Deep Hand Space Infections

- In the palm there is a central space between the thenar and hypothenar eminences – which contain the LOAF and MAFIA muscles.

- The roof of this space is formed by the thickened palmar aponeurosis which is triangular in shape.
  - Apex merging with distal border of flexor retinaculum.
  - Fanning out to the base of the fingers, where it merges with the lumbrical canals that surround each lumbral tendon

- The medial fibrous septum extends from the medial edge of the palmar aponeurosis, and inserts deep down onto the 5th metacarpal – medial to this lies the hypothenar eminence muscle group

- A lateral fibrous septum extend from the lateral edge to insert onto the 1st metacarpal – lateral to this lies the thenar eminence muscle group.

- A third oblique fibrous septum runs from the lateral edge of the palmar aponeurosis down onto the 3rd metacarpal, and partitions the palmar space into 2:
- **Thenar Space:**
  - Roof = palmar aponeurosis
  - Lateral wall = lateral fibrous septum
  - Medial wall = oblique fibrous septum
  - Floor = transverse head of Adductor pollicis
  - Contents = 1st lumbrical + long flexors of index fingers

- **Mid-palmar Space:**
  - Roof = palmar aponeurosis
  - Lateral wall = oblique fibrous septum
  - Medial wall = medial fibrous septum
  - Floor = 3rd – 5th metacarpals and interossei
  - Contents = 2nd, 3rd & 4th lumbricals + long flexors to middle, ring and little fingers + neurovascular arches that give rise to digital arteries and nerves.

- Infection from innocuous webpace or digital injuries can track back into these spaces – results in pain in palmar spaces without visible signs of infection on the palmar skin (e.g. redness)
  - Often see a loss in the concavity of the palm, and may even appear convex
  - Or may see dorsal swelling, since the palmar skin is too tightly bound down
  - Missed infections can lead to destruction or adhesions of the flexors and lumbricals to the fingers and devastating impaired hand function.

- Treatment involves urgent surgical decompression and lavage via a palmar incision + antibiotic therapy.