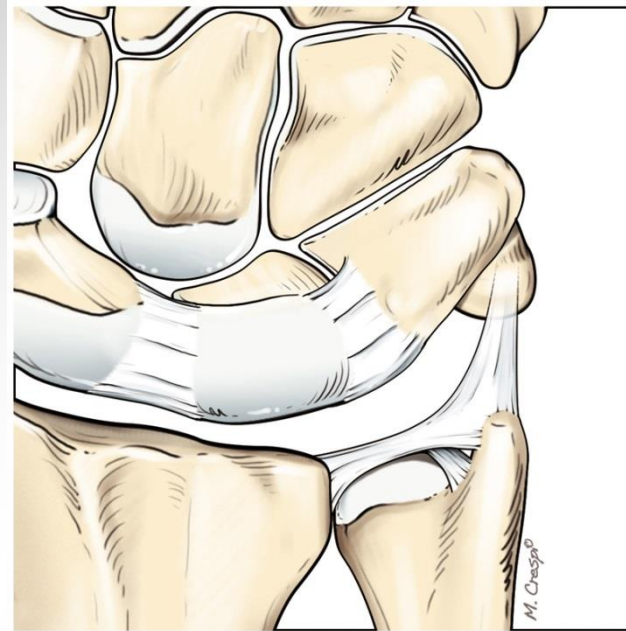


ULNAR IMPACTION SYNDROM

ULNAR RESECTION ARTHROPLASTY

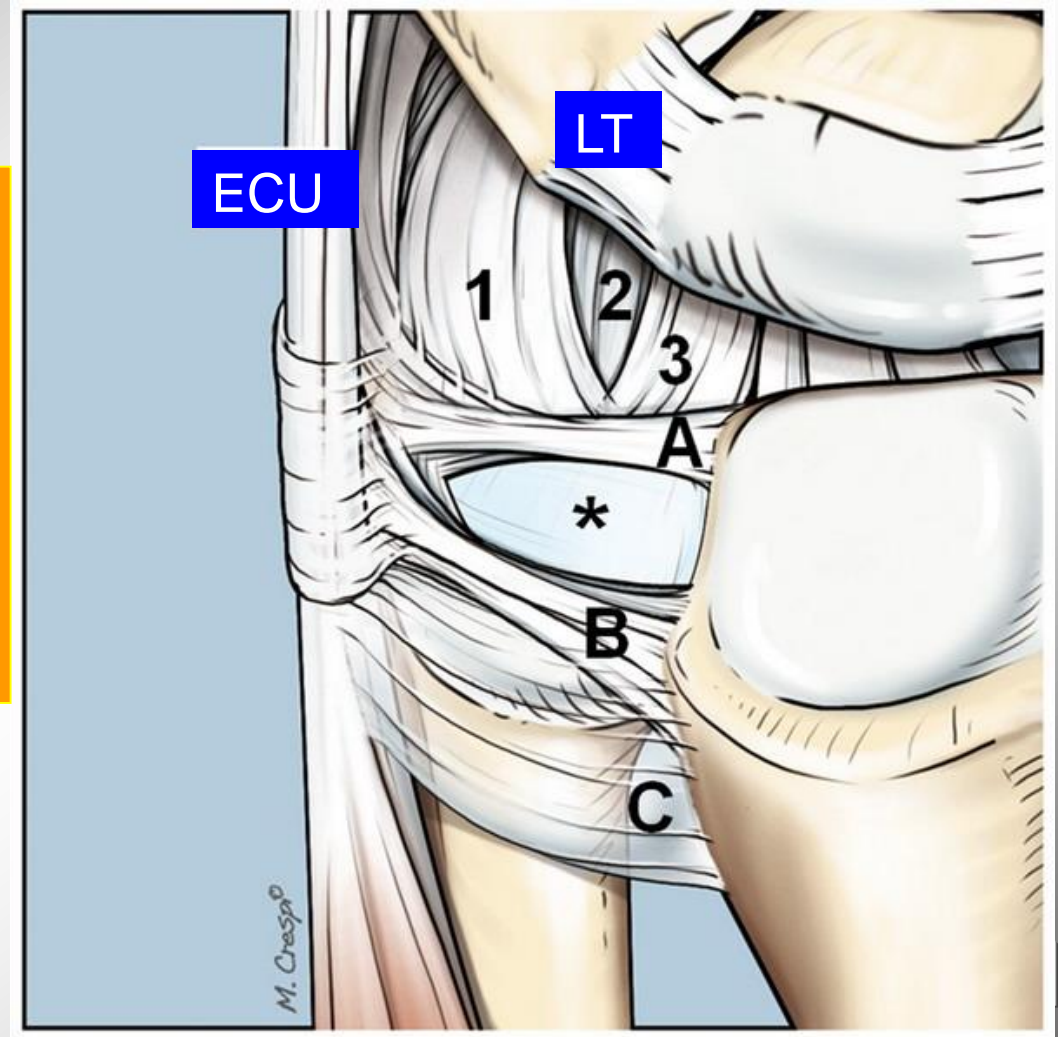


Ch. Mathoulin
Institut de la main, Paris

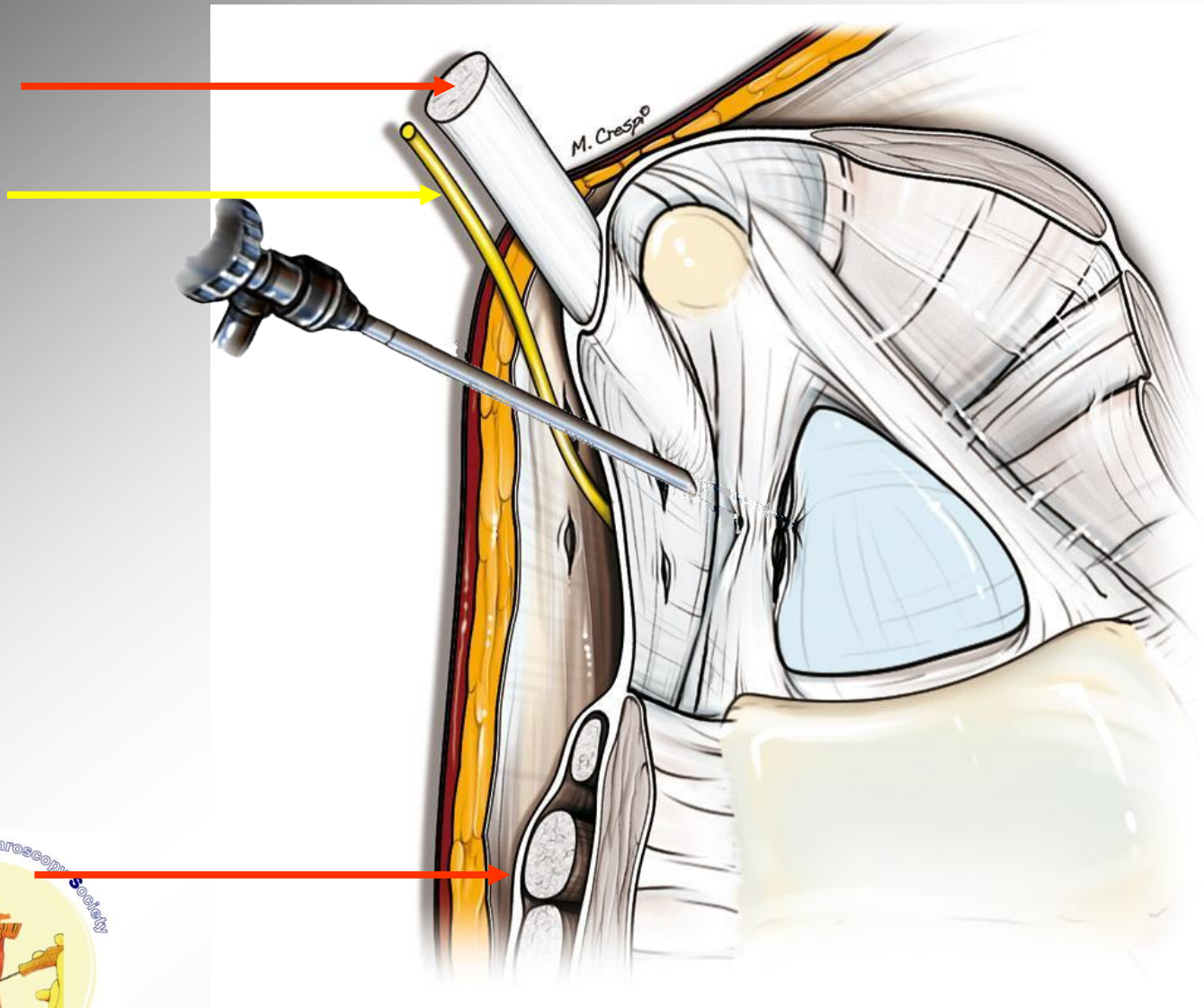


DIFFERENTIAL DIAGNOSIS

Ulnar nerve
ECU tendon
Radio-ulnar
congruity

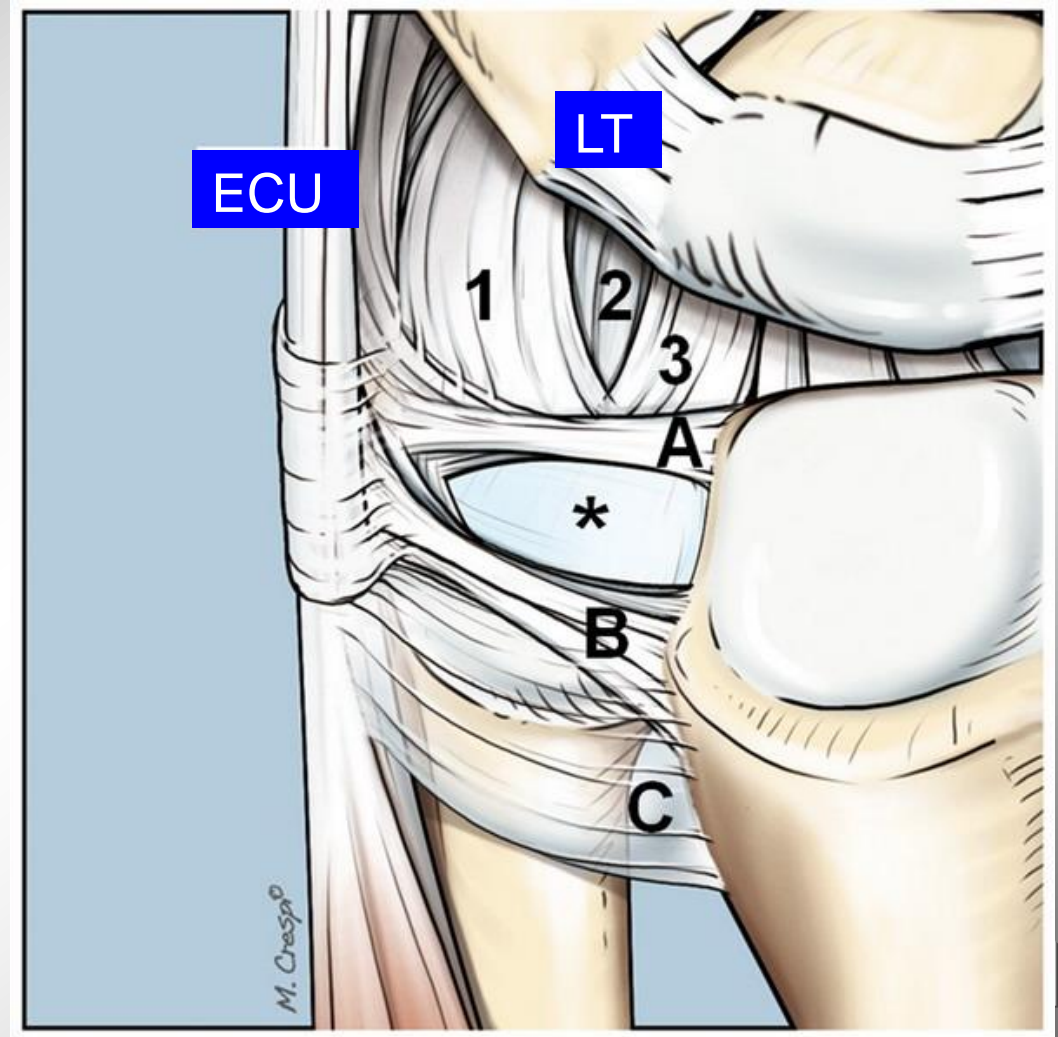


DIFFERENTIAL DIAGNOSIS

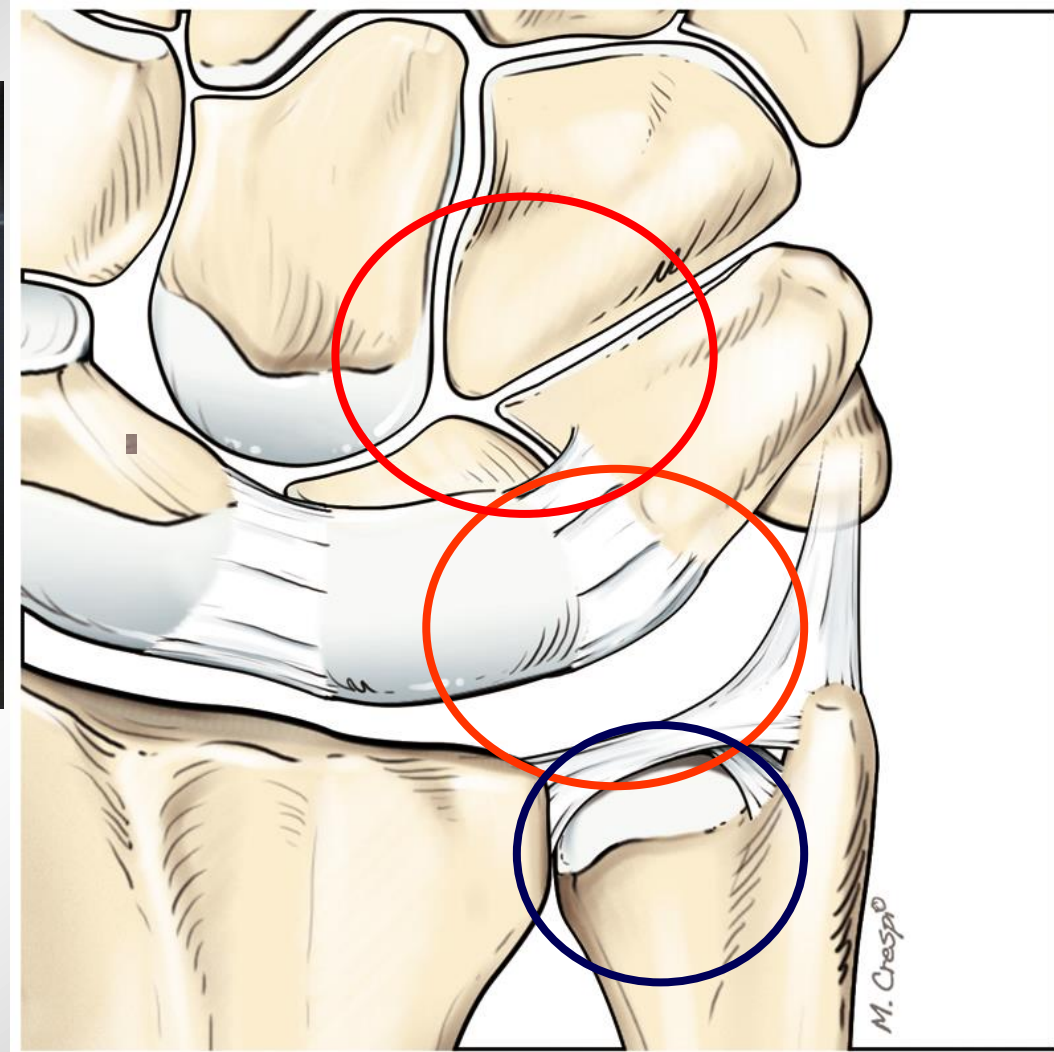


DIFFERENTIAL DIAGNOSIS

Ligament tears
TFCC tears



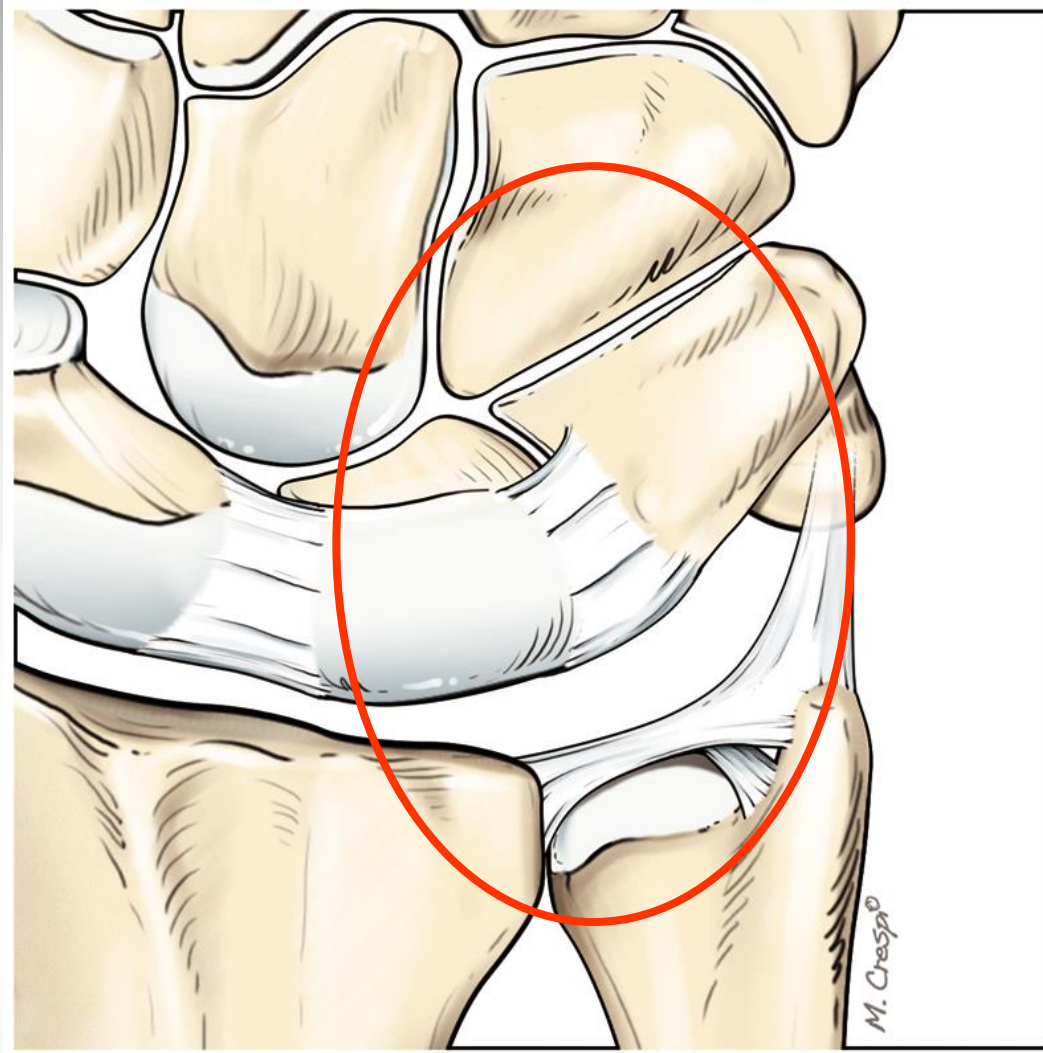
Anatomical geometry



With permission of M. Llinas



Anatomic geometry



Ulnar-impaction syndrom

Painful longitudinal force transmission

Positive Ulna-Variance

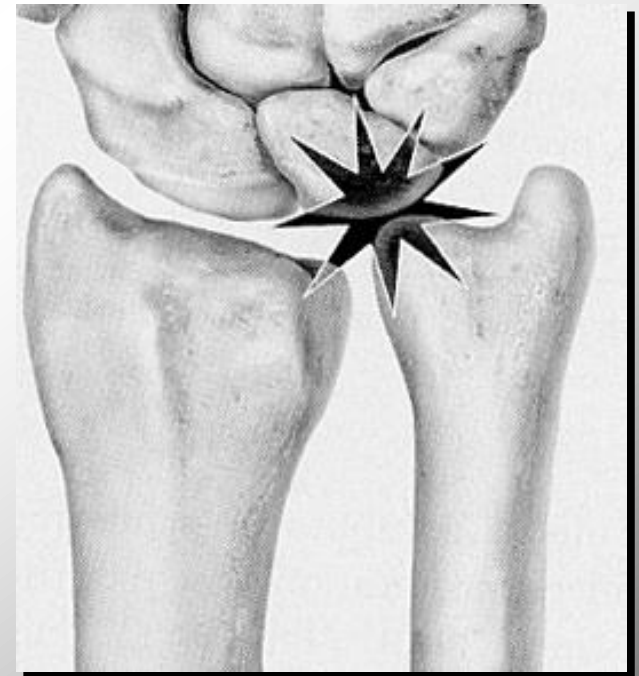
Often secondary to distal radius fracture

Ulnar variance

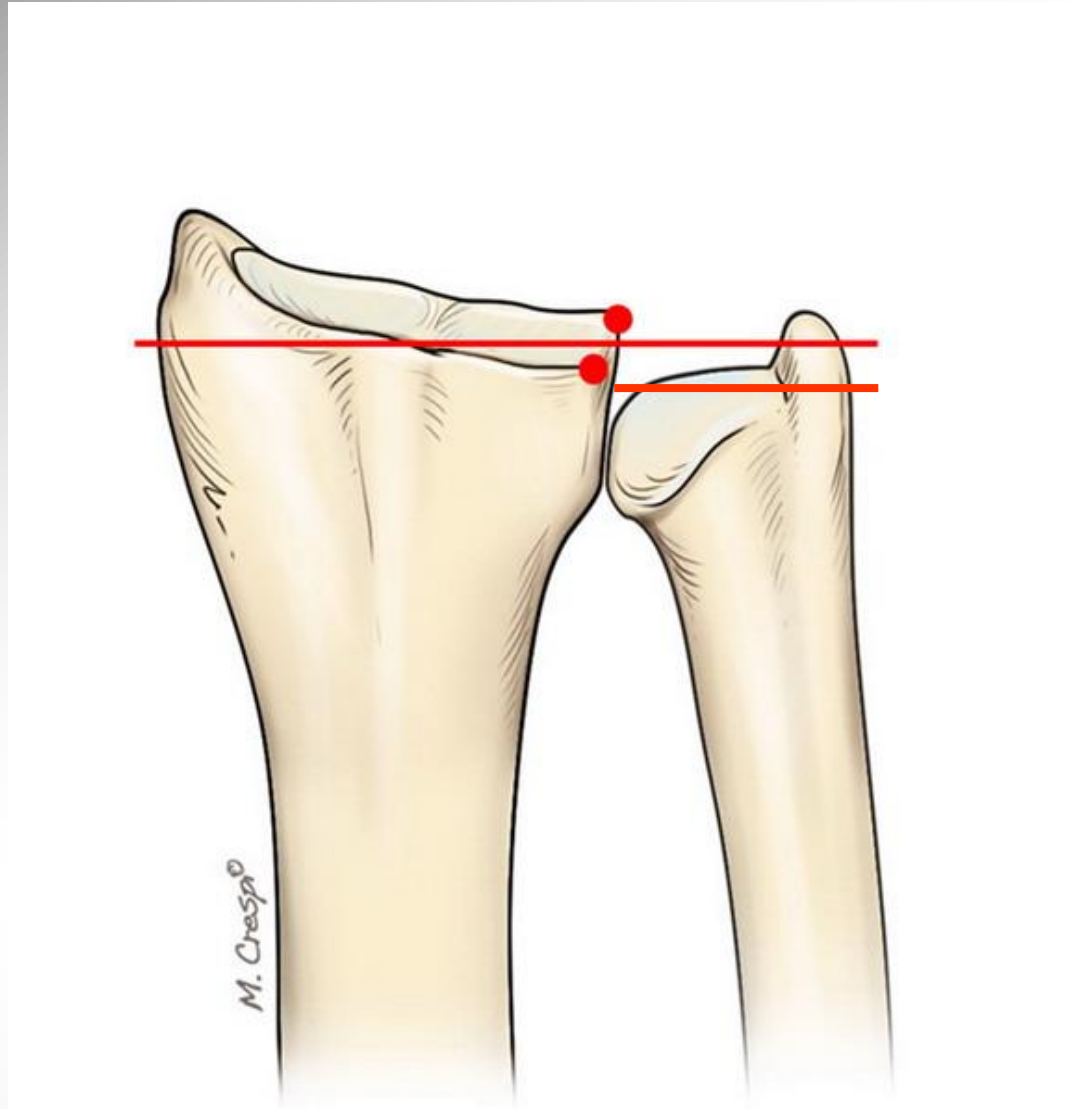
positive

neutral

negative



Ulna-Impaction-Syndrom



Ulna
Variance

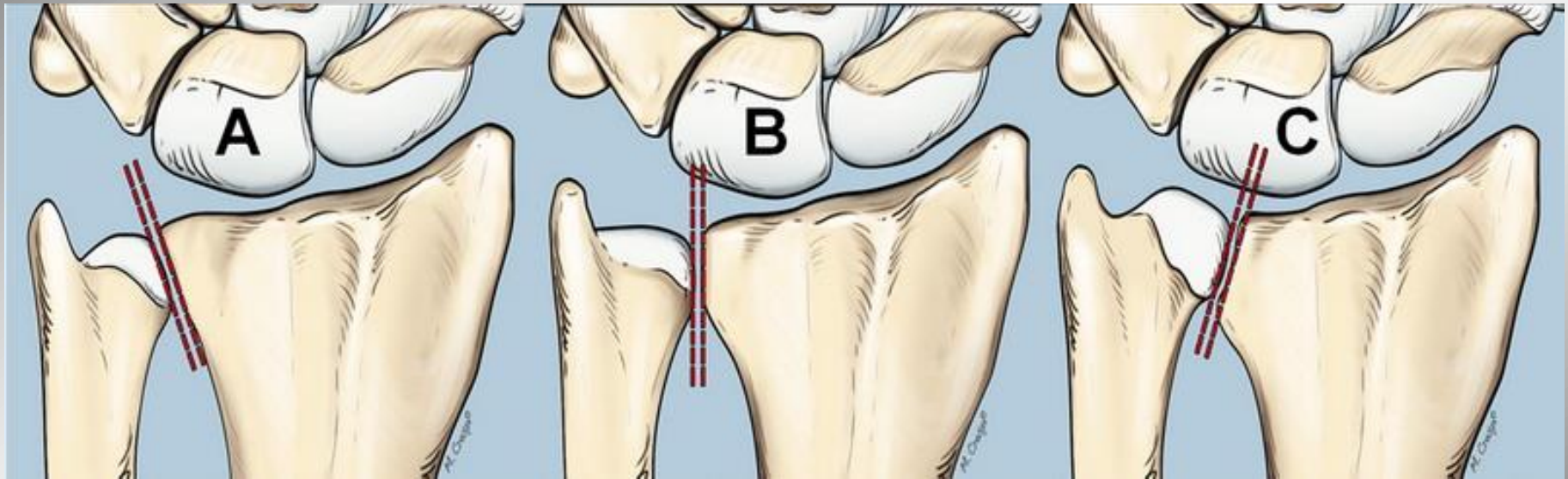


pron

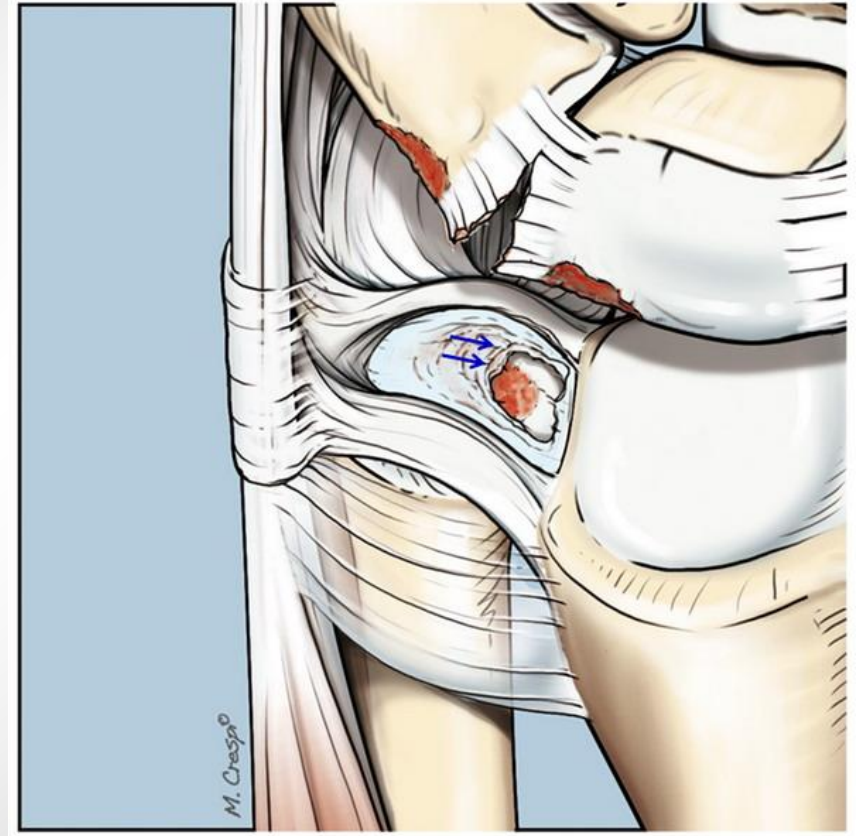
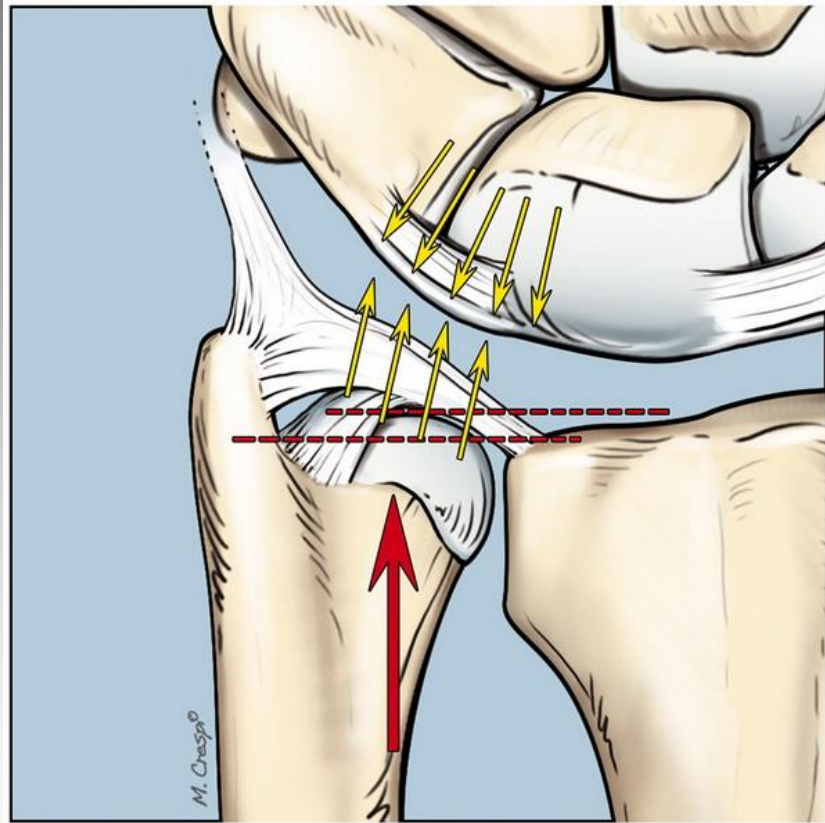


sup

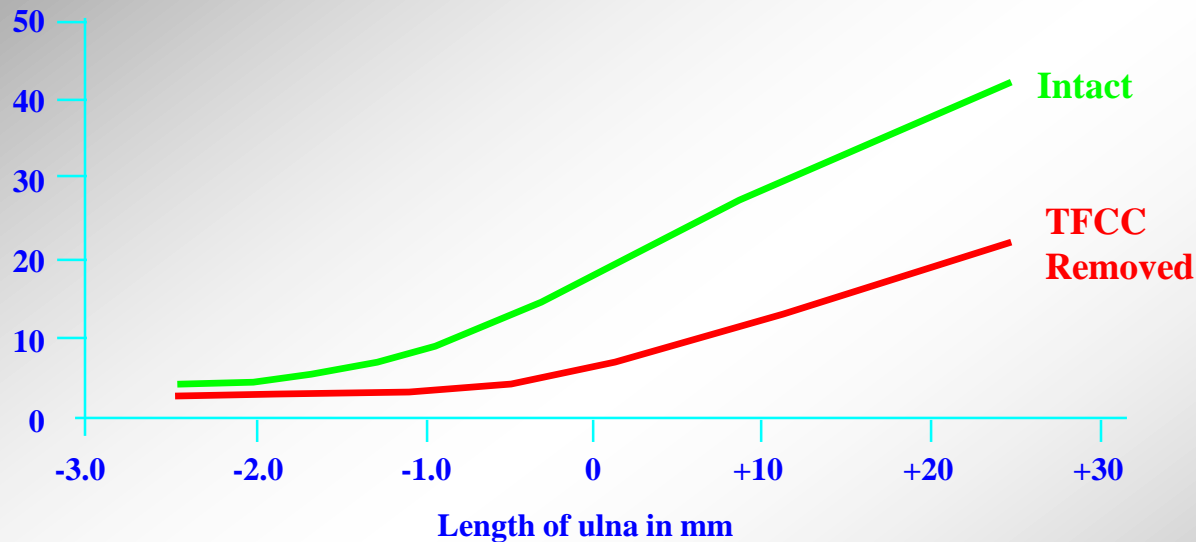
Ulna-Impaction-Syndrom



Ulna-Impaction-Syndrom



Variations of strength according to ulna length



- If ulna shortening of 2,5 mm , 95,7% strength by radius, 4,8% by ulna
- If ulna lengthening of 2,5mm, 58,1 % strength by radius, 41,9 % by ulna

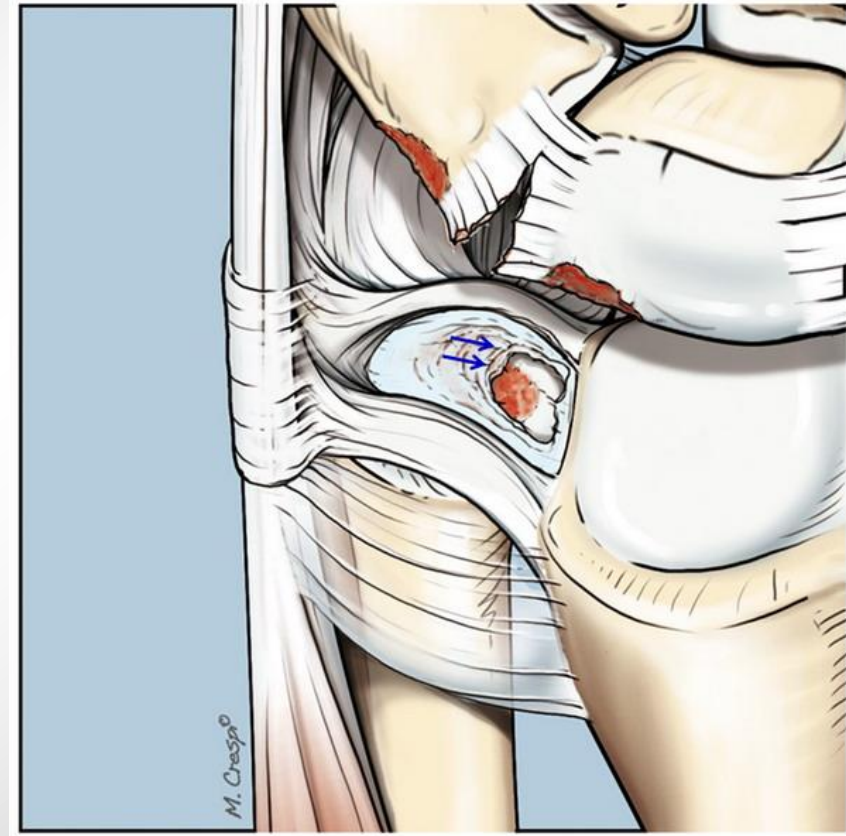
Ulna-Impaction-Syndrom

Central perforation of TFCC

Abutment between ulna head and lunate

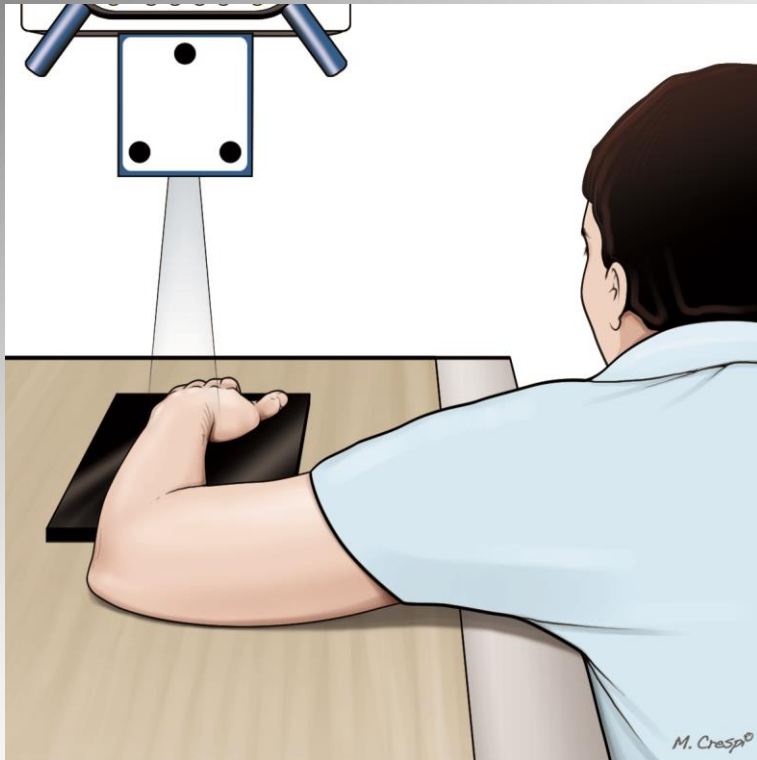
Alteration of cartilaginous carpal surface

Late stage : Luno triquetral ligament tears



X-Rays

X-rays in neutral position

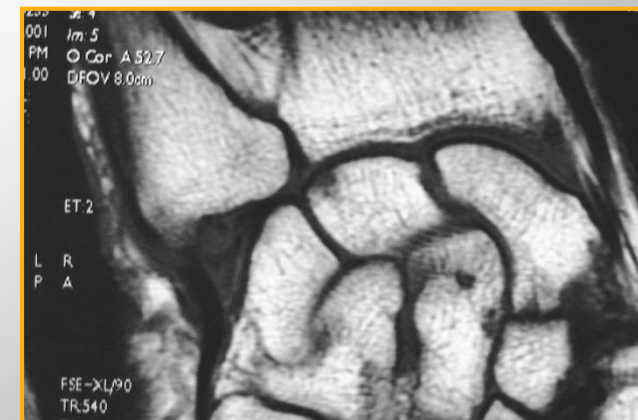
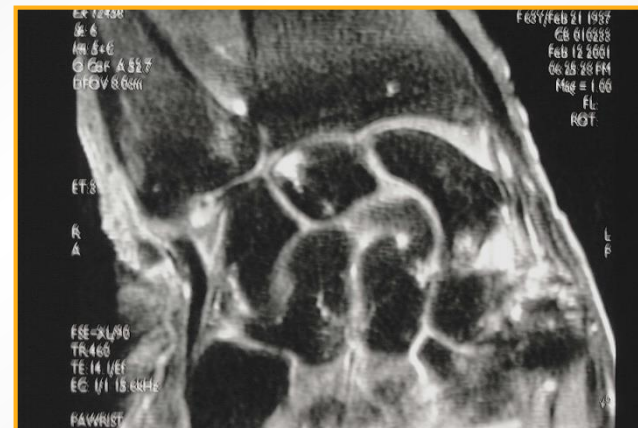


Radial deviation



X-Rays

Arthrography, arthro tomodensitometry +/-
M.R.I. +++++



X-Rays

Neutral Position



Closed fist



X-Rays

Neutral Position

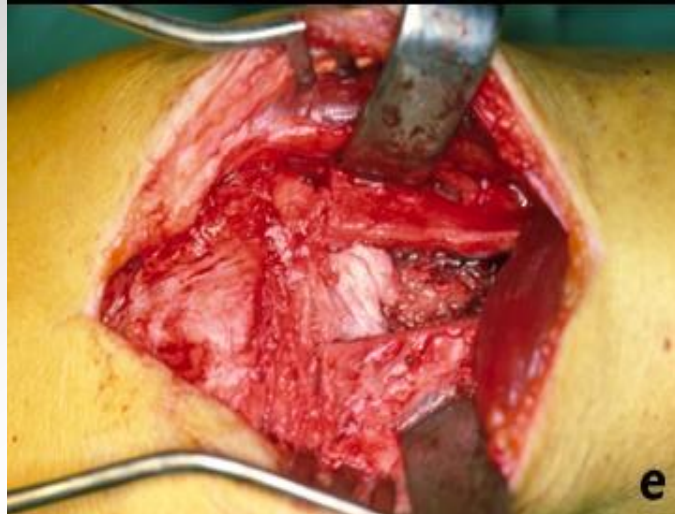
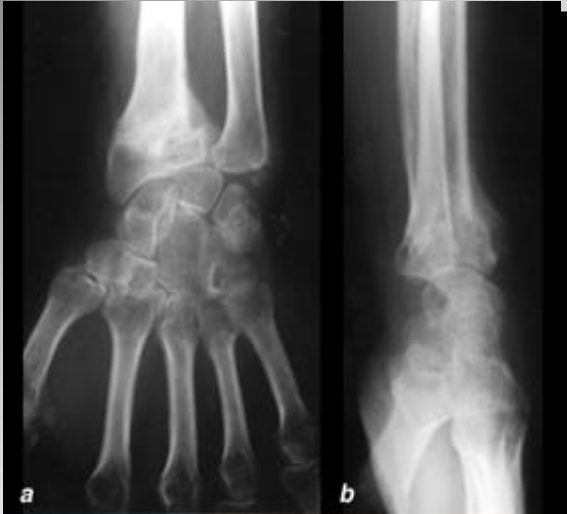


Closed fist



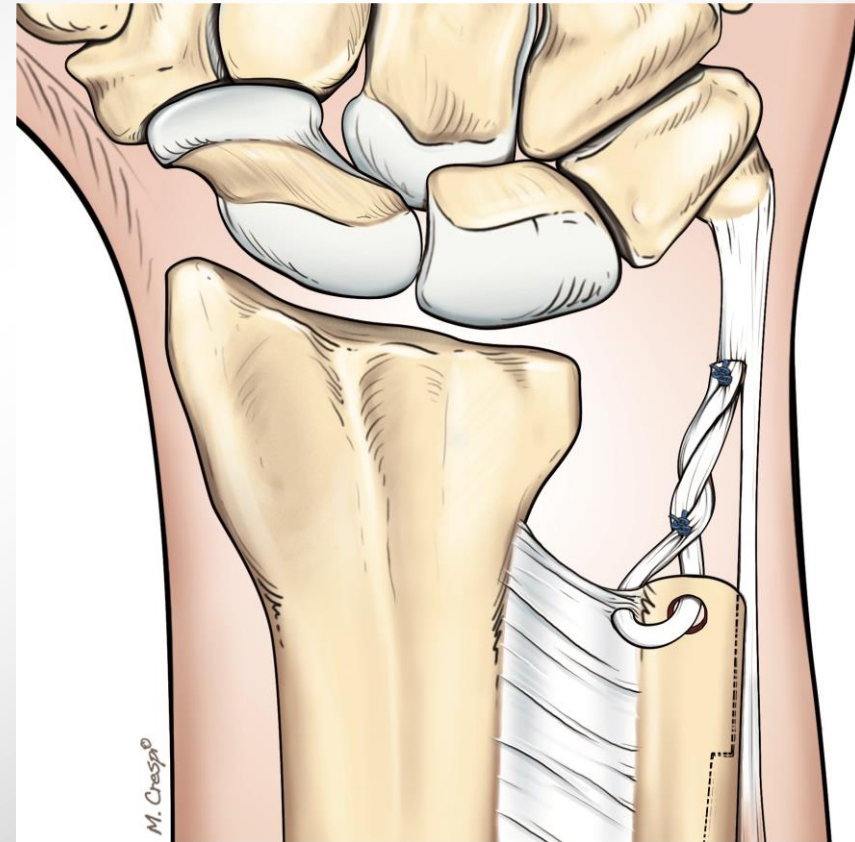
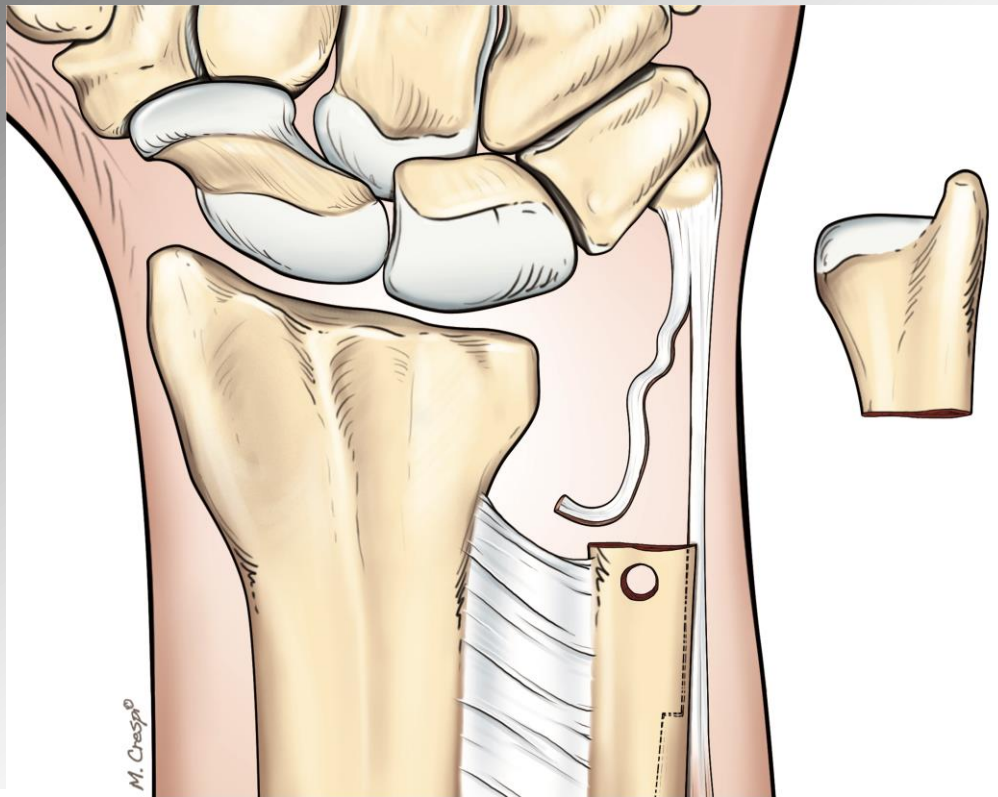
Treatment options

Radius osteotomy : It is the best treatment but....



Treatment options

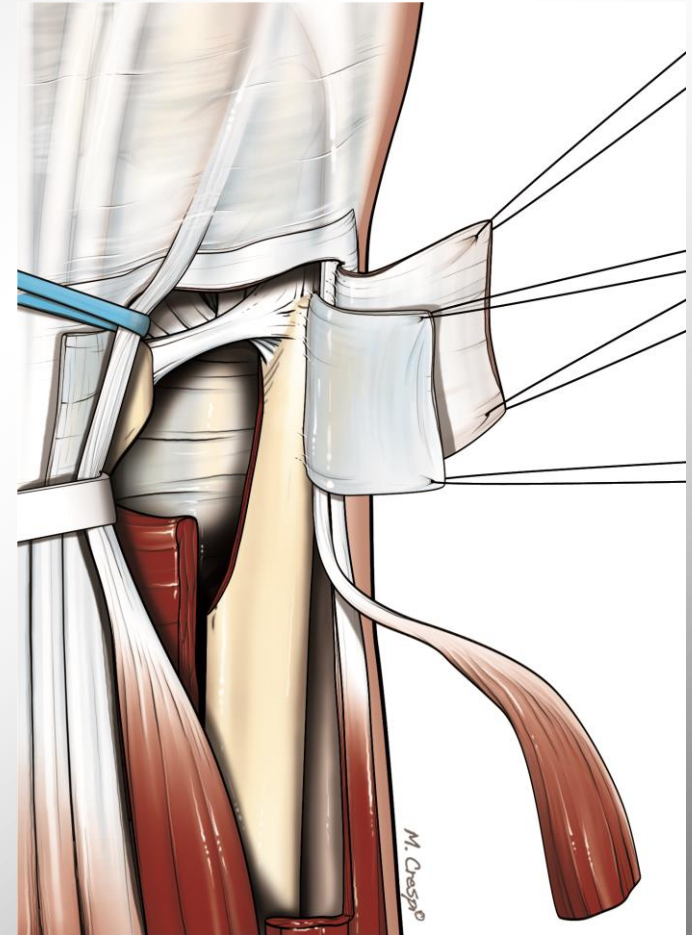
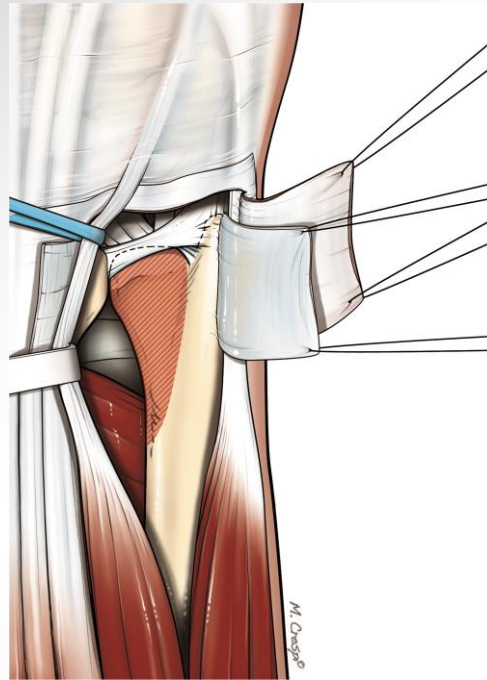
Darrach's procedure (1913) the simplest, but...



Treatment options

Hemi-resection

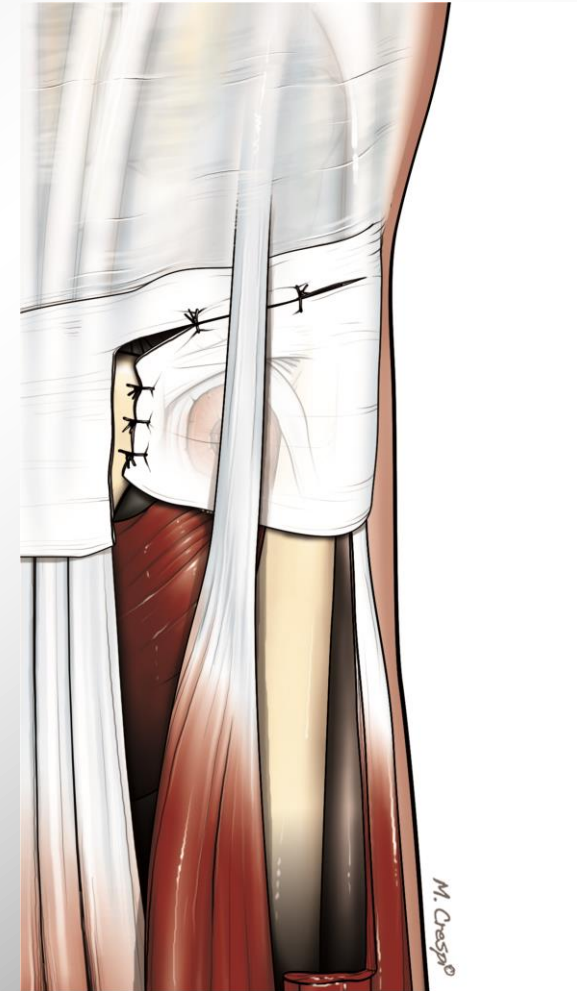
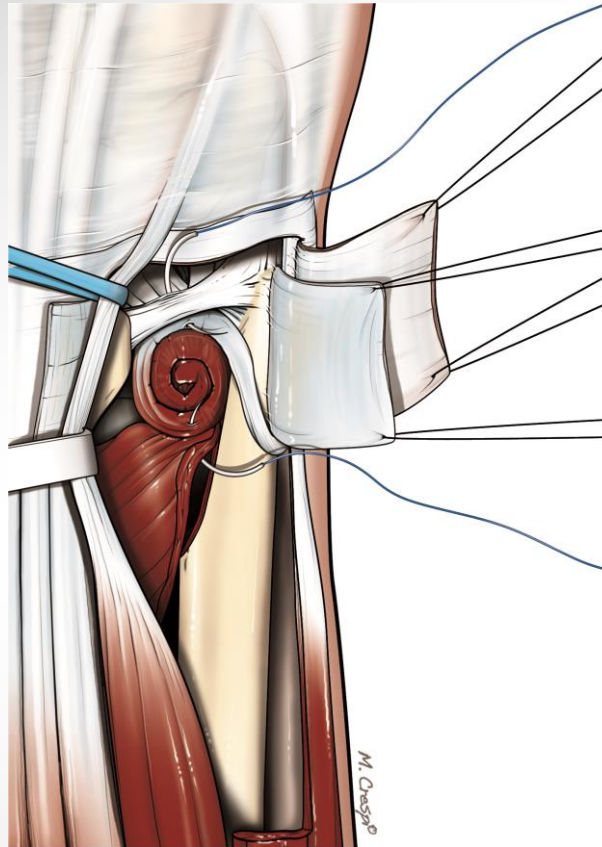
- BOWERS 1985
- FERNANDEZ 1988
- Dorsal approach



Treatment options

Hemi-resection

- BOWERS 1985
- FERNANDEZ 1988
- Dorsal approach



Treatment options

Hemi-resection

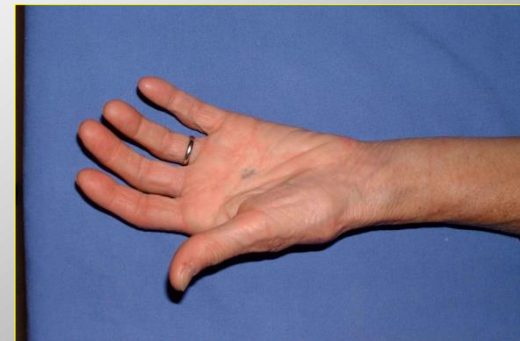
- BOWERS 1985
- FERNANDEZ 1988
- Dorsal approach



25 years of follow-up...

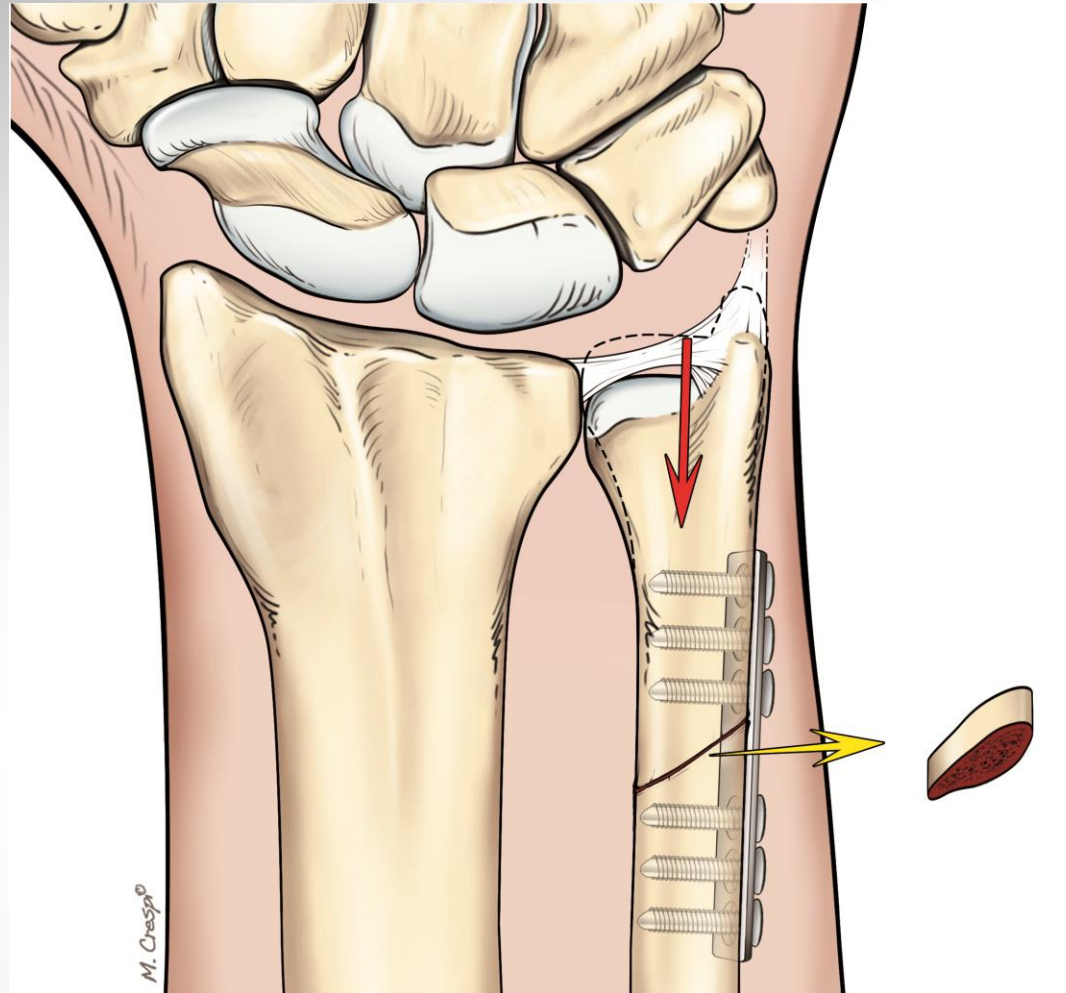
Treatment options

Sauvé-Kapandji: good technique, bad indication

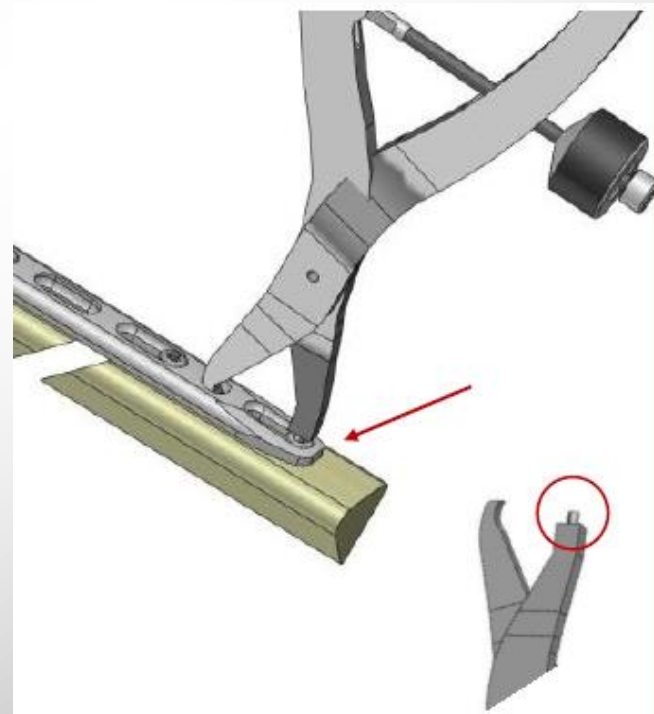


Treatment options

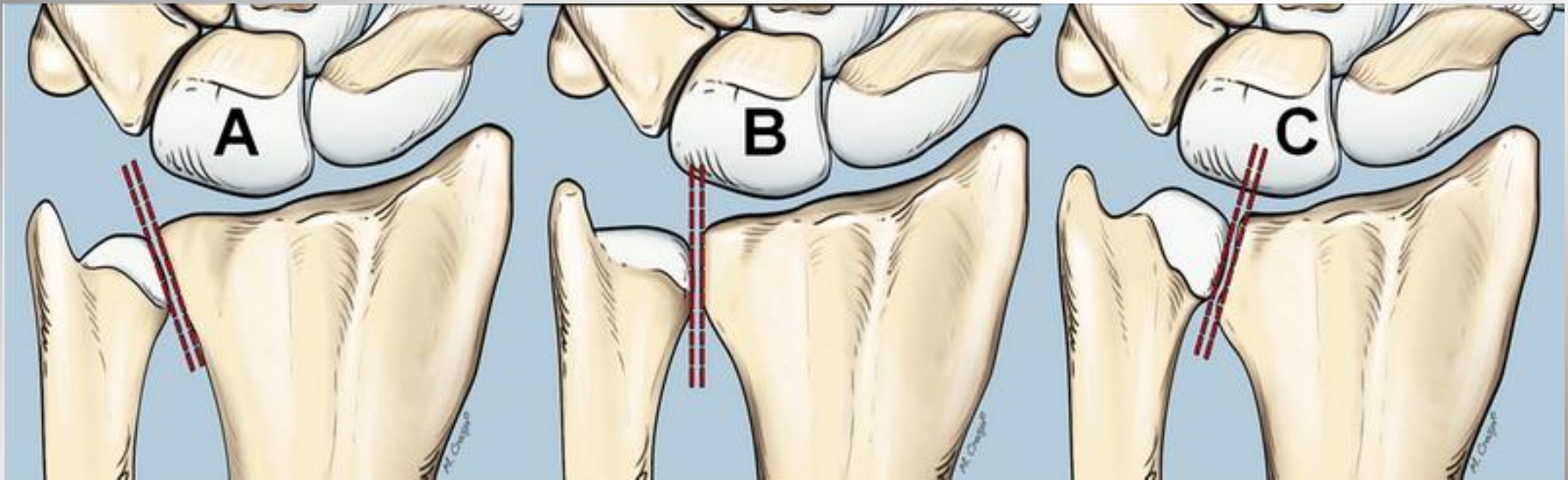
Ulnar shortening (Milch, 1941): nonunion...



Treatment options



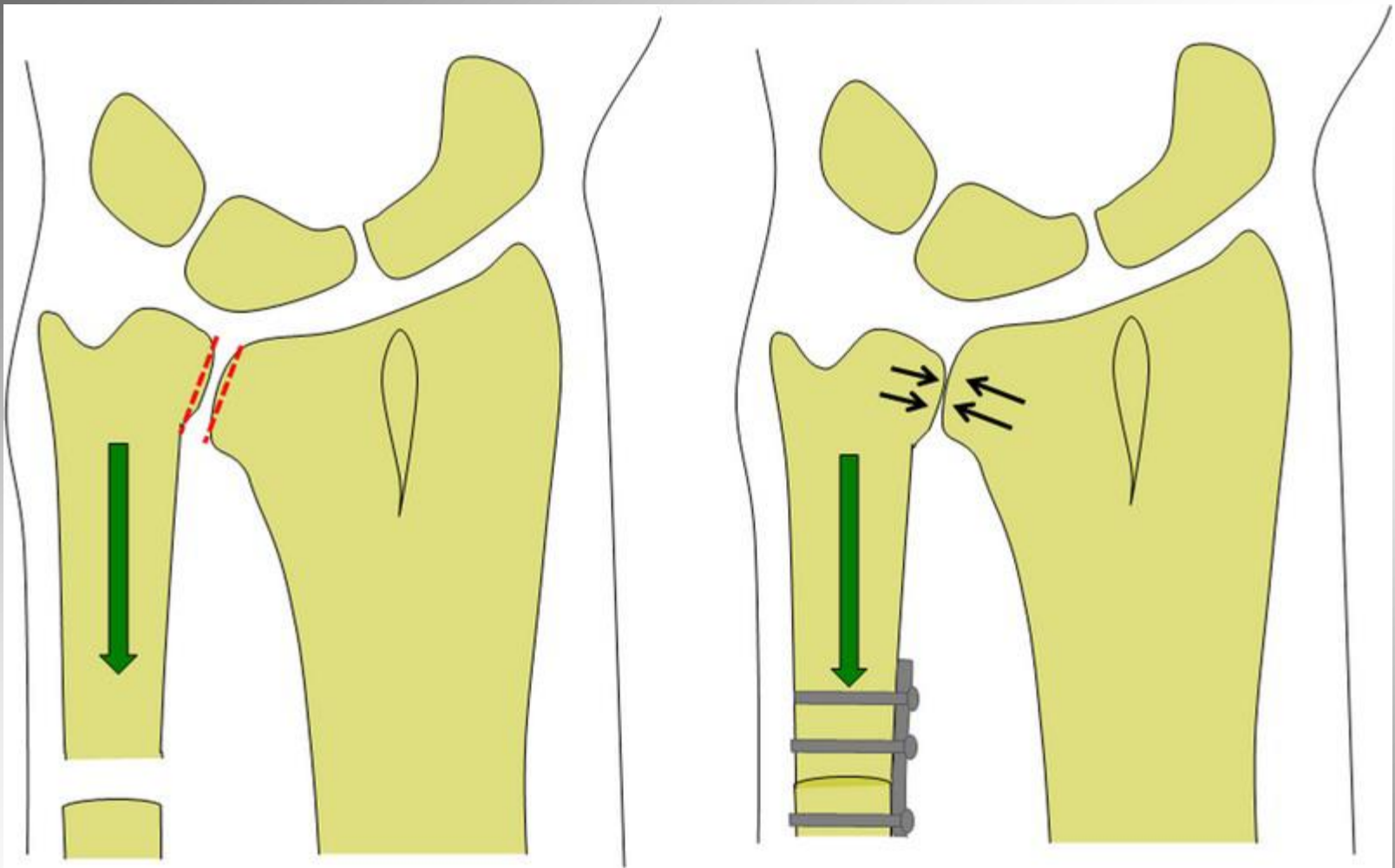
Treatment options



Yes

Yes

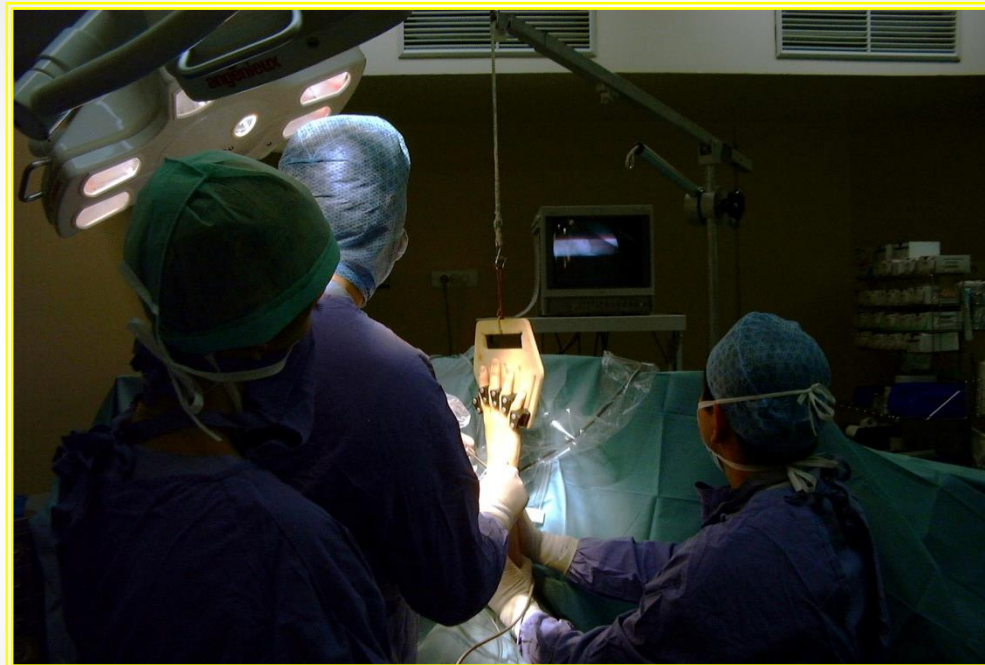
No



Role of Arthroscopy

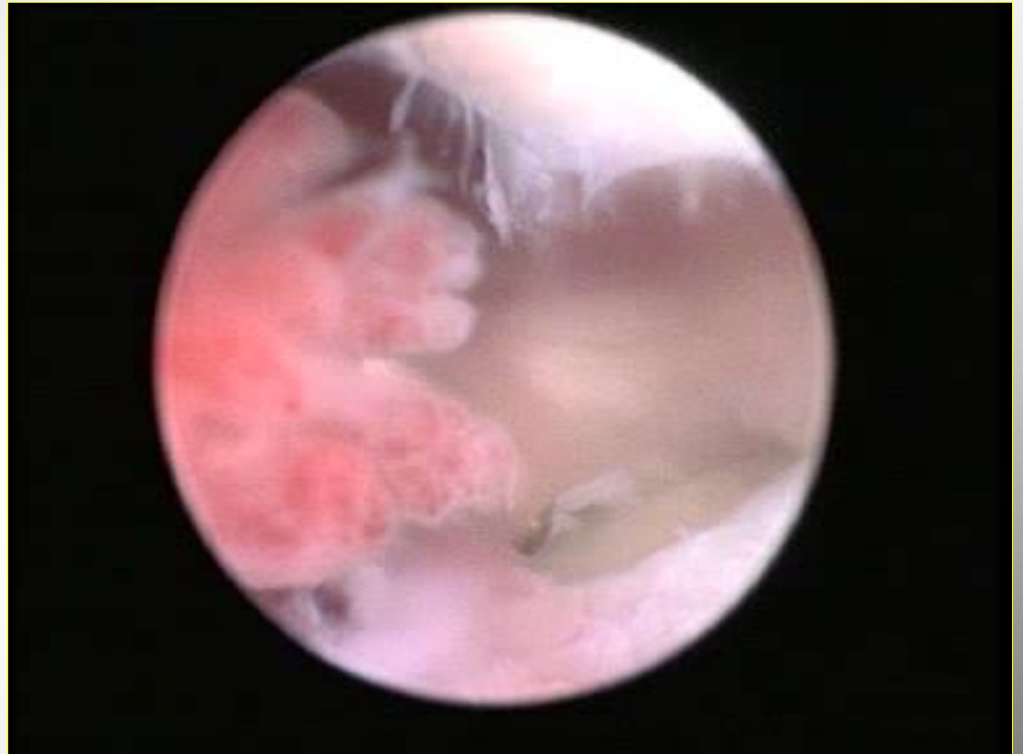
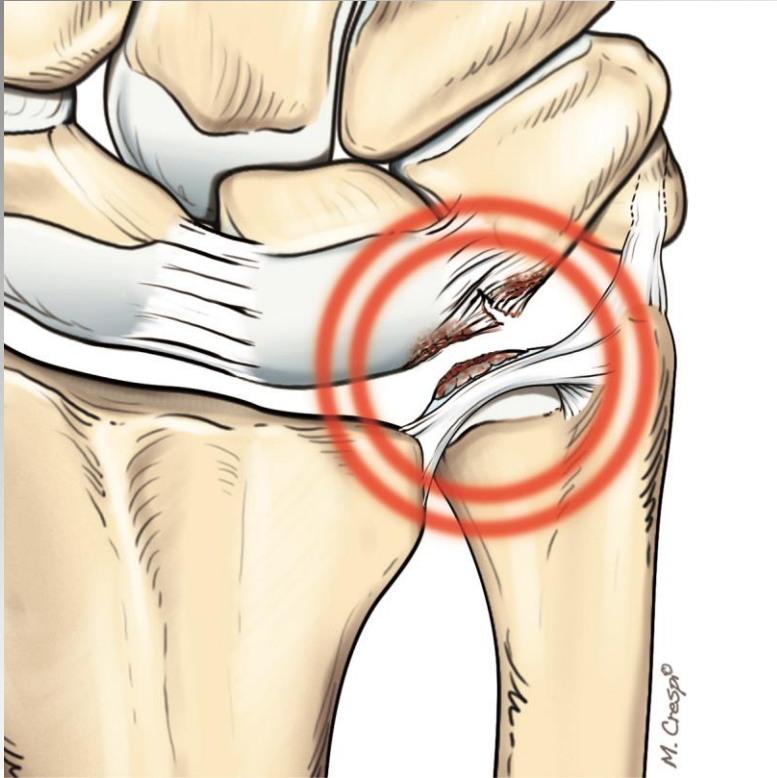
Diagnostic and Therapeutic

- Visualize chondral change
- Associated lesions (TFCC)



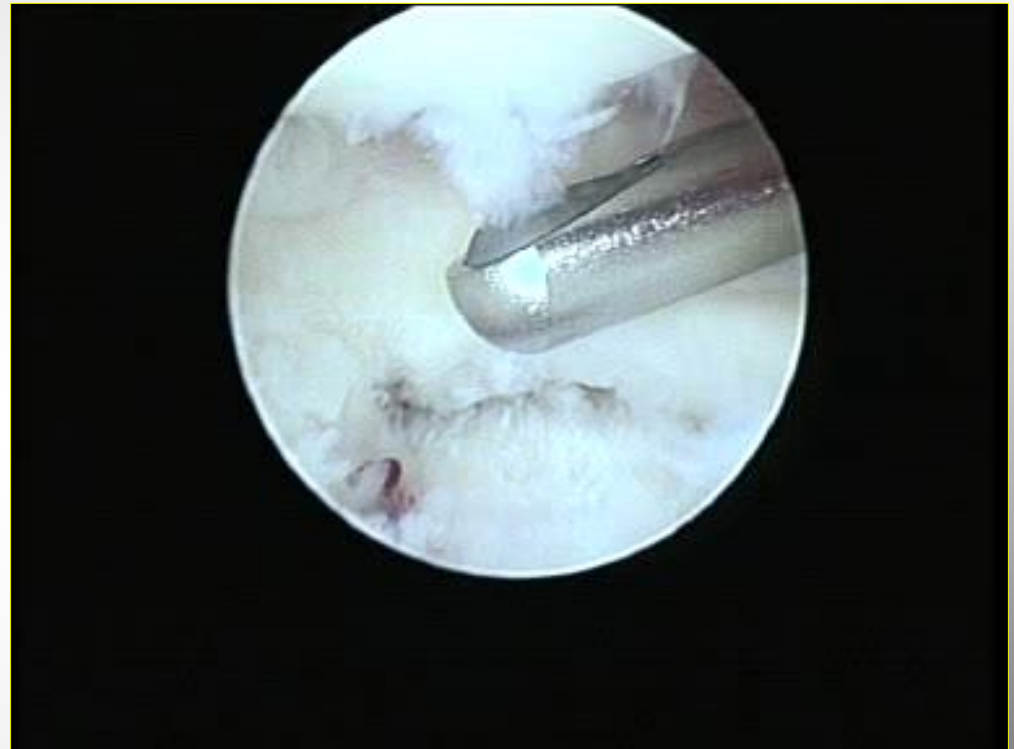
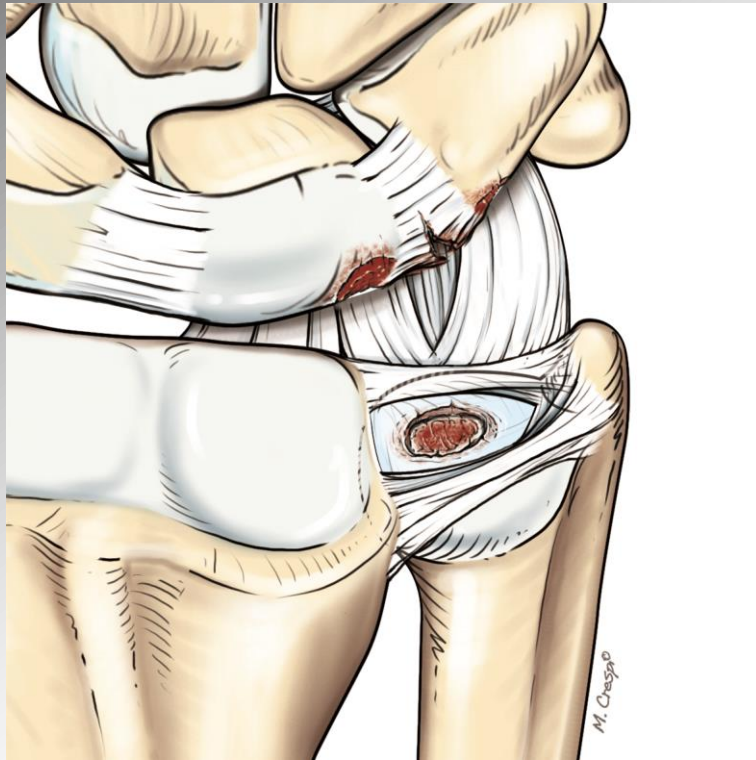
Technique

Direct visualization of lesions



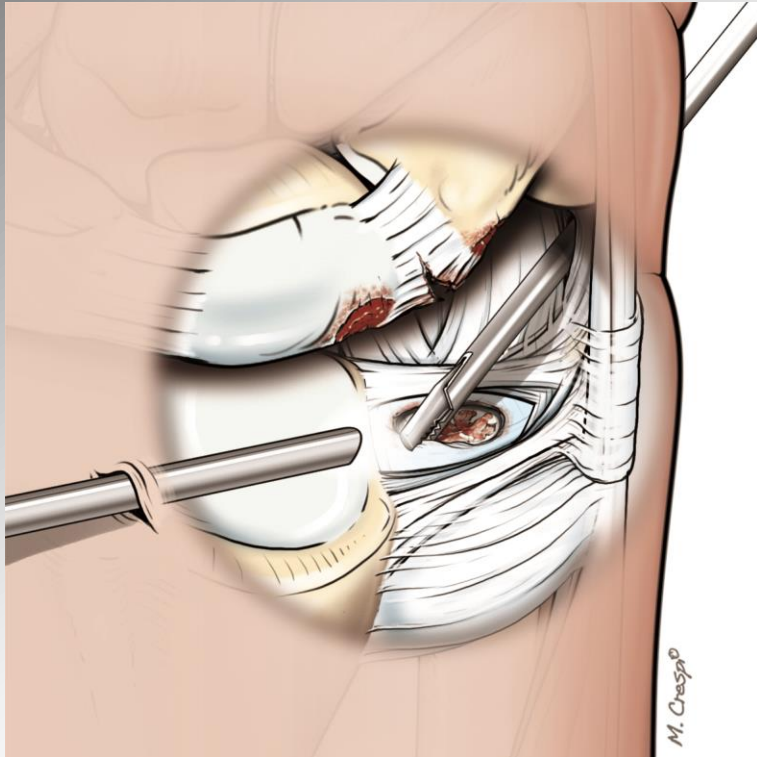
Technique

Direct visualization of lesions



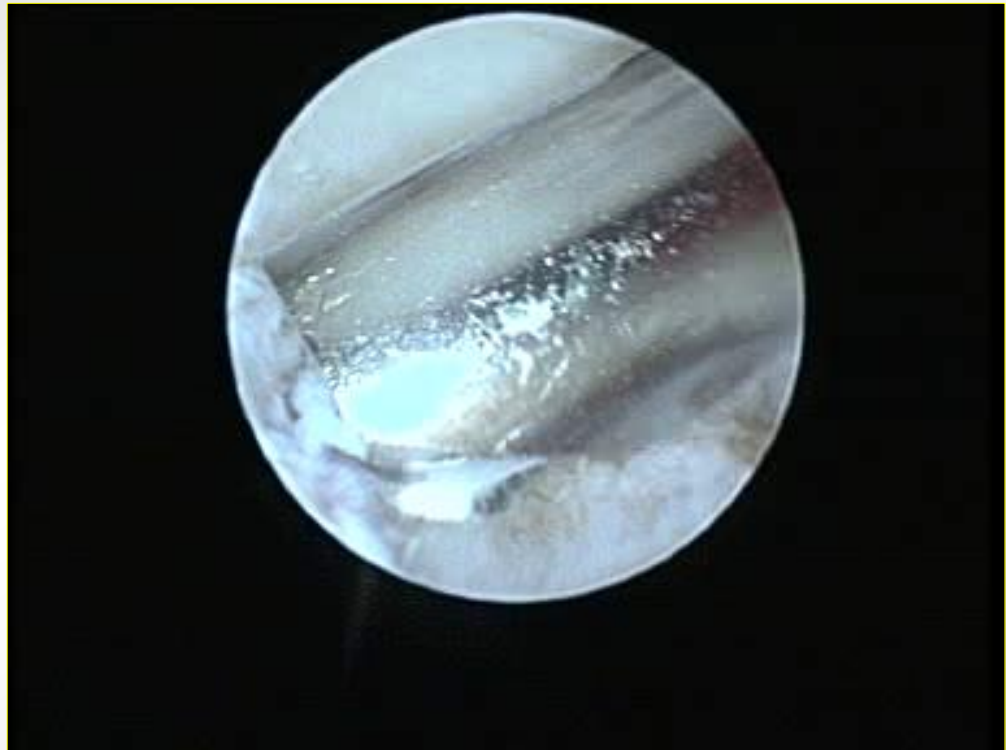
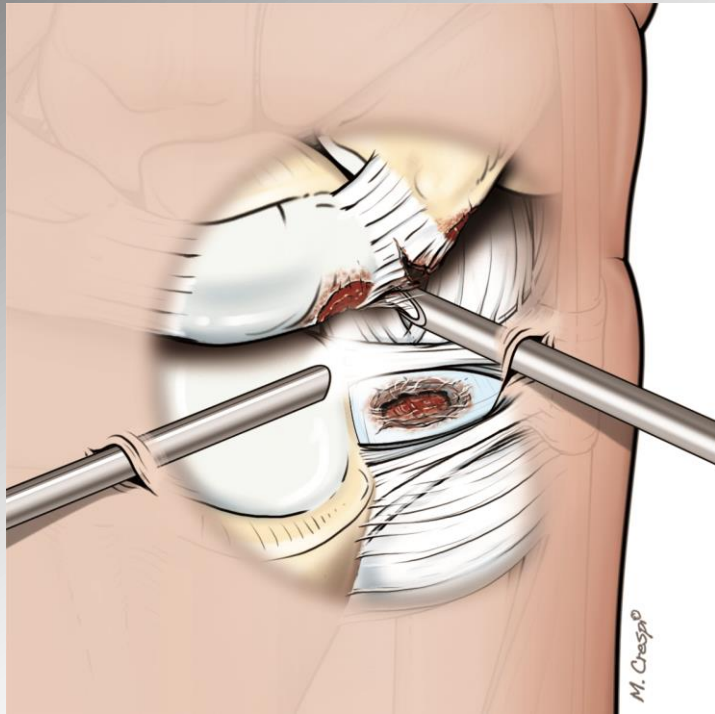
Technique

Central debridement of TFCC



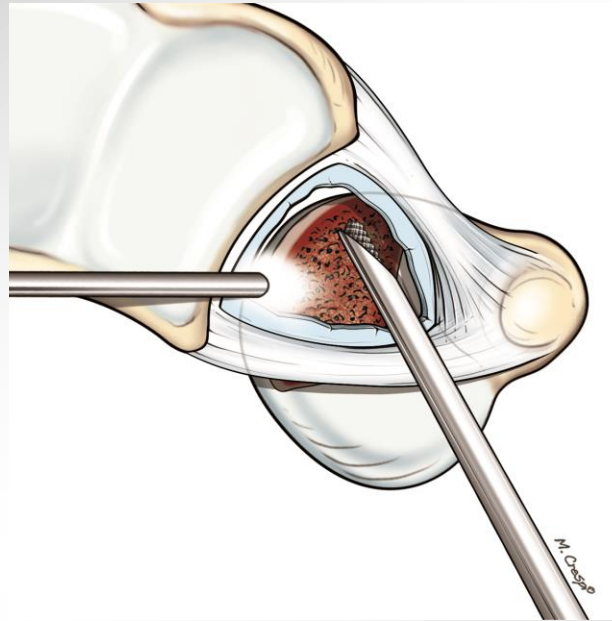
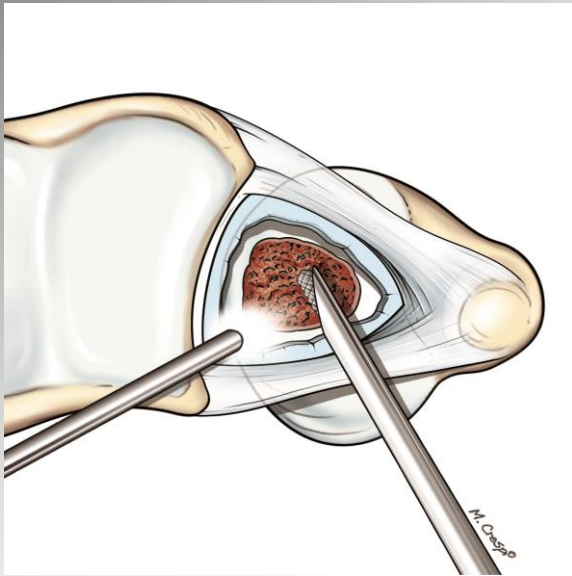
Technique

Distal ulna resection (wafer) with a burr



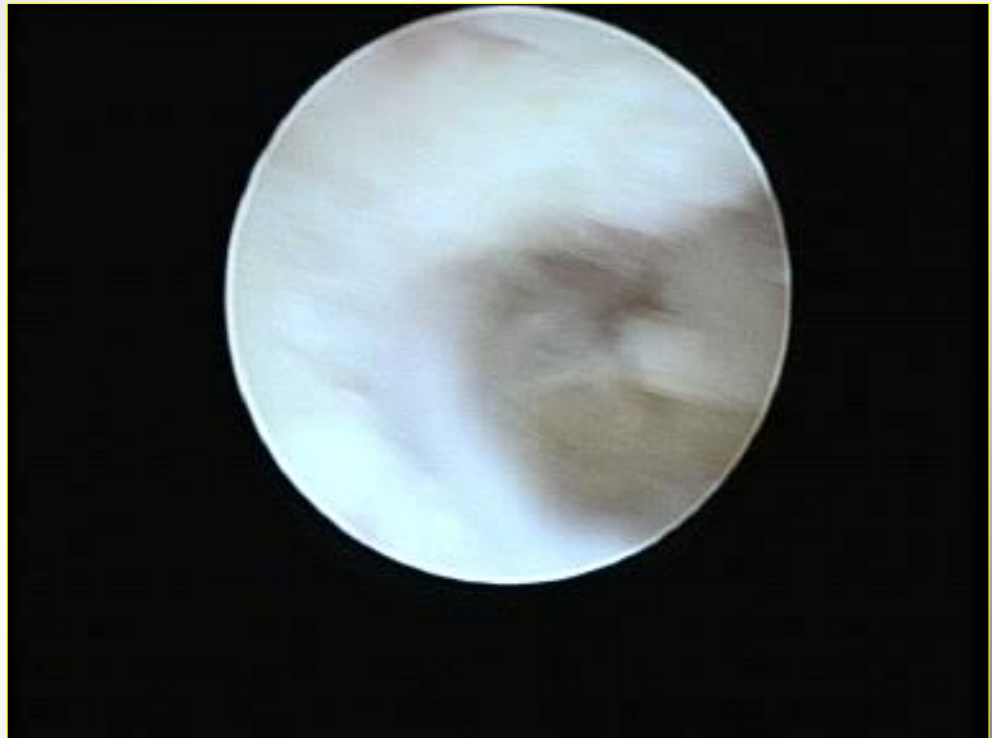
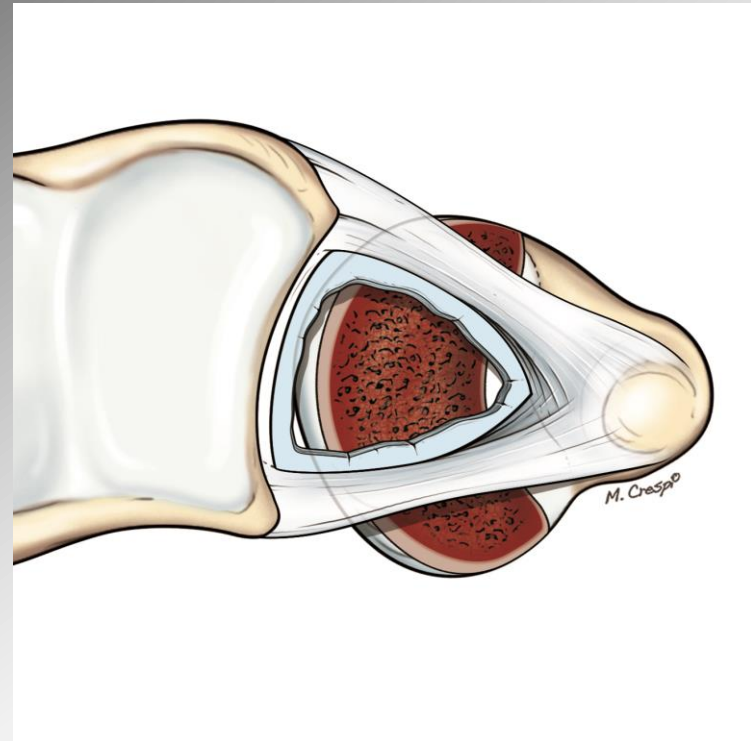
Technique

Distal ulna resection (wafer) with a burr



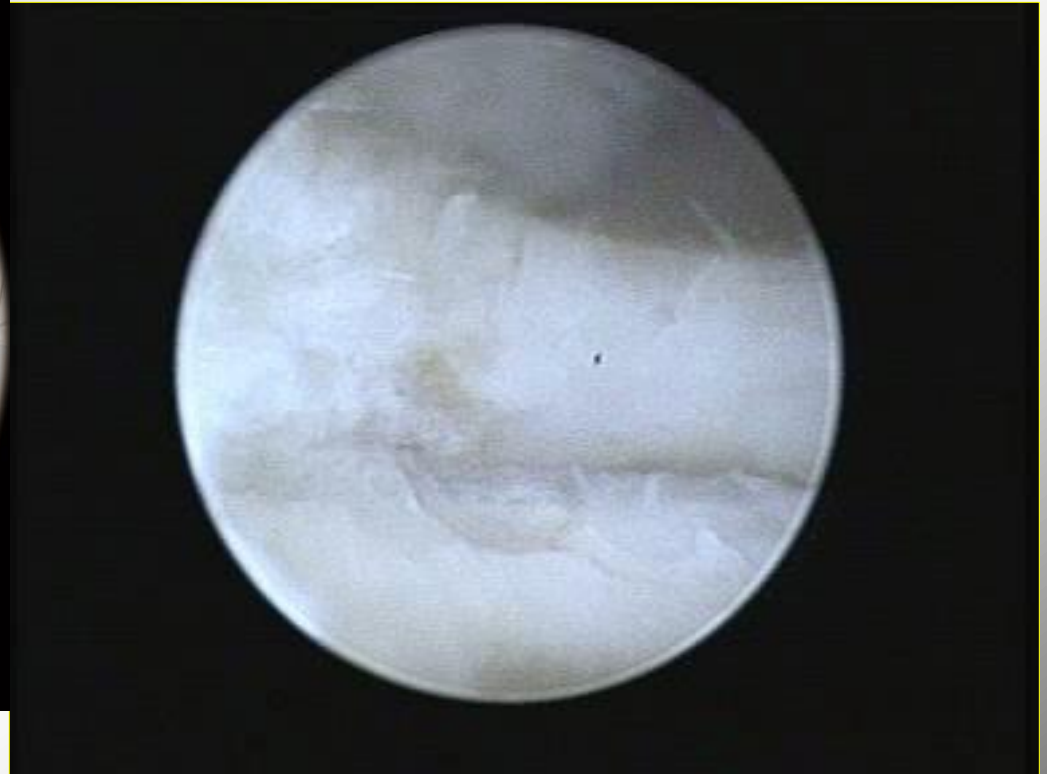
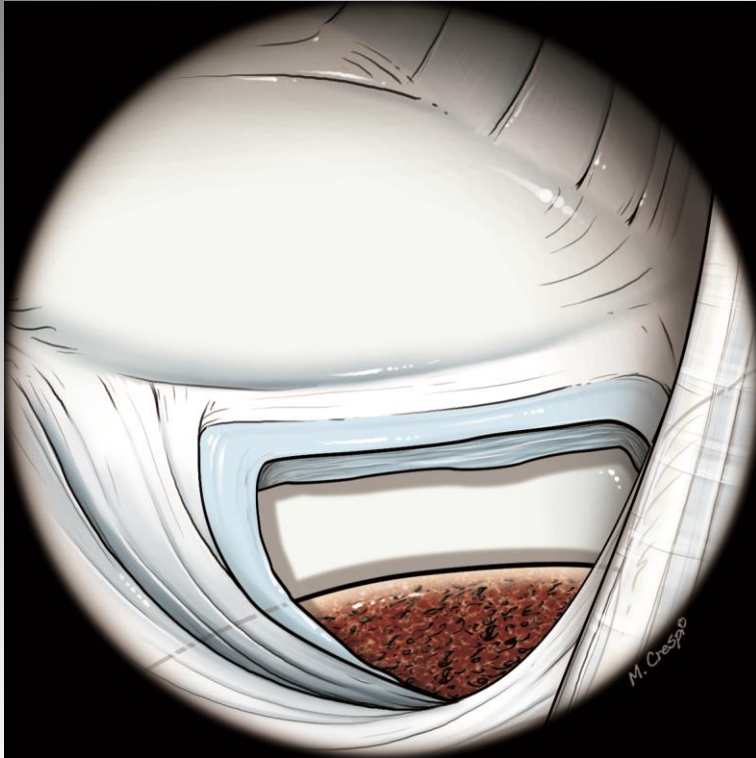
Technique

Oblique-helicoidal osteotomy !!



Technique

DRUJ intact +++++



Material

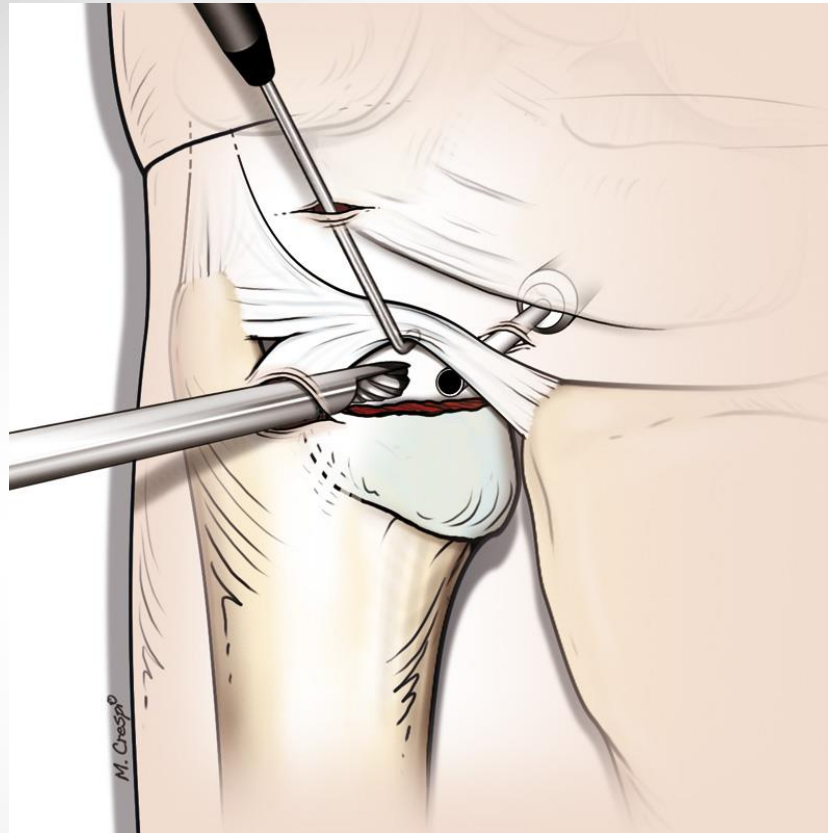
1998-2013 2567 wrist arthroscopies
152 arthroscopic wafer (5,96 %)

- **152 patients**
- **Often after malunion of distal radius fracture**
- **66 males 86 females**
- **Mean age : 67 y.o. (range 42 to 89)**



Material

3 cases with intact TFCC
Direct foveal portal – Atzei 2008



Material

- **Average ulnar variance : 2.6 mm (2-5)**
- **Average time between initial fracture and arthroscopic treatment : 9.3 months (2-36)**
- **Pain always present, moderate in 107 cases and disabling in 45 cases**

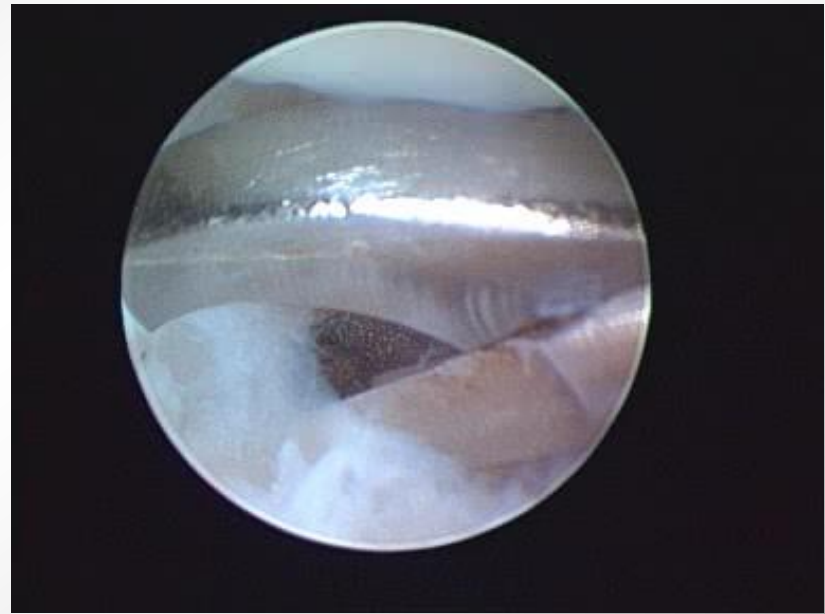


Technique



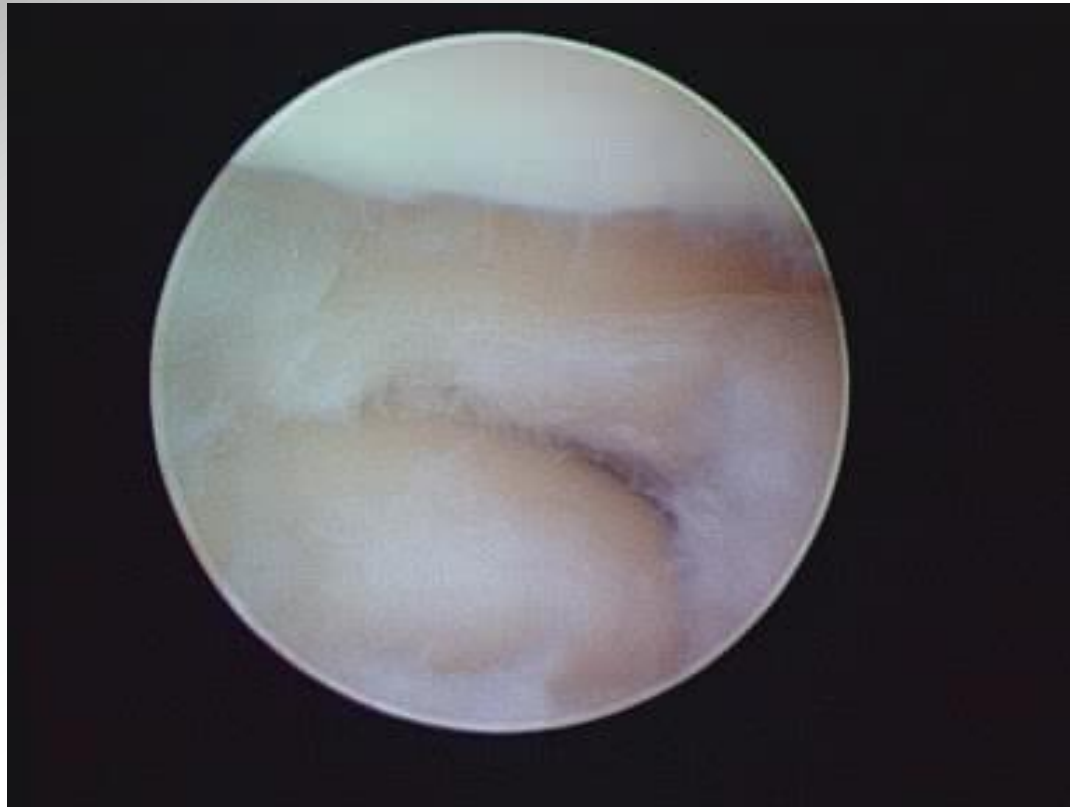
Direct visualization of lesions

Technique



Central debridement of TFCC

Technique



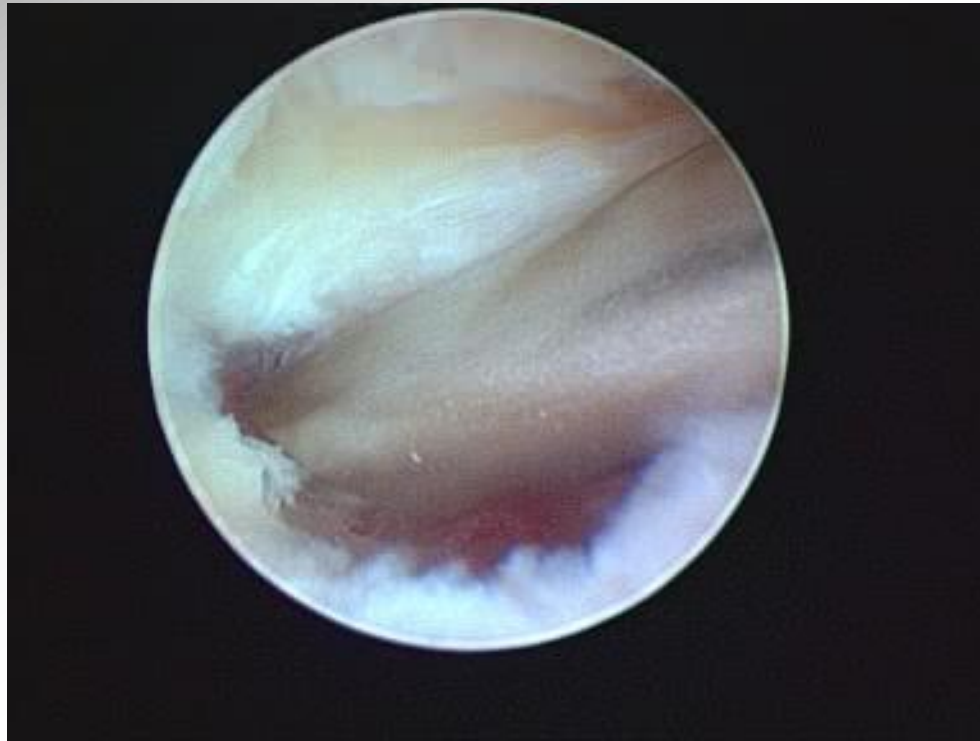
Central debridement of TFCC

Technique



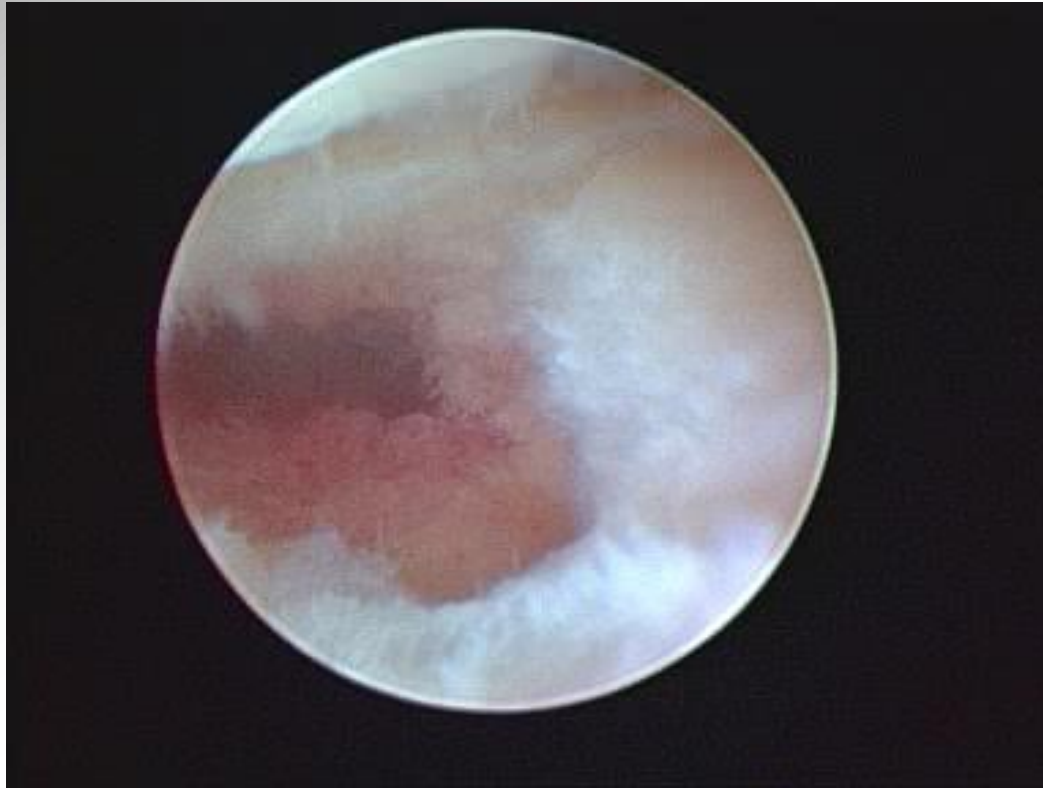
Distal ulna resection (wafer)

Technique



Distal ulna resection (wafer)

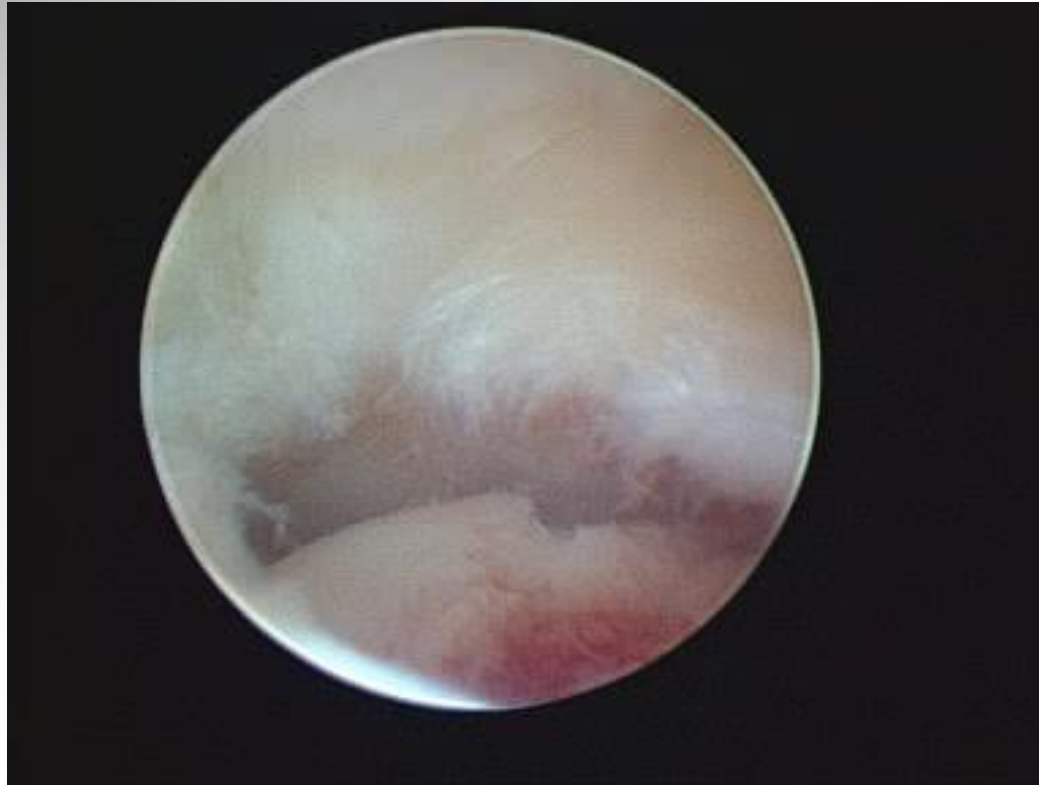
Technique



Oblique-helicoidal osteotomy !!



Technique



DRUJ intact +++++

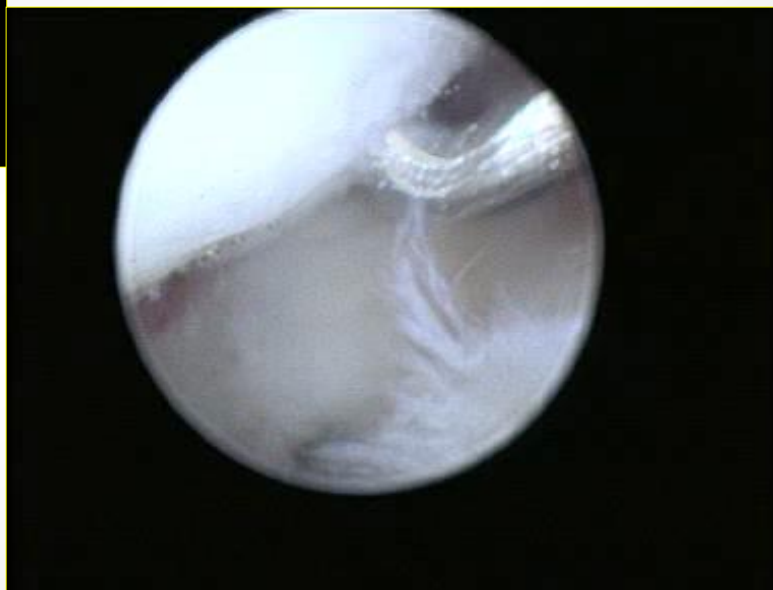


Results

- **Average follow-up : 48 months (12-124)**
- **Never post-operative immobilization**
- **Immediate recovery of mobility**
- **Immediate post operatively painless in 126 cases**
- **Permanent moderate pain in 12 cases**



Clinical case

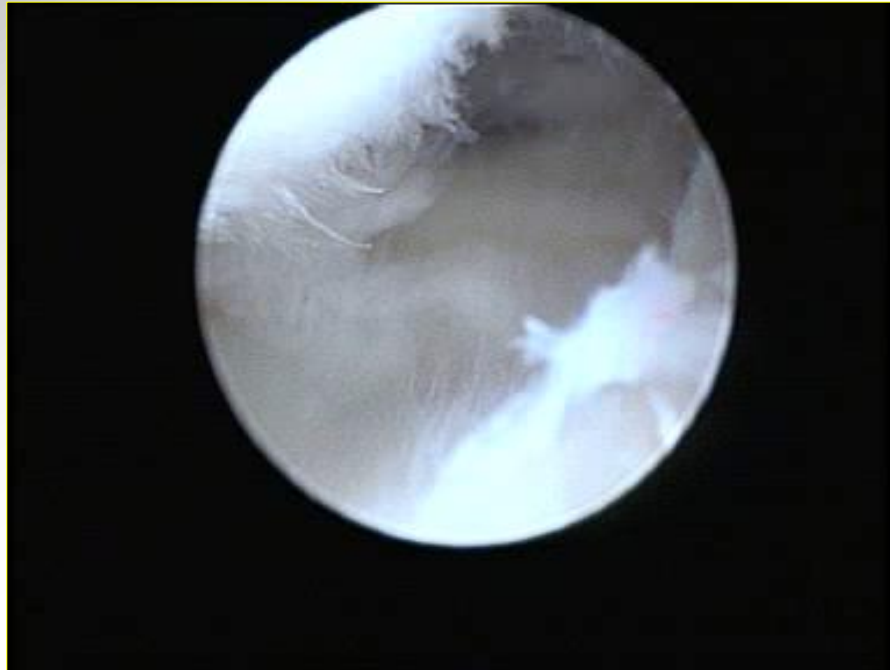


Complications

- **Haematoma : 3 cases**
- **Limitation of pronation-supination : 14 cases**
- **Südeck's Dystrophy : 11 cases**



Clinical case



Clinical case



Conclusion

Ulnar impaction syndrom is the result of inversion of DRU index, more often after distal radius fracture. It leads to TFCC central perforation with chondral changes at ulna and lunate with pain.

Arthroscopic treatment has proved itself effective and innocuous in small sized DRU index inversion (5mm) even with intact TFCC