

A rare muscle anomaly: the supraclavicularis proprius muscle

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In the Dissection Team of the Second Chair of Anatomy at the School of Medicine of the University of Buenos Aires, Argentina, during the routine dissection of 78 cadavers (corresponding to 156 supraclavicular fossae), 10% formalin fixed, we found the supraclavicularis proprius muscle over the lower part of the left supraclavicular fossa in an adult Caucasian male cadaver. We described this rare muscular anomaly, the likelihood of finding this muscle, and its participation in supraclavicular nerve entrapment syndrome. (Folia Morphol 2009; 68, 1: 55–57)

Key words: supraclavicularis proprius muscle, supraclavicular fossa, supraclavicular nerve entrapment syndrome

INTRODUCTION

The supraclavicularis proprius muscle is an abnormal muscle that may be found in the supraclavicular fossa. It consists of an anterior tendon inserting into the sternal aspect of the clavicle, lateral to the clavicular insertion of the sternocleidomastoideus muscle, and a posterior muscular portion entering the lateral aspect of the clavicle, medial to the acromioclavicular joint. This anatomic variant was first described by Gruber (1865) [9], who called it the tensor fascia colli, on account of his finding that its contraction made tense the superficial layer of the cervical fascia that contained it. Since then a few authors have described this abnormal muscle: Macalister (1875) [19], Bardeleben (1876) [1], Knott (1880) [16], Dubar (1880) [6], Le Double (1897) [18], Laidlaw (1902) [17], Eisler (1912) [7], and Stadler (1930) [24]. However, none of them provided any information on its frequency of occurrence. Only Bergman et al. [2] reported that clavicular supernumerary muscles are numerous but uncommon. With respect to its embryological origin, Mori [21] indicates that the trapezius and sterno-

cleidomastoideus muscles develop from the branchial musculature, so it is presumed that the supraclavicularis proprius muscle evolved from the sternocleidomastoideus and trapezius muscles, of which it represents an abnormal persistence [2, 7, 14, 17, 24, 25]. Here we describe our finding of a supraclavicularis proprius muscle, its frequency of occurrence according to our experience, and its clinical significance.

CASE REPORT

In the Dissection Team of the Second Chair of Anatomy, at the School of Medicine of the University of Buenos Aires, during the routine dissection of 78 cadavers (10% formalin-fixed), we found this abnormal muscle over the lower part of the left supraclavicular fossa in an adult Caucasian male cadaver (Fig. 1). Measuring 8.3 cm long, the muscle was enclosed between the superficial and deep layers of the fascia colli overlying the clavicle with an inferiorly concave curvature. It inserted into the posterior border at the lateral end of the clavicle, 4.2 cm from the acromion process, between the acromio-

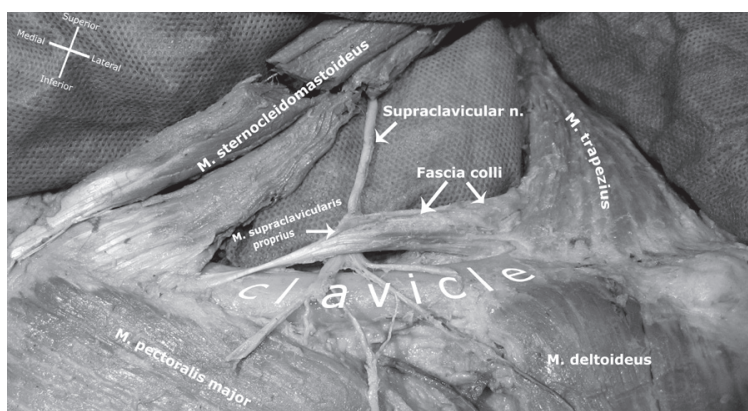


Figure 1. The supraclavicularis proprius muscle over the lower portion of the left supraclavicular fossa.

clavicular insertion fibres of the trapezius muscle. It exhibited a tendinous medial insertion at the level of the anterior border of the clavicle, 3.5 cm from the sternoclavicular joint, lateral to the sternocleidomastoideus muscle. The supraclavicular nerve, before passing underneath this abnormal muscle and through the space it formed with the clavicle, provided a small twig to the dorsal aspect of the muscle, which would be responsible for its innervation. Therefore, as previously suggested by Laidlaw [17], Eisler [7], Stadler [24] and Havet et al. [11], innervation of this muscle would be supplied by C3 and C4 ventral rami.

DISCUSSION

To our knowledge, data on the frequency of occurrence of this abnormal muscle is lacking. Only Bergman et al. [2] reported that clavicular supernumerary muscles are numerous but uncommon. In our experience, the frequency of occurrence of the supraclavicularis proprius muscle would be 0.64%, based on a total of 156 supraclavicular fossae dissected in 78 Caucasian adult cadavers.

Historically, this muscle variant has been termed variably. Gruber called it *praeclavicularis subcutaneus* and, because of its action, *tensor fascia colli*. Later, Testut [25] developed a classification of clavicular supernumerary muscles, and included this variant as belonging to the group of “*musculus cleido-aponévrotique ascendant, tensor de l’aponévrose sous-claviculaire*.” Finally, it was Laidlaw [17] who, in 1912, first employed the currently used term, *supraclavicularis proprius* muscle.

Hyrtl [12] and Bryce [3] described a “*sterno-clavicularis* muscle”, which had an anterior tendon extending medially and anteriorly to the sternum. Haller [10] established that the frequency of occur-

rence of this rare muscle anomaly is in 1 in 30 bodies. Jinguji and Takisawa [14] described yet another form of this muscle in a female cadaver, the *supraclavicularis singularis*, extending from the ventral surface of the sternal manubrium to the clavicular insertion of the sternocleidomastoideus muscle, and located posteriorly to this muscle. To our mind, none of these muscles conforms to the description of the *supraclavicularis proprius*; instead, these muscle anomalies represent other clavicular supernumerary muscles, and show the high muscle variability that may be found in this region, as already observed by Bergman et al. [2].

Clinically, supraclavicular nerve entrapment and compression have been attributed to intraclavicular osseous canals, clavicle fractures, or trapezius muscle expansions [4, 5, 8, 13, 15, 20, 22, 23, 26, 27]. Gelberman et al. [8] were the first to describe supraclavicular nerve entrapment and compression as a syndrome, calling it supraclavicular nerve entrapment syndrome, but never has the *supraclavicularis proprius* muscle been mentioned as a cause of such a syndrome. We can presume that, due to the close relationship that exists between the supraclavicularis proprius muscle, the clavicle, and the supraclavicular nerve [7, 17], when in action, the muscle may compress the supraclavicular nerve against the clavicle, which would be a potential cause of supraclavicular nerve entrapment syndrome, causing shoulder pain.

We conclude that comprehensive knowledge of normal and abnormal anatomy is essential to perform any kind of clinical and surgical procedures with a high degree of confidence and precision. This finding has shown that although the *supraclavicularis proprius* muscle is a rare anatomical variant, knowledge

regarding its possible occurrence may provide a hypothesis as to its potential involvement in supraclavicular nerve entrapment syndrome.

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