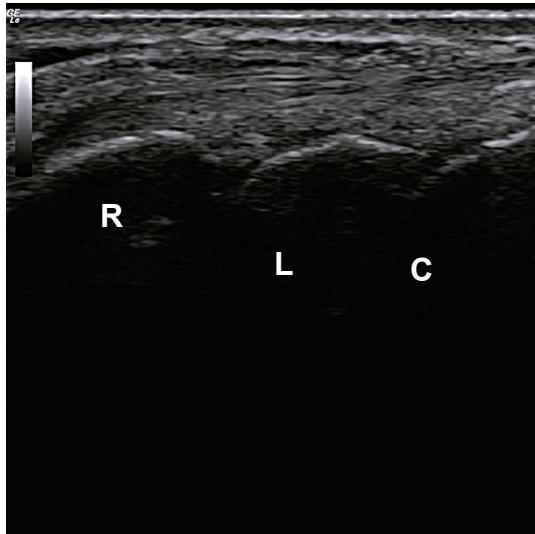


# Wrist

Healthy Subject  
RA  
Crystal-related  
Other Diseases

# Wrist



**Healthy Subject**

**Longitudinal dorsal median  
scan of wrist**

R= radius

L= lunate

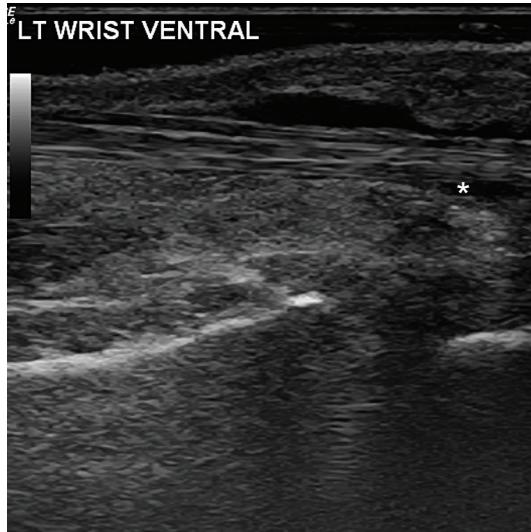
C= capitate



**Chang, Chi-Ching**

Grey scale US using a Envisor (Philips, the Netherland) with a multi-frequency linear transducer (7~12 MHz)

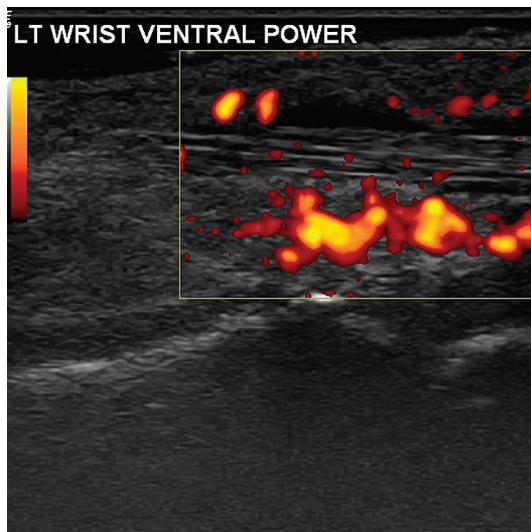
# Wrist



RA

## Longitudinal scan, ventral

Severe tenosynovitis of wrist (\*). Marked tenosynovial hypertrophy with intense inflammation.



**Kuo, Chang-Fu**

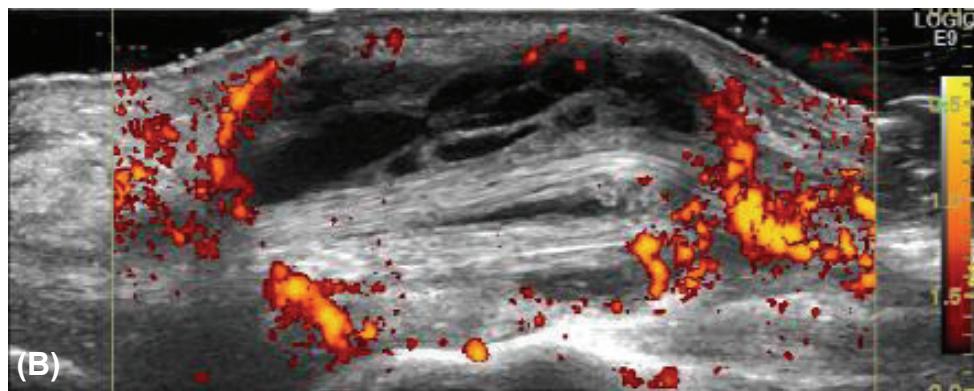
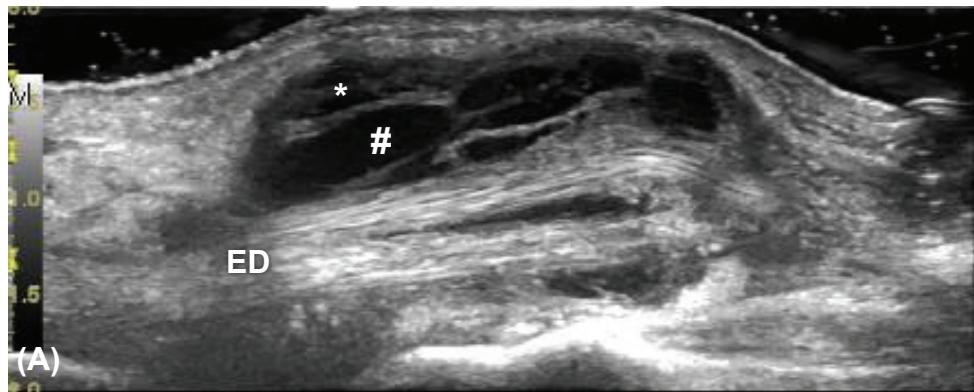
Grey scale US using a Logiq 9 (General Electrics Medical Systems, Milwaukee, WI) with a volumetric probe (4D16L), with power doppler

# Wrist

## RA

(A) Longitudinal US scan of the extensor digitorum tendons showed marked tenosynovial hypertrophy (\*) with effusion (#) and sequestration.

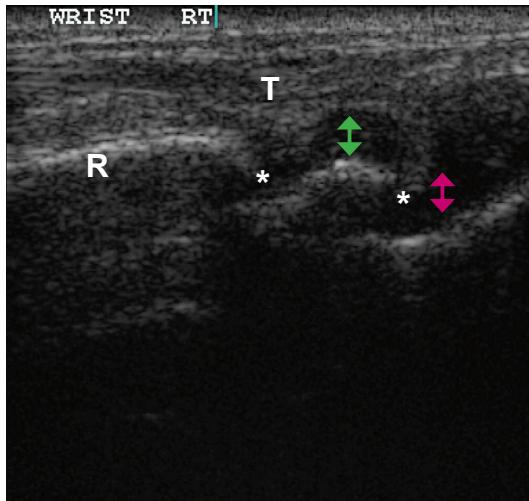
(B) Power Doppler US showed tenosynovial vascularity. ED:extensor digitorum tendons.



**Lai, Kuo-Lung**

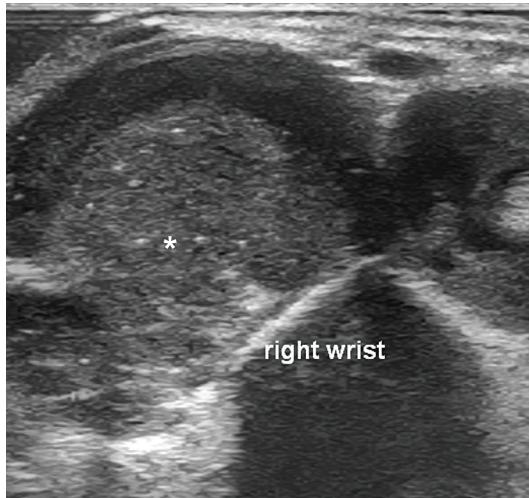
Gray scale and power Doppler US (PRF 1.3KHz) using a GE E9 (General Electrics) with a linear probe (15MHz)

# Wrist



**Chang, Chi-Ching**

Grey scale US using a Titan 180



**Kuo, Chang-Fu**

Grey scale US using a Logiq 9 (General Electric Medical Systems, Milwaukee, WI) with a volumetric probe (4D16L), with power doppler

**RA**

## Longitudinal dorsal median scan of wrist

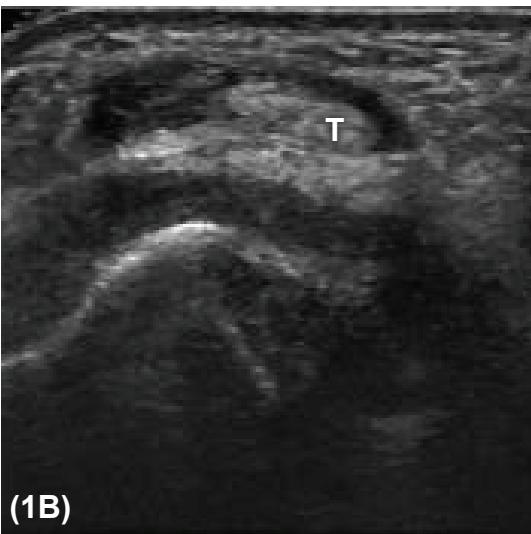
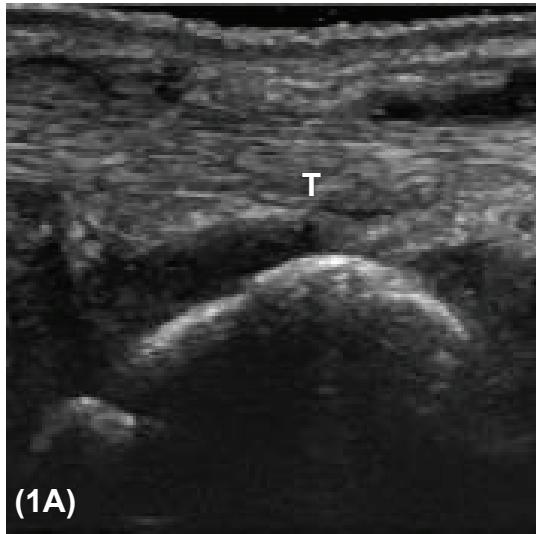
Marked joint cavity widening. Synovial fluid (\*) echotexture appears anechoic with echoic spots, due to the presence of proteinaceous material. T = extensor digitorum tendons; RC = Radiocarpal (green double); MC = mid-carpal (red-double); R = radius

**RA**

## Transverse scan, dorsal

Extensive synovial hypertrophy (\*) of joints and overlying tendons. The synovial hypertrophy is tumor-like.

# Wrist



RA

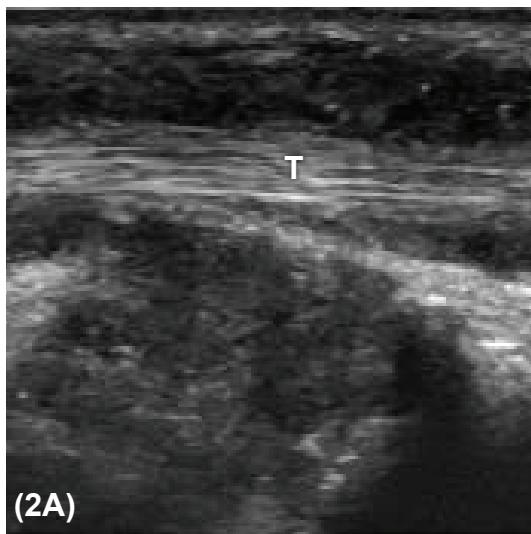
## ECU tenosynovitis Longitudinal scan

Extensor carpi ulnaris (ECU) tenosynovitis. Longitudinal (1A) and transverse(1B) US scans of the ECU tendon in a RA patient with mild ECU tenosynovitis. The tenosynovium was thickened and hypoechoic, formed halo sign in transverse view(1B). Another RA patient with severe ECU tenosynovitis which presented marked tenosynovial hypertrophy in both longitudinal (2A) and transverse(2B) US scans. T: ECU tendon.

Lai, Kuo-Lung

Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

# Wrist

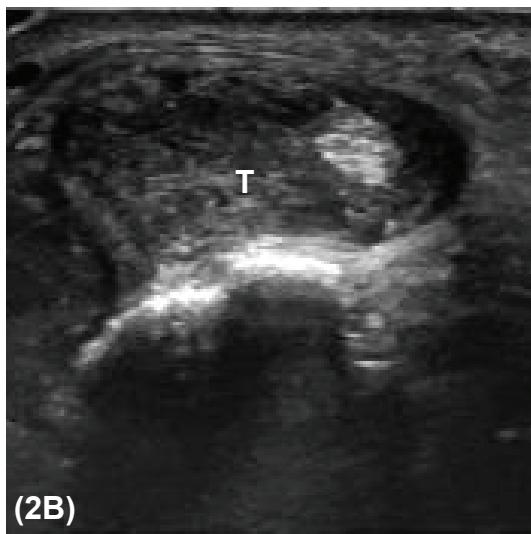


(2A)

RA

## ECU tenosynovitis Longitudinal scan

Extensor carpi ulnaris (ECU) tenosynovitis. Longitudinal (1A) and transverse(1B) US scans of the ECU tendon in a RA patient with mild ECU tenosynovitis. The tenosynovium was thickened and hypoechoic, formed halo sign in transverse view(1B). Another RA patient with severe ECU tenosynovitis which presented marked tenosynovial hypertrophy in both longitudinal (2A) and transverse(2B) US scans. T: ECU tendon.

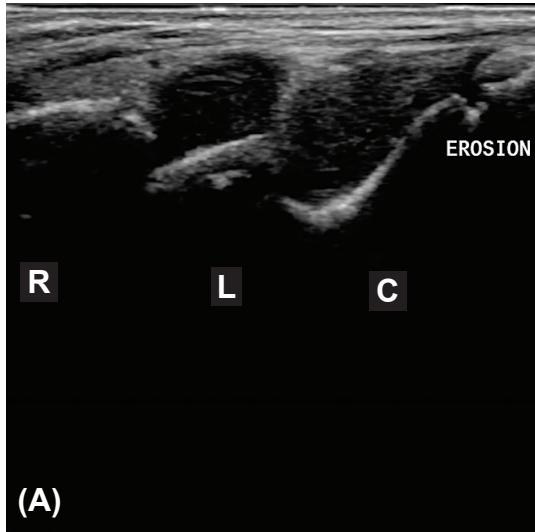


(2B)

**Lai, Kuo-Lung**

Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

# Wrist



RA

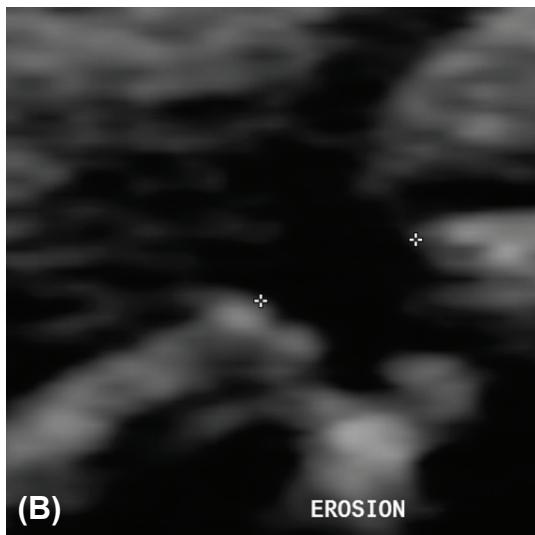
Dorsal longitudinal scan (A) and amplified image for bony erosion (0.1461cm) (B).

Widening of radiocarpal joint capsule with synovial membrane proliferation and a bony erosion in capitate. PDUS showed a neovascularized vessel in synovium toward the erosive region.

R = radius

L = lunate

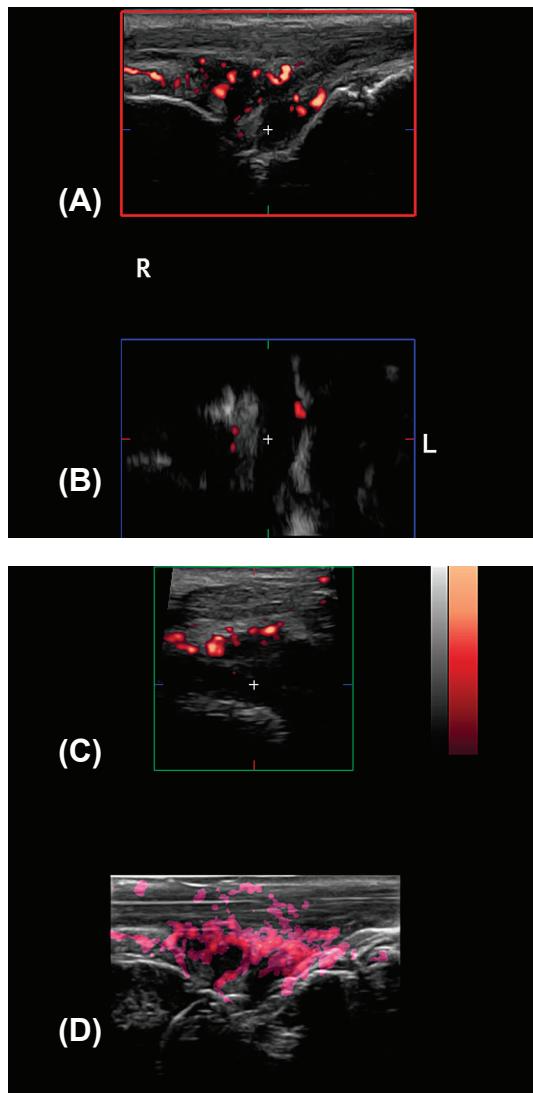
C = capitate



Chen, Hsin-Hua

Grey scale US using a Philip iU22 with a volumetric probe (4D, 5-13MHz)

# Wrist



RA

Dorsal longitudinal (A) and reconstructed coronal (B), transverse (C) scan, with reconstructed 3D image (D).

Widening of Joint capsule of Radiolunate joint with synovial thickening and many power Doppler signals in the proliferated synovium.

R = radius

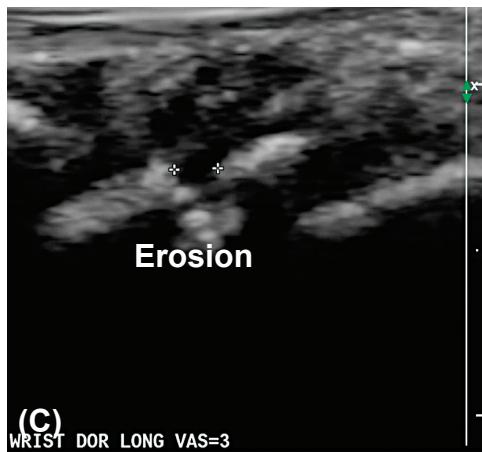
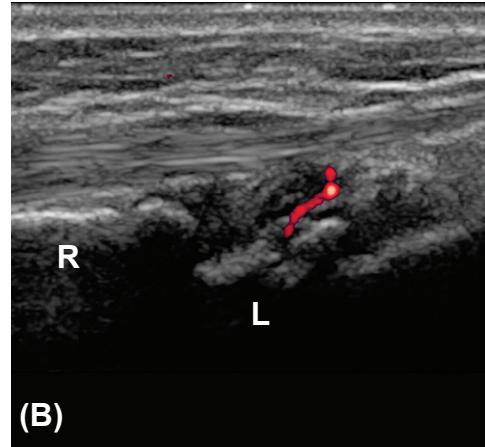
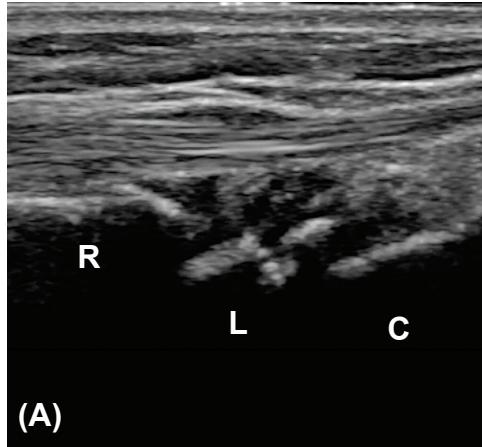
L = lunate

Chen, Hsin-Hua

3D Power Doppler US using a Philip iU22 with a volumetric probe (4D,5-13 MHz)

# Wrist

RA



Chen, Hsin-Hua

Grey scale and power Doppler US using a Philip iU22 with a volumetric probe (4D, 5-13MHz)

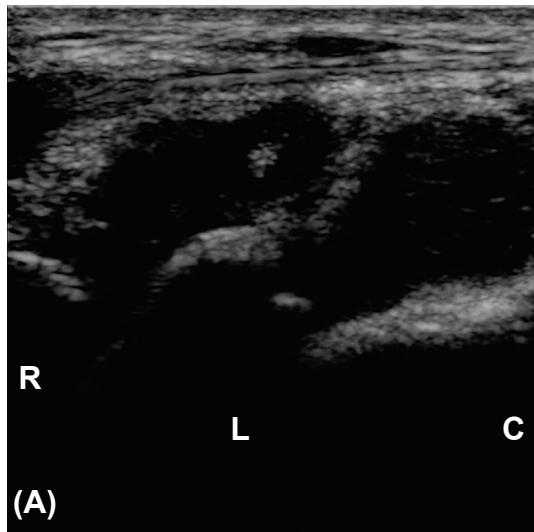
## Anti-TNF Failure

Dorsal longitudinal scan (A) and Power Doppler image (B), amplified image for bony erosion (0.131cm) (C).

Widening of radiocarpal joint capsule with synovial membrane proliferation and a bony erosion in lunate. PDUS showed a neovascularized vessel in synovium toward the erosive region.

R= radius, L= lunate, C= captate.

# Wrist



RA

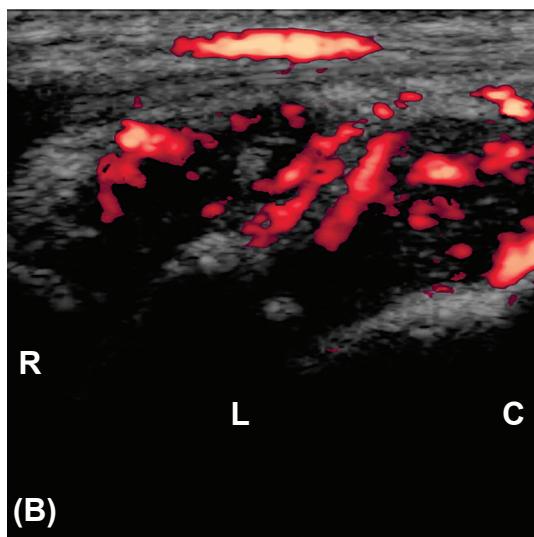
Dorsal longitudinal scan (A)  
and Power Doppler image  
(B).

Widening of radiocarpal  
joint capsule with synovial  
membrane proliferation.  
PDUS showed a marked  
hypervascularity within the  
joint capsule.

R = radius

L = lunate

C = capitate

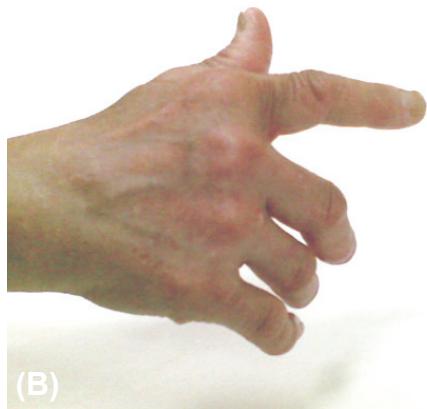
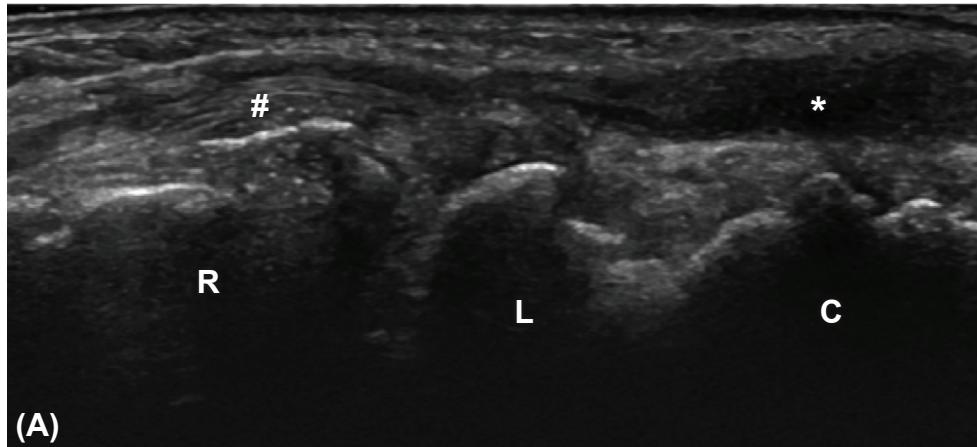


Chen, Hsin-Hua

Grey scale and power Doppler US using a Philip iU22 with a linear probe (7-15MHz)

# Wrist

RA



**Lai, Kuo-Lung**

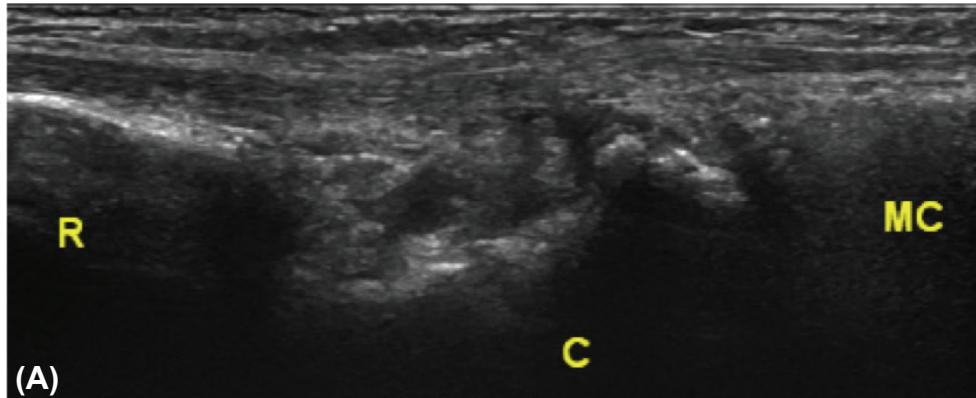
Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

**RA**  
**Extensor tendon rupture**  
**Longitudinal scan**

Extensor tendon rupture in RA. (A) Longitudinal US scan of the dorsal wrist. Absence of ED tendon at the distal portion(\*). Retraction of the ruptured ED tendon(#) was found. (B) The patient could not extend the 3rd, 4th and 5th fingers. ED: extensor digitorum tendon, R: radius, L: lunate, C: capitate.

# Wrist

RA



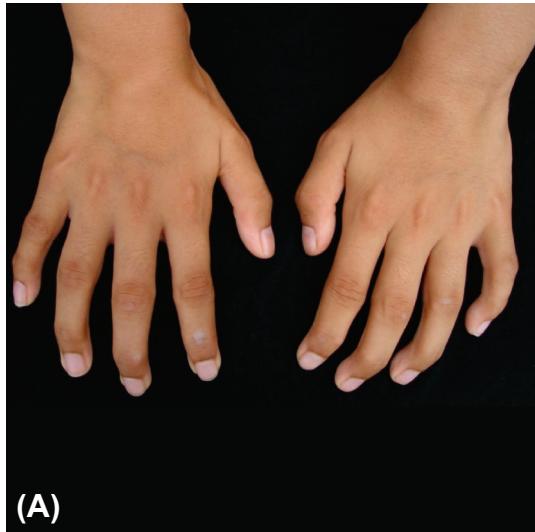
## Carpal bone ankylosis Longitudinal scan

Carpal bone ankylosis in RA.  
(A) Longitudinal scan at dorsal aspect of wrist showed cortex irregularity and ankylosis of carpal bones. The lunate-capitate junction was ill-defined. (B)X-ray of the same wrist. R: radius, C: carpal bone, MC: 3rd metacarpal bone.

**Lai, Kuo-Lung**

Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

# Wrist



## Crystal-related

### MPS IS (Scheie Syndrome)

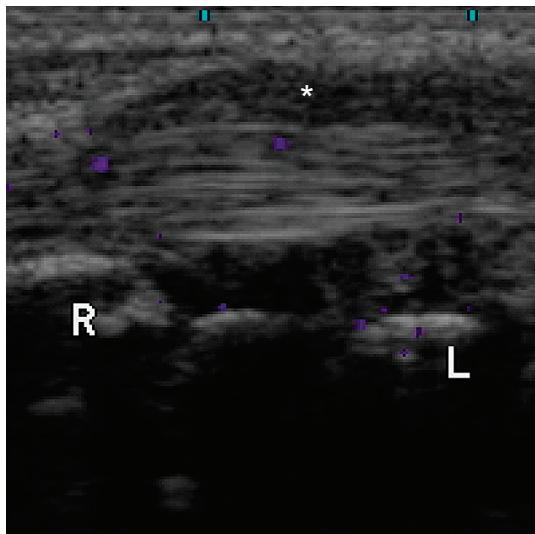
Radiolunate joint

**Gross picture (A) and dorsal longitudinal scan over radiolunate joint.**

Extensor tendon sheath thickening (\*) with hypoechoic internal echo

R = radius

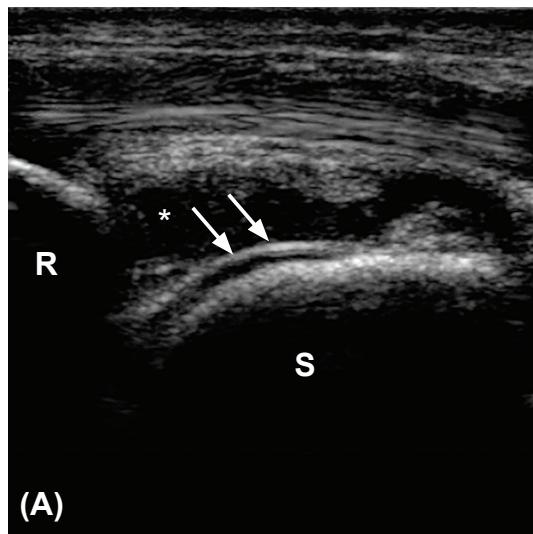
L = lunate



**Chen, Hsin-Hua**

Power Doppler US using a Logiq 500 (General Electrics Medical Systems, Milwaukee, WI) with a linear probe (7-12MHz)

# Wrist



## Crystal-related Gouty Arthritis

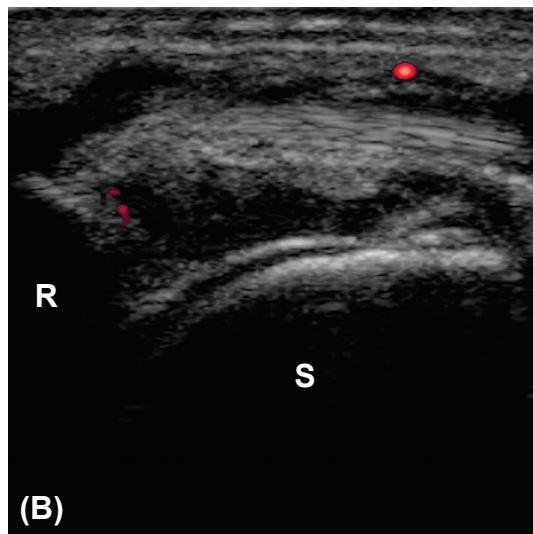
Dorsal longitudinal scan (A) and Power Doppler image (B).

(A) Widening of radioscapheoid joint cavity with moderate anechoic effusion (\*). Note a hyperechoic linear lesion (arrows) on the surface of the cartilage over scaphoid bone (S), which is a typical “double contour sign”.

(B) PDUS showed some Doppler signals in synovium.

R = radius

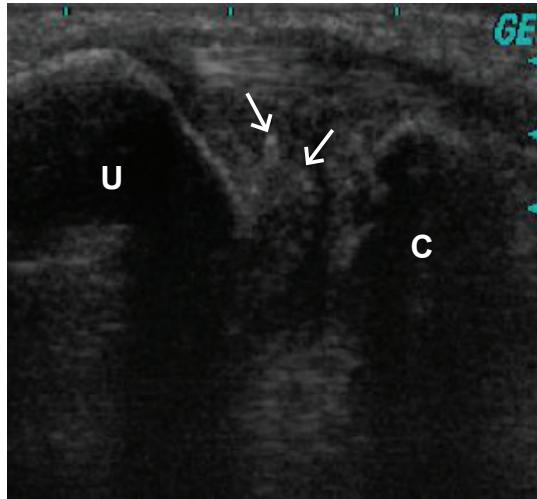
S = scaphoid



Chen, Hsin-Hua

Grey scale and power Doppler US using a Philips iU22 with a volumetric probe (4D, 5-13MHz)

# Wrist



## Crystal-related

### CPPD arthropathy

### Longitudinal scan of ulnocarpal junction

CPPD arthropathy.  
Longitudinal US scan of  
ulnocarpal junction showed  
some hyperechoic depositions  
(arrows) with varied size in  
the triangular fibrocartilage. U:  
ulna, C: carpal bone.

Lai, Kuo-Lung

Gray scale US using a GE LOQIG500 (General Electrics) with a linear probe (11MHz)

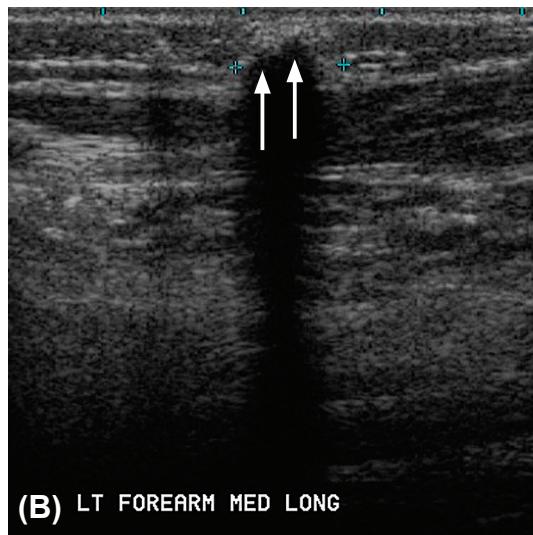
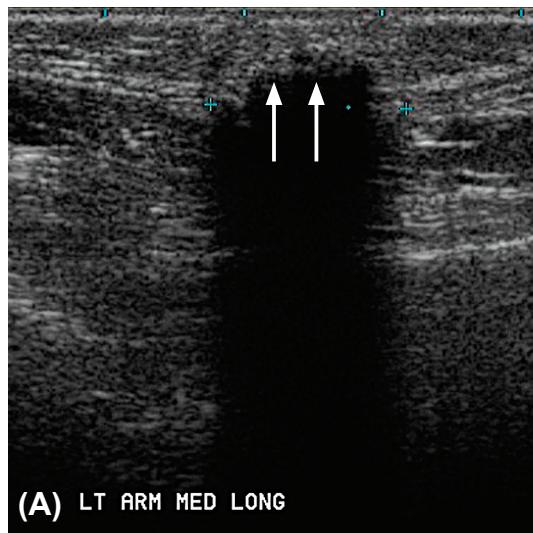
# Wrist

## Other Diseases

### PSS with Subcutaneous Calcinosis

Dorsal longitudinal scan over left arm medial aspect (A) and over left forearm medial aspect (B).

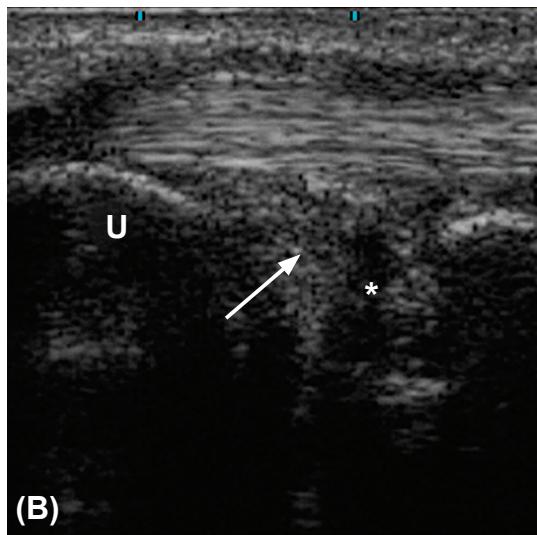
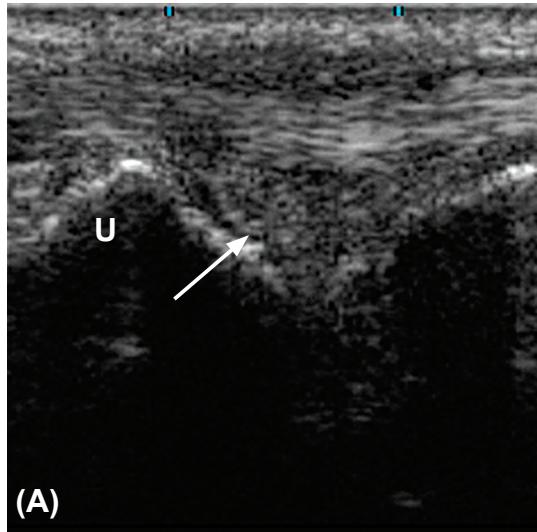
Hyperechoic lesions in subcutaneous tissue with acoustic shadows (arrows) were compatible with subcutaneous calcinosis related to PSS.



Chen, Hsin-Hua

Grey scale US using a Logiq 500 (General Electrics Medical Systems, Milwaukee, WI) with a linear probe (6-13MHz).

# Wrist



## Other Diseases

### TFCC Tear

proximal interphalangeal joint

**Dorsal longitudinal scan of left ulnarpal (A) and right ulnarpal (B) joints.**

(A) Normal TFCC (arrow) shows a hyperechoic triangular materia in ulnarpal joint.

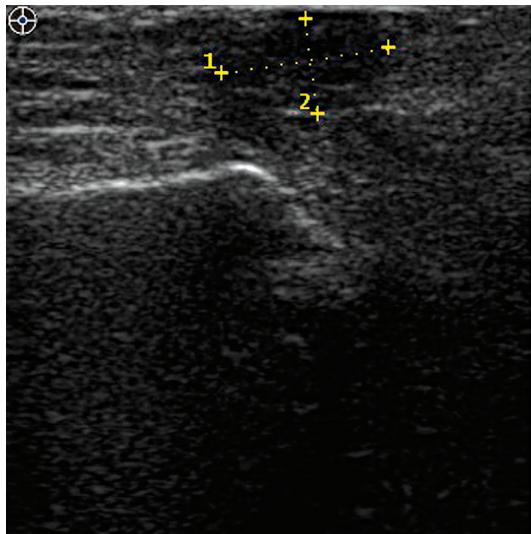
(B) A anechoic cleft (\*) was found in TFCC, which suggested a tear.

U = ulna

**Chen, Hsin-Hua**

Grey scale US using a Logiq 500 (General Electrics Medical Systems, Milwaukee, WI) with a linear probe (6-13MHz)

# Wrist



## Other Diseases

### Systemic Lupus Erythematosus, Ganglion

Longitudinal views aligned the long axis of the forearm and over the radial aspect of left wrist using a 7.5MHz transducer

A ill defined hypoechoic mass (1.5x1cm) is identified along the abductor pollicis longus tendon.

Abbreviations = Extensor pollicis longus (E)

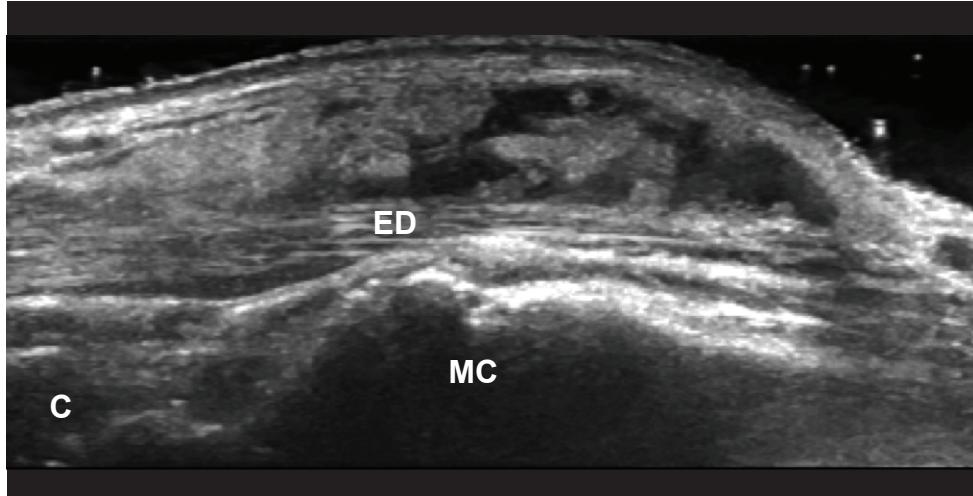


Chen, Ying-Chou

Grey scale US using CGM OPUS 5000

# Wrist

## Other Diseases



### Ganglion cyst

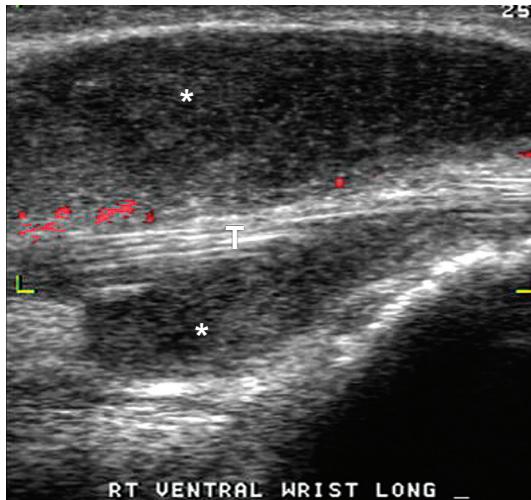
#### Longitudinal scan of extensor digitorum tendon

Ganglion cyst of the extensor digitorum tendon at wrist (longitudinal scan). ED: extensor digitorum tendon, C: capitate, MC: 3<sup>rd</sup> metacarpal bone.

**Lai, Kuo-Lung**

Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

# Wrist



Tsai, Wen-Pin

Aloka 5500

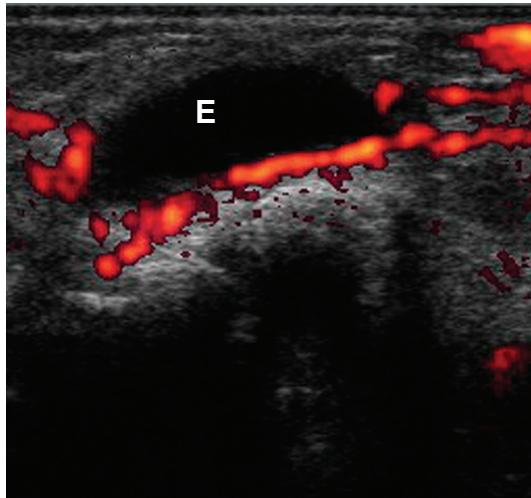
## Other Diseases

**Septic Tenosynovitis,  
Rheumatoid Arthritis**

**Ventral longitudinal scan**

Marked tendon sheath  
widening with heterogenous  
fluid collection (\*).

T = tendon



Chen, Ying-Chou

POWDER US using CGM OPUS 5000

## Other Diseases

**Rt 4<sup>th</sup> Extendon Rupture**

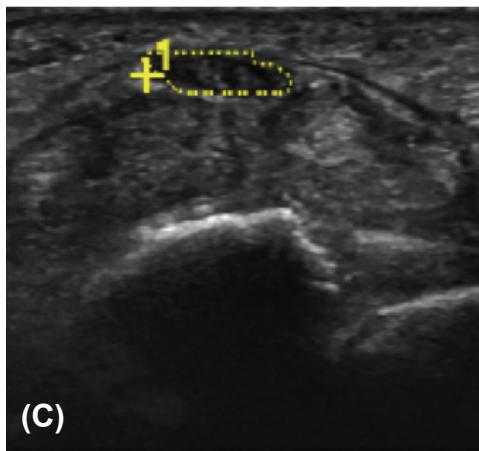
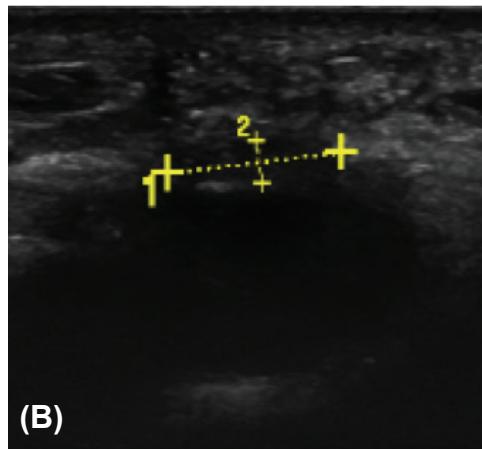
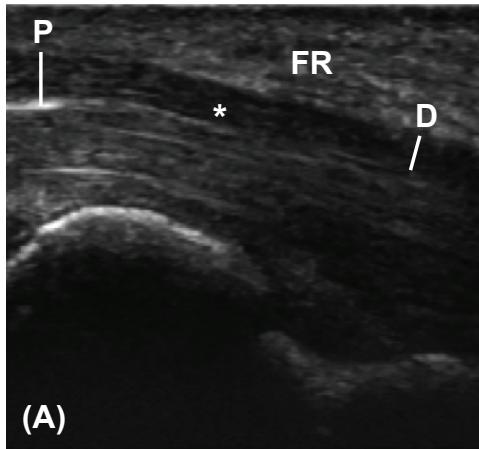
**Transverse dorsal scan**

Power Doppler signals in  
more than half the synovium  
of the dorsal hands. Loss  
of the 4<sup>th</sup> extensor tendons.

Abbreviations: Extensor  
tendon (E)

# Wrist

## Other Diseases

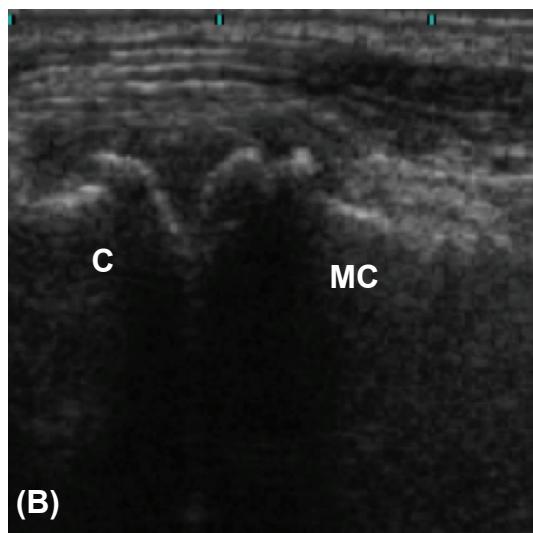
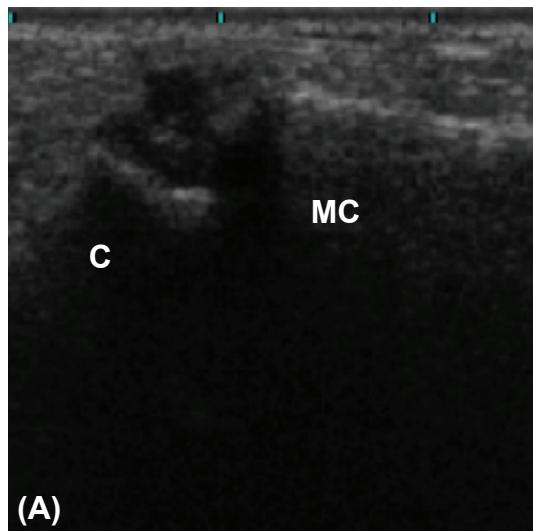


**Lai, Kuo-Lung**

Gray scale US using a GE E9 (General Electrics) with a linear probe (15MHz)

Carpal tunnel syndrome.  
(A) Longitudinal scan at volar aspect of wrist. The median nerve (\*, MN) had hypoechogenicity  
(B) Transverse scan at site D (within carpal tunnel): the MN was compressed. The ratio of width/thickness =  $7.8\text{mm}/1.9\text{mm} >3$ .  
(C) Transverse scan at site P (proximal to carpal tunnel entry): the cross-sectional area of MN was  $10\text{mm}^2$ . FD: flexor digitorum tendon, FR: flexor retinaculum.

# Wrist



## Other diseases

### OA

#### Longitudinal scan of CMC joint

CMC OA. Longitudinal scan at dorsal (A) and volar (B) aspects of 1<sup>st</sup> CMC joint. Spurs were present. C: carpal bone, MC: 1<sup>st</sup> metacarpal bone.

Lai, Kuo-Lung

Gray scale US using a GE LOGIQ500 (General Electrics) with a linear probe (11MHz)

# Memo