Small muscles of the hand

Revision:
The palmar aponeurosis is triangular in shape with apex and base. It is divided into 4 bands that radiate to the medial four fingers.

Dupuytren’s Contracture:

- A localized thickening and shortening of palmar aponeurosis that limits hand function (it is permanent)
- Fibrosis pulls the ring finger then the little finger into partial flexion at the MCP joints, followed by flexion of their proximal interphalangeal joints
- **Usual treatment:**
  Treated by surgical excision of fibrous bands followed by physiotherapy.
  **Alternative treatment:**
  Injection of the enzyme Collagenase into the contracted bands of the fibrous tissue.

Keep in mind:

- When the muscle Isn’t functioning: It is Relaxed.
  While it is in action: It is contracted.
- *Contraction* DIFFERS from *contracture*. *Contracture* means permanent shortening.
Small muscles of the hand:

Arranged in five groups + 1 muscle, as the following:

1- Thenar muscles: (three in number)
   each moves the thumb according to its name:
   • Flexor pollicis brevis: assists the flexor pollicis longus in the flexion of MCP joint of the thumb.
   • Abductor pollicis brevis: abduction of the thumb.
   • Opponens pollicis: pulls the thumb medially and forward across the palm (as in counting fingers, shown in the figure below).
   All supplied by median nerve.

2- Hypothenar muscles: (three in number)
   each moves the little finger according to its name:
   • Flexor digiti minimi.
   • Abductor digit minimi.
   • Opponens digiti minimi.
   All supplied by deep branch of ulnar nerve.

Only the thumb and little finger got opponens muscles, the Dr said it is because of the long distance between the two fingers 😊

3- Adductor pollicis muscle:

   • It has got two heads: horizontal( transverse) and Oblique.
   • Origin: Oblique head: from the 2nd & 3rd metacarpal bones.
     Transverse head: from 3rd metacarpal bone.
Both heads form one tendon (within this tendon there is a sesamoid bone>> to enhance and improve the pull).

- Action: adducts the thumb.
- Insertion: base of the proximal phalanx of the thumb.
- Supplied by Deep branch of ulnar nerve.

Notes to remember:

- The thumb has got 8 muscles: (flexor pollicis brevis & longus, abductor pollicis brevis & longus, opponens pollicis, adductor pollicis, extensor pollicis brevis & longus)
- The largest sesamoid bone in the body is the Patella (knee cap).

Before moving on to talk about the rest of the muscles Remember that: The lumbricals insert on the lateral side of the Extensor expansion, But the interossei insert either on the lateral or medial side (of the extensor expansion).

4- Lumbrical muscles: (four in number)

- Emerge from deep to superficial.
- Are numbered from lateral to medial.
- Origin: flexor digitorum profundus tendons.
- Insertion: lateral side of extensor expansion.
- Action: (flexion of MCP joints, Extension of interphalangeal joints) >> writing position.
- Nerve supply: 1st & 2nd muscles: median nerve. 3rd & 4th muscles: Ulnar nerve.
Note: All the muscles of the hand are supplied by ulnar nerve except for five muscles that are supplied by median nerve. These muscles are:

- Flexor pollicis brevis
- Abductor pollicis brevis
- Opponens pollicis
- 1st & 2nd lumbral muscles

5- Palmar interossei: (interossei = muscles between bones)
   (four in number)
   - Origin: 1st, 2nd, 4th, 5th MC bones
   - Insertion: extensor expansion and the base of proximal phalanx of 1, 2, 4, 5 fingers. (1, 2 fingers on the medial side of the proximal phalanx, 4, 5 fingers on the lateral side of the proximal phalanx.)
   - Action: adducts all to the axial line
   - Nerve supply: deep branch of ulnar nerve.

The middle finger is the center of the hand, all the fingers move towards it, or away from it.
6- Dorsal interossei: (four in number)
• Numbered from lateral to medial.
• Origin: two heads from two adjacent MC bones.
• Insertion: Extensor expansion and proximal phalanx of index, middle & ring fingers (as shown in the figure below).
• Action: abducts the fingers from the axial line.
• Nerve supply: deep branch of Ulnar nerve.

“Always bear in mind that your own resolution to succeed is more important than any other.”

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