Tendon Injuries Of The Hand

Diagnosis, Management& Complications

Essay

Submitted for Partial Fulfillment of Master Degree In General Surgery

Presented by

Mohammed Hosny Gharib
M.B.B, ch.

Under supervision of

Professor\ Awad Hassan Elkial
Professor of General Surgery
Faculty of Medicine
Ain Shams University

Doctor\ Mohammed Ahmed Mahmoud Aamer
Lecturer of General surgery
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
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بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم.

صدق الله العظيم

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Introduction

The hand can justly be called the most important extension of the intellect. It clearly is far more than just a tool with prehensile capacities, as it is complemented with a rich collection of sensory receptors. In general the purpose of surgery on hands is to reconstruct mobility, strength, sensibility and socially-acceptable appearance. How these goals can best be achieved for each individual depends on a careful evaluation of the hand's physical condition, the patient's professional or vocational requirements and the patient's psycho-social circumstances ***(Robert, 2003).***

The serious student of surgery of the hand must of necessity become a lifelong student of the intricate and fascinating anatomy of the hand, the mastery of which is absolutely essential to accurate diagnosis, development of logical treatment plans, and, of course, skillful execution of surgical repairs. Fortunately, as one begins to understand the hand, one will find it so beautiful and interesting that mastering the complex anatomy becomes a pleasure rather than a task ***(Robert, 2003).***

Acute injuries of the hand and wrist will be encountered. Patient may not appreciate the severity of these injures and are as likely to present in a clinic as in the emergency department. Timely diagnosis and treatment of upper extremity injuries are of paramount importance. Failures to diagnose, manage and rehabilitate upper extremity injuries has the potential to result in permanent disability ***(James et al., 2004).***

The normal, healthy tendon is a remarkably strong structure that is extremely resistant to tearing and can bear high loads without rupture. Tendon rupture requires a weakened tendon. Many factors will predispose to tendon injury ***(Peterson and Renstorm, 2001).***

Acute injury to the flexor and extensor tendons in the hand and forearm is common and requires careful assessment and management. Injuries may be open or closed and are often seen in conjunction with neurovascular injury. Open injuries are the commonest and are often associated with neurovascular injury. Closed injuries are usually caused by forced extension of the finger in active flexion ***(Nicholas and Hamish, 2006).***

In programming the repair of tendons we have to evaluate all the others structures affected that need to be repaired and remember that we should provide a good coverage of these structures. In some situations it will be possible to suture the tendons directly, but in others we might need tendon grafts or to transfer some motor units for reconstruction of others, including the use of tendons of amputated parts. In other situations with grate tissue destruction and loss of pulleys of the flexor tendons it might be reasonable to do the reconstruction at a later procedure and to utilize silicone rods to maintain the space for a later reconstruction ***(Roger, 2006).***

Tendon adhesions, joint stiffness, boutonniere and swan neck deformities are some of the complications that we might expect to have, even with a good rehabilitation program, and to solve at a later surgical procedure ***(Roger, 2006).***

Aim of Work

To review the recent advances in diagnosis, management of tendon injuries of the hand and their complications.

Tendon anatomy

Anatomy of the Hand

- ***Skin:***

The most superficial structure of the hand is the skin. It provides a durable covering, which is highly innervated volarly for efficient tactile gnosis. The volar surface is endowed with fixed fat pads in addition to numerous eccrine glands, which aid in nonslip grasping. The various lines or creases of the skin follow the normal stresses imposed by the movements of the hand. Extensibility and innervation of the skin are extremely important to ultimate function of the hand ***(Slattery and Philip, 2005*)**.

- ***Bones:***

There are three groups of bones in the hand:

- The eight carpal bones are the bones of the wrist.
- The five metacarpals (I to V) are the bones of the metacarpus.
- The phalanges are the bones of the digits-the thumb has only two, the rest of the digits have three.

1. Carpal bones:

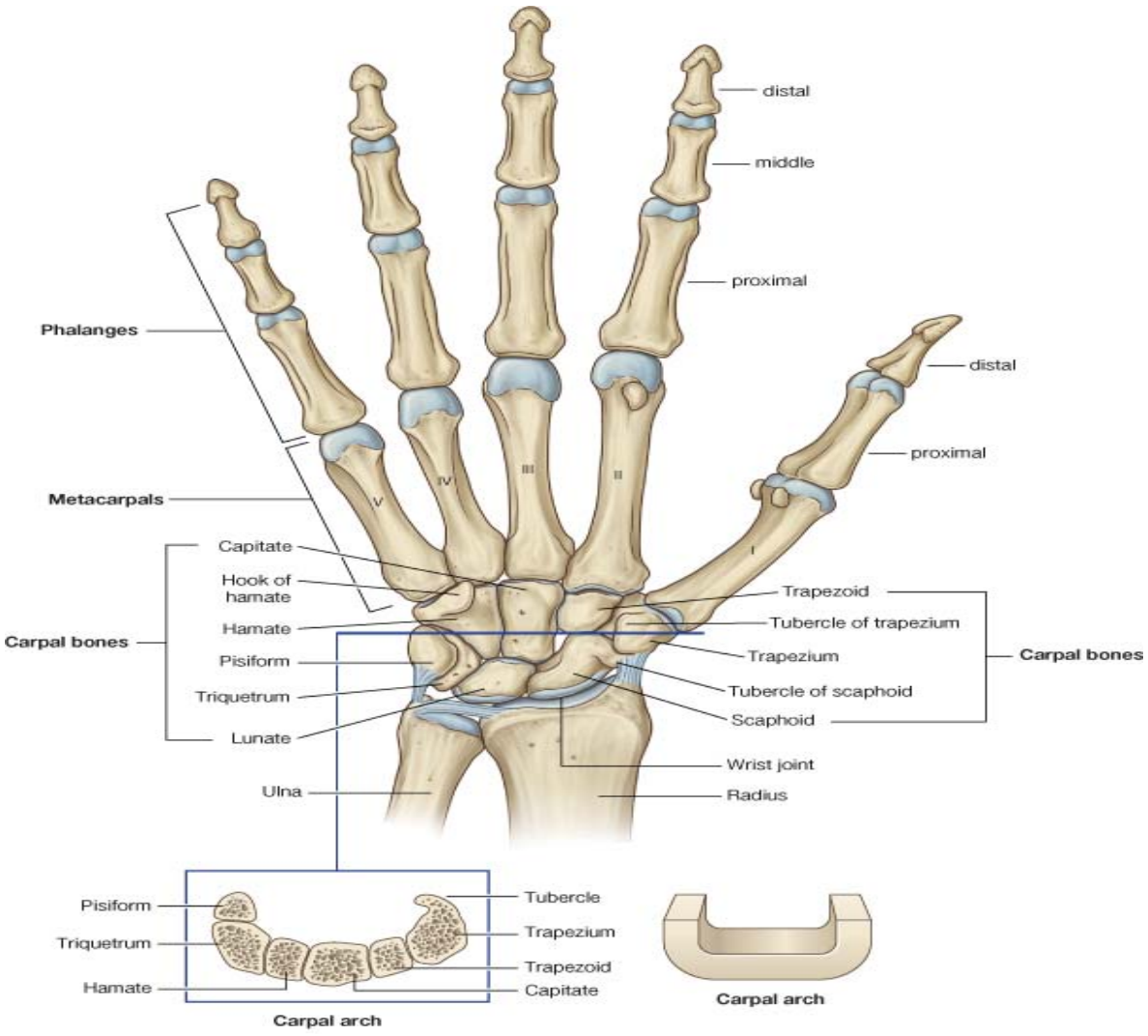
The small carpal bones of the wrist are arranged in two rows, a proximal and a distal row, each consisting of four bones.

- ***Proximal row***

From lateral to medial and when viewed from anteriorly, the proximal row of bones consists of:

- The boat-shaped scaphoid.

- The lunate, which has a 'crescent shape'.
- The three-sided triquetrum bone.
- The pea-shaped pisiform.



(Fig.1) bones of the hand ***(Lawrence et al., 2005).***

- ***Distal row***

From lateral to medial and when viewed from anteriorly, the distal row of carpal bones consists of:

- The irregular four-sided trapezium bone.

- The four-sided trapezoid.
- The capitate, which has a head.
- The hamate, which has a hook ***(Beasley and Meyer, 2003).***

2. Metacarpals:

Each of the five metacarpal bones is related to one digit:

- Metacarpal I is related to the thumb.
- Metacarpals II to V are related to the index, middle, ring, and little fingers, respectively.

Each metacarpal consists of a **base**, a **shaft** (**body**), and distally, a **head**. All of the bases of the metacarpals articulate with the carpal bones; in addition, the bases of the metacarpal bones of the fingers articulate with each other. All of the heads of the metacarpal bones articulate with the proximal phalanges of the digits. The heads form the knuckles on the dorsal surface of the hand when the fingers are flexed **(*Beasley and Meyer, 2003).***

3-Phalanges:

The phalanges are the bones of the digits:

- The thumb has two-a proximal and a distal phalanx;
- The rest of the digits have three-a proximal, a middle, and a distal phalanx

Each phalanx has a base, a shaft (body), and distally, a **head**. The base of each proximal phalanx articulates with the head of the related metacarpal bone. The head of each distal phalanx is nonarticular and flattened into a crescent-shaped palmar tuberosity, which lies under the palmar pad at the end of the digit ***(Beasley and Meyer, 2003).***