CASE REPORT

MUSCULAR COMPOSITION OF 1ST EXTENSOR COMPARTMENT OF THE WRIST - A CADAVERIC STUDY

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INTRODUCTION: Muscular composition of first dorsal compartment of the wrist has important role in the movement of thumb. Multiplicity of tendons of Abductor Pollicis Longus and extensor pollicis Brevis has a significant role in DE QUERVIAN'S STENOSING TENOSYNOVITIS. It is a disease in which pain and swelling occurs on movement of thumb or compression of first dorsal compartment of wrist in the radial styloid process due to stenosing Tenosynovitis of the Abductor pollicis Longus and Extensor pollicis Brevis. Abductor pollicis Longus and extensor pollicis Brevis are two of outcropping muscles located in the dorsal carpal region. The Abductor pollicis Longus arises from posterior surface of the middle one third of the radius, ulna and adjoining interosseous membrane, in distal forearm it usually splits into two slips and attached to radial side of first metacarpal and Trapezium. The EPB is attached to the posterior surface of radius and adjacent interosseous membrane. Thus knowledge of such variations is important for surgeons while performing plastic reconstructive surgeries.

MATERIAL AND METHOD: Present study was undertaken in the department of Anatomy, SMS Medical College, and Jaipur. Study was done on 42 hands of embalmed cadavers. Hands were dissected over a period of 14 months. Back of forearm, dorsum of wrist, and thumb were carefully dissected. After reflection of the skin and superficial fascia on the back of the forearm and hand, the extensor retinaculum was divided longitudinally to fully expose the tendons. Splitting of the single tendon into two or more separable smaller tendon slips was noted.

The tendons of abductor pollicis Longus and extensor pollicis Brevis were carefully exposed up to their proximal and distal attachment. Variations in their attachments in Cadaveric dissection of upper limbs during preclinical educational teaching programme for undergraduate medical students revealed variant extensor musculature of hand in a male Indian cadaver were seen.

DISCUSSION: The anatomical knowledge of the arrangement of Extensor tendons is of prime significance for surgeons performing tendon transfers, tenosynovectomy and other reconstructive surgeries. A complete quantitative documentation of the extensor tendons to the thumb and additional anomalous muscle bellies is lacking. So we performed a study of the human extensor tendons over the dorsum of the wrist and thumb to study the arrangement of tendons on the dorsum of the hand in detail, to observe any variation or multiplicity of these tendons.

Various studies have evaluated the multiple insertions of abductor pollicis Longus and have been documented in the literature. Abductor pollicis Longus is known to have split insertion in chimpanzees, gorillas and gibbons. Extensor pollicis Brevis is completely separated and much smaller only in man. Variations in the tendon of Abductor Pollicis Longus have been reported by many researchers.

CASE REPORT

It is well known fact that the Anomalies of APL and EPB tendons are associated with DE QUERVIAN TENOSYNOVITIS. During dissection of one right limb we have seen that fused single belly of these two muscles. The tendon of this belly is divided in to 6 slips and these slips are attached to one slip to abductor pollicis Brevis, 2 slips to the anterolateral aspects of the base of first metacarpal, one slip to Trapezium, one slip to base of proximal phalanx of thumb and one slip to dorsal digital expansion of thumb. Bergman R.A. et al (1) in 1988 have seen the APL tendon to divided in three slips, Mehta V et al (5) in (2009) observed the quadruplicate arrangement of abductor pollicis Longus tendon and found 3 slips of APL. Mansur et al (7) in 2010 studied the multiple tendons of abductor pollicis Longus and found a rare case of nine slips of abductor pollicis Longus.

These supernumerary slips of abductor pollicis Longus may be utilized for tendon transfer, tendon translocation and tendon interposition arthroplasty. The Multiplicity of the tendon may be reminiscent of the foetal tendinous pattern of development. Minamikawa Y et al (8) in 1991 reported double or more tendons of APL in 94% cases and double tendons of EPB in 3% cases.

CONCLUSION: Awareness of the anatomy and variations of the Extensor tendons on the dorsum of the hand is necessary not only for the anatomist but also for surgeons. Variations of the extensor tendons were common in this study, especially for Abductor Pollicis Longus and Extensor Pollicis Brevis. An unusual fusion of the Abductor pollicis Longus and Extensor pollicis Brevis, and its division in to 6 slips with a variant insertion patterns is the highlight of the current case report. These additional tendons may prove biomechanical advantageous Knowledge of this complexity of muscular fusion and their attachment is very important for a surgeon before any reconstructive surgery or surgical correction in tendinopathies. So, knowledge of multiplicity of these tendons helps when assessing the traumatized or diseased hand and when considering tendons for repair or transfer or Suturing Of an injured extensor tendon on the dorsum of the hand or fingers usually gives good results, unlike the results frequently obtained when flexor tendons are sutured.

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CASE REPORT

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shows attachment of APL with its multiple tendons in the right hand

Fig. 2 - Shows origin of APL as a single muscle belly

CASE REPORT

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