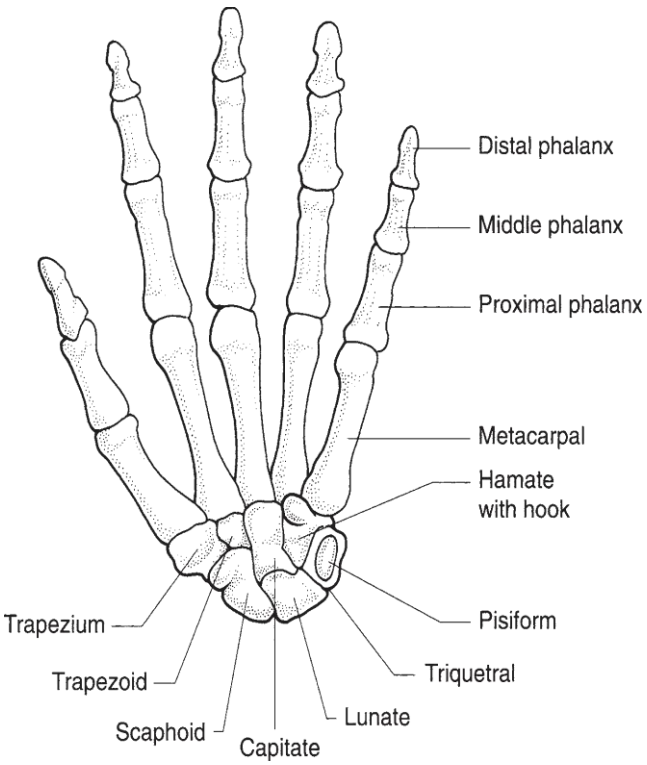
WRIST JOINT

The carpal bones (Fig 7. 8 ; see also Fig 7 .7) The carpal bones are arranged in **two rows of four each In the proximal row, from lateral to medial, are the scaphoid, lunate and triquetral bones, with the pisiform on the anterior surface of the triquetral The trapezium, trapezoid, capitate and hamate make up the distal row Together the carpal bones form an arch**, with its concavity situated anteriorly The flexor retinaculum is attached laterally to the scaphoid and the ridge of the trapezium, and medially to the pisiform and the hook of the hamate It converts the arch of bones into a tunnel, the carpal tunnel, which conveys the superficial and deep flexor tendons of the fingers and the thumb (except flexor carpi ulnar is and palmaris longus tendons)

and the median nerve The extensor retinaculum on the dorsum of the wrist attaches to the pisiform and triquetrum medially and the radius laterally Six separate synovial sheaths run beneath it (Fig 7 9)



Supernumerary bones

These may be found in the wrist and include the os centrale found between the scaphoid, trapezoid and capitate, which may represent the tubercle of the scaphoid that has not fused with its upper pole, and the os radiale externum, which is found on the lateral side of the scaphoid distal to the radial styloid

Nutrient arteries of the scaphoid

In 13% of subjects these enter the scaphoid exclusively in its distal half If such a bone fractures across its midportion, the blood supply to the proximal portion is cut off and ischaemic necrosis is inevitable This occurs in 50% of patients with displaced scaphoid fractures

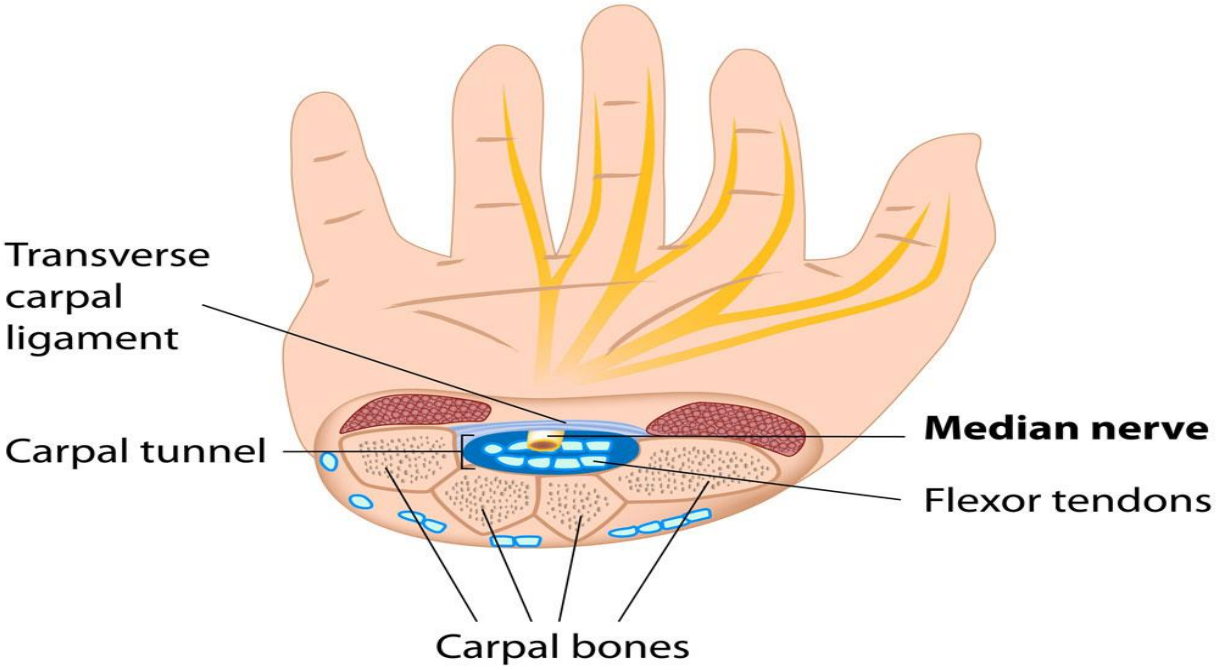
Ossification of the carpal bones

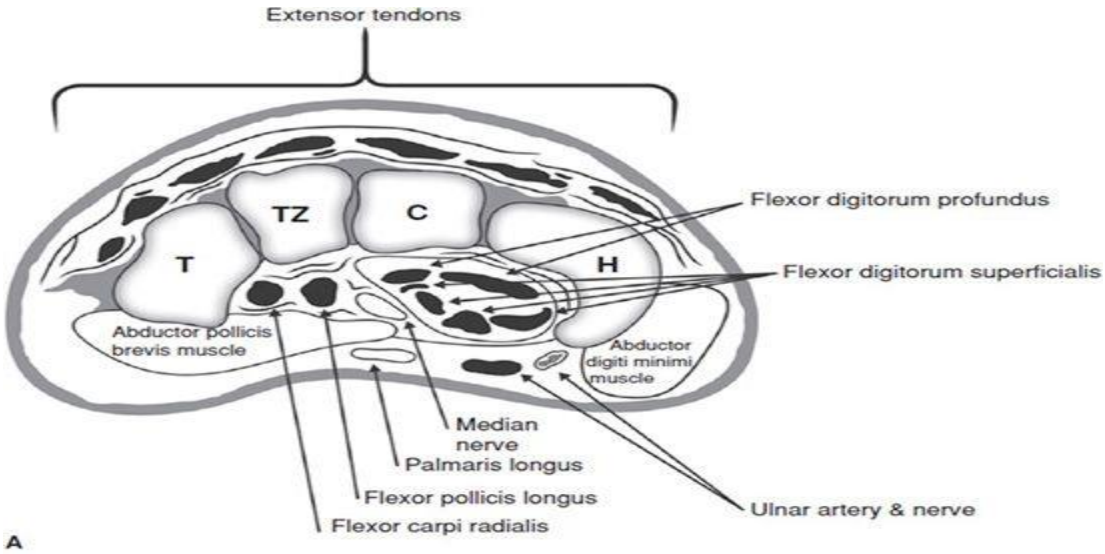
These ossify from a single centre each The capitate ossifies first and the pisiform last, but the order and timing of the ossification of the other bones is variable Excluding the pisiform, they ossify in a clockwise direction from capitate to trapezoid as follows: the capitate at 4 months; the hamate at 4 months; the triquetral at 3 years; the lunate bone at 5 years; and the scaphoid, trapezium and trapezoid at 6 years The pisiform ossifies at 11 years of age

The metacarpals and phalanges

The five metacarpals are numbered from the lateral to the medial side Each has a base proximally that articulates with that of the other metacarpals, except in the case of the first metacarpal, which is as a result more mobile and less likely to fracture The third metacarpal has a styloid process extending from its base on the dorsal aspect Each metacarpal has a rounded head distally, which articulates with the proximal phalanx The phalanges are 14 in number, three for each finger and two for the thumb Like the metacarpals, each has a head, a shaft and a base The distal part of the distal phalanx is expanded as the tuft of the distal phalanx .

The Carpal Tunnel





Sesamoid bones

Two sesamoid bones are found related to the anterior surface of the metacarpophalangeal joint of the thumb in the normal radiograph A single sesamoid bone in relation to this joint in the little finger is seen in 83% of radiographs, and at the inter- phalangeal joint of the thumb in 73% These are occasionally found at other metacarpal and distal interphalangeal joints The incidence of sesamoid bones is increased in acromegaly

Ossification of the metacarpals and phalanges

These ossify between the ninth and twelfth fetal weeks Secondary ossification centres appear in the distal end of the metacarpals of the fingers at 2 years and fuse at 20 years of age Secondary centres for the thumb metacarpal and for the phalanges are at their proximal end and appear between 2 and 3 years, and fuse between 18 and 20 years of age

Radiological features of the metacarpals and phalanges

Bone age

A radiograph of the left hand is used in the determination of bone age Standards of age determined by epiphyseal appearance and fusion have been compiled for the left hand and wrist by Greulich and Pyle, and by Tanner and Whitehouse (TW2 method)

The metacarpal sign

A line tangential to the heads of the fourth and fifth metacarpals does not cross the head of the third metacarpal in 90% of normal hands – this is called the metacarpal sign This line does, however, cross the third metacarpal head in gonadal dysgenesis

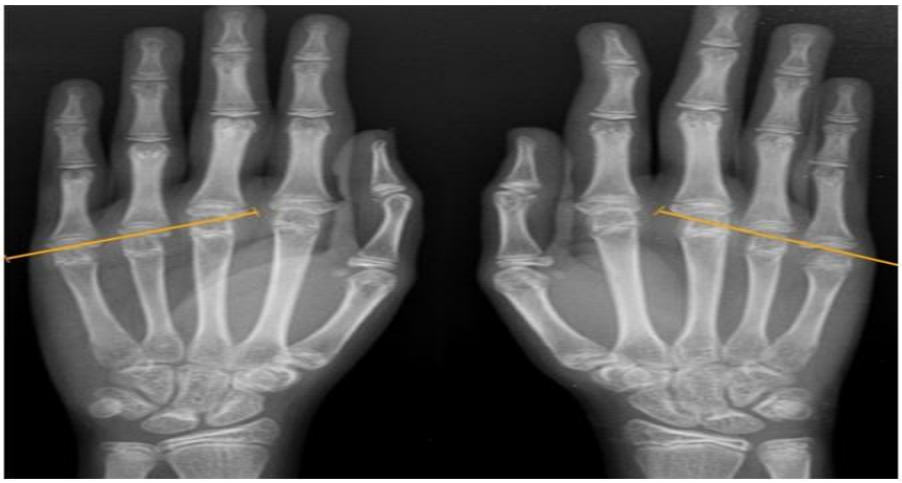
The carpal angle

This is formed by lines tangential to the proximal ends of the scaphoid and lunate bones In normal hands the average angle is 138° It is reduced to an average 108° in gonadal dysgenesis

The metacarpal index

This is calculated by measuring the lengths of the second, third, fourth and fifth metacarpals and dividing by their breadths taken at their exact midpoint The sum of these divided by four is the metacarpal index, which has a normal

Turner syndrome - hand



Update more than 124 short ring finger syndrome