

Abstract

There is undoubtful importance of the knowledge of anatomical variations during surgical procedures and diagnostic in the upper limb. They can not only confuse surgeon during the surgical approach and lead to iatrogenic damage or be misdiagnosed for pathological conditions, but they might also be used during reconstructive procedures as tendon transfers, nerve grafts or free flaps. It is even hypothesized that superficial anatomical variations might be used to predict the variable course of deeper structure. Many of those hypotheses still need experimental verification as they are often used in clinical practice without proper evidence.

Anatomical variability includes all structures such as bones, ligaments, muscles, nerves, vessels as well as superficial palmar creases. Each of these structures might be divided, multiplied or absent; they can differ in their origin, insertion, course, or branching. In some cases even completely accessory bony or muscular structures might be present.

The goal of this dissertation is to provide review of the anatomical variability of the hand and forearm with particular interest given to accessory bones around the elbow joint. We proposed their radiological definition, proposed a new classification, and stated their overall prevalence, which is 0.77 % with the most common *os subepicondylare mediale* located under the medial epicondyle of the humerus in 0.46 % of cases.

Interest is given to the ventral group of the forearm muscles and to the flexor carpi ulnaris muscle. We have modified the previous classification for an accessory flexor carpi ulnaris muscle based on its insertion. This muscle is presented with focus on the possible tendon transfers. We present two cases of absent and hypoplastic flexor digitorum superficialis and profundus muscles, and a review of the variability of the lumbrical muscles. Hand muscles variability has a significant clinical impact on the examination of ruptured flexors of fingers.

Another structure in scope is the recurrent branch of the median nerve as its variable course may lead to iatrogenic injury especially during transection of the retinaculum flexorum during the carpal tunnel release. Original study was made to predict its course based on the pattern of palmar creases. A statistically significant relationship between those structures was found. Even though knowledge of this relation is useful it is not present in all cases.

Key words: Anatomical variability; Upper limb anatomy; Hand surgery; Accessory bones; Tendon transfer