



Accessory soleus muscle as a cause of congenital talipes equino varus A case report

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The authors report a case of congenital clubfoot in a one-year-old male child, in which an accessory soleus muscle was noted intraoperatively, running antero-medially to the Achilles tendon and with a distinct insertion on the postero-medial aspect of the calcaneus. Correction of the varus and equinus of the hindfoot could only be achieved after cutting the tendon of the accessory soleus muscle at its insertion on the calcaneus.

Keywords : clubfoot ; accessory soleus muscle.

INTRODUCTION

Clubfoot is amongst the commonest skeletal congenital malformations with a reported incidence of 1-2 per 1000 live births (9). Usually it presents as an isolated skeletal abnormality in absence of any other congenital problem. The reported incidence of other associated anomalies is about 6% (9).

The pathological anatomy has been well defined with tightness of the posterior and medial soft tissues including the muscle tendon units and the ligaments, along with structural bony changes in the calcaneus, talus, navicular and cuboid and their articulations (5). The severity of the deformity ranges from mild postural to rigid varieties (5, 9).

We report a case of a rigid clubfoot with as a contributing factor to the deformity a rare finding i.e. an accessory soleus muscle inserting to the posterior-medial aspect of the calcaneus.

CASE REPORT

A one-year-old male child presented with a right sided rigid clubfoot to the authors' institution, after an initial treatment by serial casts with no significant correction of the deformity. There was no other associated birth defect such as a neural tube defect, nor arthrogryposis multiplex congenita.

A standard postero-medial soft tissue release was done and despite following the usual steps, persistent equinus remained. During posteromedial dissection and progressive lengthening of the postero-medial muscle tendon units, a thick musculotendinous accessory soleus muscle was identified, running antero-medial to the Achilles tendon and inserting on the postero-medial aspect of the calcaneum, separate from the Achilles tendon (fig 1a & 1b). In order to assess the contribution of this muscle to the deformity, the rest of the soft tissue

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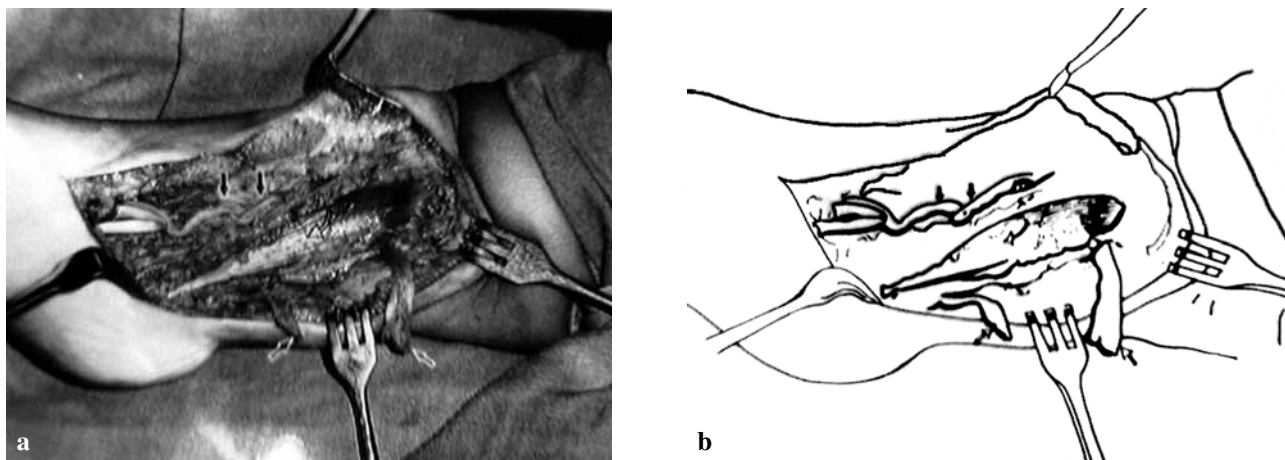


Fig. 1. — **a.** Intra-operative photograph showing accessory soleus muscle ; **b.** Line diagram of the intra-operative photograph showing accessory soleus muscle.

⇒ Tendo Achillis,
 → tibialis posterior and
 > accessory soleus muscle.

release was completed except this muscle. Despite an adequate soft tissue release, hindfoot varus and equinus could not be corrected ; the hindfoot varus and equinus got fully corrected only on cutting the muscle at its insertion on the calcaneus. At 12 months of follow-up, the patient is ambulatory with a fully corrected plantigrade foot.

DISCUSSION

The soleus muscle arises from the soleal line on the posterior aspect of the tibia and from the posterior aspect of the fibula ; it lies anterior to the gastrocnemius muscle. The muscle fuses with the gastrocnemius at the junction of the middle and lower third of the leg to form the aponeurotic arch which ends in the Achilles tendon (5).

An accessory soleus muscle can arise from various sites including the postero-medial aspect of the tibia, the head or the proximal one third of the fibula, the anterior aspect of the Achilles tendon, the oblique soleal line, the aponeurosis of the flexor digitorum longus and the anterior aspect of the soleus muscle. This variability is also present in the distal insertion of the muscle. There are four different anatomic variations, these include an insertion along the Achilles tendon, a tendinous insertion to

the superior aspect of the calcaneus, a muscular insertion along the superior aspect of the calcaneus and a muscular insertion at the postero-medial aspect of the calcaneus as was present in our case (2, 6).

Brodie *et al* reported four cases of an accessory soleus which presented with a soft tissue swelling in the ankle region (1). The most common clinical presentation is an often painful swelling at the postero-medial aspect of the ankle during adolescence or in adulthood (1). The pain occurs mostly on activity. The diagnosis can be made by imaging studies of which MRI is the most useful.

There were only two reports of an accessory soleus contributing to clubfoot (1, 7). In both reports the accessory soleus was diagnosed incidentally during surgery. Chotigavanichaya *et al* reported a similar case with an accessory soleus muscle contributing to a persistent deformity, resistant to treatment ; the deformity got corrected only on tenotomising this tendon (2). Danielsson *et al* also reported two children with accessory soleus muscle contributing to hind foot varus (3, 4). There is no case in the literature of such presentation in infancy or early childhood.

Some authors recommend early percutaneous posterior release of the Achilles tendon, which

contributes most to a rigid hind foot deformity. An accessory soleus muscle should be kept in mind as one of the possibilities, when there is failure to achieve a correction of the hindfoot deformity (8).

In our patient despite performing an adequate standard soft tissue release, the hindfoot varus and equinus persisted and exploration revealed an accessory soleus, which was also tight and contributing to equinus and hindfoot varus. Full correction of the deformity was possible only after tenotomy of this muscle at its insertion.

We conclude that an accessory soleus muscle if present in clubfoot may contribute to a rigid deformity though it may not be the sole cause of the deformity. Surgical division at the insertion is required along with the standard postero-medial soft tissue release to correct the deformity.

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