e - ISSN - 2349 - 8005

INTERNATIONAL JOURNAL OF ADVANCES IN CASE REPORTS

Journal homepage: www.mcmed.us/journal/ijacr

A CASE REPORT ON VARIANT SLIP OF FLEXOR CARPI ULNARIS MUSCLE ASSOCIATED WITH ULNAR TYPE OF SUPERFICIAL PALMAR ARCH

Roopali S Sehgal*, Sharadkumar Pralhad Sawant, Rakhi M More, Shaguphta T Shaikh, Shaheen Rizvi, Uma R

Department of Anatomy, K.J.Somaiya Medical College,
Somaiya Ayurvihar, Eastern Express Highway, Sion, Mumbai-400 022, India.

Corresponding Author:- **Roopali S. Sehgal**
E-mail: sehgalroopali@yahoo.co.in

Article Info
Received 15/01/2015
Revised 27/01/2015
Accepted 12/02/2015

Key words: Flexor carpi ulnaris muscle, Acessory muscle, Forearm, Cadaver.

ABSTRACT
During routine dissection, of the right upper limb of 70 years old donated embalmed male cadaver in the Department of Anatomy, K.J. Somaiya Medical College, Sion, Mumbai, India, we observed the accessory slip of flexor carpi ulnaris muscle associated with incomplete superficial palmar arch. To recognize anatomical variations it is necessary to know the normal anatomy. Normally the flexor carpi ulnaris muscle arises by two heads, humeral and ulnar, connected by a tendinous arch. The humeral head arises from the medial epicondyle via the common flexor tendon. The ulnar head arises from the medial margin of the olecranon process and an aponeurosis attached to the posterior sub cutaneous border of the ulna. The tendon of flexor carpi ulnaris inserted into the hamate and the fifth metacarpal bone through pisohamate and pisometacarpal ligaments. In the present case the ulnar head of flexor carpi ulnaris muscle was more bulky. It separated ulnar nerve and artery. The humeral and ulnar heads were separated from each other by ulnar nerve. These two heads fused with each other just before their insertion, where the ulnar artery came in contact with ulnar nerve. The further course and distribution of ulnar artery and ulnar nerve were normal. The knowledge of such unusual ulnar head separating ulnar artery and ulnar nerve may be clinically important for plastic surgeons doing flap surgeries and for the surgeon dealing with cubital tunnel syndrome.

INTRODUCTION

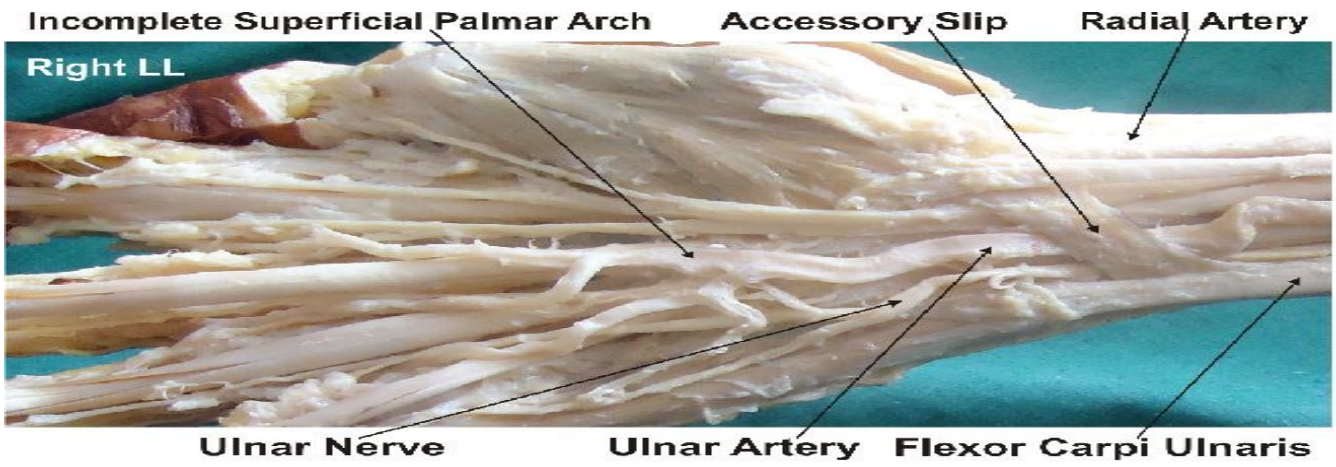
The flexor carpi ulnaris muscle is the most medial of the muscles superficial flexors. It can make the flexing and adduction of the hand simultaneously. Her innervations are made completely by the ulnar nerve [1]. According to Williams, Warwick, Dyson et al [2], it possesses heads humeral and ulnar united by an arch tendon, below these structures it travels the ulnar nerve and the posterior branch of the artery recurrent ulnar. The small head humeral originates from the medial epicondyle through a common tendon; the head ulnar is an extensive fixation of the medial margin of the olecranon and two thirds proximalis of the posterior border of the ulna through a common aponeurosis. In this report, we described a rare anatomical variation involving this important muscle of the anterior area of the forearm and discuss the clinical implications of this anatomical variation.

OBSERVATIONS

During the regular dissection on the left side forearm in a 70 year-old male cadaver, we detected that the flexor carpi ulnaris muscle presented an accessory muscle originated of her belly, third distal. The whole anterior area of the left side forearm was exposed with a dissection magnifying glass (Allzweck – Lupenleuchte [1.75/2.25 magnification]). Muscle tendon, thickness and belly

measurements were taken with the aid of a digital pachymeter (Digimess) (Figure 1). The flexor carpi ulnaris muscle presents a total length of 26.5 cm, with a muscular belly of 24.5 cm of length by 3.5 cm of width and 0.5 cm of thickness; starting from his third distal (see B1, Figure 1) there is the appearance of an accessory muscle presenting the following sizes: a total length of 14.5 cm, with a muscular belly of 12 cm of length by 2.5 cm of width and 0.5 cm of thickness. The accessory muscle is located between the flexor carpi ulnaris muscle and the palmaris longus; his tendon with 2.5 cm of length and 0.3 cm of thickness crosses the retinaculum of the flexors ones in an own tunnel (see arrows, Figure 1). Medial to the nerve ulnar he penetrates in the abductor muscle of the minimum finger (see B2, Figure 1). There was no evidence of any pathological involvement of the accessory muscle and adjacent structures.

Figure 1. Regular dissection on the left side forearm



DISCUSSION

The importance of continuing to record and discuss anatomical anomalies was addressed recently by Hicks and Newell (1997) [3] in the light of technical advances and interventional methods of diagnosis and treatment. The ulnar tunnel is located at the proximal part of the hand radial to the pisiform bone and to the proximal part of the carpal tunnel. Inside it lies the ulnar nerve and artery. Compression of the ulnar nerve in this tunnel is often reported. Cysts, occupational trauma, fractures and muscle variations are among the main causes [4, 5]. As mentioned by Khaledpour and Schindelmeiser (1994) [6] the knowledge of such variations supplements the body of information on the muscles of the antebrachial and carpal regions may be important for hand surgeons.

According to Soldado-Carrera, Vilar-Coromina and Rodriguez-Baeza (2000) [7], accessory fasciculi of the hypothenar muscles have been involved in vascular and nerve compressions. Olave, Del Sol, Gabrielli et al. (1997) [8], comments that the flexor retinaculum lays dorsal to the contents of the ulnar tunnel and medially there were some anomalous muscle fibres extending between the pisiform bone and the retinaculum. Natsis, Levva, Totlis et al. (2007) [9], reports that after dissection of the left forearm of a 73-year-old female cadaver was found a reversed palmaris longus muscle. This means that the palmaris longus muscle was tendinous in its upper part and muscular in its lower part. Additionally, the muscle belly was triple. Nakahashi and Izumi (1987) [10] cited a rare case of a short radiocarpal flexor found on the right forearm of a 47-year-old Japanese male corpse. The muscle arose from the anterior surface of the radius, ran distally in the deep layer of the flexor region to enter deeply into the carpal tunnel, and then interconnected with the subtendon of the extensor carpi radialis brevis at the gap between the bases of the second and third metacarpal bones.

Sakuma, Kato, Honda et al. (2004) [11], tell they found a case of the absence of the tendon to the fourth toe of the extensor digitorum longus muscle of the right leg in the body of a 73-year-old Japanese woman during the course of dissection. It is already evident that the muscles vary plenty as for his insert; they can be absentees, and many accessory muscles were described already (Gardner, Gray and O'Rahilly, 1988) [12], especially to the musculature of the hand (Aydinlioglu, Sakul and Diyarbakirli, 1998 [13]; D'Costa, Jiji, Sivanadan et al., 2006 [14]; Natsis, Levva, Totlis et al., 2007 [9]; Nakano, Watanabe and Masutani, 2003 [15]; Soldado-Carrera, Vilar-Coromina and Rodriguez-Baeza, 2000 [7]; Windisch, 2000 [16]) and forearm (Cigali, Kutoglu and Cikmaz, 2002 [17]; Hong, 2005 [18]).

The variation of the accessory muscle of the flexor carpi ulnaris muscle described in our study differs relatively from those reported in our literature revision. However, the specific anatomic variations described may be anticipated and more readily recognized by hand surgeons during such open surgery, thus increasing the effi cacy and safety of this common procedure.

CONCLUSION

The knowledge of such unusual variations of flexor carpi ulnaris is a must before any operative procedures of the hand. This knowledge of variant slip of flexor carpi ulnaris muscle associated with ulnar type of superficial palmar arch is important for Anatomists. It may be clinically important for plastic surgeons doing flap surgeries and for the surgeons dealing with cubital tunnel syndrome.

COMPETING INTERESTS

The authors declare that they have no competing interest.

AUTHORS' CONTRIBUTIONS

RSS wrote the case report, SPS performed the literature review, SR obtained the photograph for the case, RMM performed the literature search and RU assisted with writing the paper. STS helped to draft the manuscript. All authors have read and approved the final version manuscript.

ACKNOWLEDGEMENT

All the authors wish to convey our sincere thanks to our Dean Dr. Geeta Niyogi Madam for her valuable help, support and inspiration. We are also thankful to Mr. M. Murugan. Authors also acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

REFERENCES

1. Moore KL and Dalley AF. (2007).Anatomia Orientada para a Clínica. 4 ed. Rio de Janeiro: Guanabara Koogan.
2. Williams PL, Warwick R, Dyson M and Bannister LH. (1995).Gray Anatomia. Edinburgh: Churchill Livingstone.
3. Hicks J and Newell R. (1997). Supernumerary muscles in the pectoral and axillary region, and the nature of the axillary arches. *Clinical Anatomy*, 10, 211-212.
4. Kleinert H and Hayes J. (1971). The ulnar tunnel syndrome. *Plastic Reconstructive Surgery*, 47, 21-24.
5. Schjelderup H. (1964). Aberrant muscle in the hand causing ulnar nerve compression. *Journal of Bone and Joint Surgery*, 46B, 361.
6. Khaledpour C and Schindelmeiser J. (1994). Atypical course of the rare accessory extensor carpi radialis muscle. *Journal of Anatomy*, 184, 161-163.
7. Soldado-Carrera F, Vilar-Coromina N and Rodriguez-Baeza A. (2000). An accessory belly of the abductor digiti minimi muscle: a case report and embryologic aspects. *Surgical and Radiologic Anatomy*, 22, 51-54.
8. Olave E, Del Sol M, Gabrielli C, Prates JC and Rodrigues CFS. (1997). The ulnar tunnel: a rare disposition of its contents. *Journal of Anatomy*, 191, 615-616.
9. Natsis K, Levva S, Totlis T, Anastasopoulos N and Paraskevas G. (2007). Three-headed reversed plamaris longus muscle and its clinical signifi cance. *Annals of Anatomy*, 189, 97-101.
10. Nakahashi T and Izumi R. (1987). Anomalous interconnection between fl exor and extensor carpi radialis brevis tendons. *Anatomical Record*, 218, 94-97.
11. Gardner E, Gray DJ and O'Rahilly R. (1988).Anatomia: Estudo Regional do Corpo Humano. 4 ed. Rio de Janeiro: Guanabara Koogan.
12. Aydinlioglu A, Sakul BU and Diyarbakirli S. (1998). A rare insertion site for abductor pollicis longus and extensor pollicis brevis muscles. *Acta Anatomica*, 163, 229-232.
13. D'Costa S, Jiji PJ, Sivanadan R and Abhishek A. (2006). Anomalous muscle belly to the index fi nger. *Annals of Anatomy*, 188, 473-475.
14. Nakano M, Watanabe Y and Masutani MA .(2003). Case of extensor digitorum brevis manus. *Dermatology Online*, 9, 21.
15. Windisch G. . (2000). The fourth lumbrical muscle in the hand: a variation of insertion on the fifth finger. *Surgical and Radiologic Anatomy*, 22, 213-215.
16. Cigali BS, Kutoglu T and Cikmaz S.(2002). Musculus extensor digiti medii proprius and musculus extensor digitorum brevis manus - a case report of a rare variation. *Anatomia, Histologia, Embryologia*, 31(2), 126-127.
17. Hong MK. (2005). An uncommon form of the rare extensor carpi radialis accessorius. *Annals of Anatomy*, 187, 89-92.
18. Sakuma E, Kato H, Honda N, Mabuchi Y and Soji T. (2004). A rare anomaly of the extensor digitorum longus. *Anatomical Science International*, 79, 235-238.