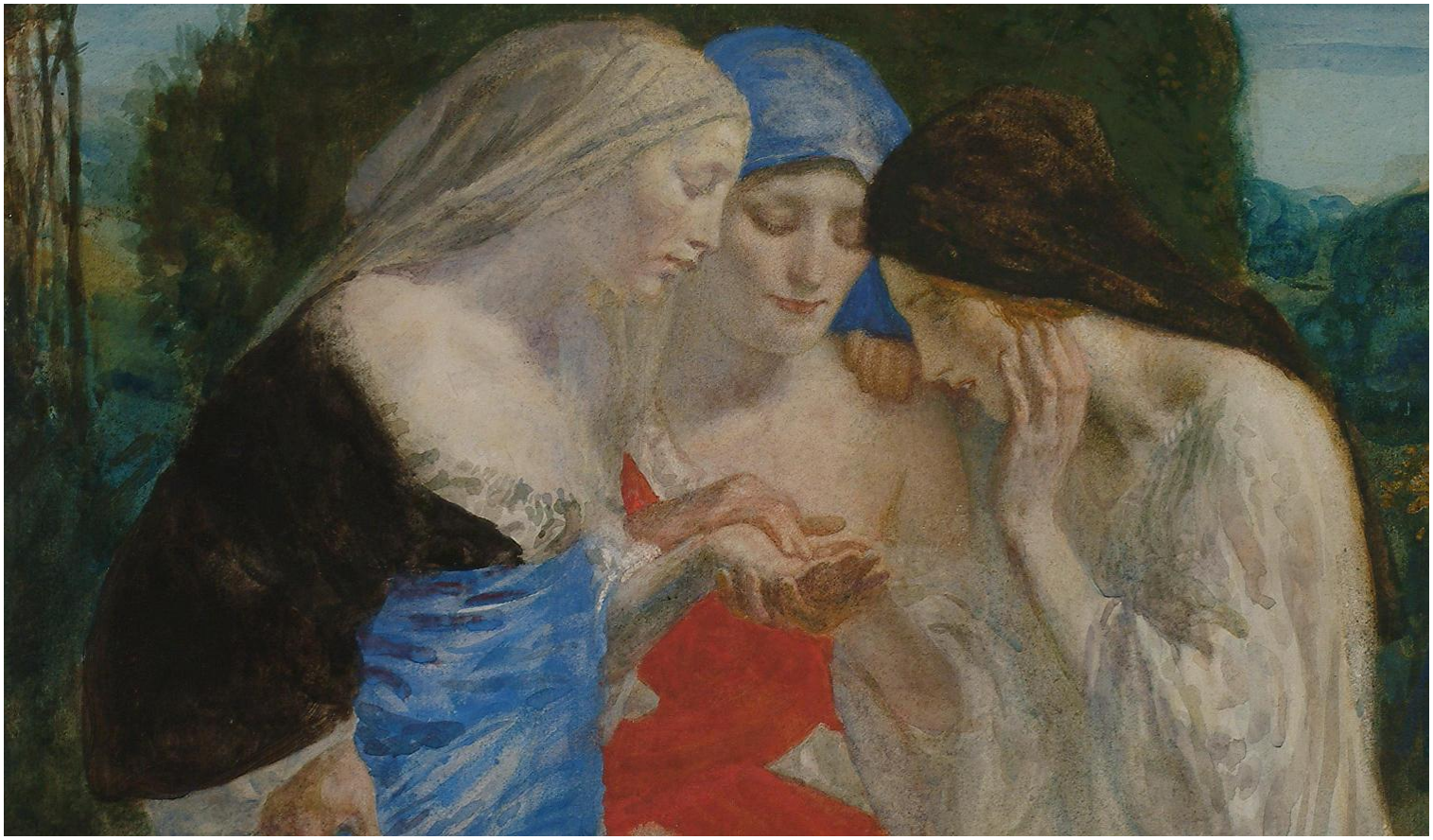
THE NORTHERN HOSPITAL

THENAR SPACE INFECTION



"The Palm Reader" oil on canvas, 1917 Robert Anning Bell

"The mind exercises a powerful influence over the body. From the beginning of time, the sorcerer, the interpreter of dreams, the fortune-teller, the charlatan, the quack, the wild medicine-man, the educated physician, the mesmerist, and the hypnotist have made use of the client's imagination to help them in their work. They have all recognized the potency and availability of that force".

Mark Twain

The art of fortune telling is a very ancient one. Traditionally the experts in these arts were the Romani people or Gypsies. By the use of the Tarot cards or by chiromancy (palm reading) - a true fortune could be foretold, so long as the client was perhaps a willing and eager one! Today these arts are largely lost, but in the medical field, there can be no doubt about the fortunes of those who present with certain signs involving the painful swelling at the lateral aspect of the palm and at the base of the thumb - they will be grim - if the signs suggest thenar eminence infection, whether or not the patient believes this to be true!

THENAR SPACE INFECTION

Introduction

Thenar space infection is an important condition to recognize.

The thenar space is one of the potential fascial spaces of the hand, and is important as it can become infected resulting in accumulation of pus under pressure and compartment syndrome, that may result in significant injury to the hand.

It is treated by **surgical drainage** and **IV antibiotics.**

Anatomy

Important deep fascial spaces of the hand include

- Thenar space
- Midpalmar space
- Hypothenar space.

Normally the fascial spaces of the palm are potential spaces filled with loose connective tissue.

Their boundaries are important clinically, as they may limit the spread of infection within the palm.

Boundaries of the palmar fascial spaces: [1]

The triangle shaped palmar aponeurosis fans out from the lower border of the flexor retinaculum.

From its medial border a fibrous septum passes backward and is attached to the anterior border of the fifth metacarpal bone.

Medial to this border is a fascial compartment that contains the **3 hypothenar muscles.** This compartment is generally unimportant clinically.

From the lateral border of the palmar aponeurosis, a second fibrous septum passes obliquely backwards to the anterior border of the third metacarpal done. Usually the septum passes between the long flexors of the index and middle fingers.

This second septum divides the palm into the **thenar space**, which lies *lateral* to the septum, (and should not be confused with the fascial compartment containing the thenar muscles) - and the **midpalmar space**, which lies *medial* to the septum.

Proximally the thenar and midpalmar spaces are closed off from the forearm by the walls of the carpal tunnel.

Distally the two spaces are continuous with the appropriate lumbrical canals.

Contents of the palmar spaces: [1]

Thenar space:

- Contains the first lumbrical muscle.
- It lies posterior to the long flexor tendons to the index finger and in front of the adductor pollicis muscle.

Midpalmar space:

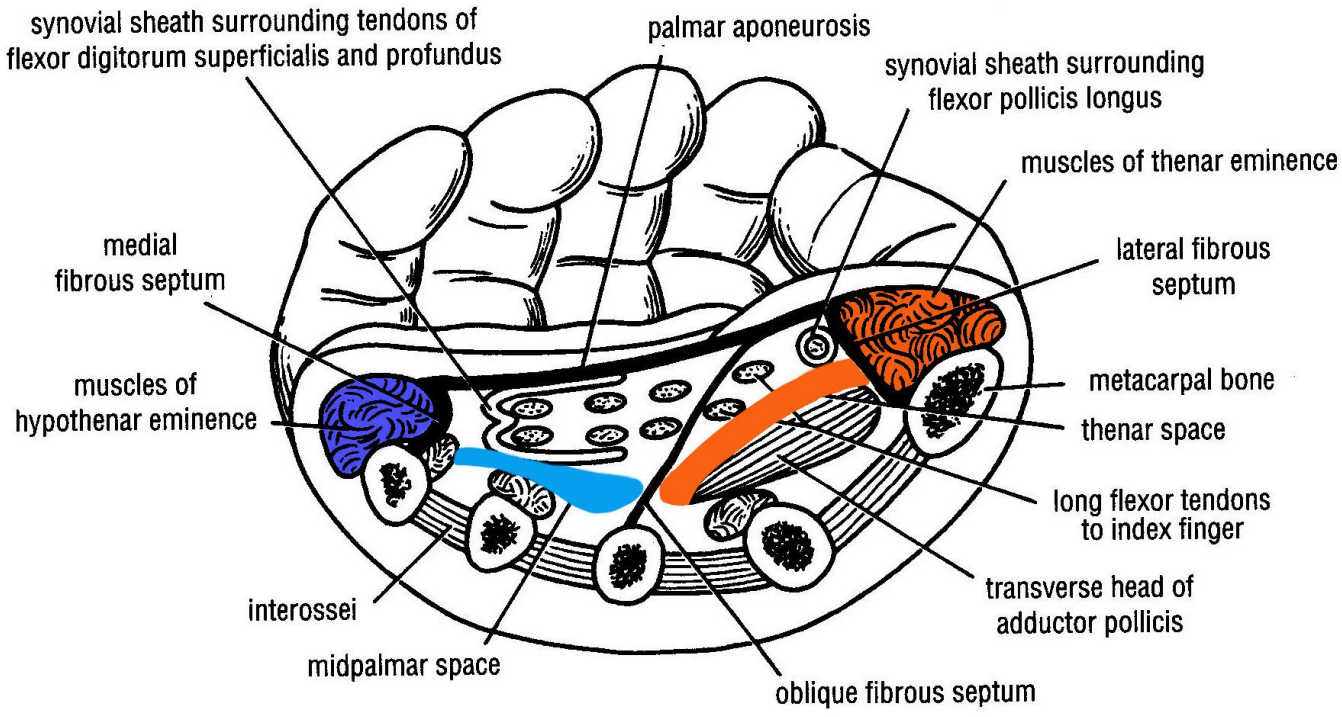
Contains the second, third and fourth lumbrical muscles.

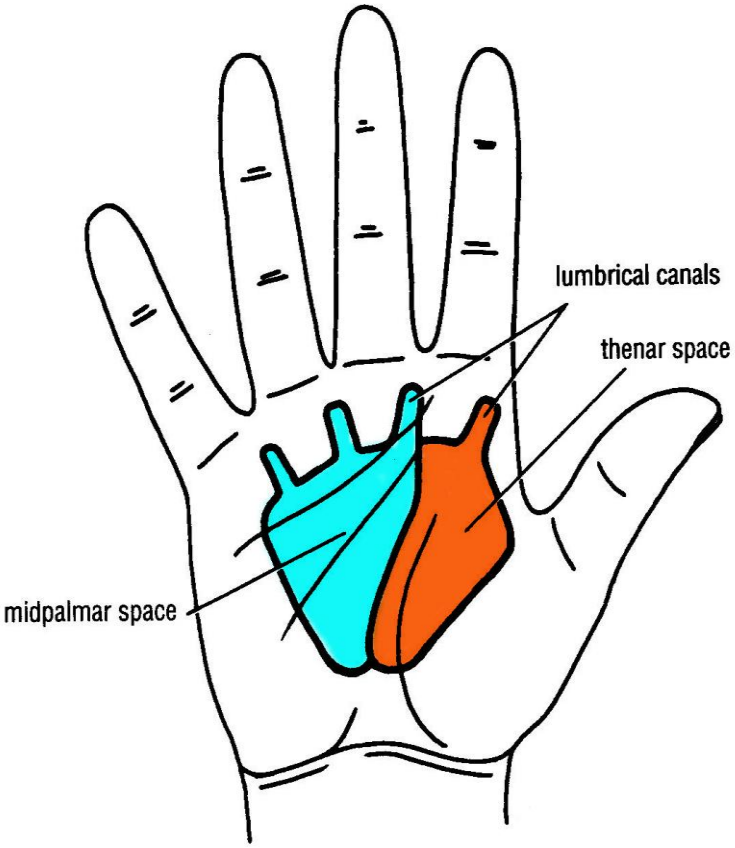
It lies posterior to the long flexor tendons to the middle, ring, and little fingers and in front of the interossei, and third, fourth and fifth metacarpal bones.

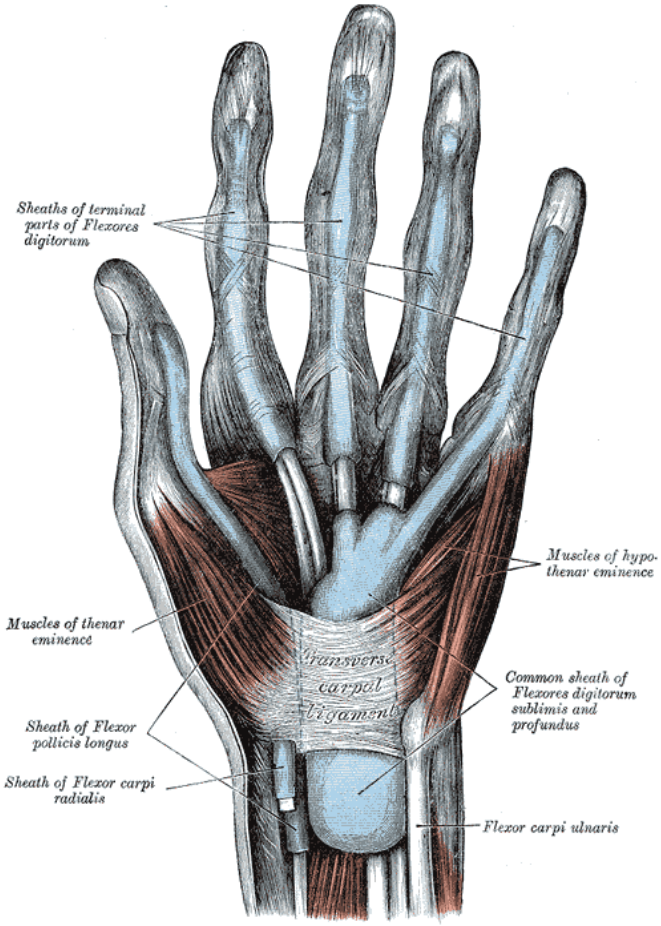
Lumbrical canal:

This is a potential space that surrounds the tendon of each lumbrical muscle and is normally filled with connective tissue

Proximally it is continuous with one of the palmar spaces.







Left: Diagram showing the midpalmar and thenar spaces of the palm. Right: Muscles of the Thenar eminence, of the left palm, Gray's Anatomy, 1918

Pathology

Organisms:

- *Staphylococcus aureus* and *Streptococcus* species are most commonly isolated.

Causes:

Infection of the thenar space may occur as a result of:

- Penetrating injury:
  - ♥ This may include a retained foreign body
- Extension from adjacent fascial spaces:
  - ♥ From a midpalmar space infection

- ♥ From an index flexor tendon sheath infection
- ♥ From a radial bursa infection

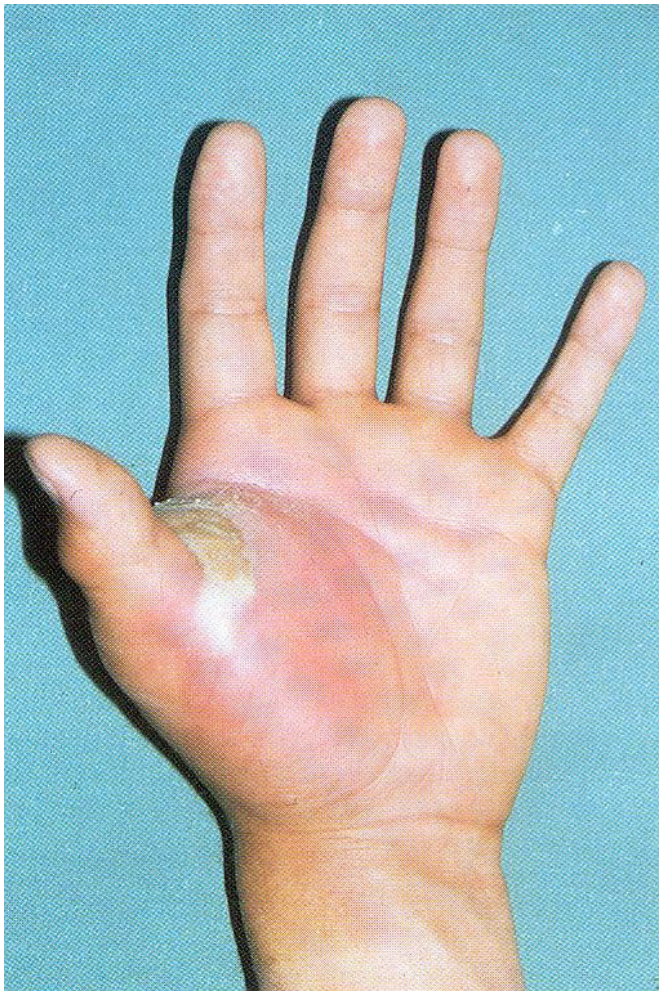
- Extension from skin hand infections

Complications:

The accumulation of purulent material can raise the pressure within the closed thenar space, leading to ischemia and necrosis.

In severe cases osteomyelitis or generalizes septicaemia may ensue.

Clinical Features



Typical appearance of a thenar space infection of the left palm of the hand. [2]

Clinical features of a thenar space infection include:

- Pain and tenderness is significant in the region of the thenar eminence.
- Swelling is prominent around the region of the thenar eminence
    - ♥ The normal concavity of the palm is lost and there can also be some associated edema on the dorsum of the hand.
- Erythema and warmth
- The thumb may be pushed into an abducted position.
- Thumb movements, both active and passive will elicit severe pain.

Investigations

Blood tests:

1. FBE
2. CRP
3. U&Es / glucose
4. Blood cultures if patient is particularly unwell.

Microbiology

Swabs should be taken for microscopy and culture when pus is able to be sampled.

Plain Radiography

Plain radiography is not helpful in this condition, unless an radio-opaque foreign body is being sought.

Ultrasound:

This is useful to confirm the diagnosis as well as locating possible foreign bodies.

MRI

This may be useful when associated osteomyelitis is suspected.

Management

Management steps will include:

1. Splint and elevate

2. Analgesia as clinically indicated

3. Tetanus immunoprophylaxis as clinically indicated

4. IV antibiotics:

   Empiric options include:

   - Flucloxacillin
   - Cephalexin
   - Clindamycin (if penicillin allergic).

   See latest Antibiotic Therapeutic Guidelines for full prescribing details.

5. Surgery:

   - Surgical drainage and irrigation of the space is essential and is the definitive treatment.

Disposition:

Thenar space infections should be referred to a Plastics / Hand surgeon.

References

1. Snell R.S. Clinical Anatomy for Medical Students 5th ed, 1995.

2. Ferguson D.G, Fodden D.I Accident and Emergency Medicine, Colour Guide. Churchill Livingstone 1993.

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