

VARIANT EXTENSOR MUSCLE OF THE FOREARM ARISING FROM THE DISTAL PART OF THE RADIUS

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ÖZET

Ön Kolda Radius'un Distal Ucundan Başlayan Aksesuar Ekstensor Bir Kas

62 yaşında kadın bir kadavranın sağ ön kolunda aksesuar bir kas gözlemlendi. Bu kas radius'un distal bölümünden başlayıp, musculus extensor pollicis longus ile brevis arasında aşağı doğru uzanmakta ve bir tendon ile sonlanmaktadır. Bu tendon oblik olarak musculus extensor carpi radialis longus ve brevis tendonları çaprazlamaktadır. El bileğinde retinaculum extensorum'un altında bulunan ikinci aralıktan, musculus extensor carpi radialis longus ve brevis tendonları ile birlikte geçtiği gözlenmiştir. İkinci metekarpal kemiğe musculus extensor carpi radialis longus ile birlikte tutunma gösterdiği saptanmıştır. Bu olguda görülen varyasyonel kasın anatomik özellikleri incelenerek diğer varyasyonel kaslar ile karşılaştırılmasını takiben, gelişimsel açıdan değerlendirilmiş ve klinik önemi ortaya konulmuştur.

Anahtar Kelimeler: Aksesuar Kas, Ön Kol.

SUMMARY

A variant extensor muscle was encountered in the right forearm of a 62-year-old female cadaver. The variant muscle originated from the distal portion of the radius and coursed downward between the extensor pollicis longus and extensor pollicis brevis muscles and ended in a tendon. This tendon, was crossing obliquely the tendons of the extensor carpi radialis longus and extensor carpi radialis brevis muscles. It passed through the second tunnel for forearm extensor tendons under the extensor retinaculum together with the tendons of these two extensor carpi radialis muscles and finally inserted into the base of the second metacarpal bone with extensor carpi radialis longus muscle. Anatomical features of this variant muscle was detailed and compared with other variant extensor muscles of the forearm and the developmental viewpoint and clinical importance was stressed.

Key Words: Accessory Muscle, Forearm.

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INTRODUCTION

A number of variant extensor muscles of the forearm have been reported in the literature, including the extensor carpi radialis accessorius and Gantzer's muscle. Recently, these muscle variations in the forearm were discussed from the clinical point of view by Gümüşalan et al (1), Khaledpour and Schindelmeiser (2) and Kida (3). The development of the muscles of the arm along with their relationship to the nerves of the arm has been detailed by Lewis (4).

In the course of an anatomical dissection, the authors encountered a variant forearm extensor muscle which was considered as rare and hitherto not reported. This original case is expected to supplement our knowledge on variations of the muscles in the forearm and hand which are important in the surgical procedures of these regions.

OBSERVATIONS

The variant forearm extensor muscle was found and prepared in the extensor compartment of the right forearm of a 62-year-old Turkish female cadaver.

The variant muscle was a well-developed and separate muscle and originated from the posterior aspect of the distal one third of the radius 7 cm proximal to the styloid process and interosseus membrane. The muscle ran between the extensor pollicis longus and extensor pollicis brevis muscles parallel to them, and was 9.7 cm long. Its fleshy part was 5.6 cm long and 0.9 cm wide in its belly. The fibers converged into a slender tendon which had a length of 4.1 cm and a width of 0.3 cm. At the level of the extensor retinaculum the tendon passed through the second synovial tunnel for forearm extensors together with the tendons of extensor carpi radialis longus and extensor carpi radialis brevis muscles, and inserted into base of the second metacarpal bone lateral to the insertion of the extensor carpi radialis longus muscle and medial to the radial artery (Figs. 1,2). The nerve branches to this muscle were given off from the radial nerve after penetrating the supinator muscle. No such variant muscle was ascertained in the left forearm.



Figure-1: Variant extensor muscle of the right forearm (1, Abductor pollicis longus; 2, Extensor pollicis brevis; 3, Variant extensor muscle; 4, Extensor pollicis longus tendo; 5, Extensor carpi radialis brevis tendo; 6, Extensor carpi radialis longus tendo; 7, Radial artery).

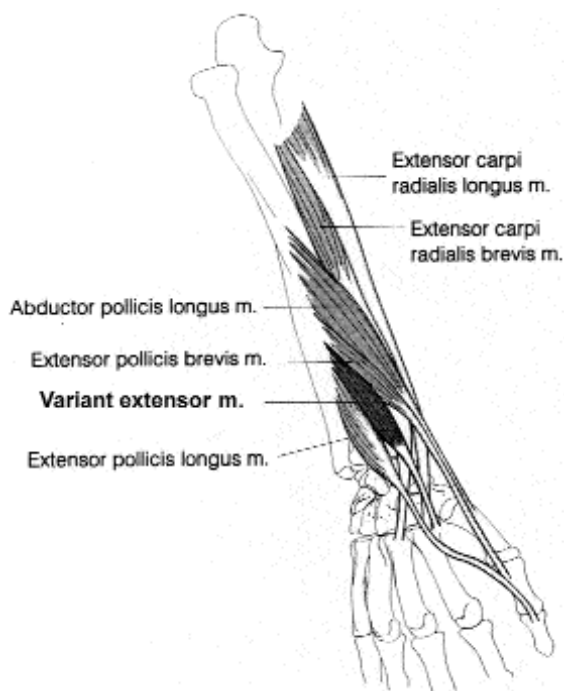


Figure-2: Schematic representation of the variant extensor muscle arising from the distal part of the radius.

DISCUSSION

The authors first judged the variant muscle as an aberrant type of the extensor carpi radialis accessorius muscle Gümüřalan et al. (1), Khaledpour and Schindelmeiser (2), MacAlister (5), Wood (6). A number of muscle variations of the forearm extensors have been described by many authors. Wood (6) (cited by MacAlister (5) and Khaledpour and Schindelmeiser (2)) was the first to describe the extensor carpi radialis accessorius muscle as an accessory muscle and noted a tendon splitting off from the extensor carpi radialis longus and inserting into the base of the first metacarpal bone. MacAlister (5) (cited by Khaledpour and Schindelmeiser (2)) reported a similar unilateral muscle and stated that it was inserted into the base of the first metacarpal bone together with the abductor pollicis brevis. Bergman et al. (7) reported that extensor carpi radialis accessorius muscle is an additional muscle sometimes seen arising from the humerus, in common with or below the extensor carpi radialis longus, and inserting most frequently into the metacarpal bone of the thumb. A bilateral and double-headed muscle reported by Khaledpour and Schindelmeiser (2) arose between the origins of the extensor carpi radialis longus and extensor carpi radialis brevis muscles, converged into a bifid tendon which coursed separately from the tendons of these muscles, and attached to the first and second metacarpal bones after crossing these tendons. In another case reported by Gümüřalan et al. (1) a unilateral accessory muscle originated from the medial aspect of extensor carpi radialis brevis muscle, passed through the second tunnel for forearm extensor and inserted into the base of the second metacarpal bone.

The variant muscle of our report is different from those mentioned above, since it originated distal and medial to the abductor pollicis longus and extensor pollicis brevis muscles and had no direct connection with the extensor carpi radialis longus and extensor carpi radialis brevis muscles. Developmentally, the extensor muscle mass of the forearms in an about 5-week-old embryo have been divided into 3 groups: the first one consisting of the extensor digitorum, extensor carpi ulnaris and extensor digiti minimi muscles, the second one consisting of the brachioradialis, extensor carpi radialis longus and extensor carpi radialis brevis muscles, the third one being made up of the abductor pollicis longus, extensor pollicis longus, extensor pollicis brevis, extensor indicis proprius and perhaps supinator

muscles (4). Thus, it is considered that the variant muscle of this report is a derivative of the second mass, while the muscles mentioned above, including the extensor carpi radialis accessorius, are derivatives of the first group of the extensor muscle mass. However, it passed through the same tunnel for forearm extensor tendons together with tendons of the extensor carpi radialis longus and extensor carpi radialis brevis muscles, and inserted into the second metacarpal bone just lateral to the insertion of the extensor carpi radialis longus muscle.

Khaledpour and Schindelmeiser (2) and Gümüřalan et al. (1) stated that these kinds of variations were important in diagnosing dorsal hand masses and when planning the surgical interventions of this region, especially in tendon reconstruction and muscular flap design.

The awareness of these accessory muscles in the extensor compartment of the forearm is essential in hand surgery as mentioned by various authors. The additional muscle in the present case does not lead to any functional impairment of the hand. However, this report is expected to provide additional knowledge on the muscular variations of the forearm and hand.

REFERENCES

1. Gümüřalan, Y., Kalaycıođlu, A., Yazar, F., Arifođlu, Y., Sınay, A.: Accessory extensor carpi radialis muscle and interconnecting muscular bundle. *Acta Anat* 159: 57-60, 1997.
2. Khaledpour, C., Schindelmeiser, J.: A typical course of the rare accessory extensor carpi radialis muscle. *J Anat* 184:161-163, 1994.
3. Kida, M.: The morphology of Gantzer's muscle, with special reference to the morphogenesis of the flexor digitorum superficialis. *Acta Anat Nippon* 63:539-546, 1988.
4. Lewis, W.H.: The development of the arm in man. *Am J Anat* 1:145-183, with plate 1 and 2, 1901.
5. MacAlister, A.: Additional observations on muscular anomalies in human anatomy (3rd series), with a catalogue of the principal muscular variations hitherto published. *Trans. Roy. Irish Acad Sci* 25:101-102, 1871.
6. Wood, J.: Variations in human myology observed during the winter session of 1866-67 at King's College London. *Proc Soc Lond* 15:518-546, 1867.
7. Bergman, R.A., Thompson, S.A., Afifi, A.K., Saadeh, F.A.: *Compendium of Human Anatomic Variation. Text, Atlas and World Literature*, Urban & Schwarzenberg, Baltimore - Munich, pp 26-29, 1998.