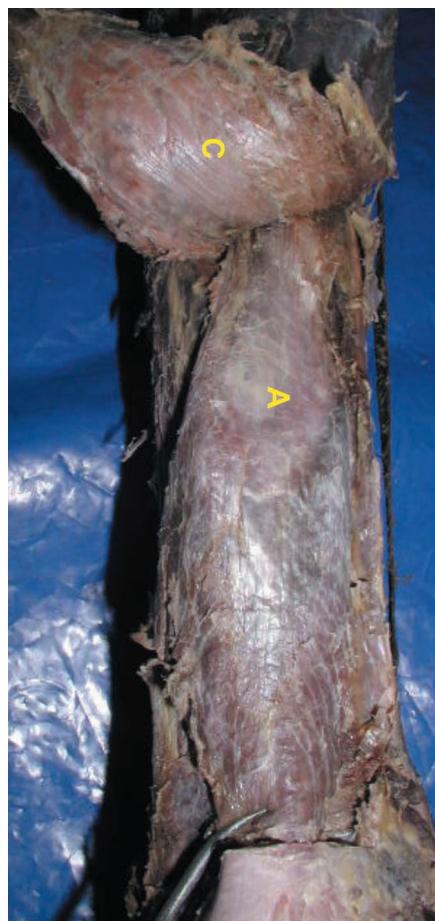


Fig. 2 Origin of the accessory soleus muscle (A) and the soleus muscle (C).



Fig. 3. Insertion of the accessory soleus muscle, with their own tendon (A) and the flexor digitorum longus muscle of the toes (D).

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RESUMEN: Durante una disección de rutina, se encontró un músculo sóleo accesorio, en la pierna izquierda de un cadáver masculino. El músculo se localizaba posteromedialmente en la pierna, entre los músculos flexor largo de los dedos y largo del hálux. Su origen estaba en el tercio superior de la fascia anterior del músculo sóleo y su inserción se realizaba, a través de un tendón en la superficie anteromedial del hueso calcáneo.

PALABRAS CLAVE: Músculo; Músculo sóleo accesorio; Variación anatómica.

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