ARTHROSCOPIC MANAGEMENT OF INTRA ARTICULAR DISTAL RADIUS FRACTURE

Ch. Mathoulin

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Clinical case

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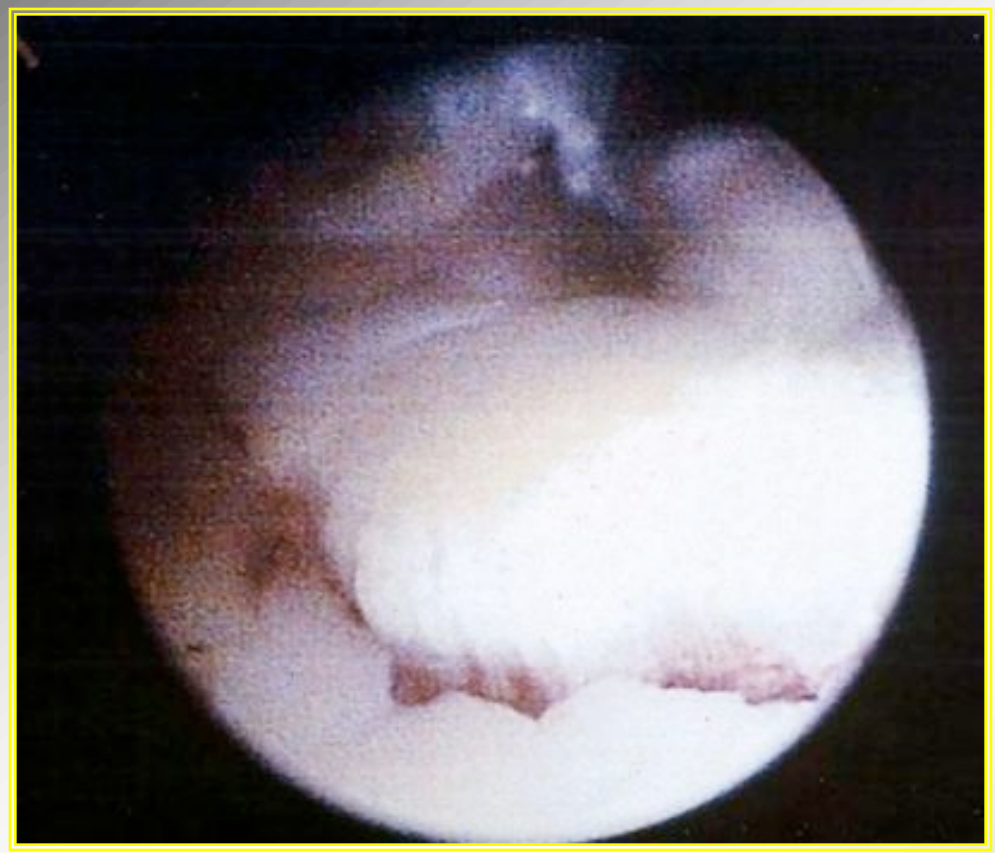
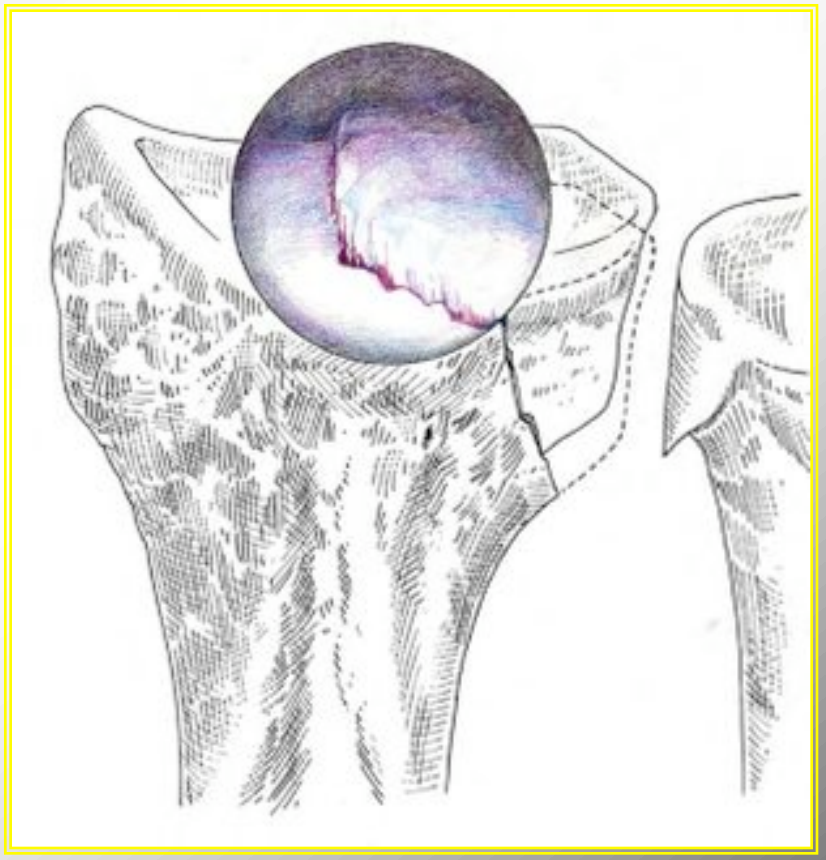
Clinical case





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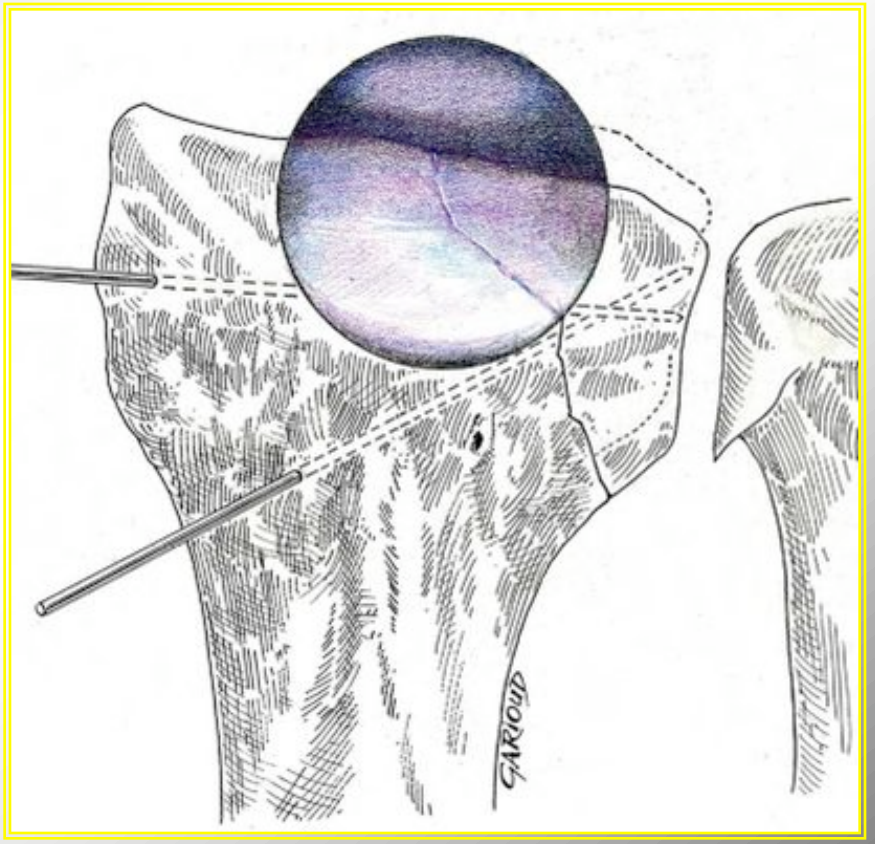
Clinical case



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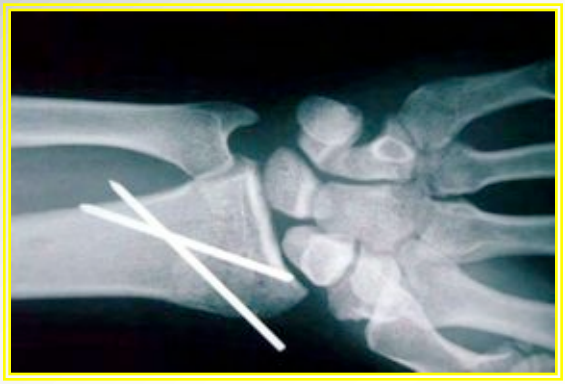
Cas clinique



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Technique

- Local-regional anaesthesia
- Tourniquet
- Outpatient surgery
- Elbow flexed 90°
- « Japanese » fingers traps

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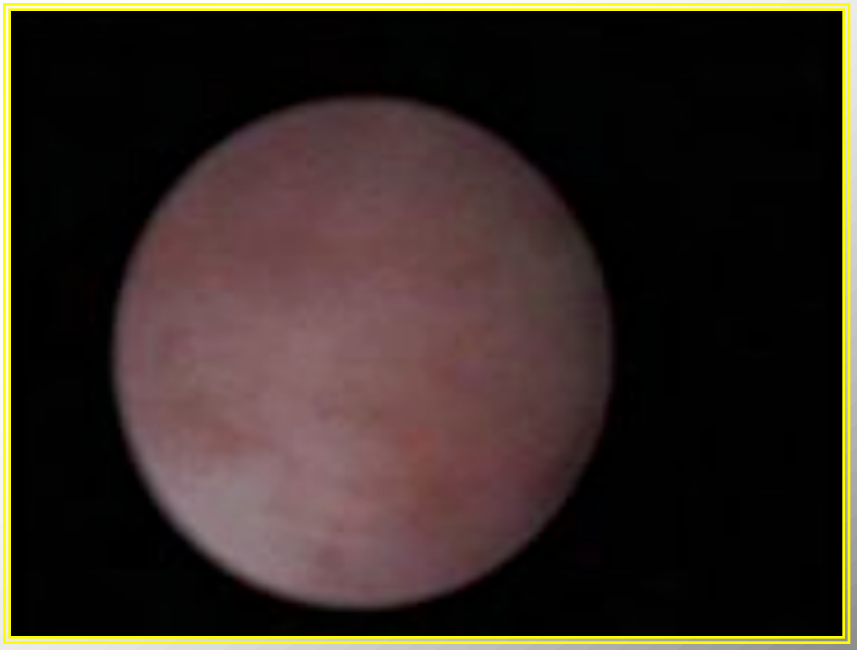
Technique

- Usually, it is better to wait for 3-5 days before surgery
- Average waiting period between fracture and arthroscopic surgery
  2 days (range 0-5 days)
- Dry technique (Paco Pinal)



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Technique

- Reduction = traction with arthroscopic and fluoroscopic controls
- Fixation = K-wires +/- volar plate
- Splint = 45 days

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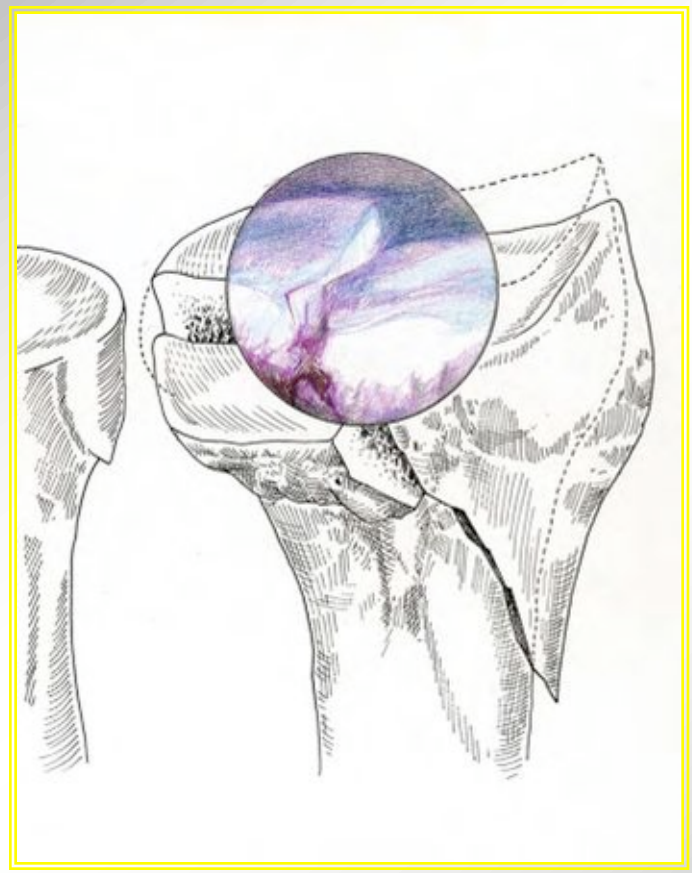
Technique
four fragments IA fractures



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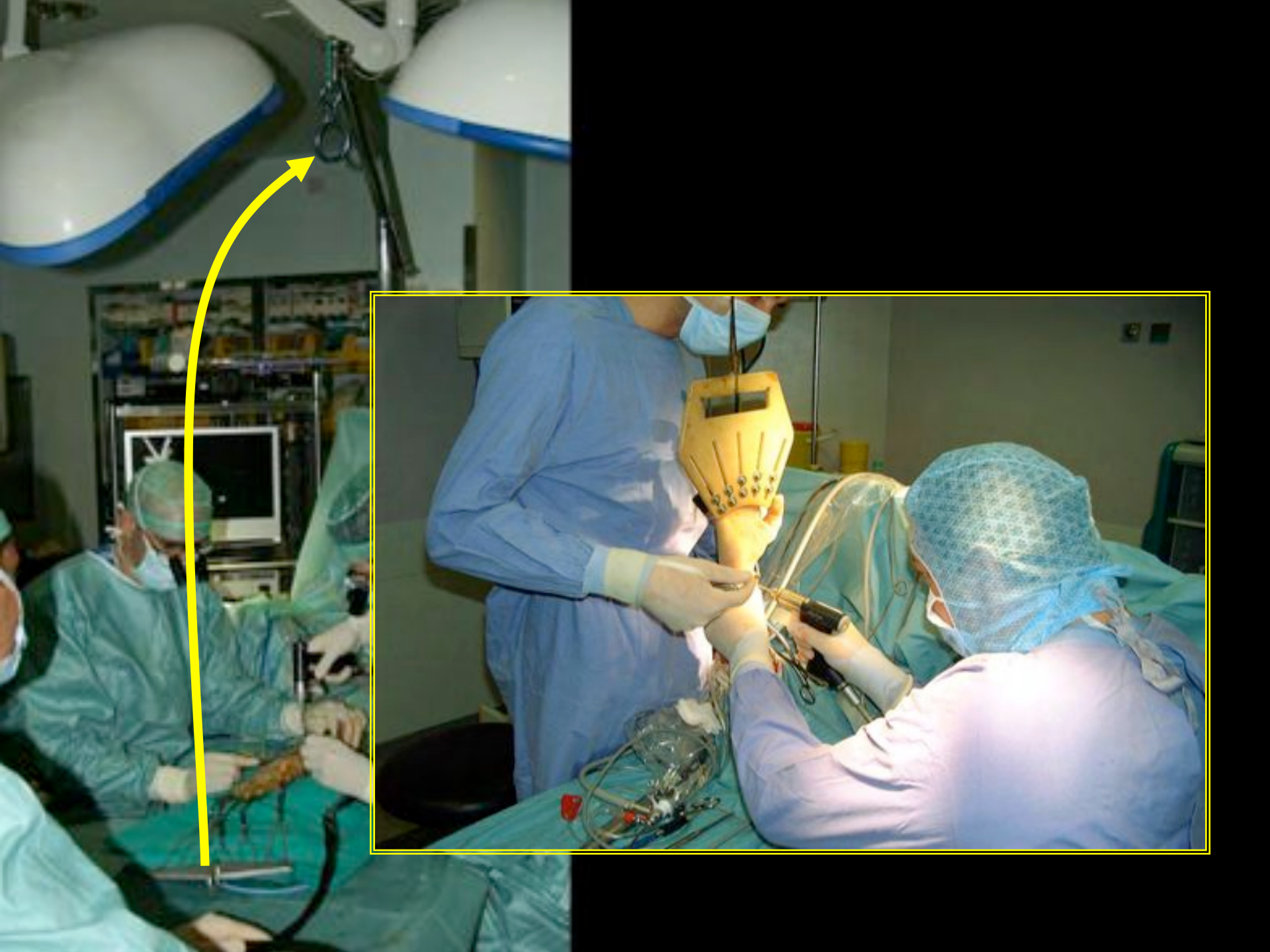
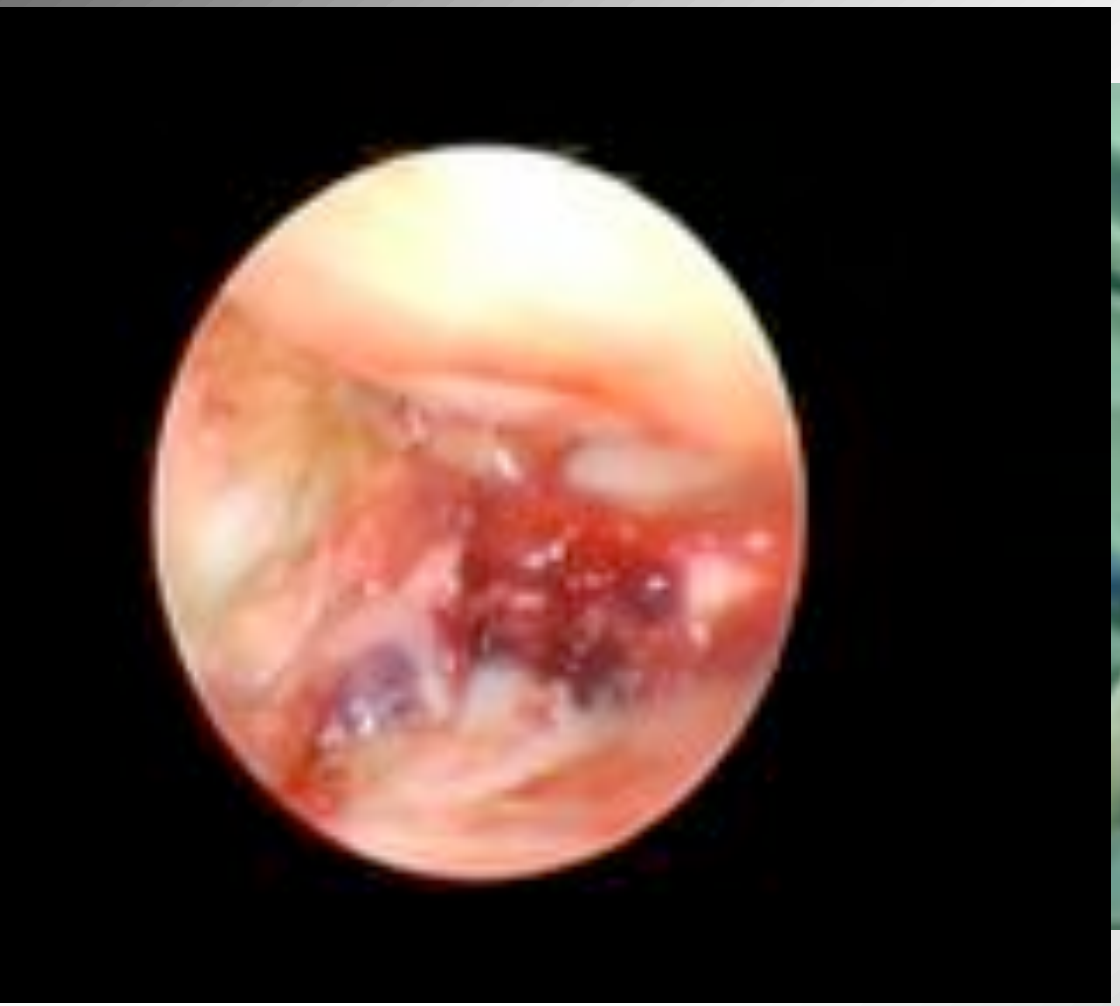
Open reduction & Provisional Plating



Arthroscopic Fine-Tuning



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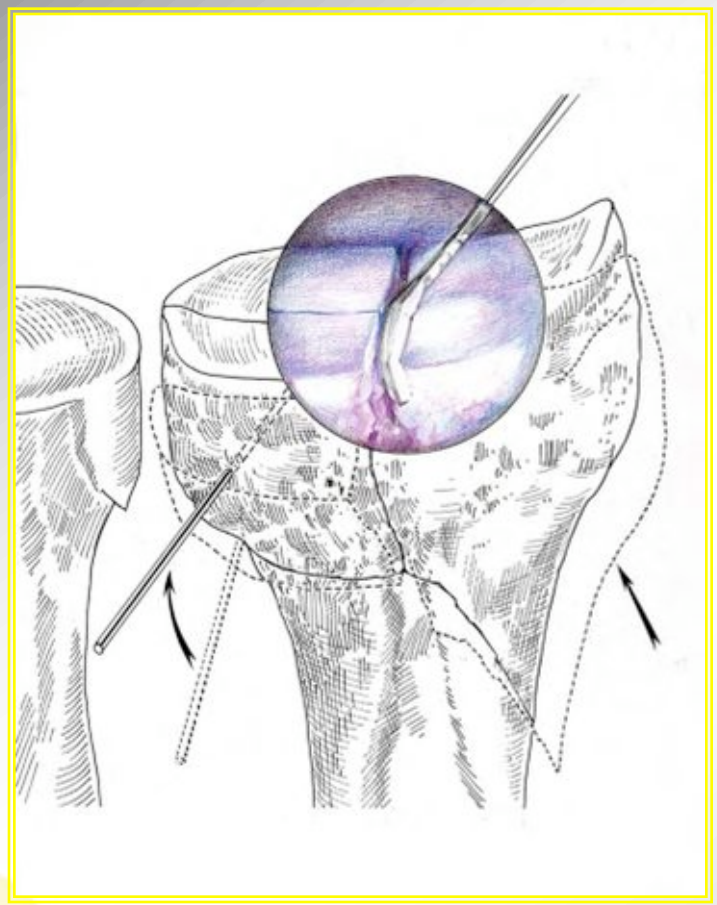
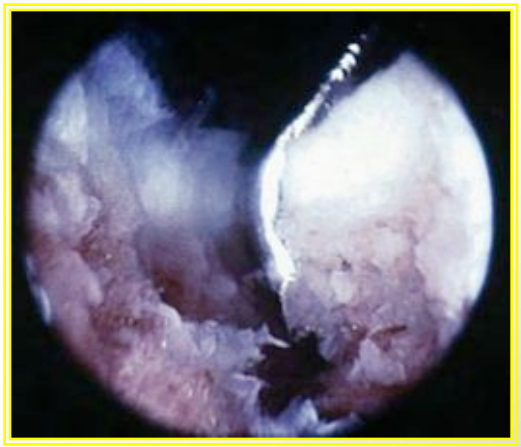
Provisional Fixation

Technique
four fragments IA fractures





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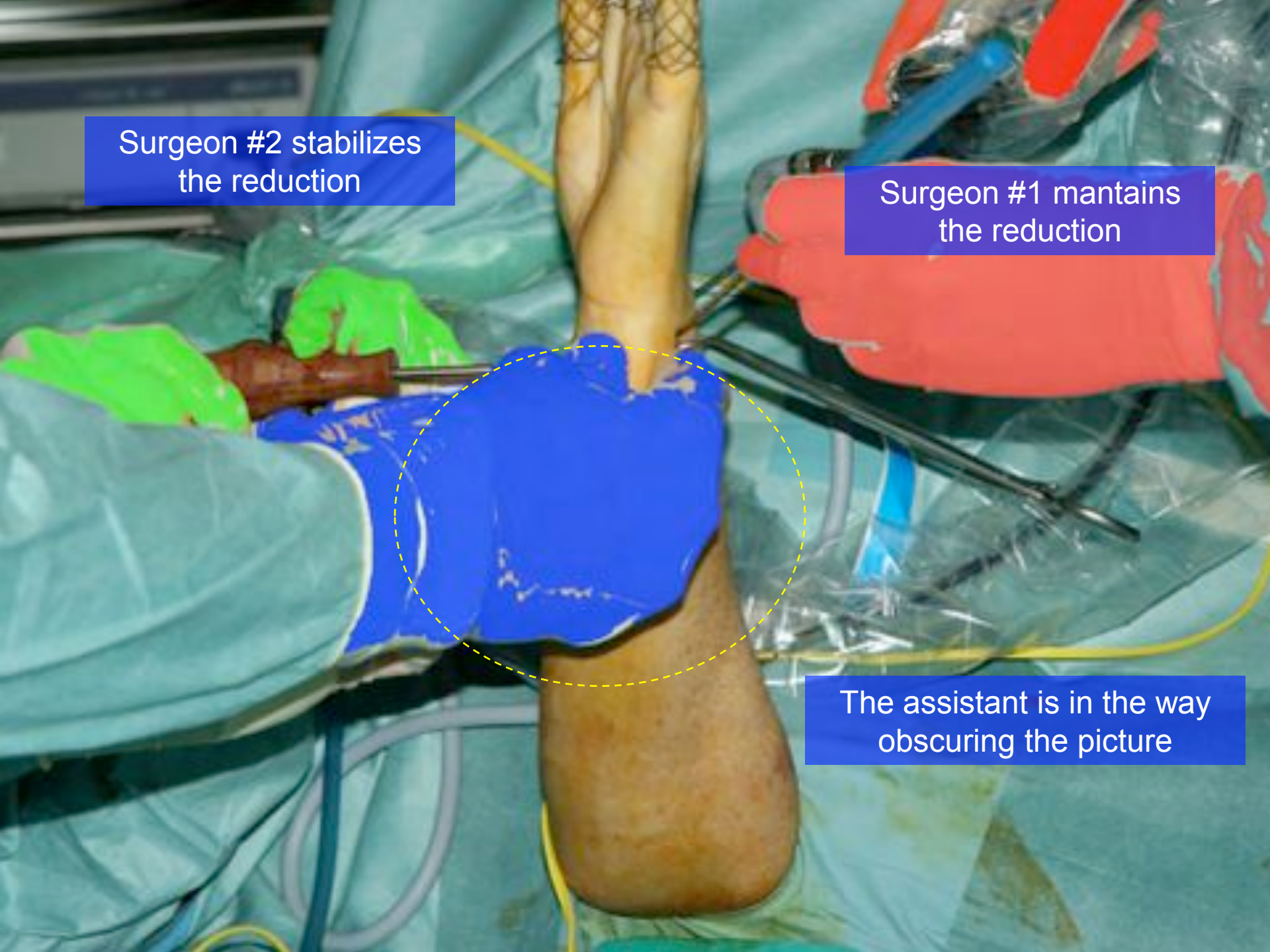
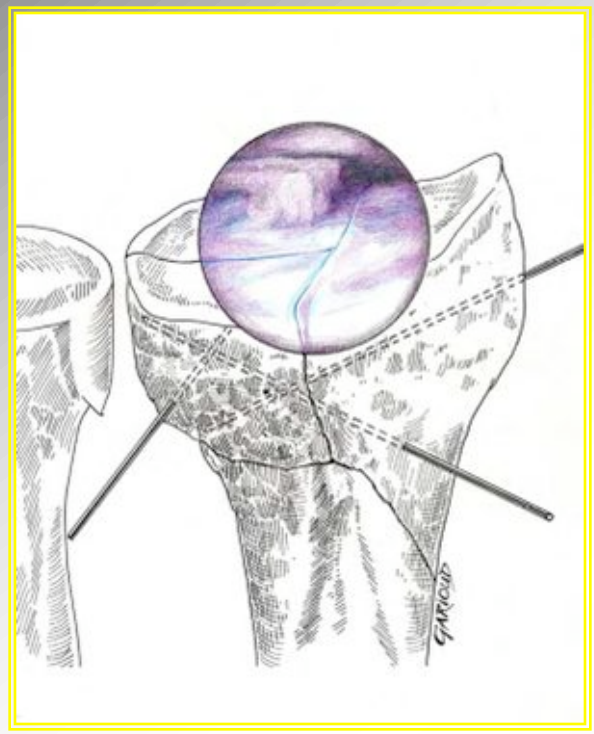
Stable Fixation under Arthroscopic Control

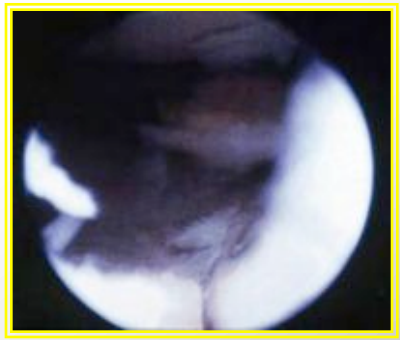

Surgeon #1 mantains
the reduction

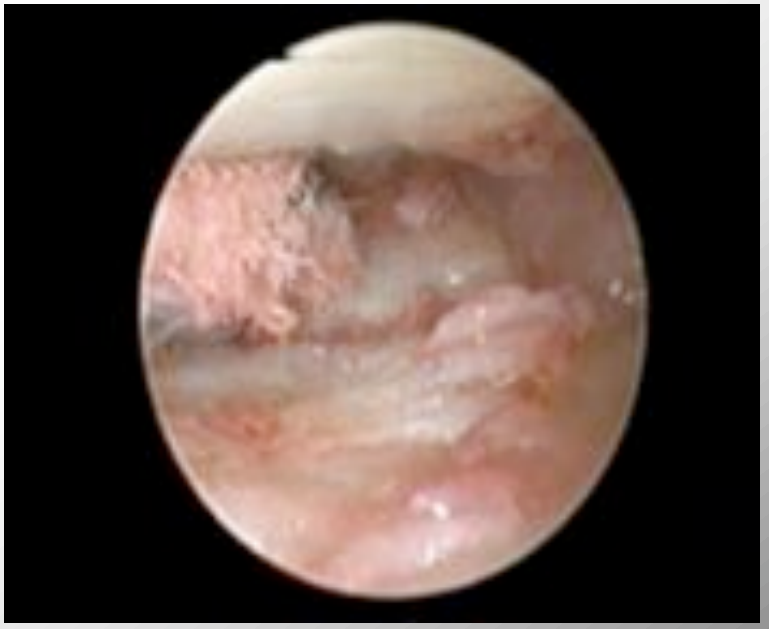

Surgeon #2 stabilizes the reduction
Surgeon #1 mantains the reduction


Surgeon #2 stabilizes the reduction
Surgeon #1 mantains the reduction
The assistant is in the way obscuring the picture

Technique
four fragments IA fractures







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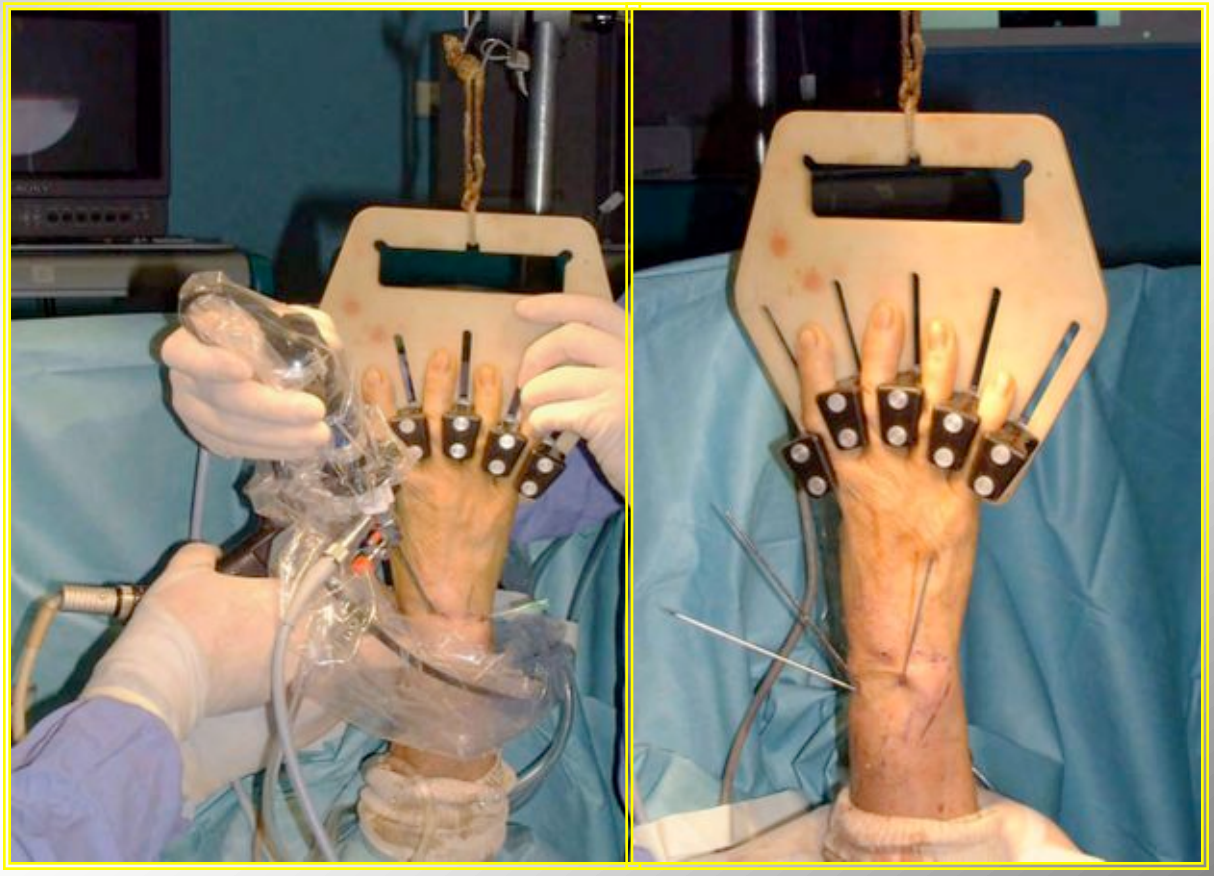
Technique

Dorsal pinning with fluoroscopic and arthroscopic control



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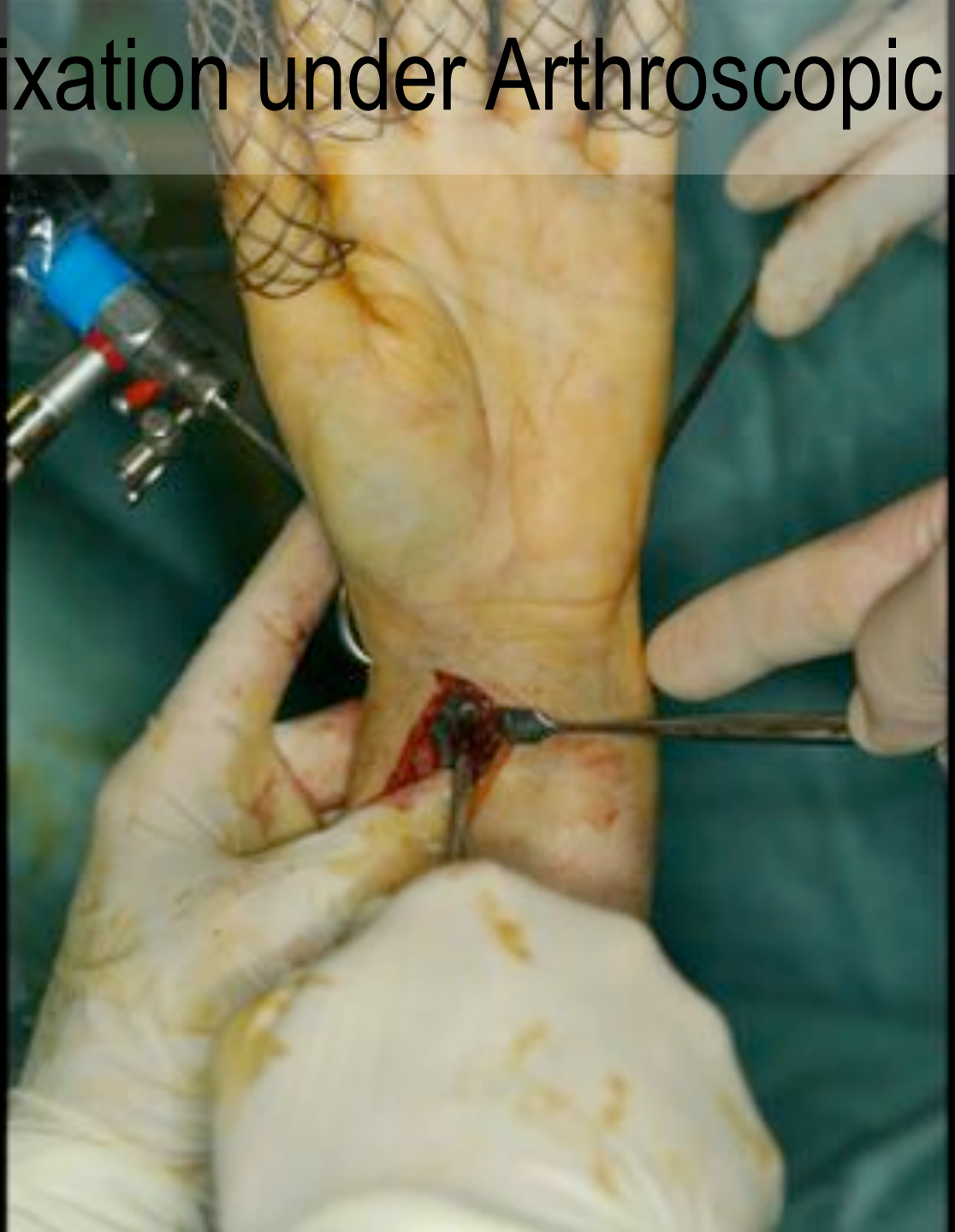
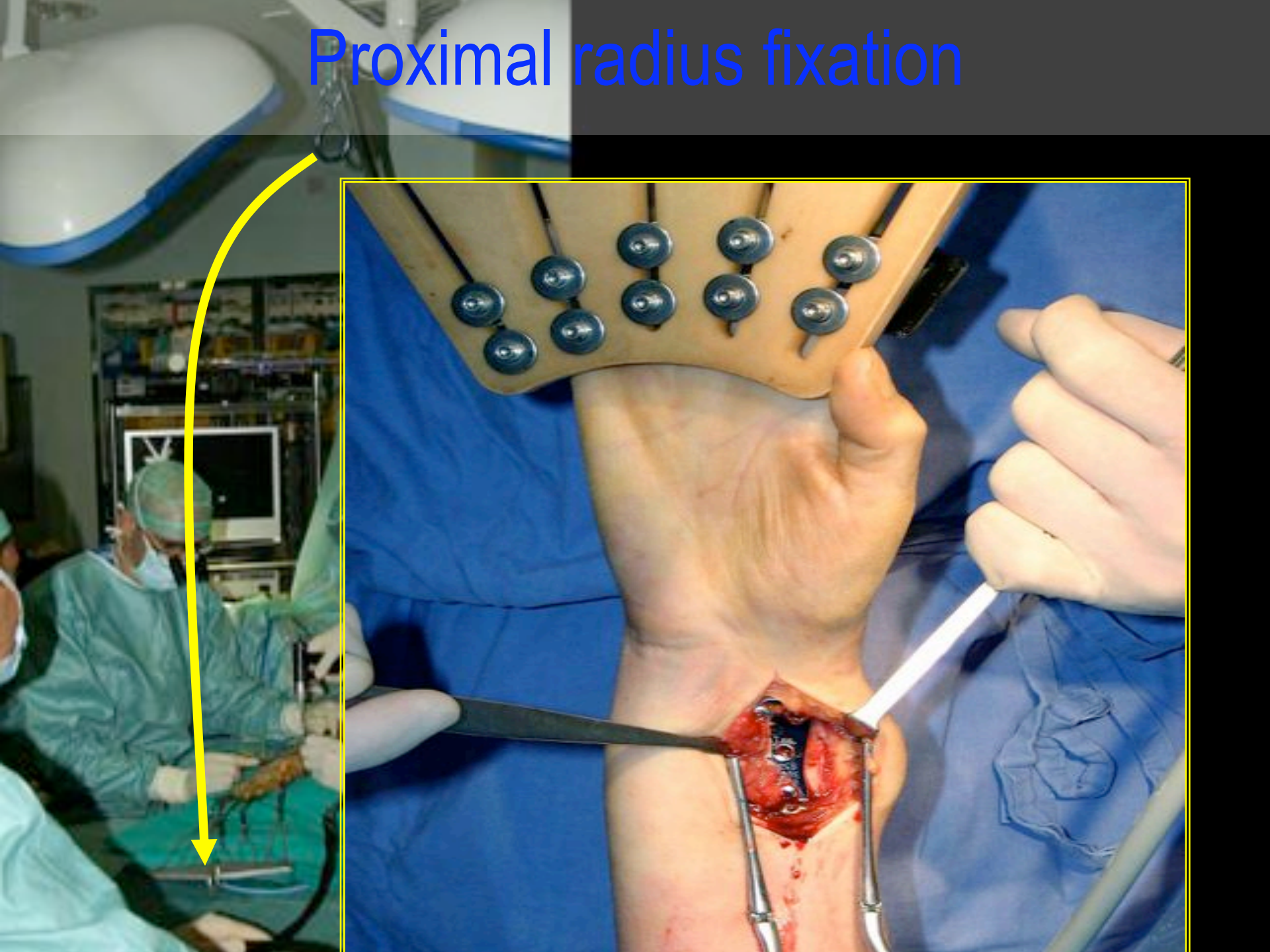
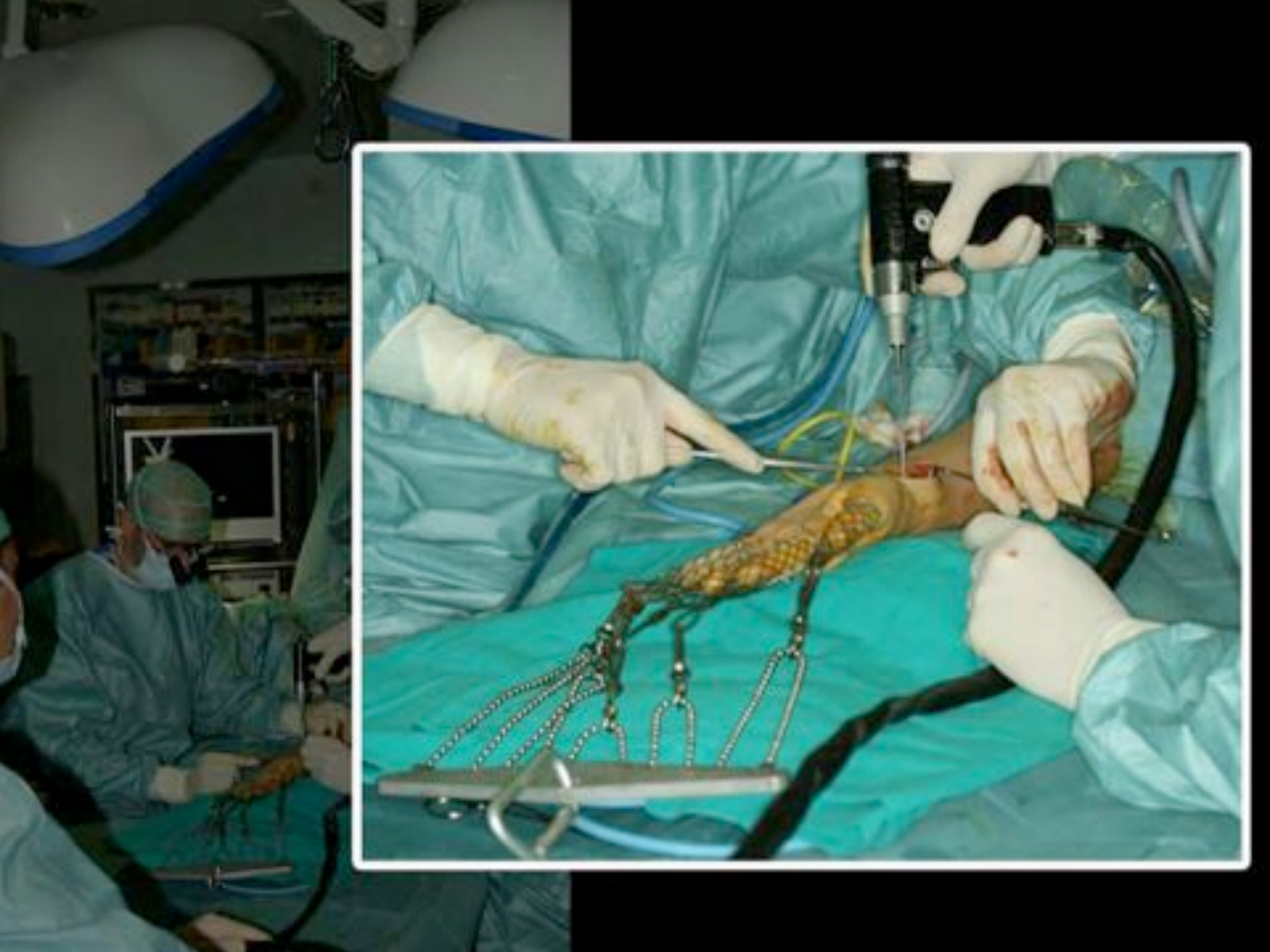
Stable Fixation under Arthroscopic Control




Surgeon #1
Assistant
Surgeon# 2

Proximal radius fixation





Technique
four fragments IA fractures

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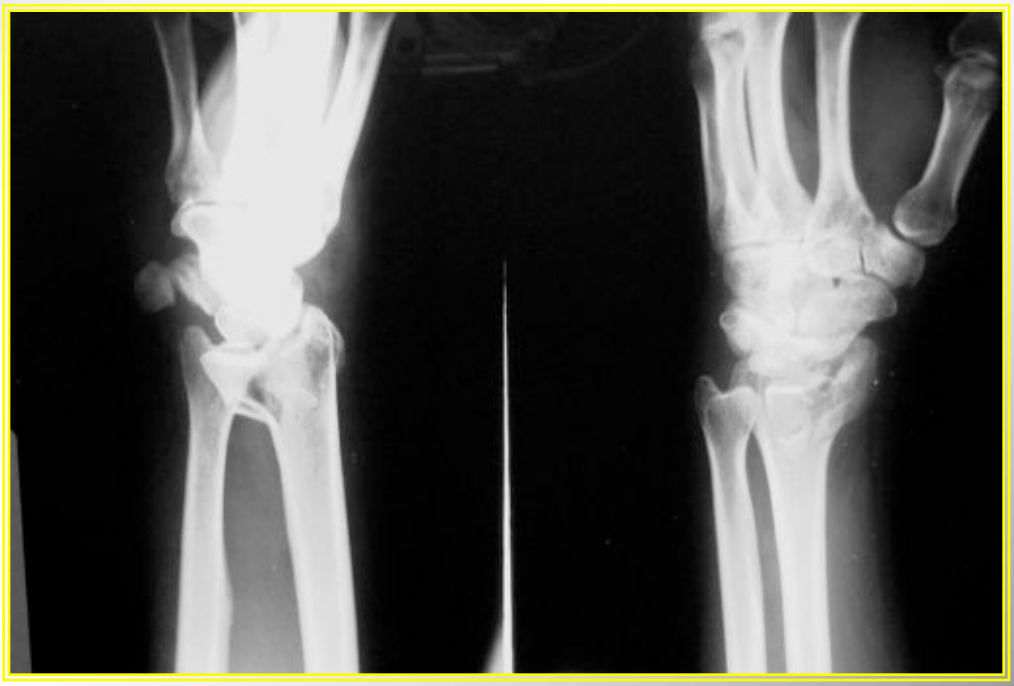
Clinical case
four fragments IA fractures



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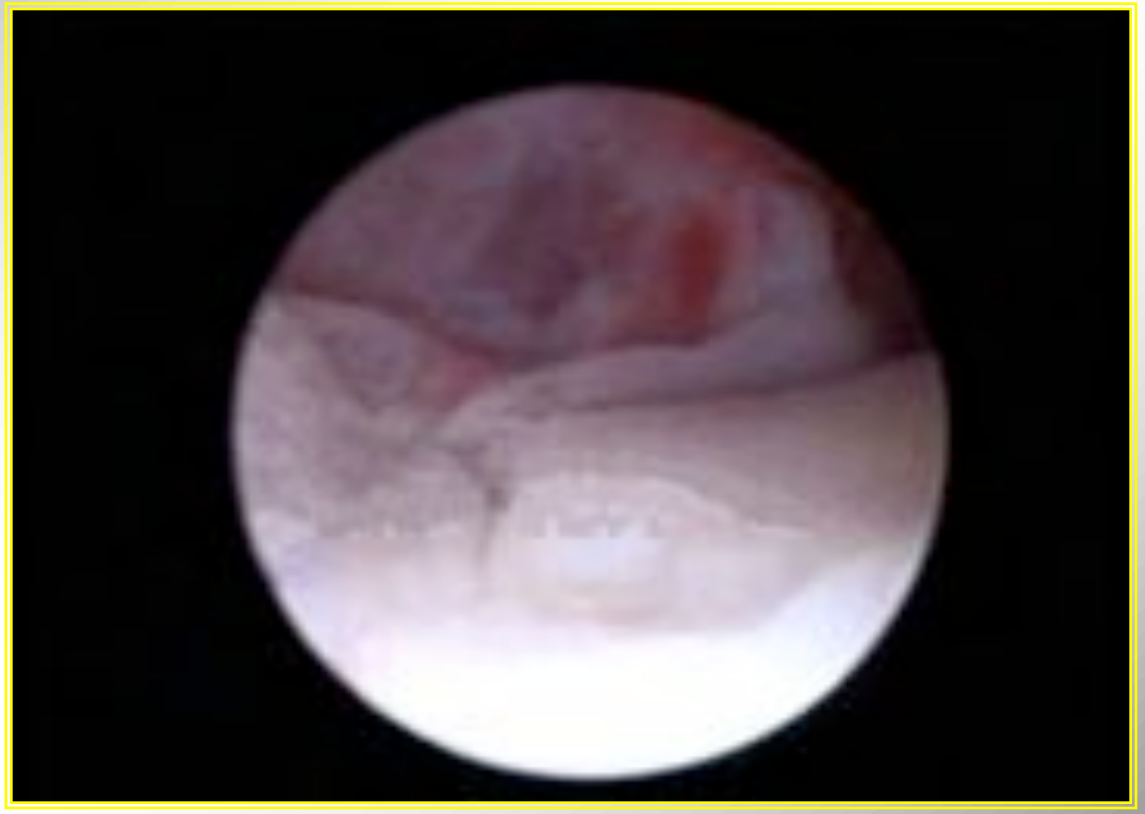
Clinical case
four fragments IA fractures



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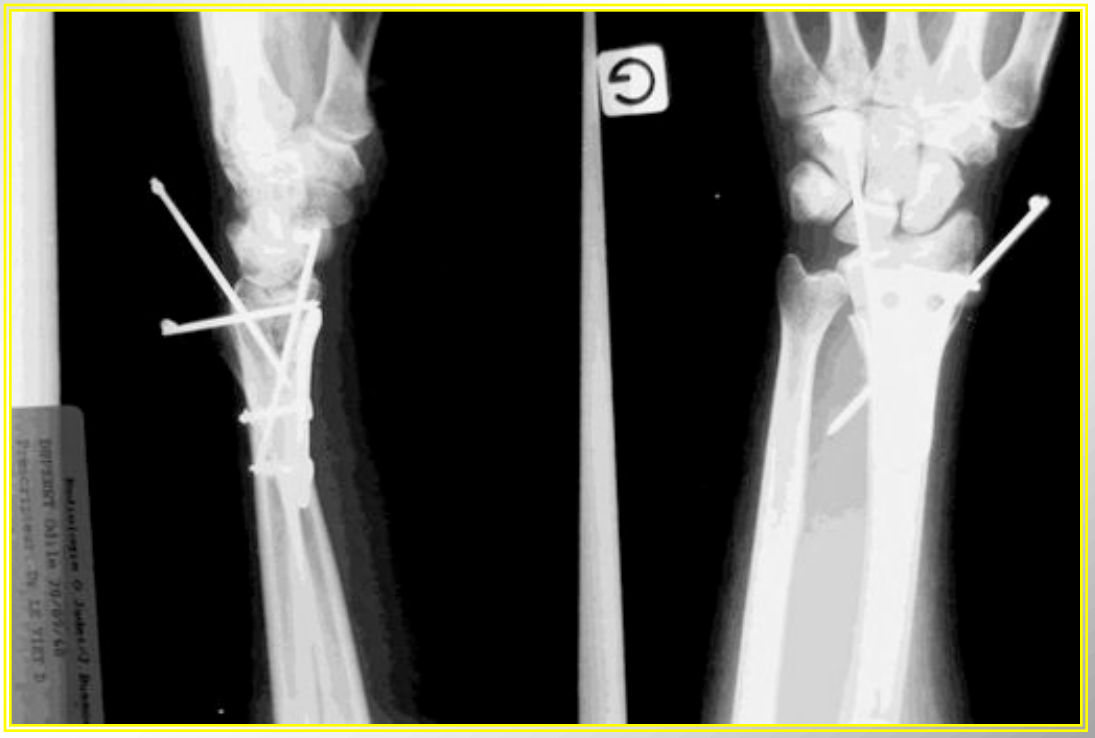
Clinical case
four fragments IA fractures



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Clinical case
four fragments IA fractures

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Clinical case
four fragments IA fractures

2 years of follow-up

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WRIST ARTHROSCOPY IN DISTAL RADIUS Fx.

- Assoc. Ligamentous injury.
- DRUJ instability.

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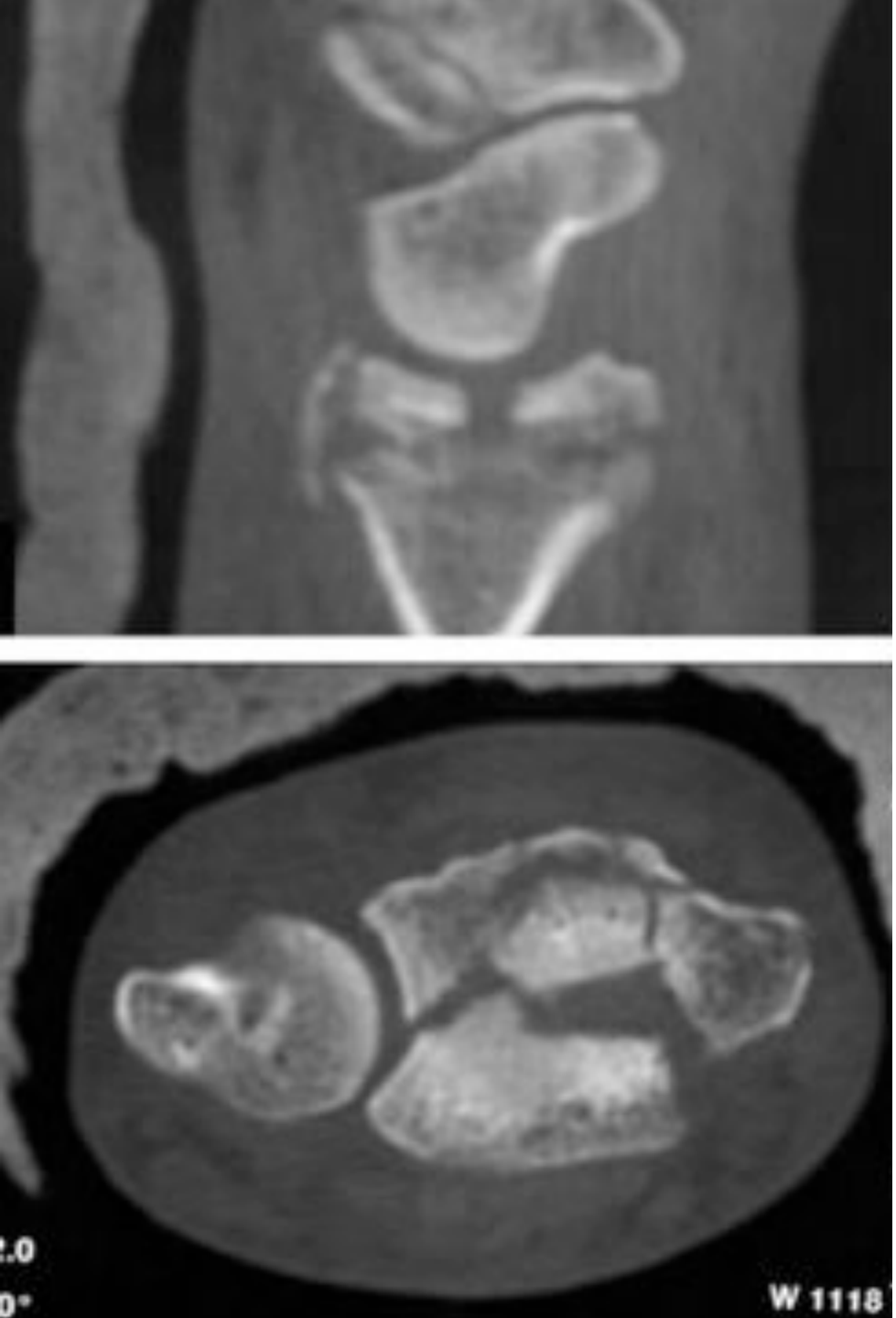
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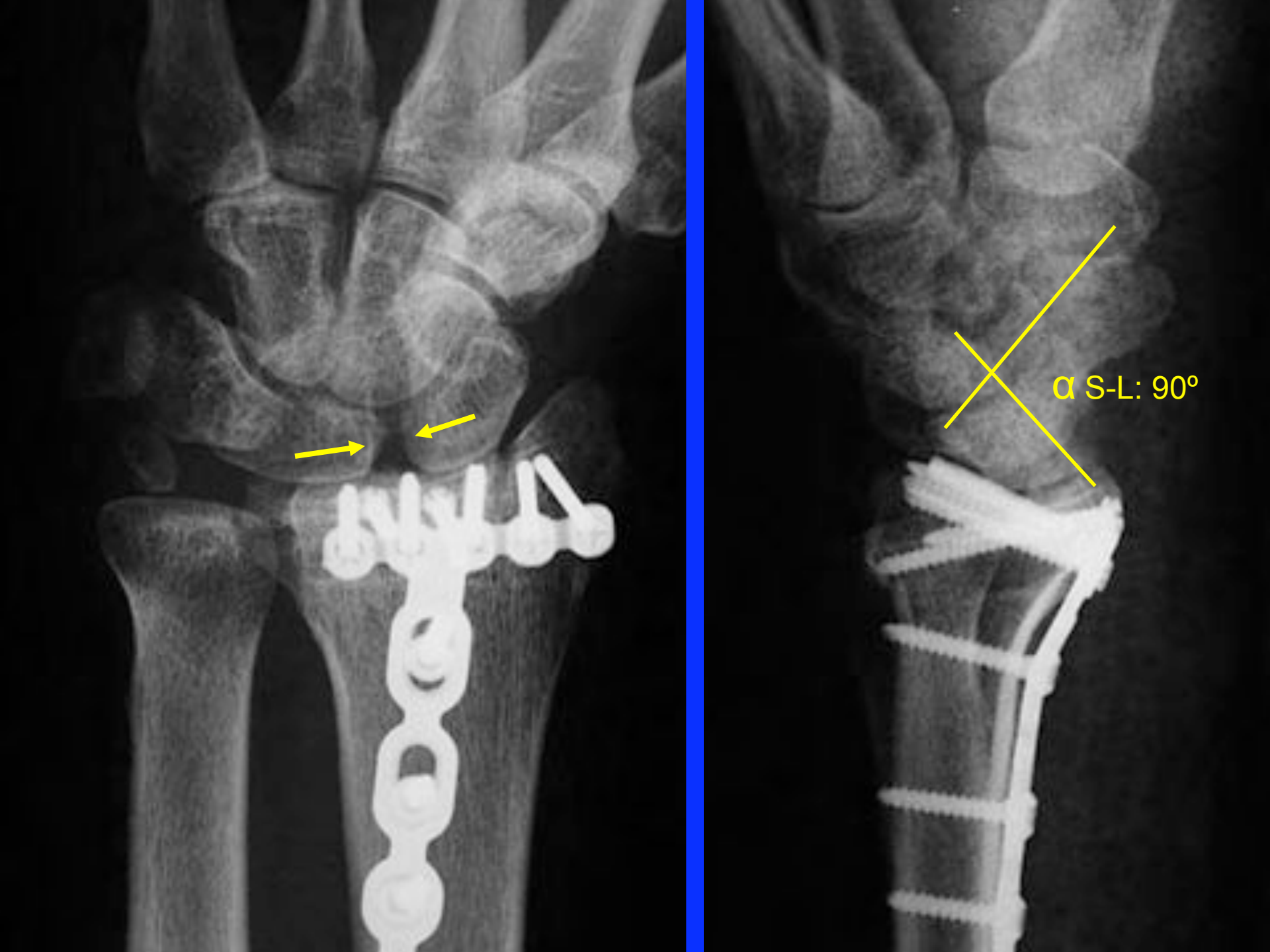
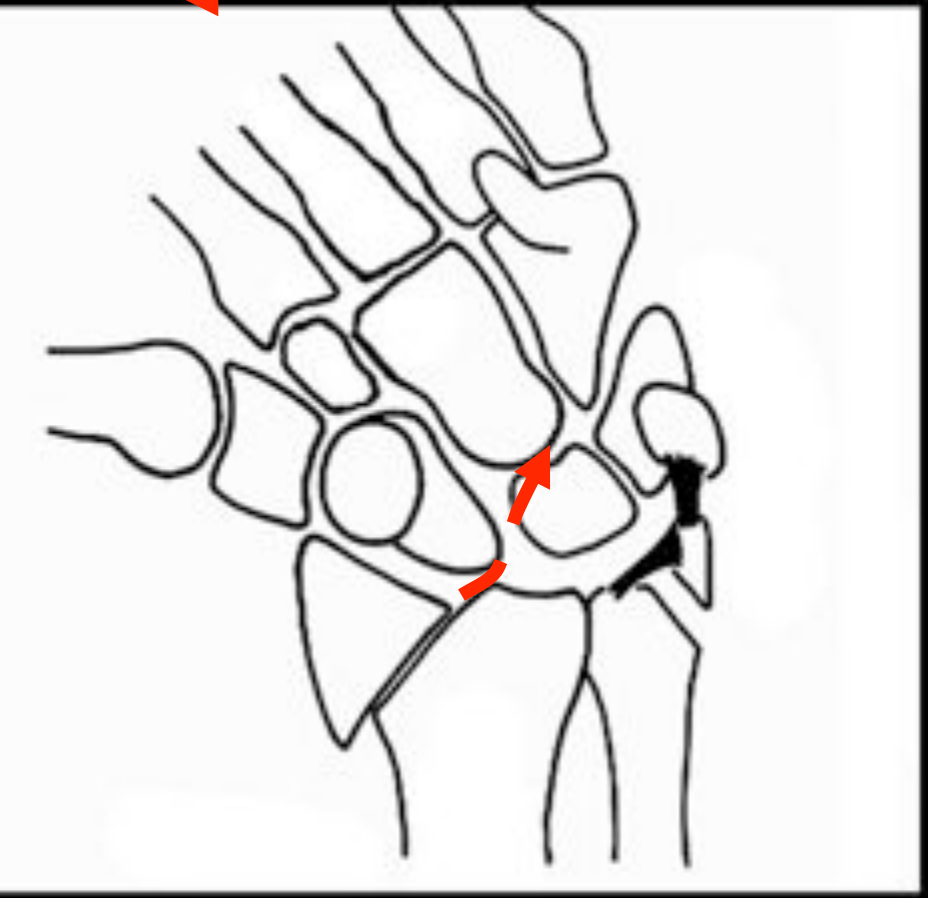
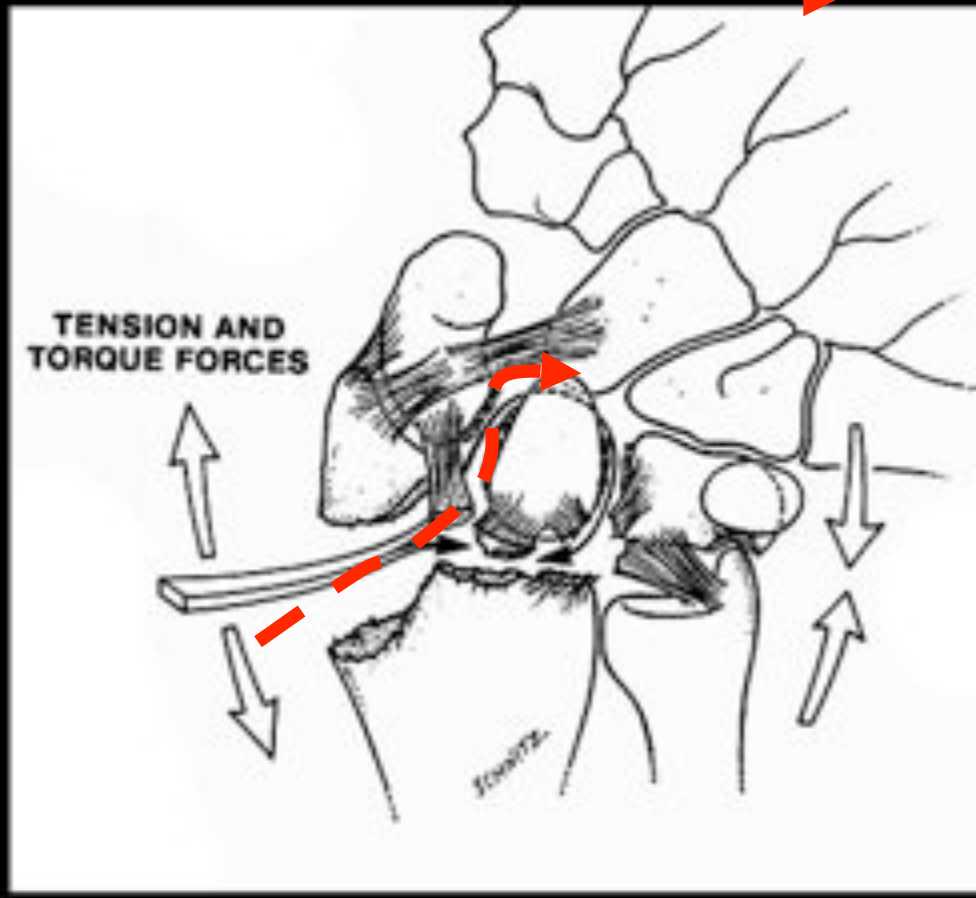

α S-L: 90º

RADIAL DEVIATION

ULNAR DEVIATION

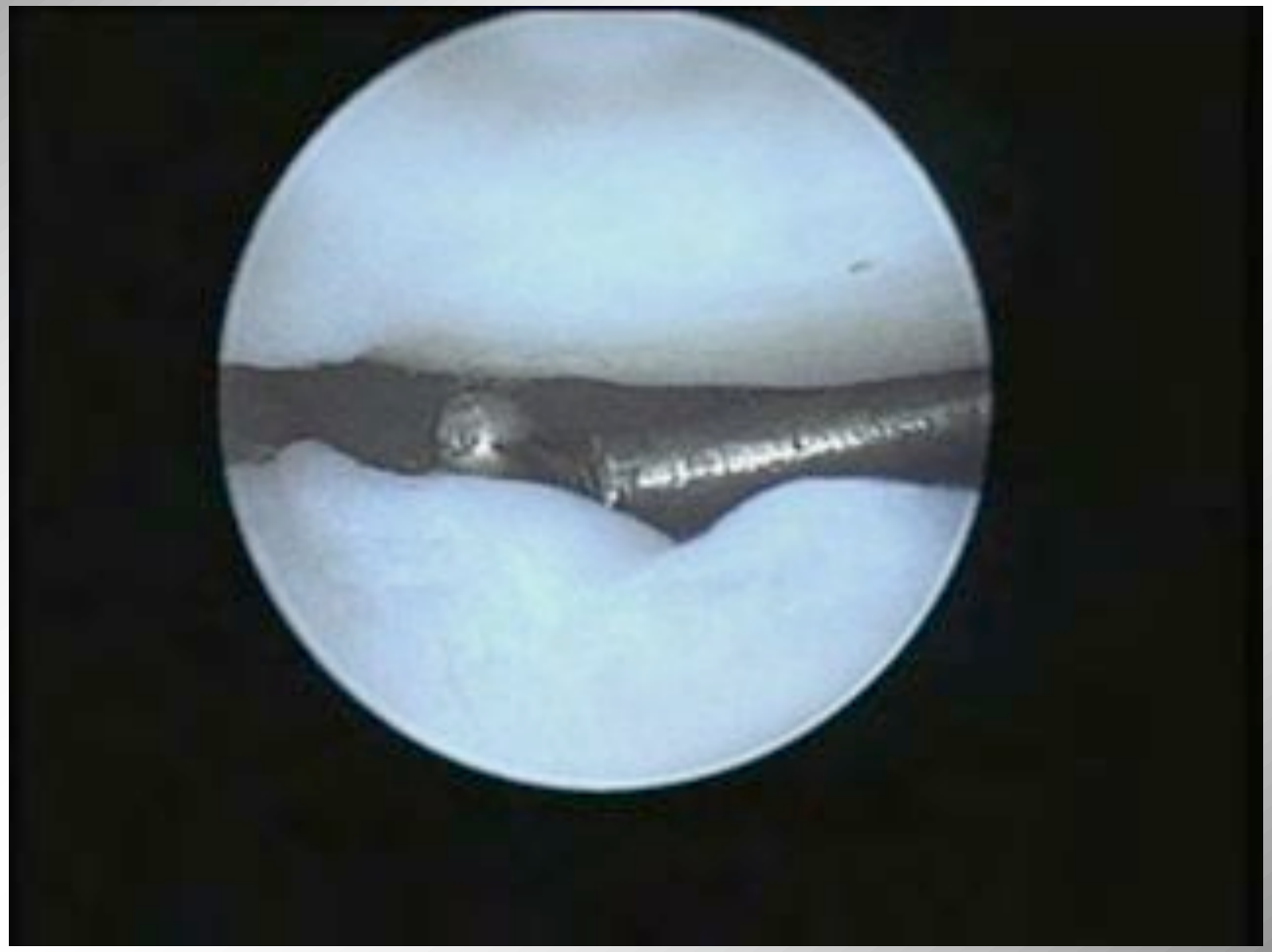




COMPRESION TYPE

AVULSION TYPE

Geissler º III



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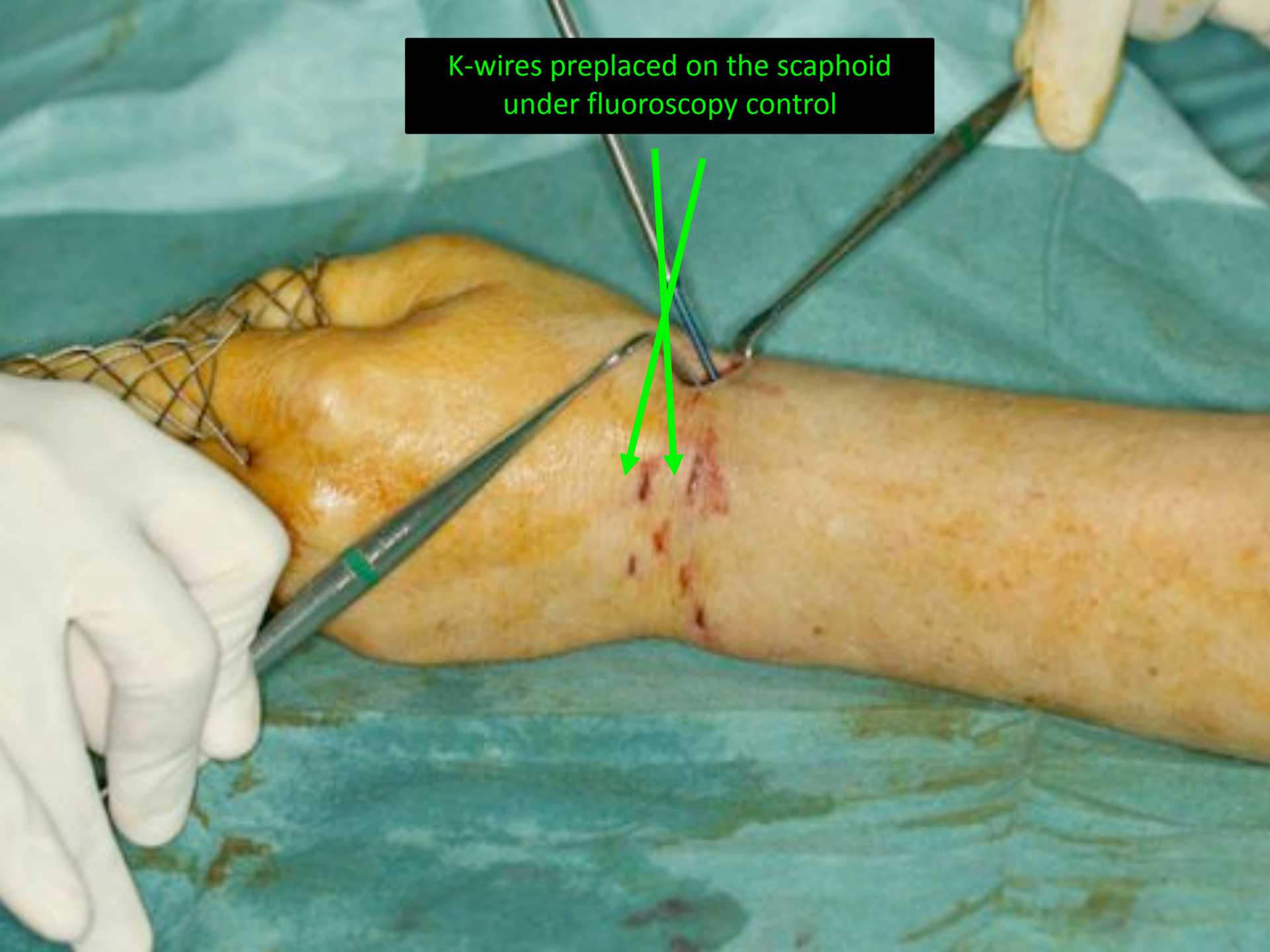
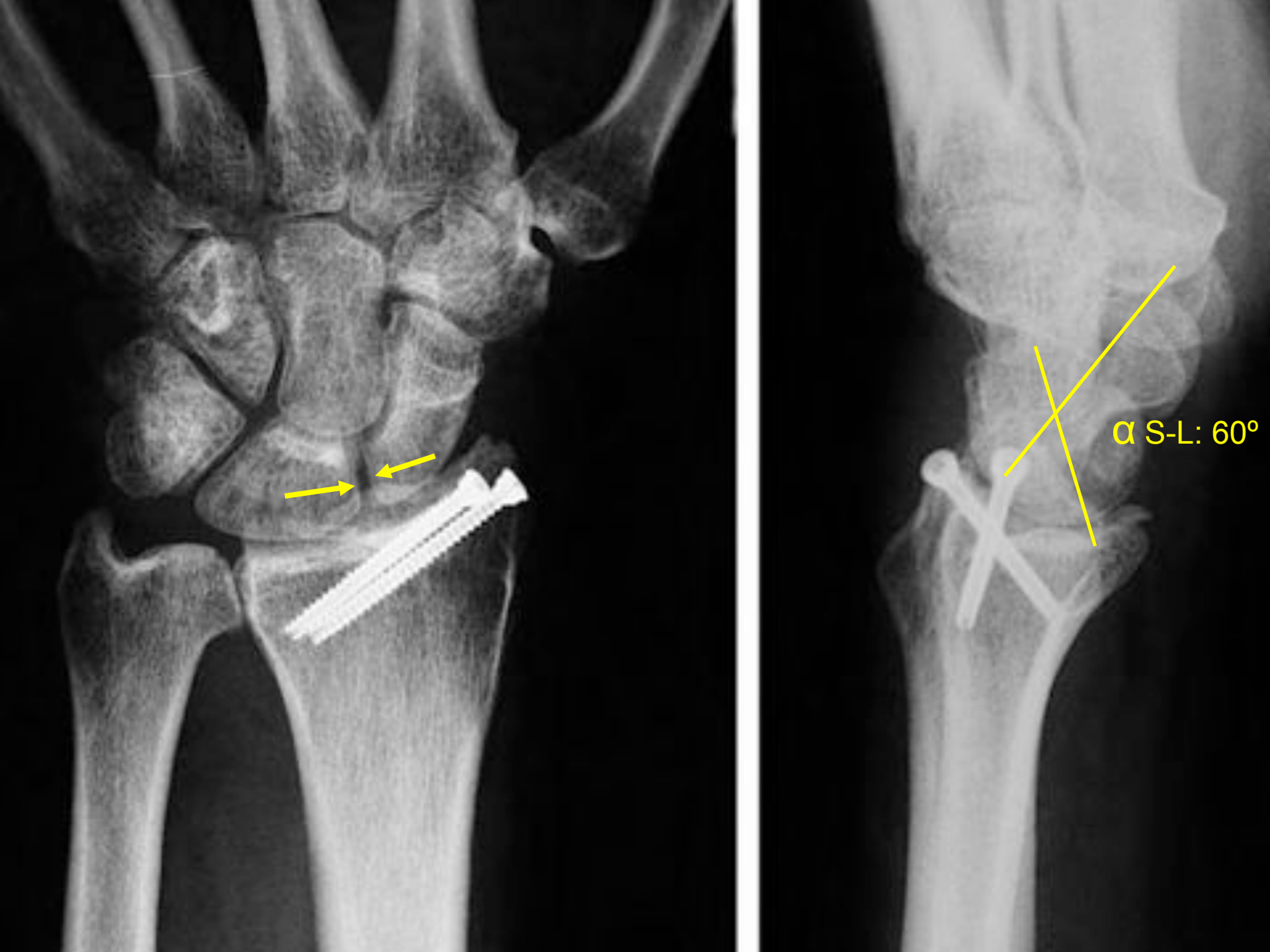

K-wires preplaced on the scaphoid
under fluoroscopy control


α S-L: 60º




WRIST ARTHROSCOPY IN DISTAL RADIUS Fx .

- Assoc. Ligamentous injury.
- DRUJ instability.

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FALSE

STABLE

INESTABLE

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TFCC's SURGICAL ANATOMY

Toshi Nakamura.

•Nakamura T, et al Origins and insertions of the triangular fibrocartilage complex: a histological study. J Hand Surg [Br]. 2001;26:446.

• Makita A, Nakamura T. The shape of the triangular fibrocartilage during pronation-supination. J Hand Surg [Br]. 2003;28:537.

•Nakamura T. The proximal ligamentous component of the triangular fibrocartilage complex J Hand Surg [Br]. 2000;25:479.

•Nakamura T et al. Functional anatomy of the triangular fibrocartilage complex. J Hand Surg [Br]. 1996;21:581.

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TFCC's SURGICAL ANATOMY

Toshi Nakamura.

EWAS.

Tommy Lindau
Andrea Atzei
Paco Pinal.

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Funnel shape type

Fan shape type

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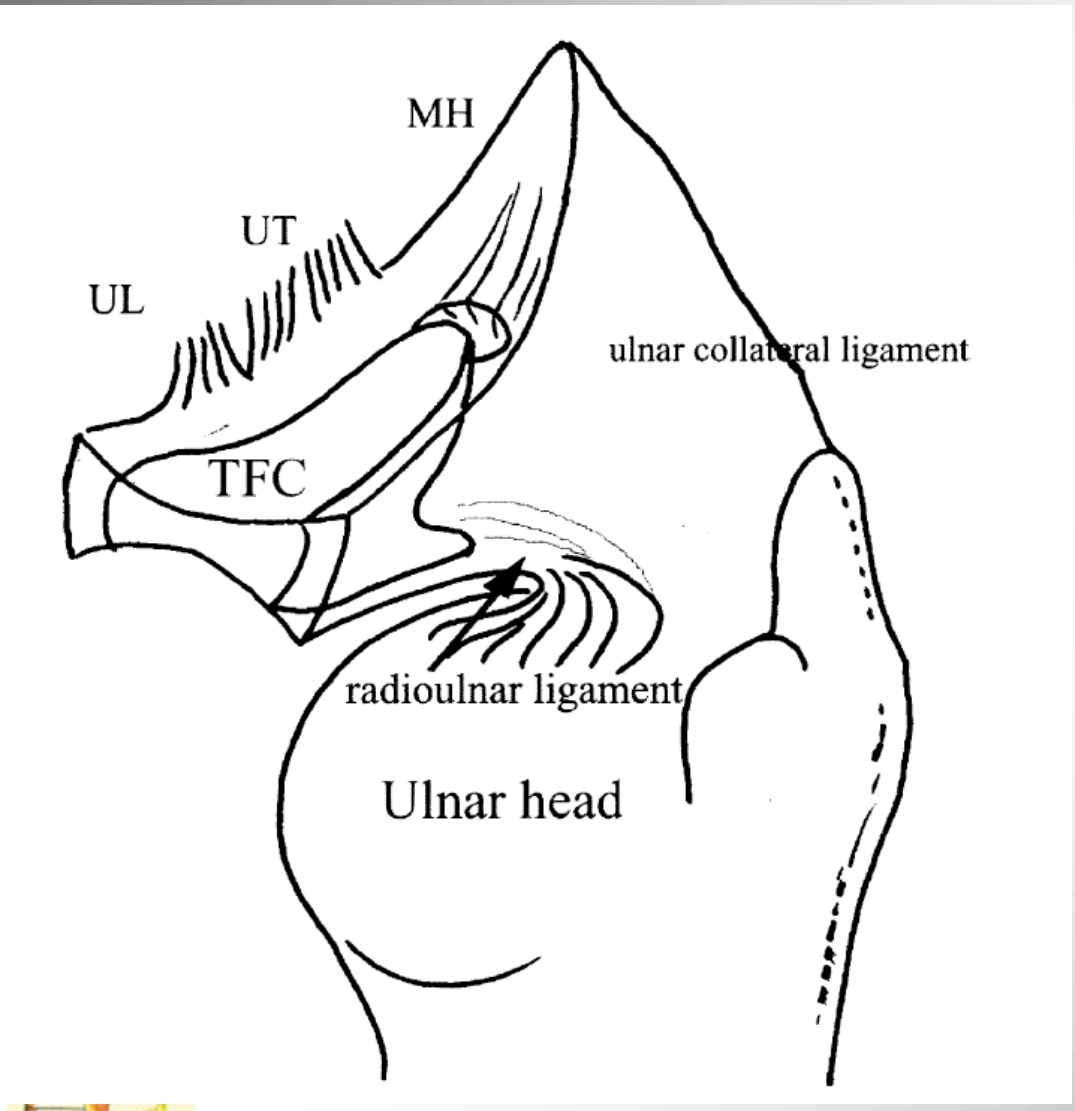

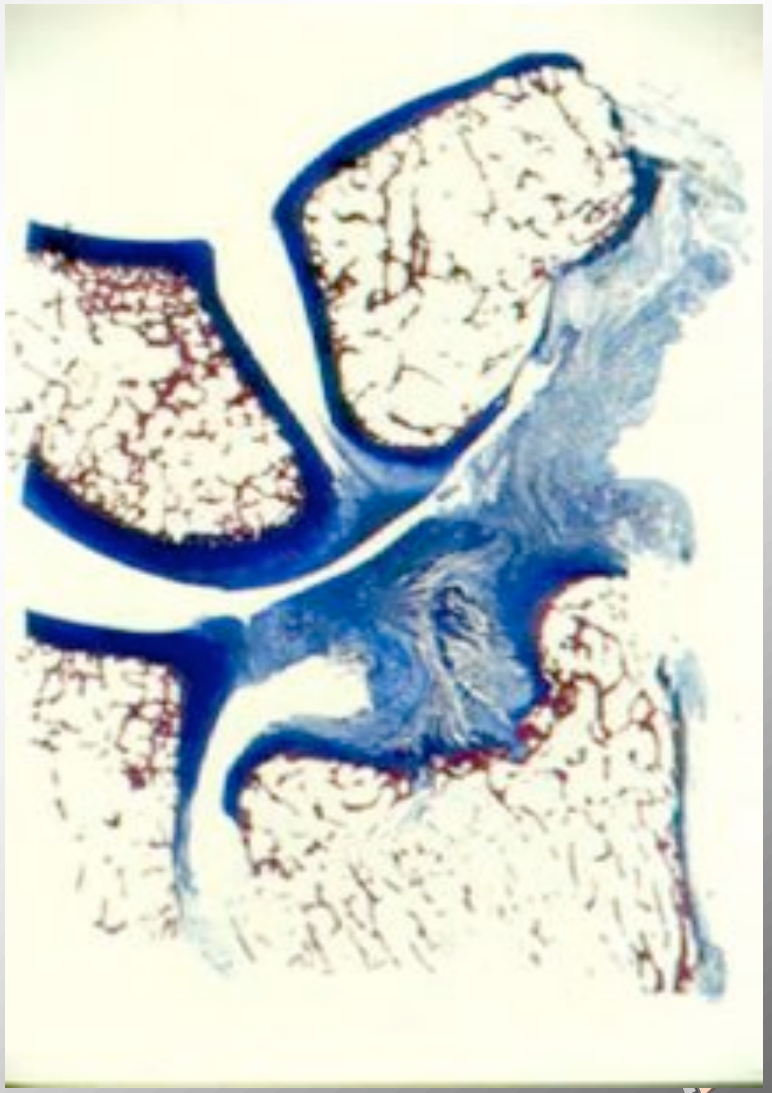

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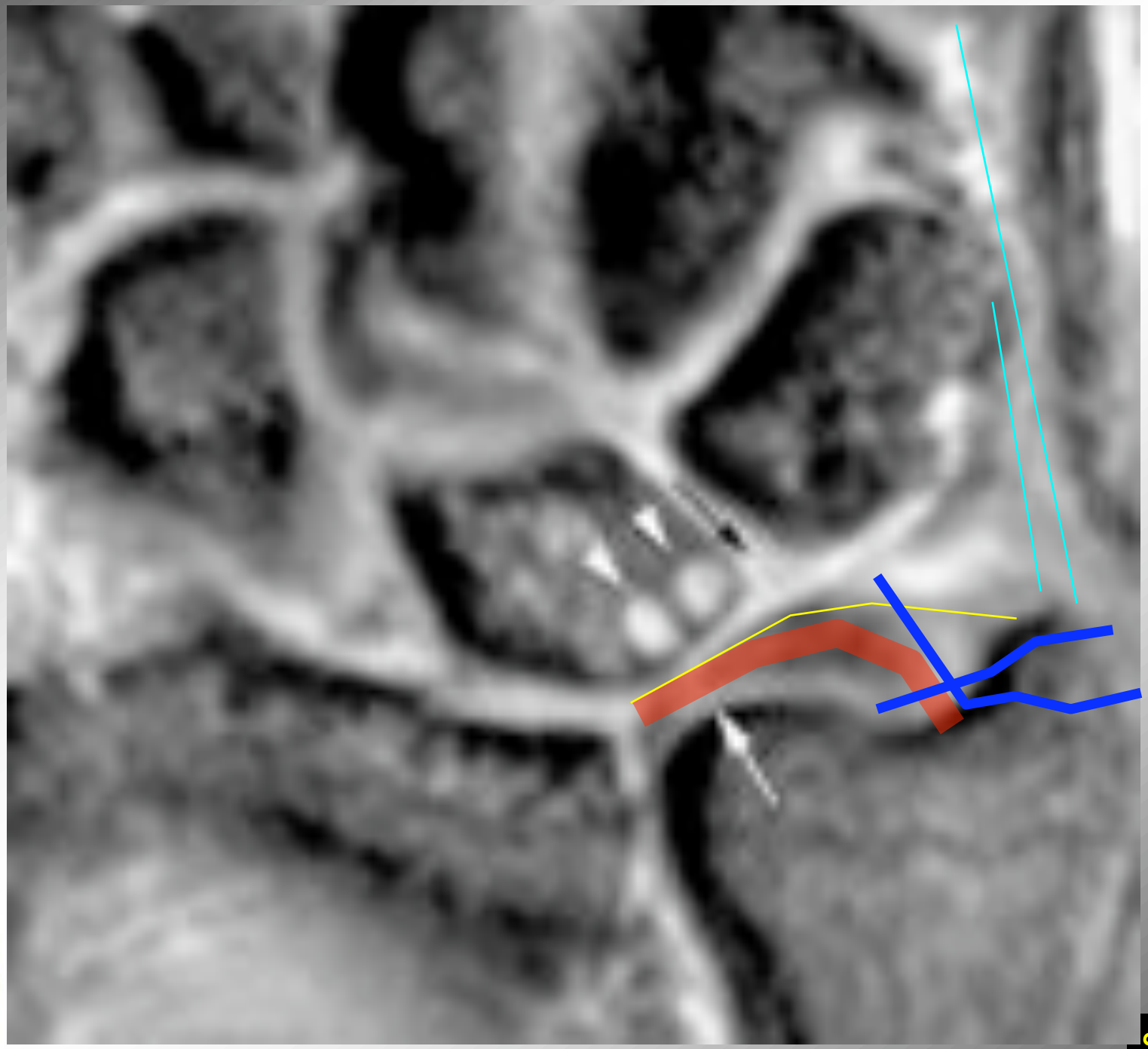

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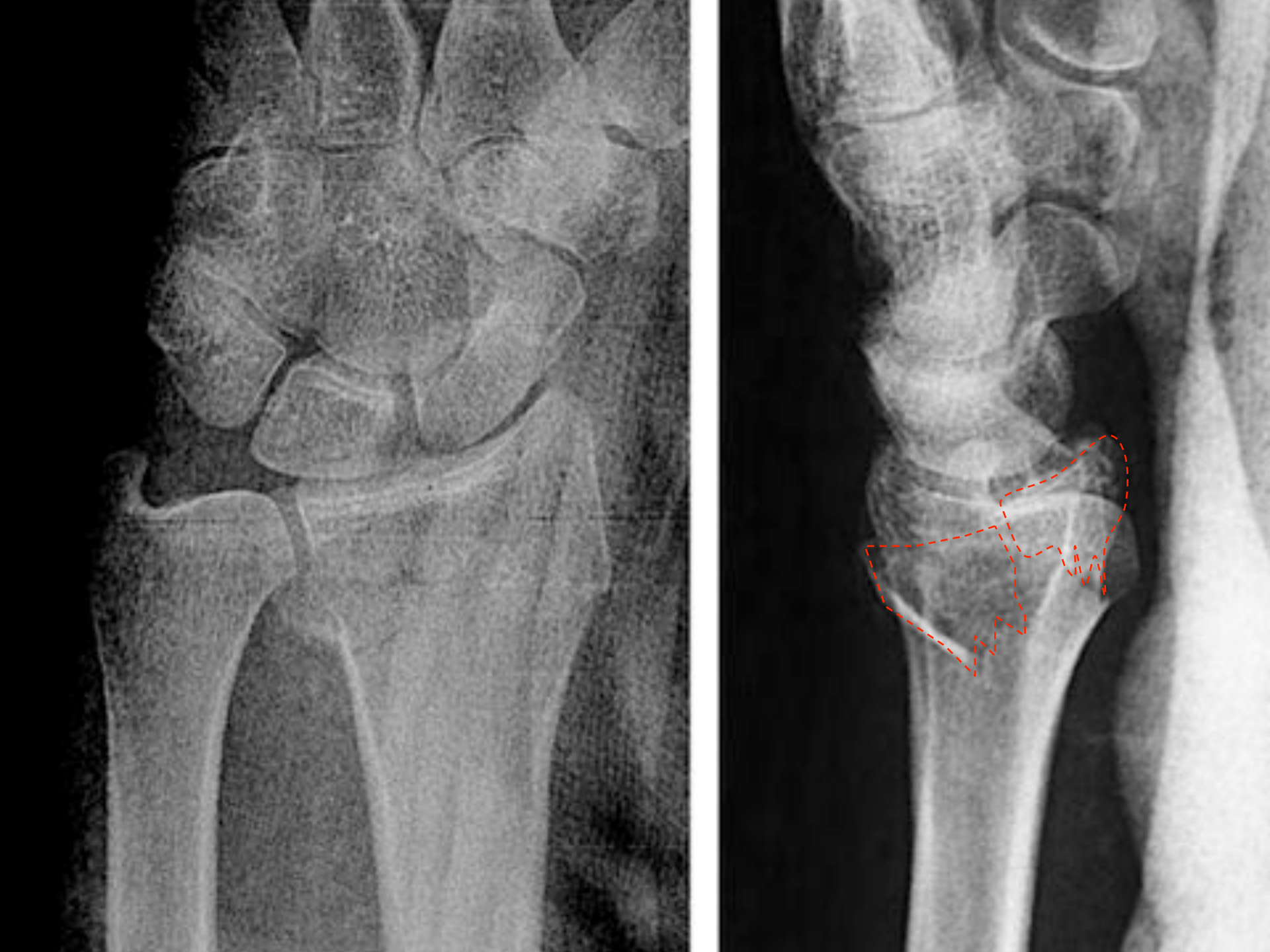

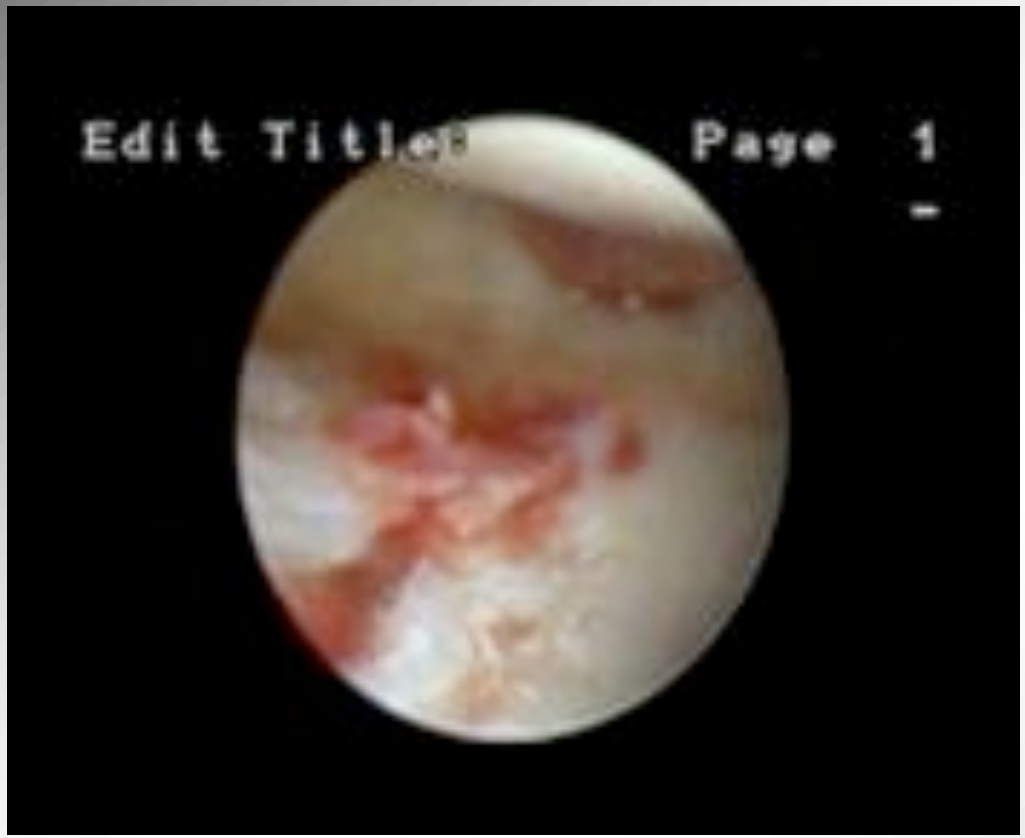

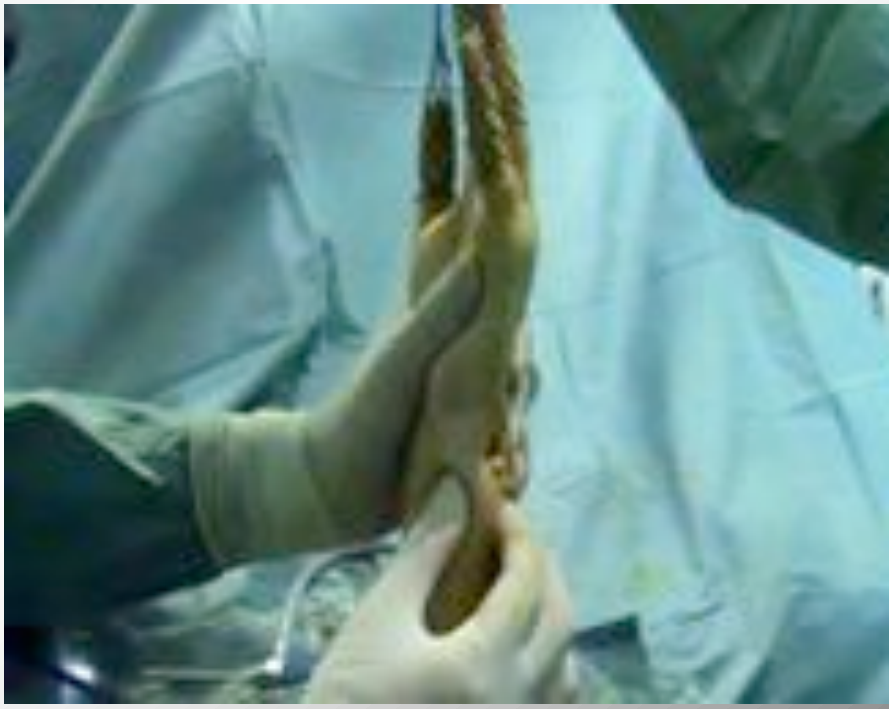

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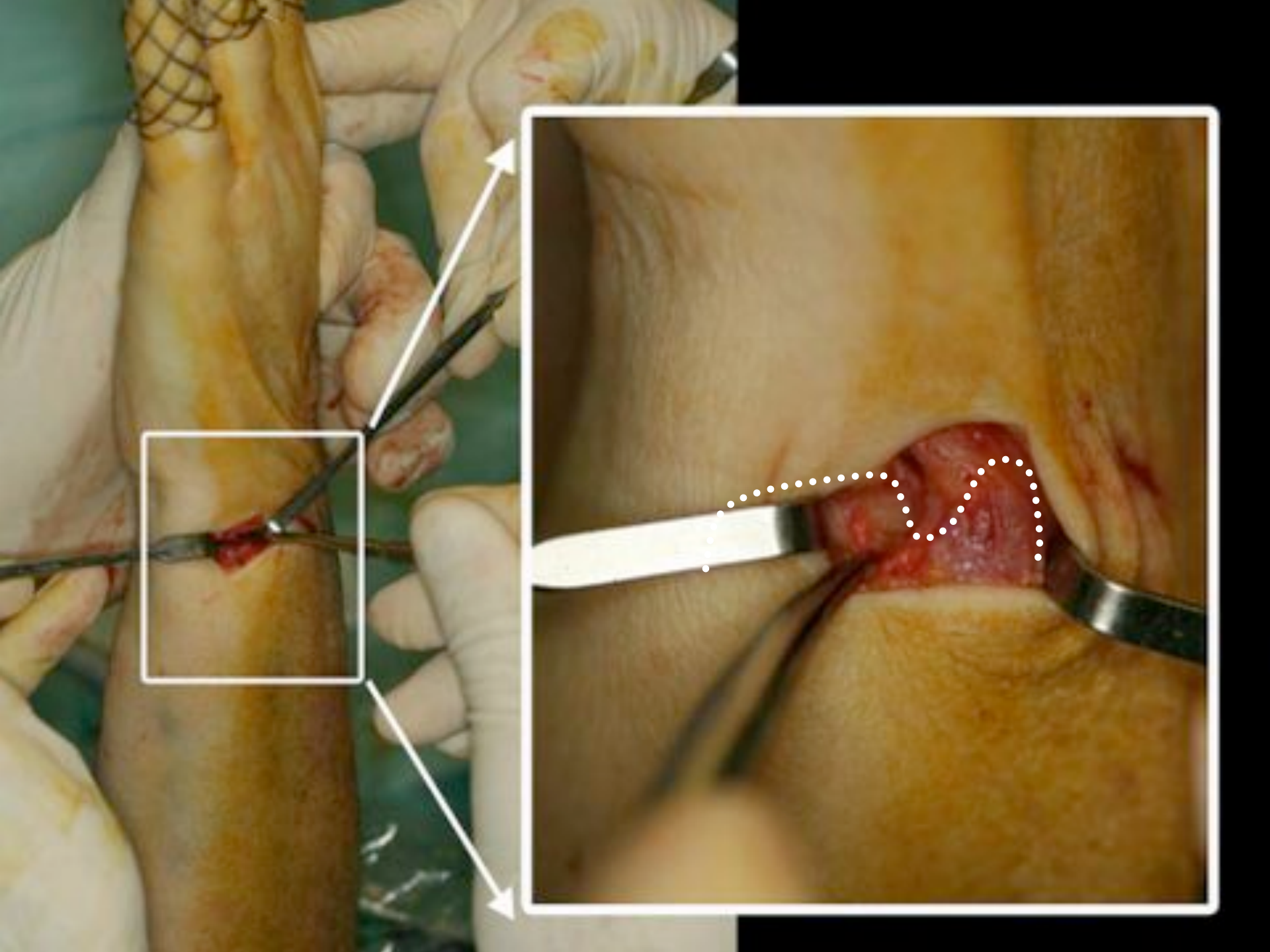
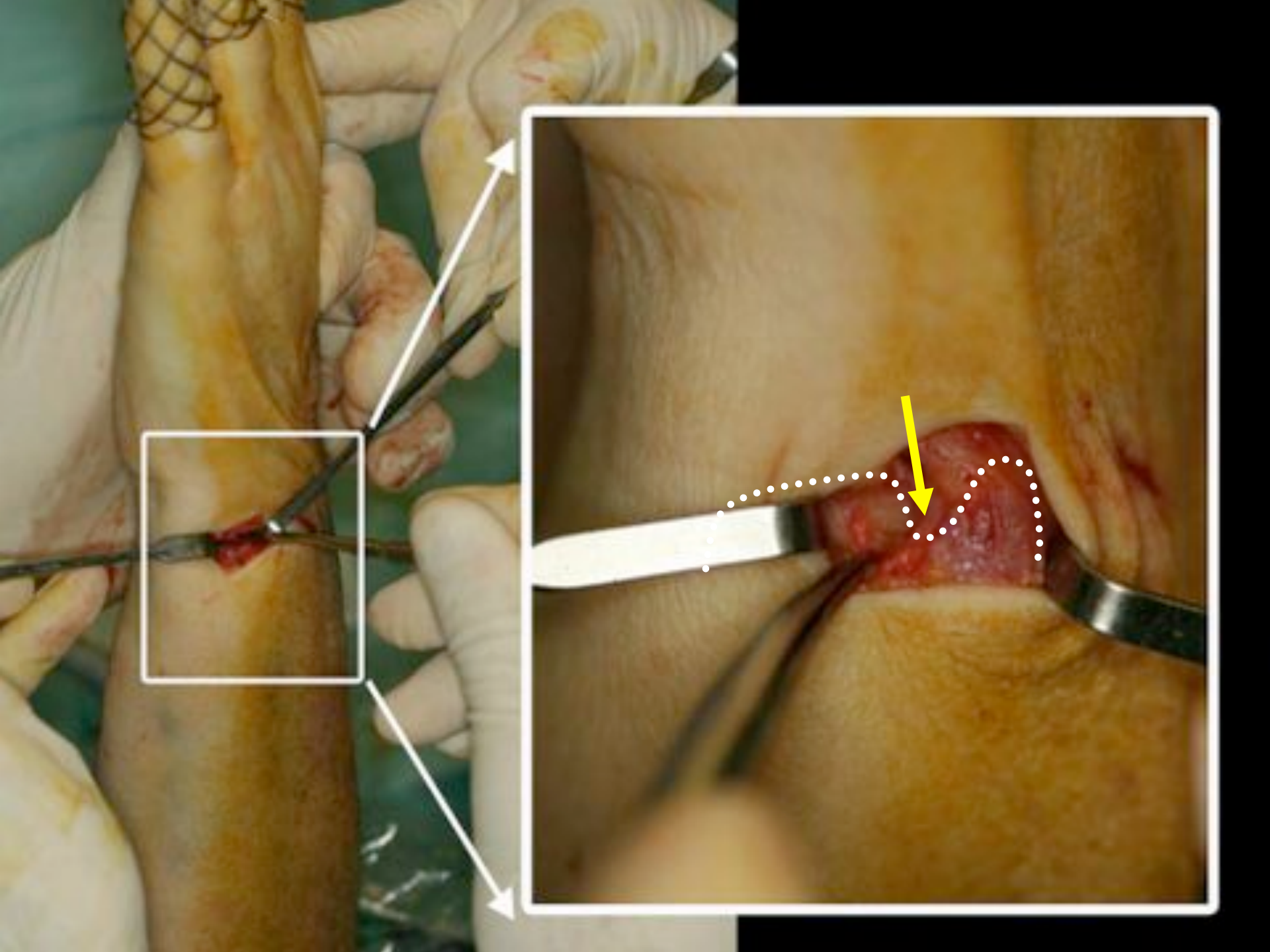
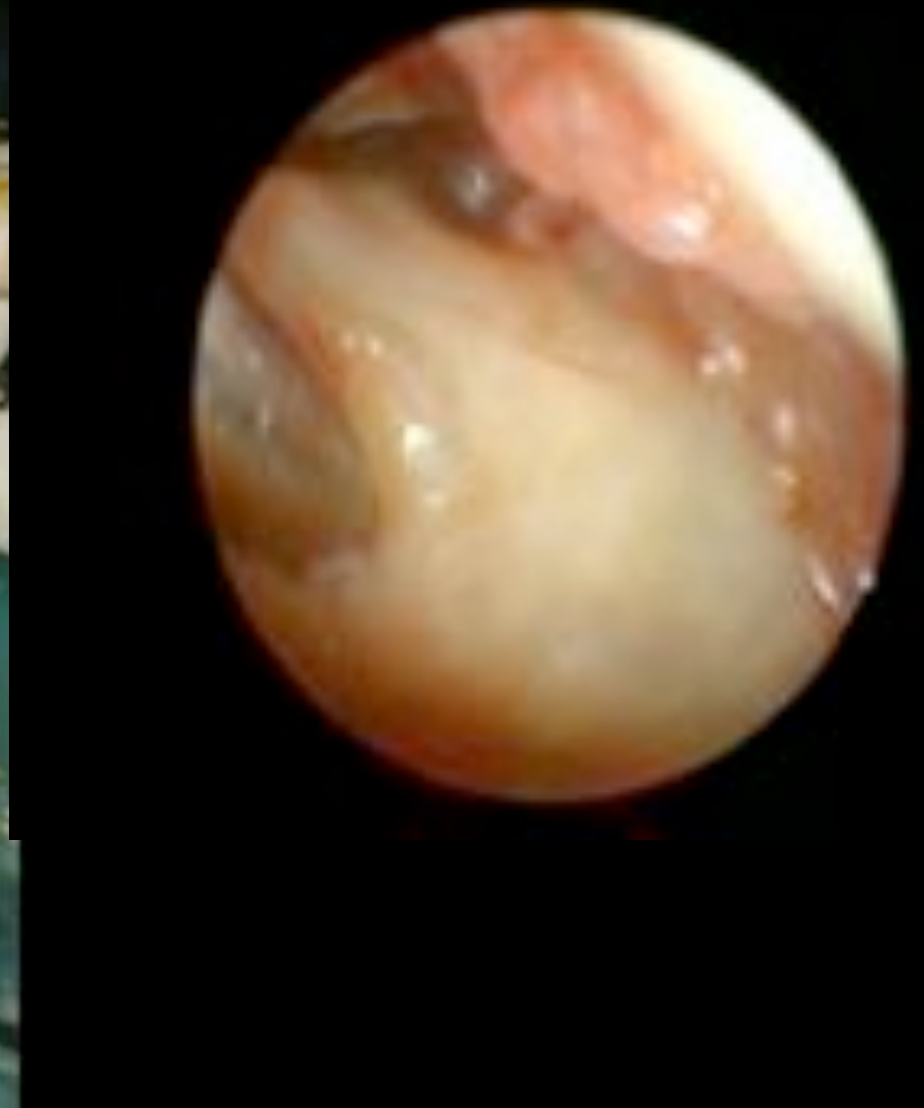
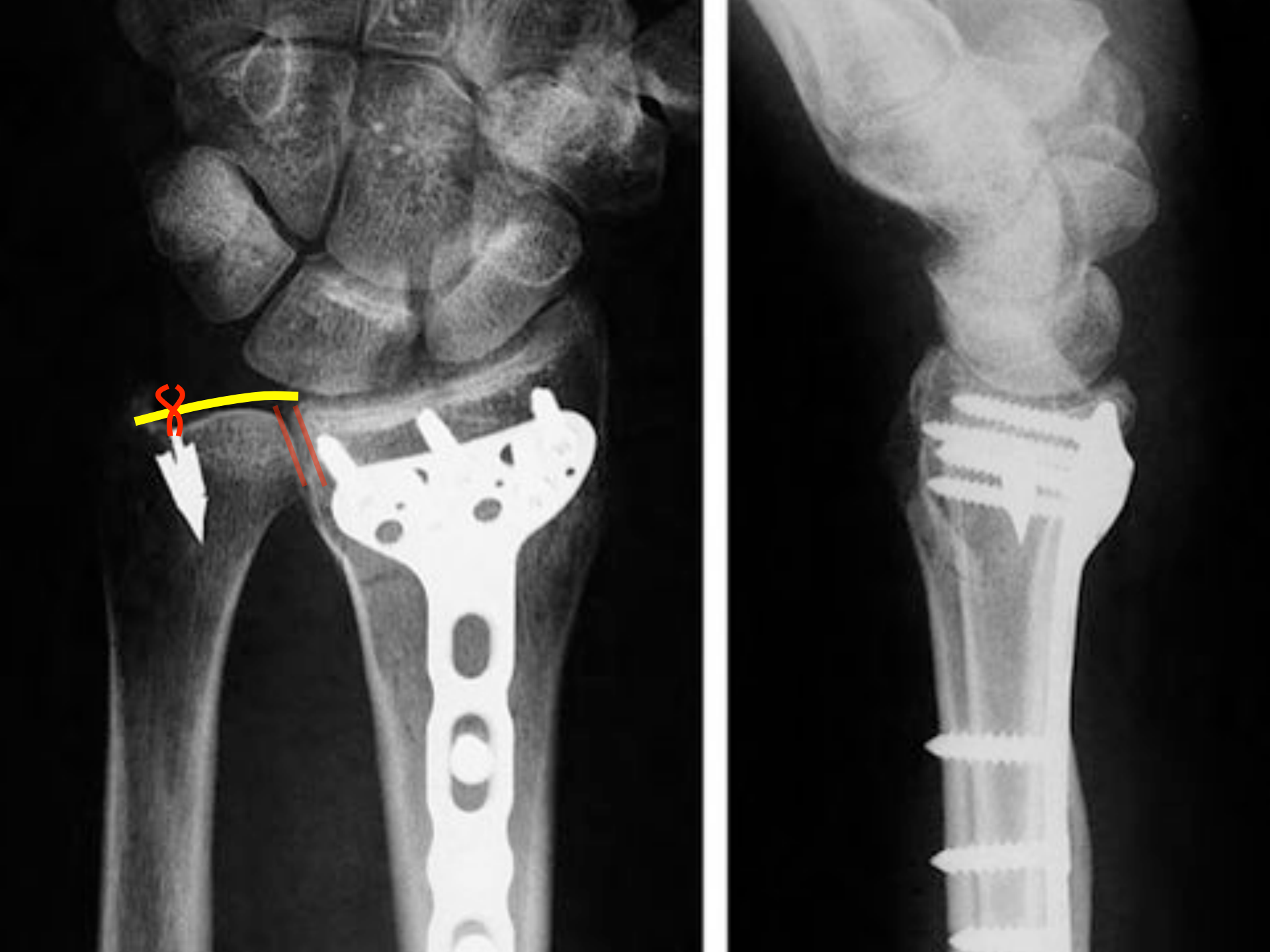




1.- Bone anchor in fovea.





Material

59 patients

28 females 31 males

Average age : 36 y.o. (range 19 71)

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Material

- 4 radial styloid fractures
- 6 postero-medial fragments
- 19 «T» «3 fragments» fractures
- 30 «4 fragments» fractures … (volar plate)

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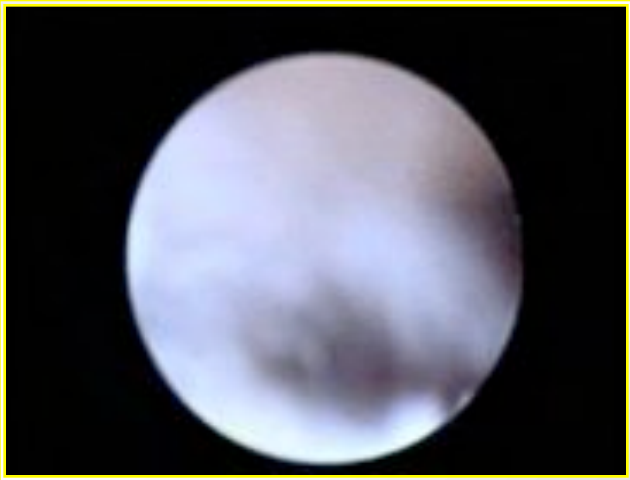
Associated lesions

- 11 TFCC tears
- 4 luno-triquetral ligament tears
- 10 scapho-lunate ligament tears



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Clinical case

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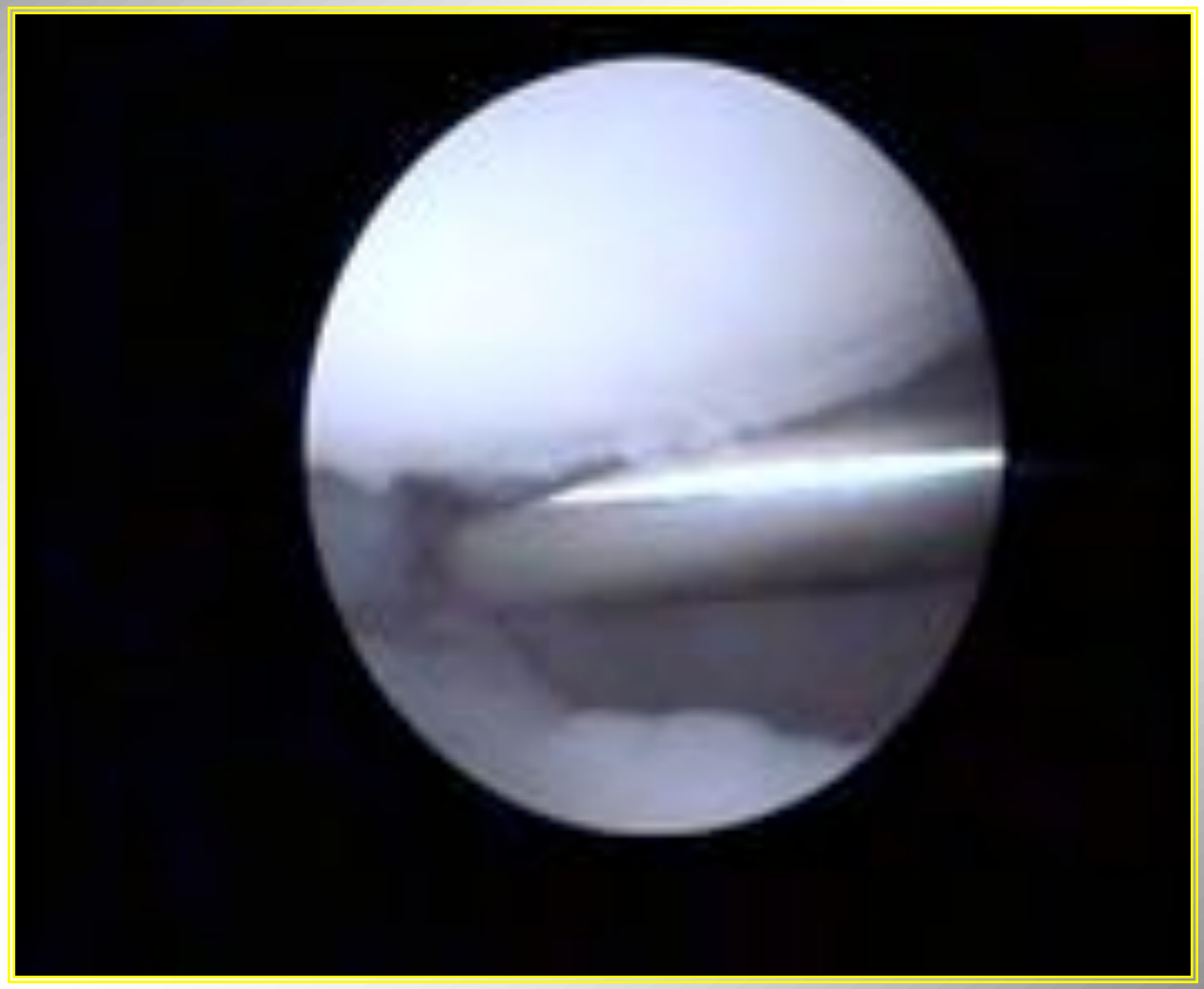
Clinical case



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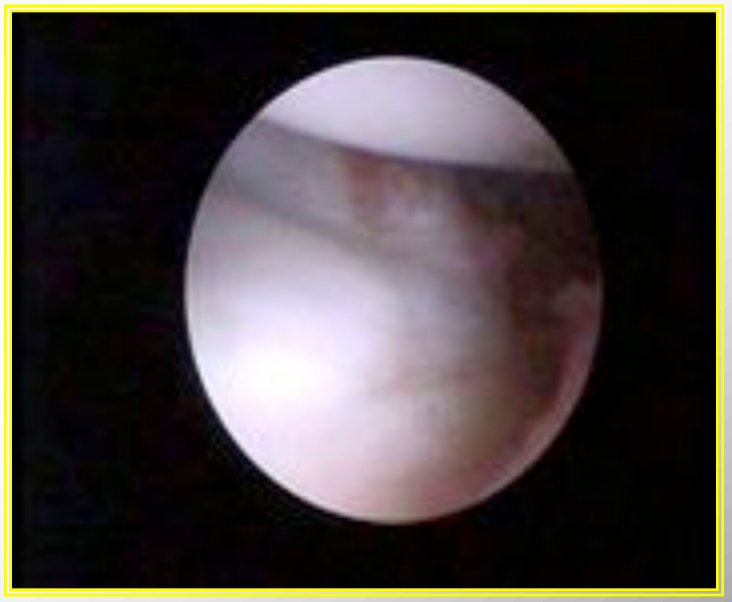
Clinical case



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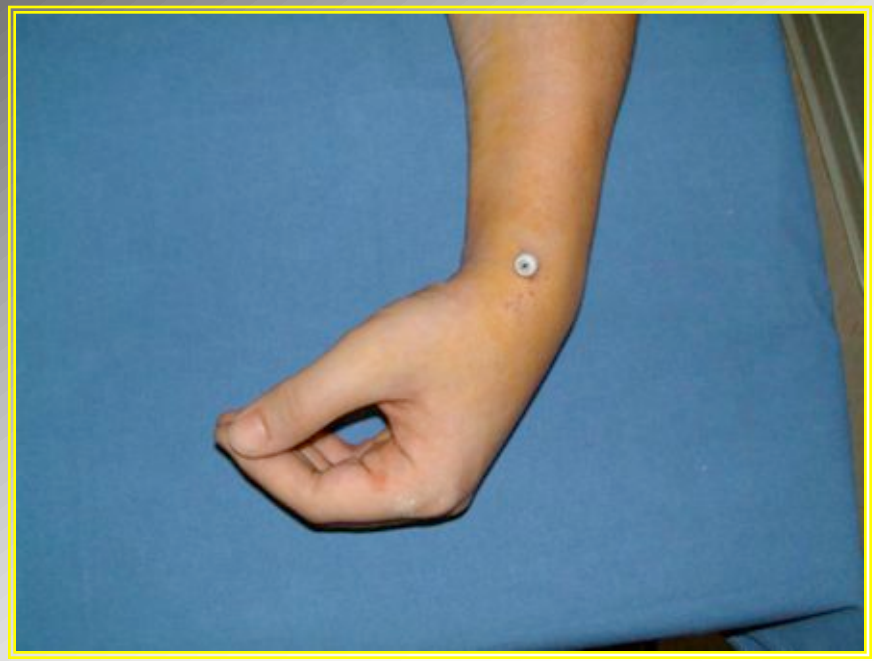
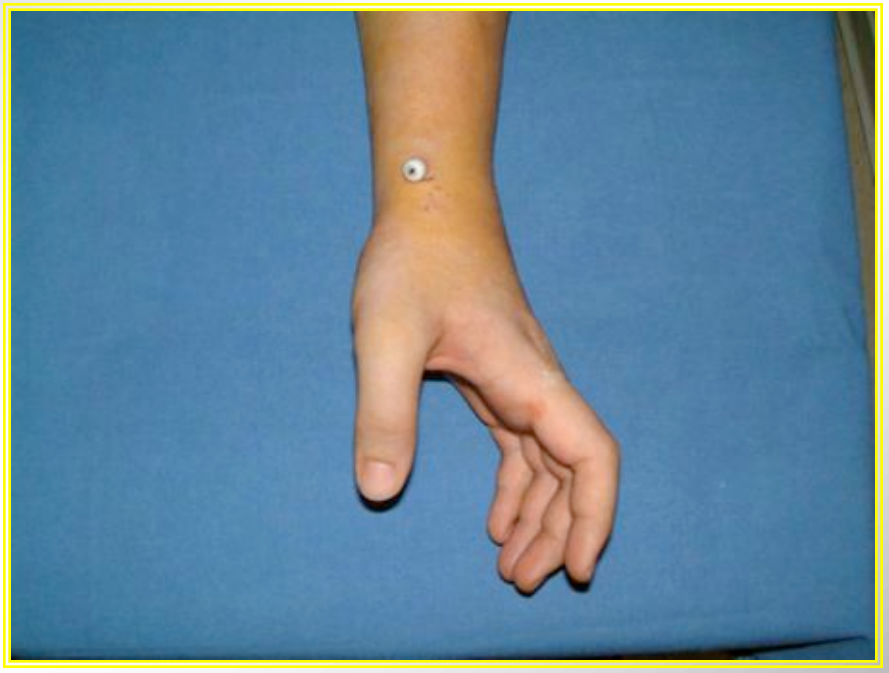
Clinical case





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Results - pain

AVERAGE FOLLOW-UP : 39 m (range 15-53)

- No pain : 43
- Mild, occasional : 12
- Moderate, tolerable : 4
- Severe to intolerable : 1

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Results – range of motion

Flexion-extension

- > 120° : 47
- 60° to 120° : 8
- < 60° : 4

Pronation-supination

- > 120° : 55
- 60° to 120° : 4
- < 60° : 0

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Clinical case

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Clinical case

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3 years of follow-up

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Results – strength

COMPARATIVE OPPOSITE SIDE

- 75 % to 100 % : 46
- 50 % to 75 % : 12
- < 50 % : 1

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Results – x-rays

- Dorsal tilt : 3
- Frontal tilt : 0
- Ulnar abutment : 4
- Intra-articular step-off > 1mm : 0

No necessary secondary reduction !

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Complications

- Carpal tunnel : 2
- Südeck's dystrophy : 3
- Secondary displacement : 0
- Radial nerve lesion : 2

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Outcome score

90 % of good and excellent results

EXCELLENT	28 cases
GOOD	25 cases
FAIR	5 cases
POOR	1 case

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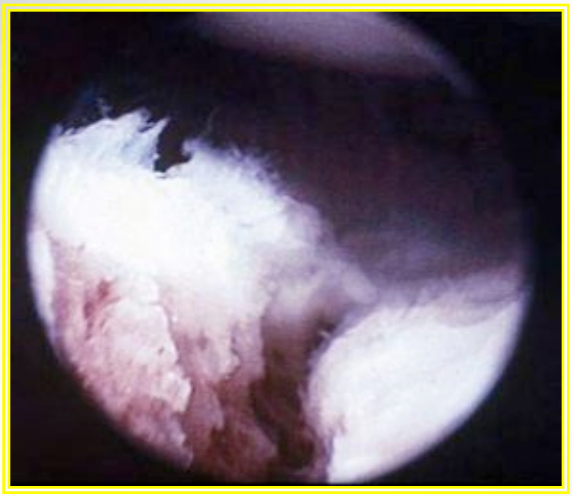

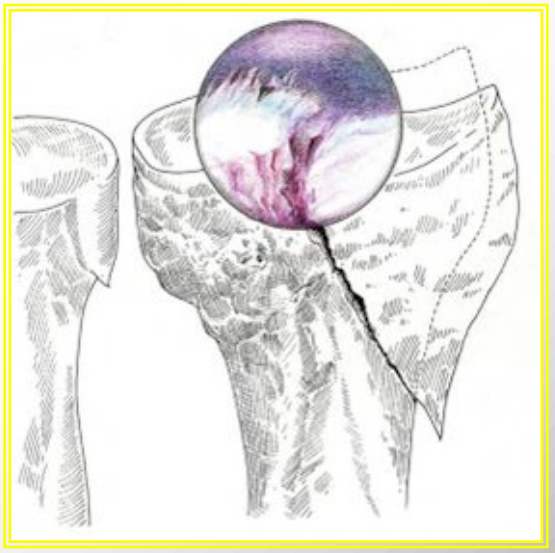

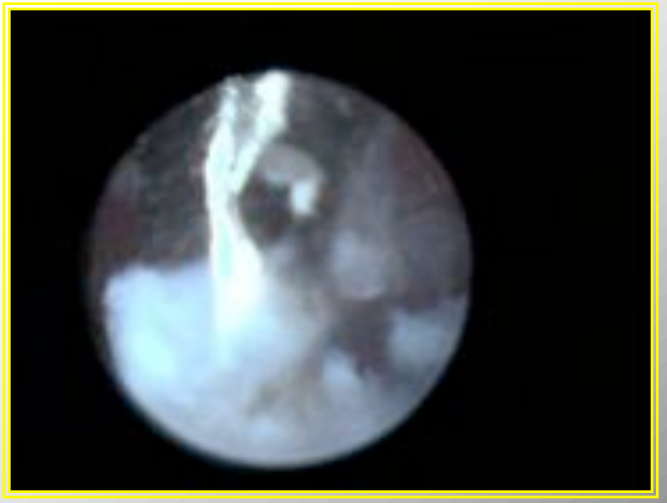

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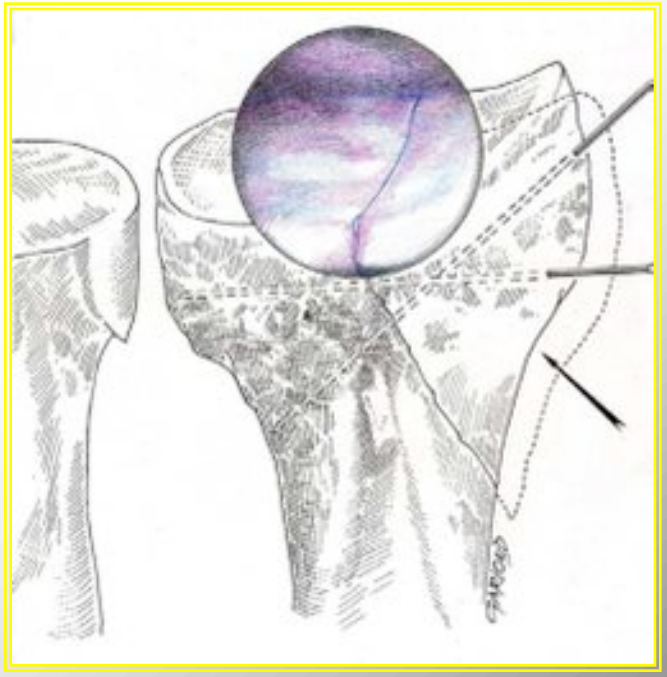
Clinical case



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Clinical case

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Discussion

- Knirck – Jupiter 1986
- Whipple 1986, 1992, 1994
- Hanker – Nuys 1991
- Bain – Richard – Roth 1992
- Geissler 1992
- Mathoulin 1993
- Fontes 1995

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Discussion

- Osterman 1995
- Lindau 1997
- Wolfe 1997
- Palmer 1998
- Doi 1999
- Hardy 1999
- Mathoulin 2001
- Pinal 2006

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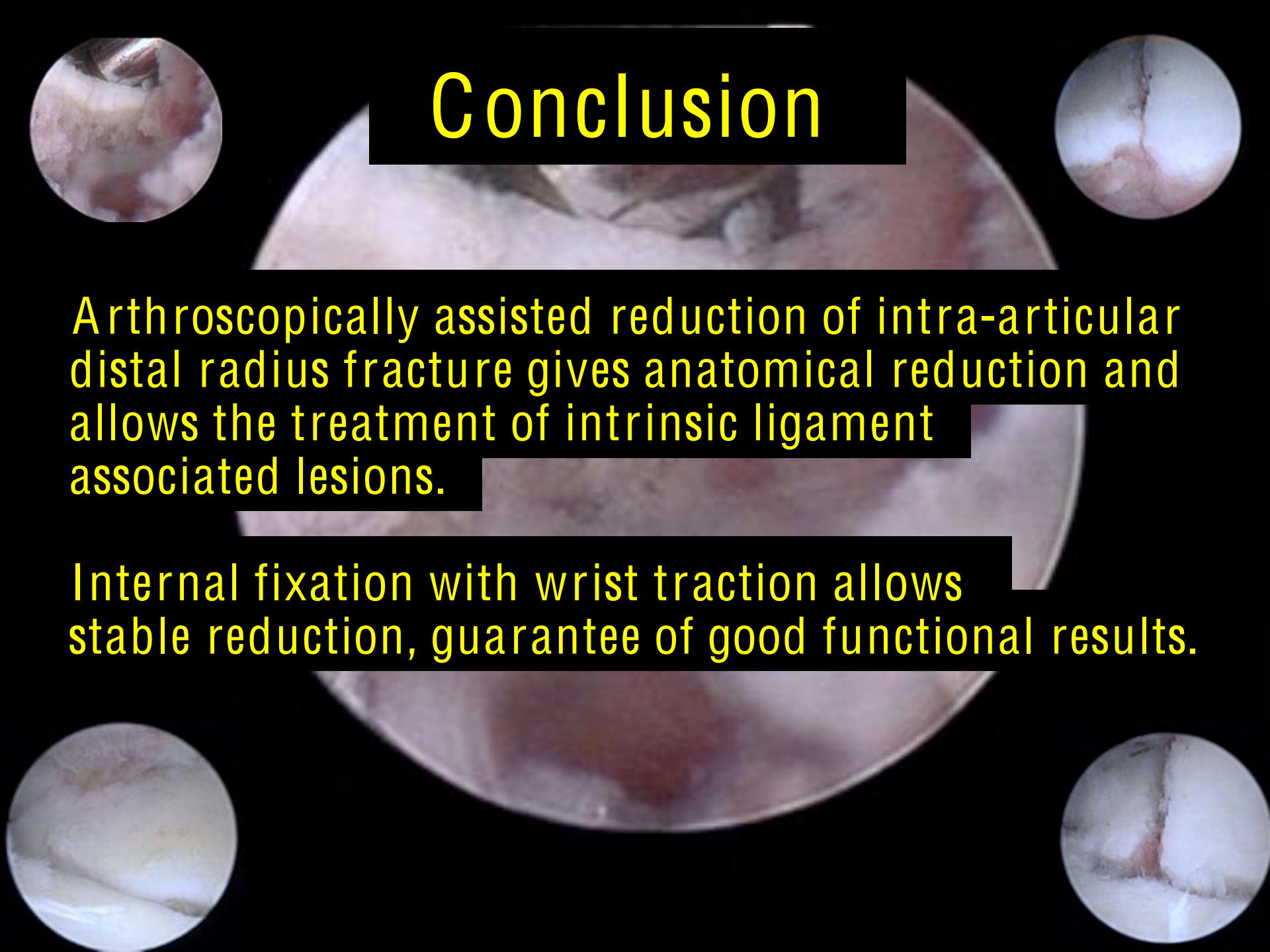

Conclusion

Arthroscopically assisted reduction of intra-articular distal radius fracture gives anatomical reduction and allows the treatment of intrinsic ligament associated lesions.

Internal fixation with wrist traction allows stable reduction, guarantee of good functional results.