

Accessory muscles of the lower calf

KY Manjunath

Associate Professor, Department of Anatomy, St John's Medical College, Bangalore, India

Abstract

Two rare cases of accessory muscle of the lower calf observed in dissecting room cadavers are described here. This muscle is supposed to occur in 1% bodies and is implicated in tarsal tunnel syndrome. Occurrence of such anomalous muscles should be considered while examining cases reporting with pain associated with swelling in the region of Achilles tendon since they may mimic a soft tissue tumour.

Key words: Ankle, Muscles

Accessory muscles of the extremities, such as extensor digitorum brevis of the hand and the accessory soleus muscles are rare^{1,2,3,4,5}. But the occurrence of the accessory muscles of the lower calf is still rarer. Only few cases of such a variation are found in the world literature⁶. Here we report two similar cases observed in dissecting room cadavers.

Case reports

Case 1 (fig 1a and 1b)

The accessory muscle described here was found in the lower part of the right calf of an adult male cadaver during dissection. The muscle was found deep to the Achilles tendon superficial to the main vascular bundle of the calf. Proximally it was attached by thin tendinous strands to the superficial surface of the flexor hallucis longus and flexor digitorum longus. The muscle belly measured 9.5cm in length and 1cm in width. A slender twig originating from the tibial nerve was found supplying the muscle. The distal tendon of the muscle was a rounded cord of 2cm width and 10cms in length coursed posterior to the neurovascular bundle of the calf, and then deep to the flexor retinaculum, abductor hallucis, flexor digitorum brevis muscles of the sole and broke in to the three strands. The medial strands merged with the tendon of the flexor hallucis longus and the lateral with the tendons of the flexor accessories and flexor digitorum longus muscles of the sole. No similar structure was found on the left side.

Case 2 (fig 2)

It was also found in another male cadaver on the left side. The anomalous muscle was located in the lower 1/3 of the calf. The proximal tendon consisted of slender strands of deep fascia attached to the transverse septa of deep fascia of the calf superficial to the long flexor muscles. The tendinous strands were 11cm in length, followed by fleshy muscle belly 7 cm in length, and 4mm width. The distal tendon was rounded of 1mm width coursed deep to the flexor retinaculum and was found attached to the deep surface of the flexor digitorum brevis.

Correspondence

KY Manjunath,
Associate Professor, Dept of Anatomy,
St John's Medical College, Sarjapur Road,
Bangalore-560 034, India
E-mail: kymanjunath@rediffmail.com

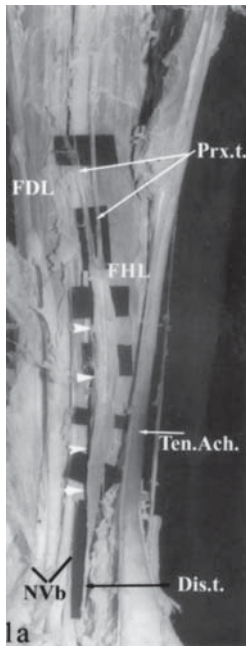


Fig 1a: Shows the accessory muscle dissected out in the lower calf in the case-1.

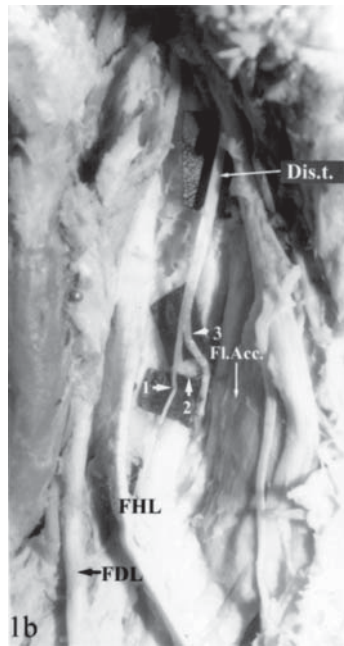


Fig 1b: The course and attachment of the distal tendon of the muscle shown in the fig 1a in the sole breaking into three strands and getting attached to flexor digitorum longus.

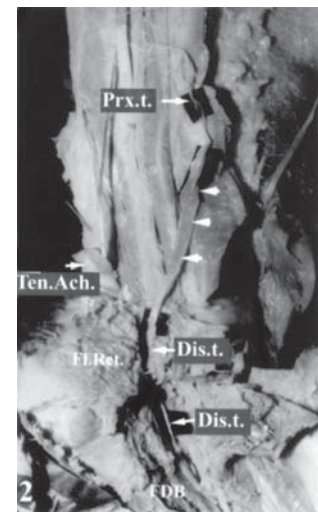


Fig 2: Shows the anomalous muscle described in the case-2 (arrow heads) and the course of its distal tendon in the sole of the foot.

Abbreviations used

Dist.t.-distal tendon; Fl.Acc.-flexor accessories; FDB-flexor digitorum brevis; FDL- flexor digitorum longus; FHL-flexor hallucis longus; Fl.Ret.-flexor retinaculum; NVb-neuro –vascular bundle of the leg; Prx.t.-proximal tendon; arrow heads –muscle belly; 1,2,3 –tendinous strands.

Discussion

Many cases of accessory muscle of lower calf in the pre-Achilles pad of fat have been reported so far¹. According to Nidecker, Von Hochstetter, Fredenhagen similar to those described by them have never been reported before¹.

Of the four cases reported by Nidecker, Hochstetter, Fredenhagen two cases were observed in teen aged patients (one male and another female). Both the patients reported with swelling and pain in the region of Achilles tendon on the left side. A soft tissue swelling was noted and the CT scan done in one of the patients revealed an accessory muscle mass in the pre-Achilles pad of fat. Since no surgical exploration was done on these patients further anatomical details of the accessory muscle are not known. The other two cases also were observed by the same authors in dissection room cadavers (of which one was bilateral). In these two specimens the accessory muscle was attached proximally to the posterior border of the tibia and distally to the upper surface of the calcaneum. No details of the dimensions of the muscle are mentioned¹.

The anomalous muscle described by us in case 1 varies considerably in comparison to the previous reports;

proximally it was found attached to the superficial surfaces of the long flexors of the calf and distally merged with the tendons of the same muscles in the sole of the foot. There was no attachment to the calcaneus. This is the first case encountered by us in our experience of dissecting 150 human cadavers in over 20 years period.

Nichols and Kalenak have reported a case of female athlete with pain and swelling in the ankle. An accessory muscle was found during surgical exploration in the lower calf and was removed⁵. The second case described in the present report closely resembles the cases quoted above.

According to Bergman, Thompson, Afifi, Sadeh the accessory calf muscles are formed in 1% of the bodies; it is known by a variety of names including the following:

m.accessories ad quadratum plantae, m. accessories ad flexorum accessorium, m. accessories longus ad flexor digitorum longus, m. accessorium as accessorium, m. peroneocalcaneus internus, fibulocalcaneus medialis and flexor accessories digiti longus⁶.

Prior to the advent of CT the accessory muscle could only be suspected and confirmed only at surgery. They may mimick soft tissue tumors of the lower calf. This muscle been implicated in the tarsal tunnel syndrome⁶.

According to Nidecker, Hochstetter, Fredenhagen the accessory muscle may be functionless¹; even the muscles described here are not likely to be functional as its proximal attachments were thin aponeurotic strands. However an orthopaedician has to rule out the possible occurrence of an accessory muscle when a patient reports with pain and swelling in the region of Achilles tendon.

References

1. Nidecker A.C., Von Hochstetter A, Fredenhagen H, Accessory muscle of the calf, Radiology. 1984; 151:47-8.
2. Dunn, A.W. Anomalous muscle simulating soft tissue tumors in the lower extremities. J Bone Joint Surg. 1965; 47A: 1397.
3. Ger R and Sedlin F. The Accessory soleus muscle Clin Orthop 1976; 116:200.
4. Gordon SL and Matheson DW. The accessory soleus. Clin. Orthop 1973; 97:129.
5. Nichols G.W. and Kalenak A. The accessory soleus muscle. Clin.Orthop. Nov 1984;190: 279-80.
6. Bergman R.A., Thompson S, Afifi A.K., Sadeh F.A. Editors-Compendium of human anatomical variations. Munich : Urban and Schwarzenberg, 1988: 317.