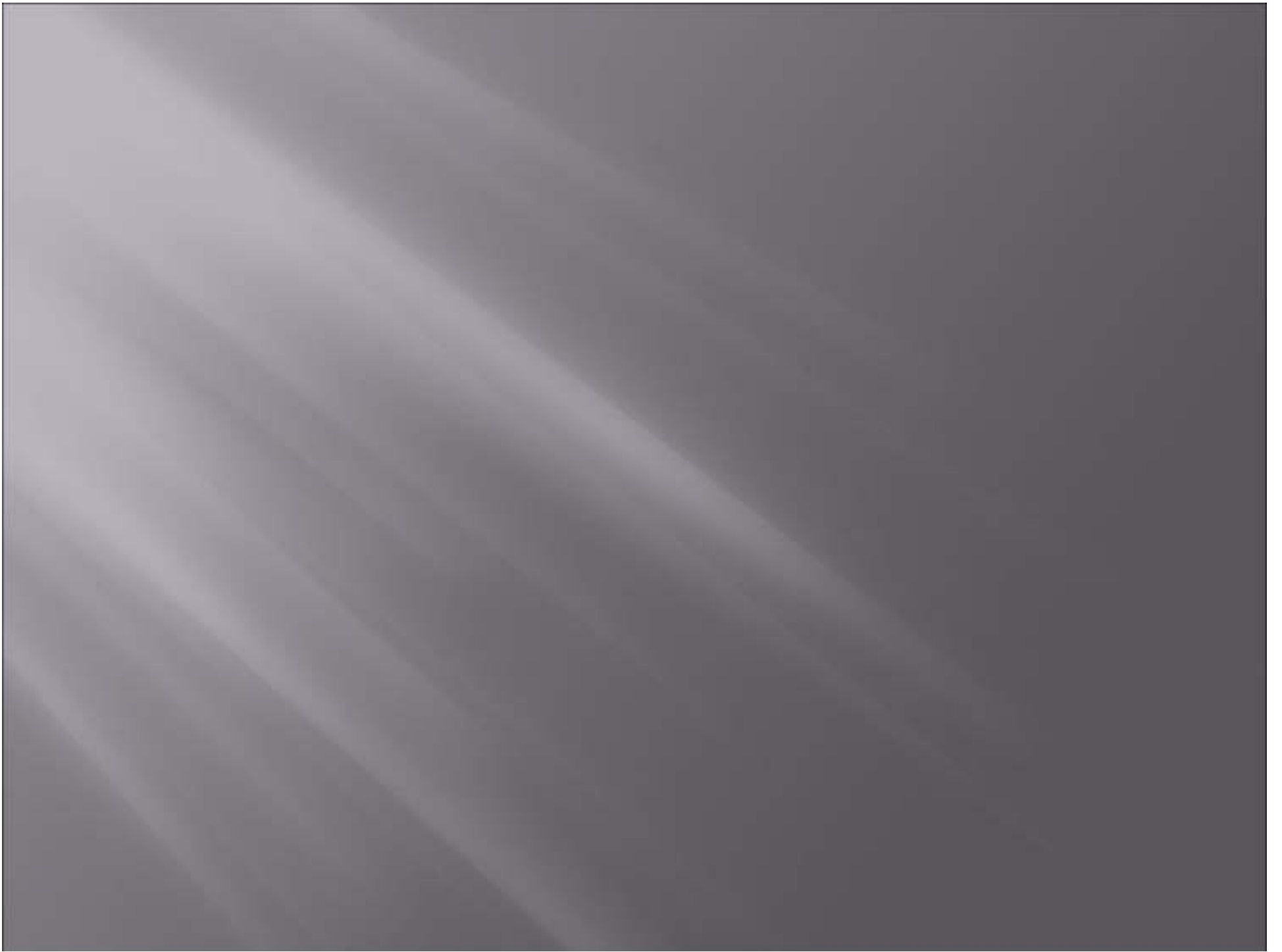


# BASIC PRINCIPLES OF HAND & WRIST SURGERY

Les Irwin

Consultant Orthopaedic & Hand Surgeon - Sunderland



# Know the Limits of Yourself, Your Patient and Your Implants.





# The Problem:

- ▣ Pantrapezial Arthritis is best treated by trapeziumectomy
- ▣ The major drawback with trapeziumectomy is collapse of the thumb pillar

# The Problem:

## Options to prevent pillar collapse

- K-wires
- Implants
- Froimson
- Burton & Pellegrini
- Metacarpal base fusion

The Problem:

But....trapeziectomy  
alone is as good as any  
other alternative, when  
studied properly.



38% of PI2 group  
required further  
surgery, either because  
of dislocation or tendon  
tethering.









# Successful Outcome Relies On:

- ▣ Patient selection
- ▣ Respect for soft tissues
- ▣ Attention to detail

# Successful Outcome Relies On:

- ▣ **Patient selection**
- ▣ Respect for soft tissues
- ▣ Attention to detail

# Patient Selection

- ▣ Implant is suitable for Osteoarthritic joints or mild/early Rheumatoid
- ▣ Unconstrained prosthesis relies on soft tissue integrity for position and stability
- ▣ Ligaments, musculotendinous control and compliance must all be in good order



L.R.Irwin





L.R.Irwin



L.R.Irwin



L.R.Irwin





L.R.Irwin



L.R.Irwin

# Successful Outcome Relies On:

- ▣ Patient selection
- ▣ **Respect for soft tissues**
- ▣ Attention to detail

# Respect for Soft Tissues

- ▣ If it's not right on the table, it never will be
- ▣ Tendons should be repaired for smooth, early movement
- ▣ Stabilise before closing - splints will never disguise your error
  - Collateral 'hitch' on PIPJ
  - Tendo-periosteal sleeve on CMCJ

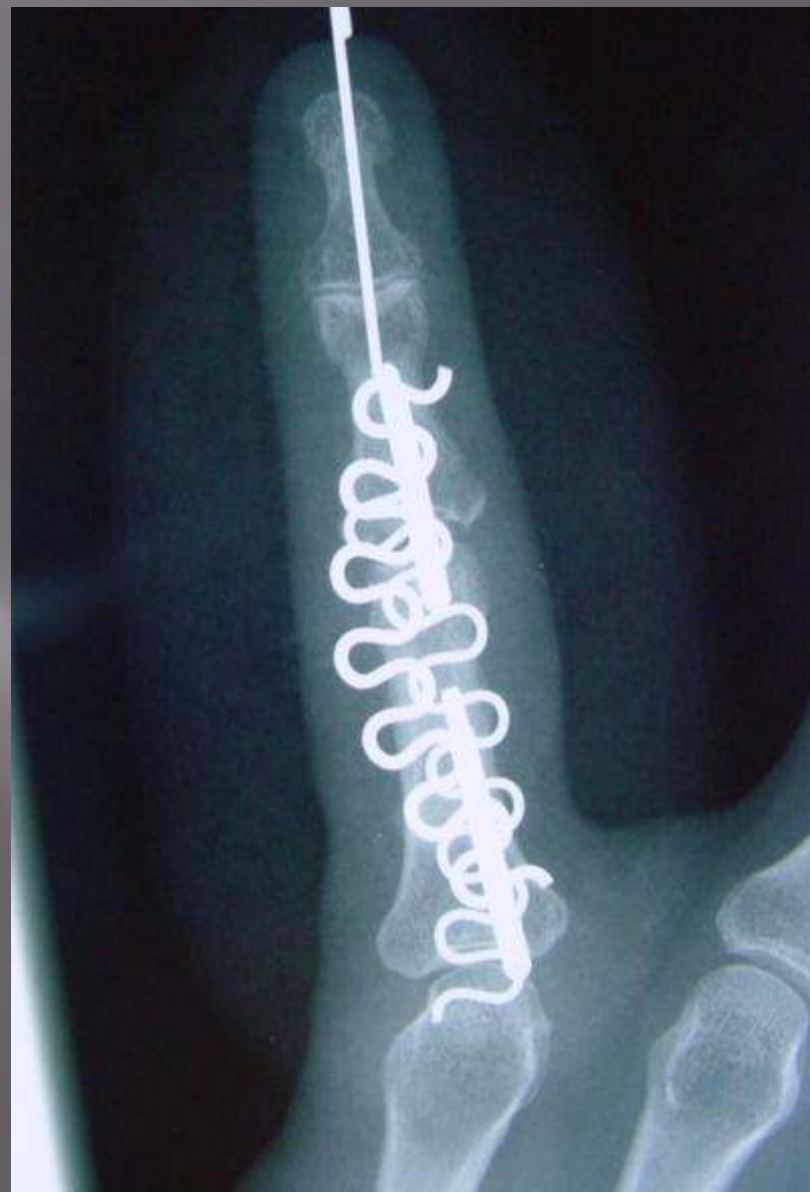
You Can't  
Unbugger  
Something  
By  
Rebuggering It.





L.R.Irwin

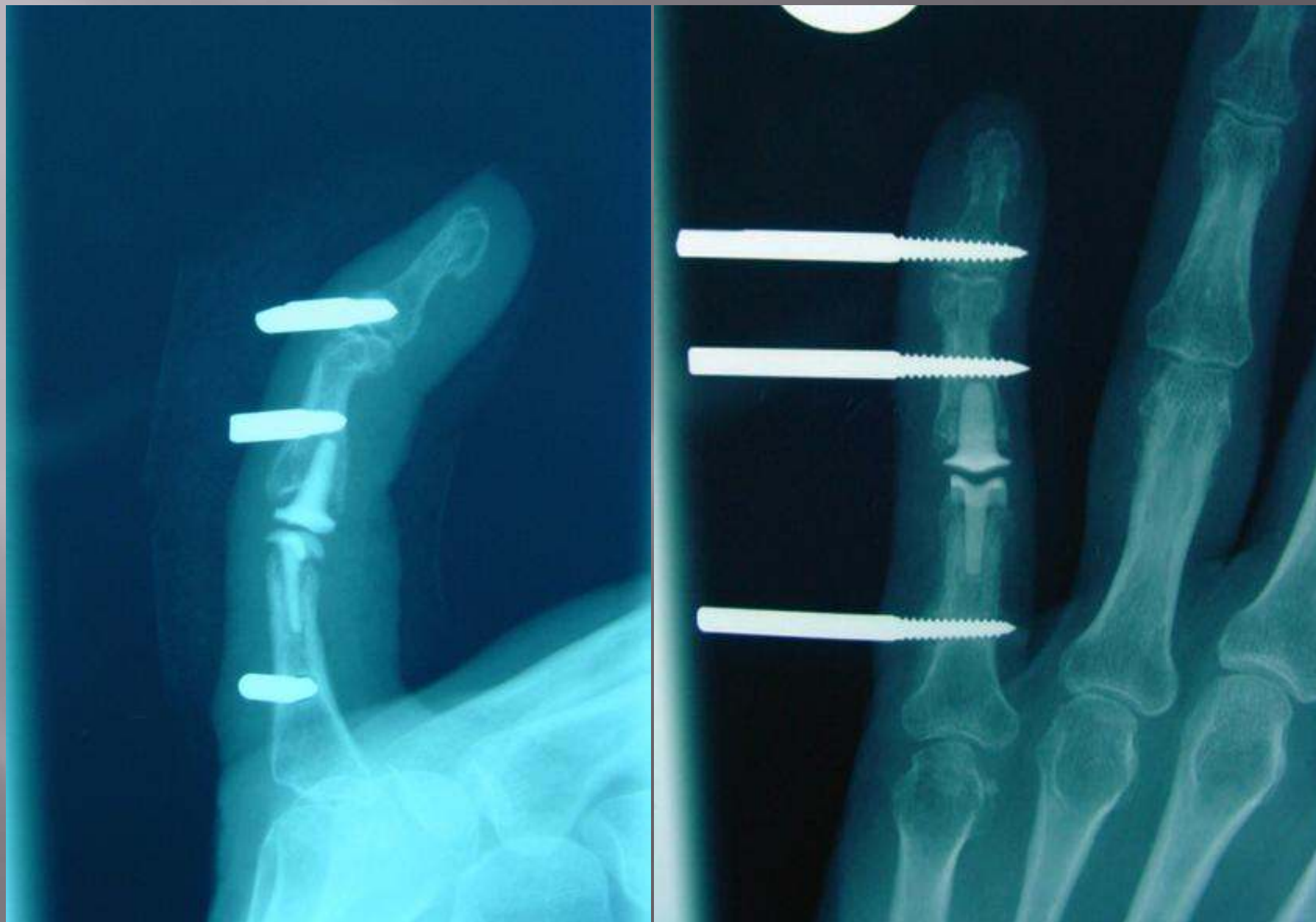
















# Successful Outcome Relies On:

- ▣ Patient selection
- ▣ Respect for soft tissues
- ▣ **Attention to detail**

# Attention to Detail

- ▣ A 'little bit tight' = flexion contracture
- ▣ A 'little bit slack' = unstable
- ▣ Details:
  - Implant sizing
  - Flexion/extension gaps
  - Volar plate releases
  - Trapezial 'sculpture'

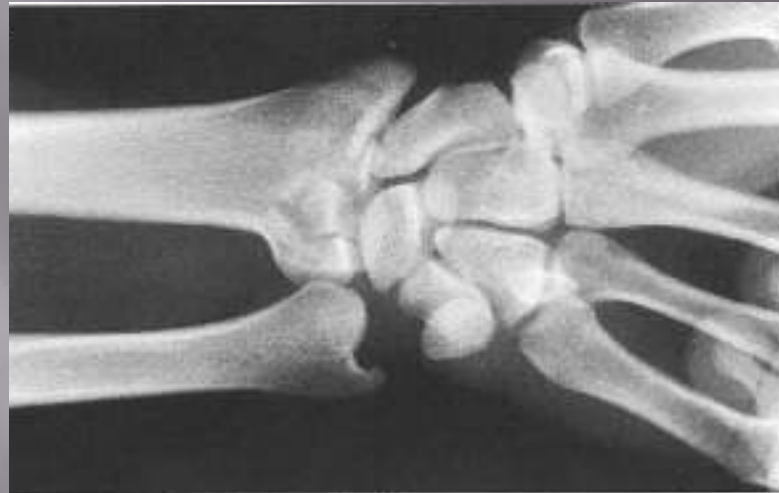




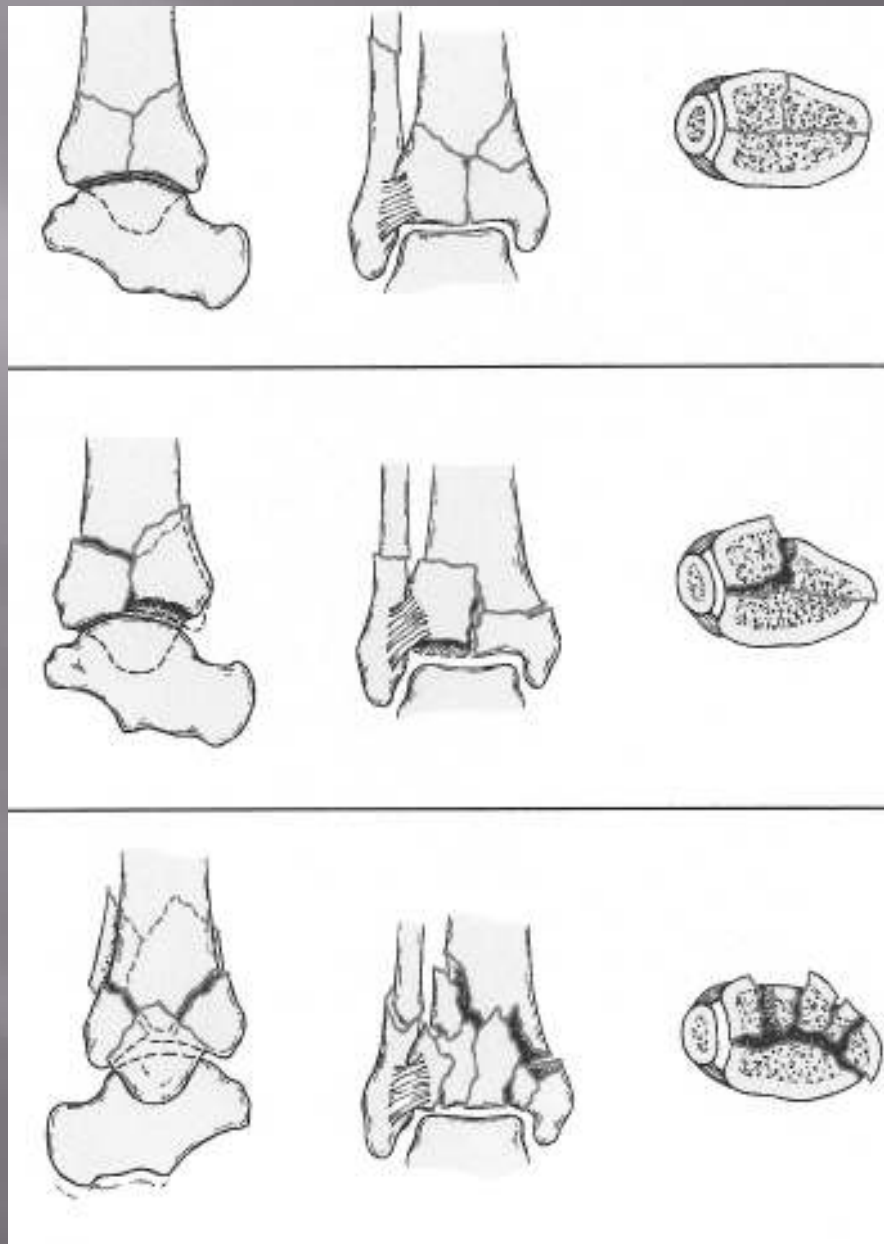


# DISTAL RADIAL FRACTURES

L.R.Irwin



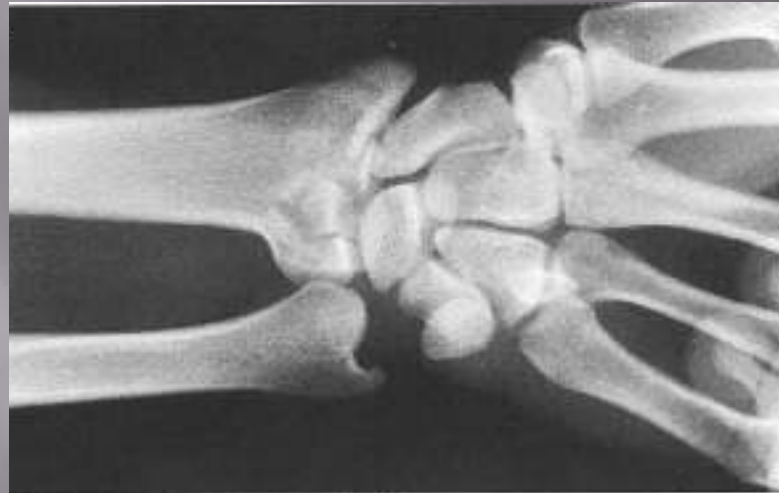
L.R.Irwin



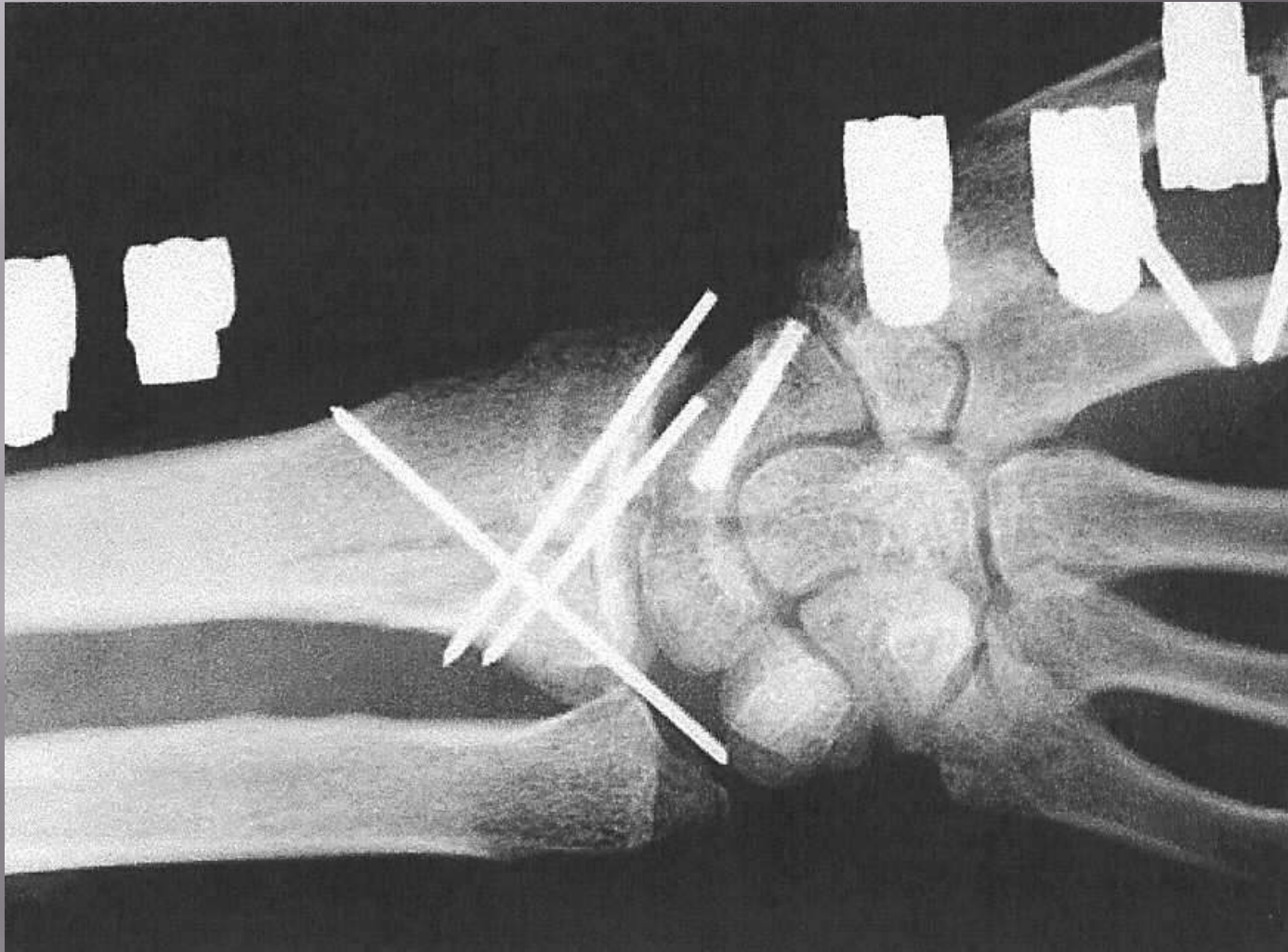




L.R.Irwin



L.R.Irwin







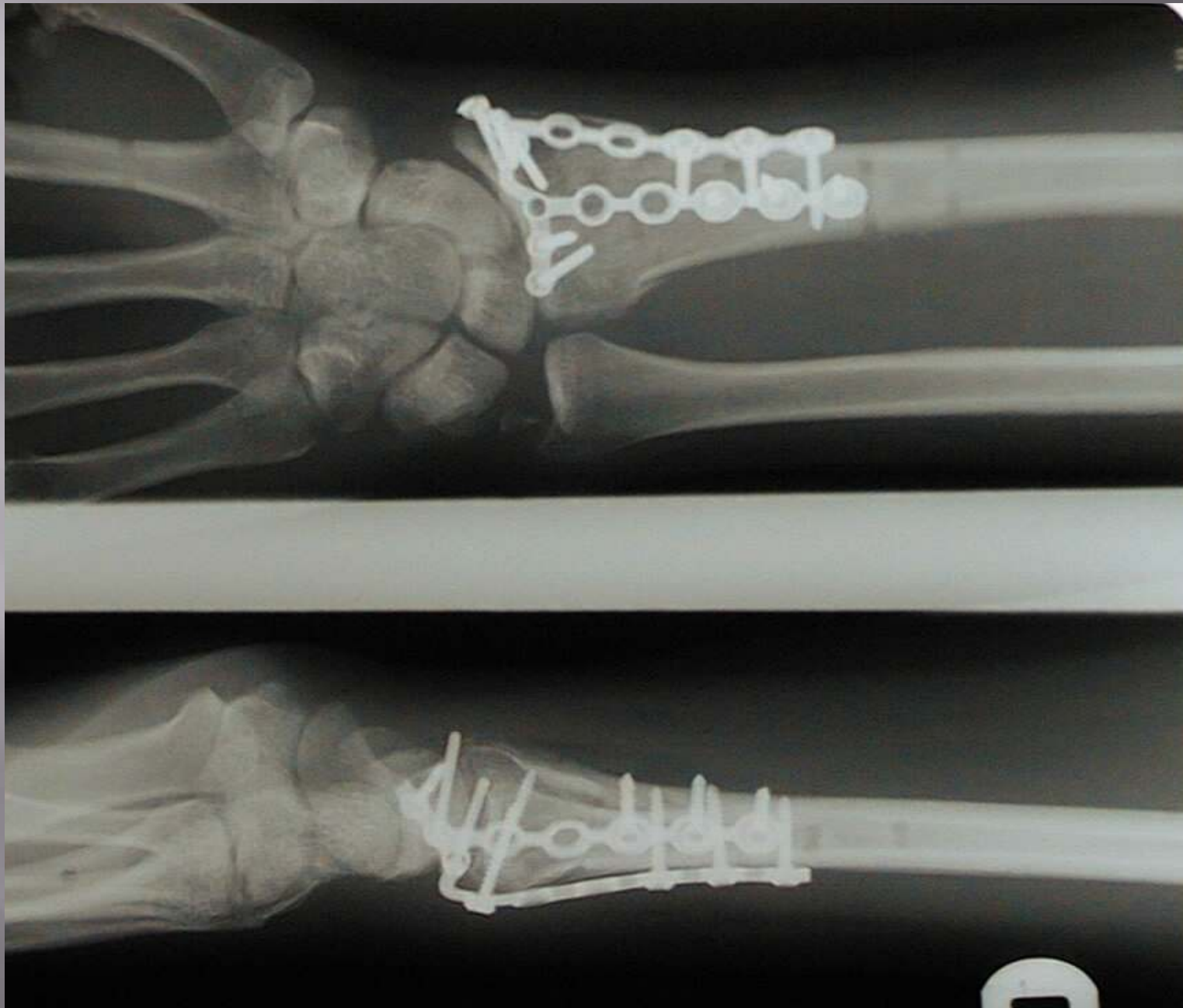








L.R.Irwin



L.R.Irwin





# Pay Attention To Detail!





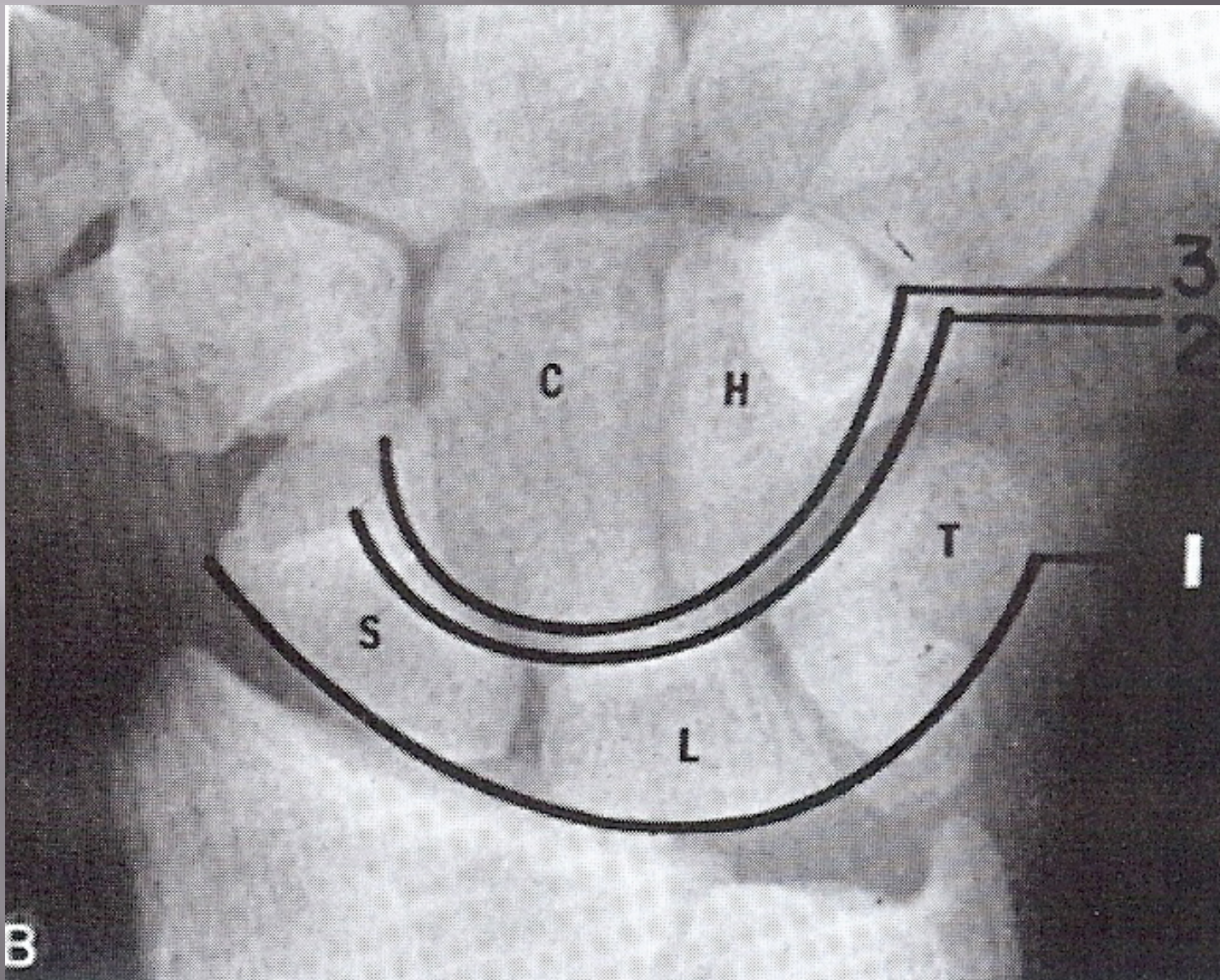
# Rheumatoid



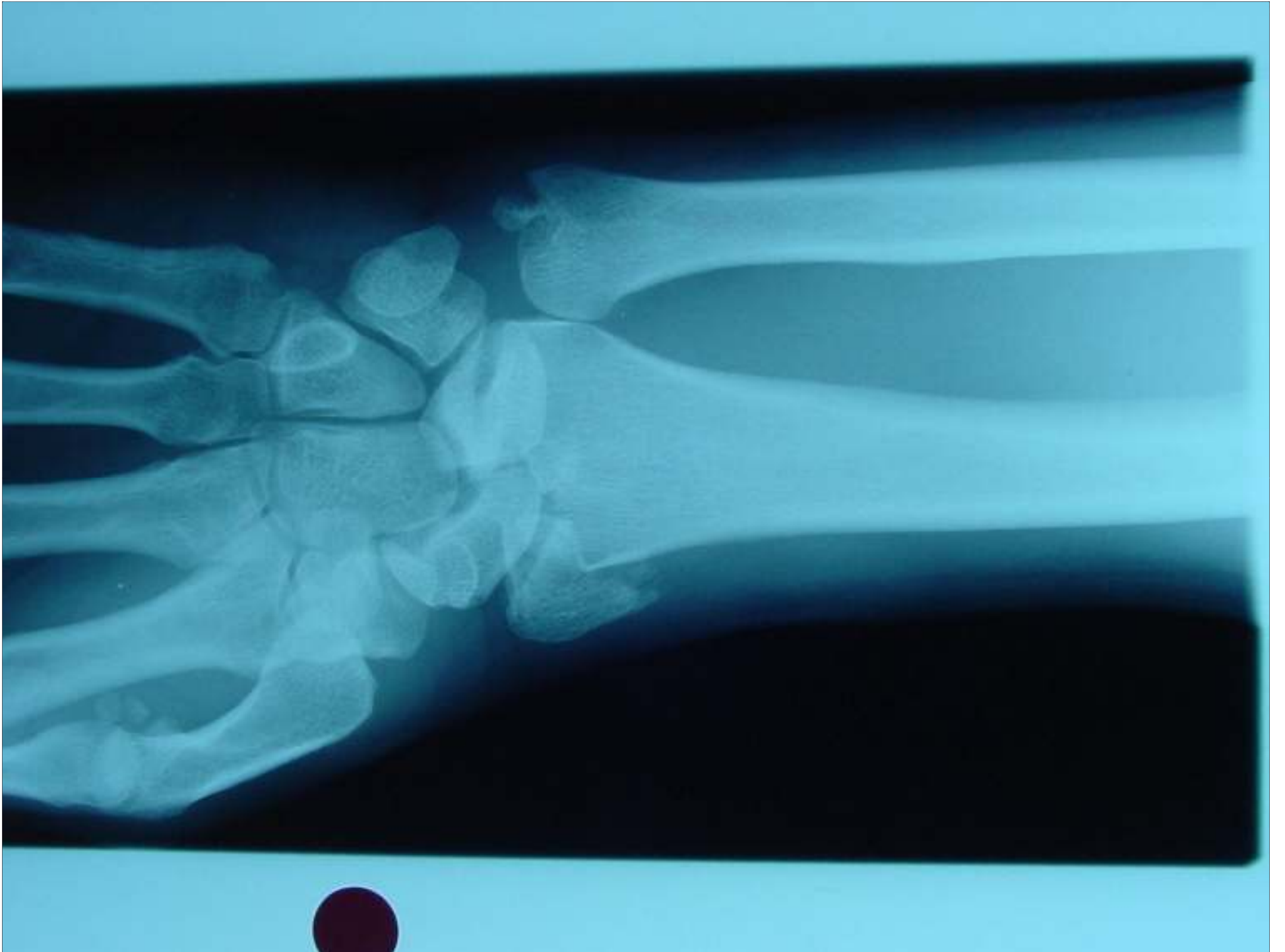


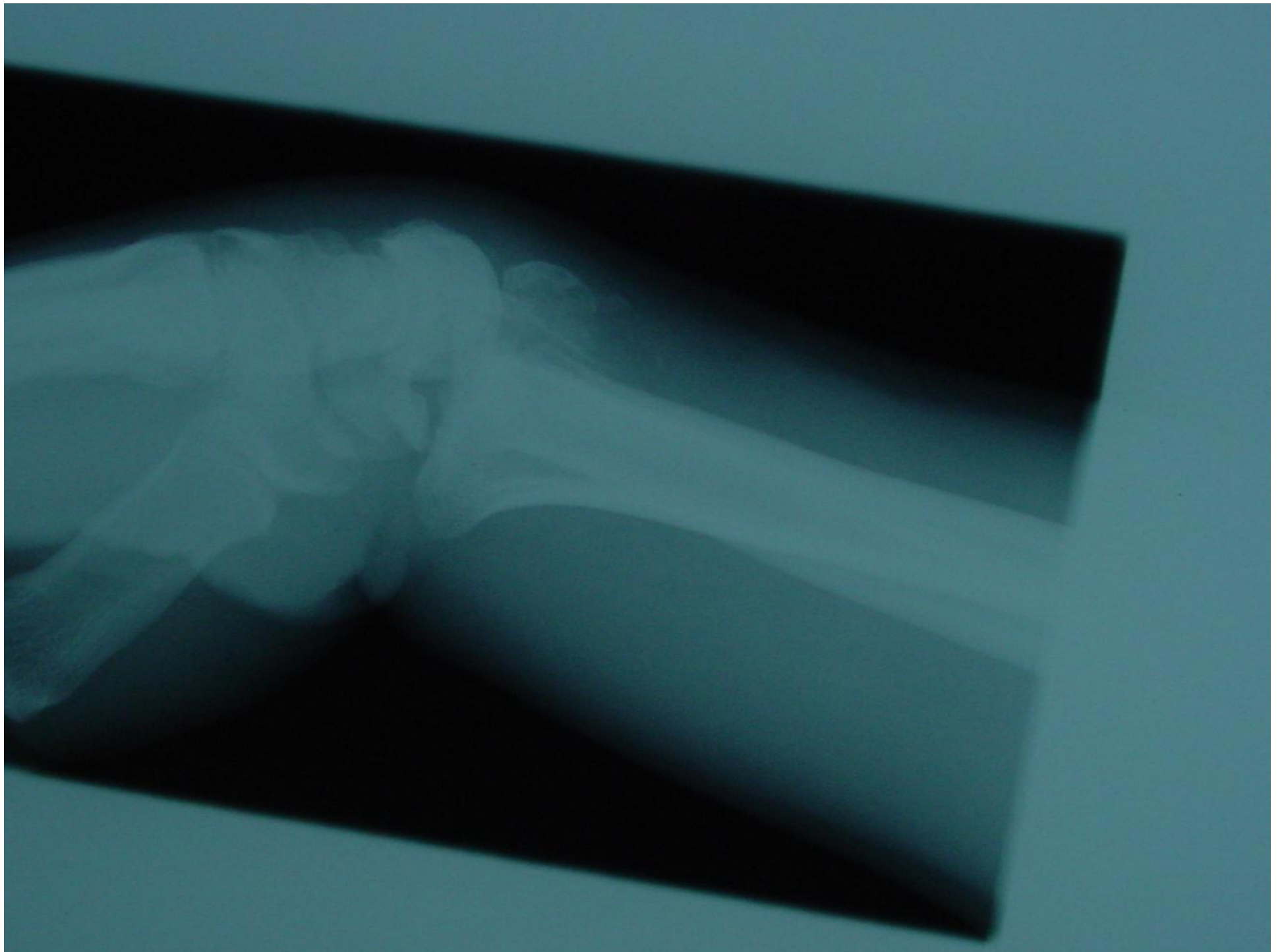
# Rheumatoid









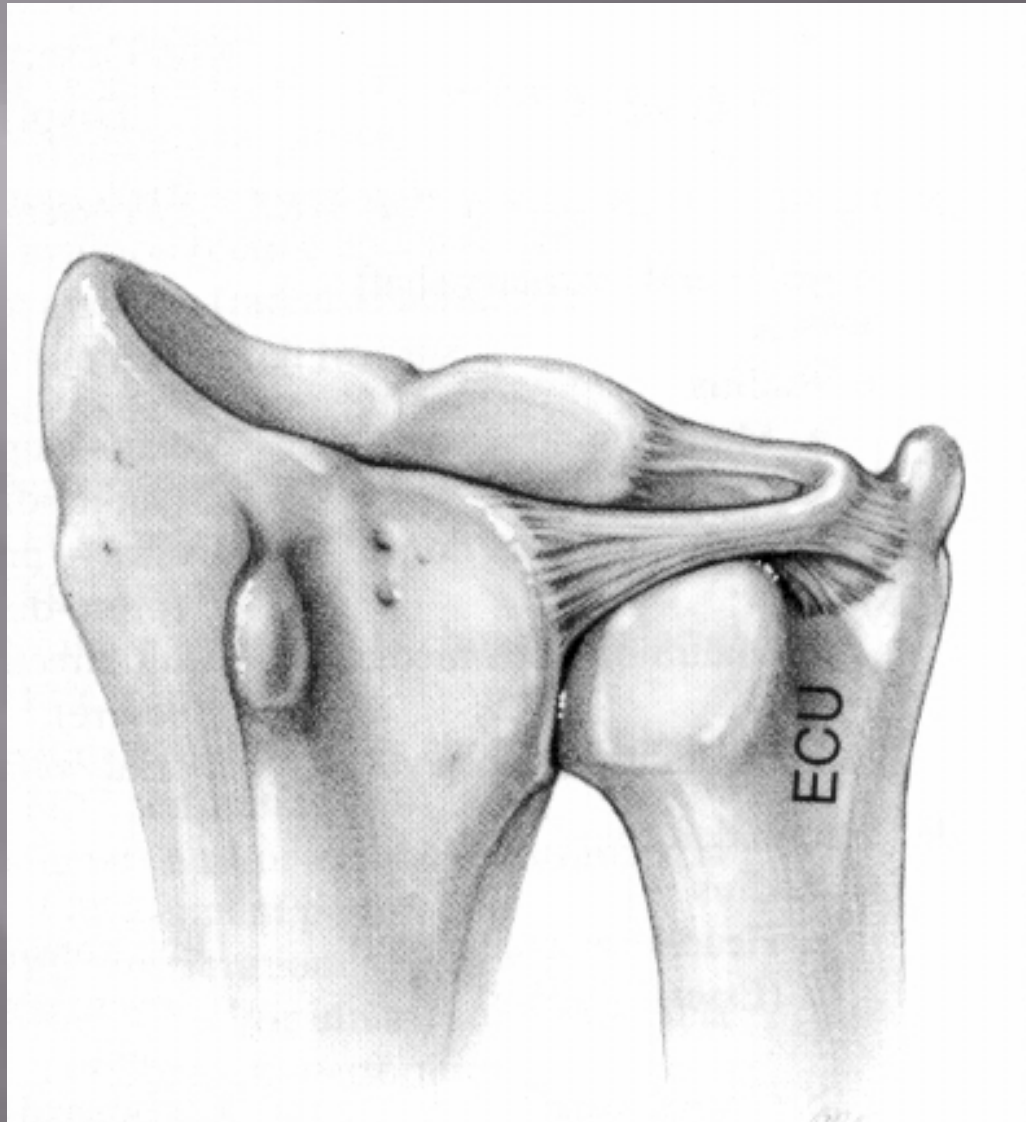


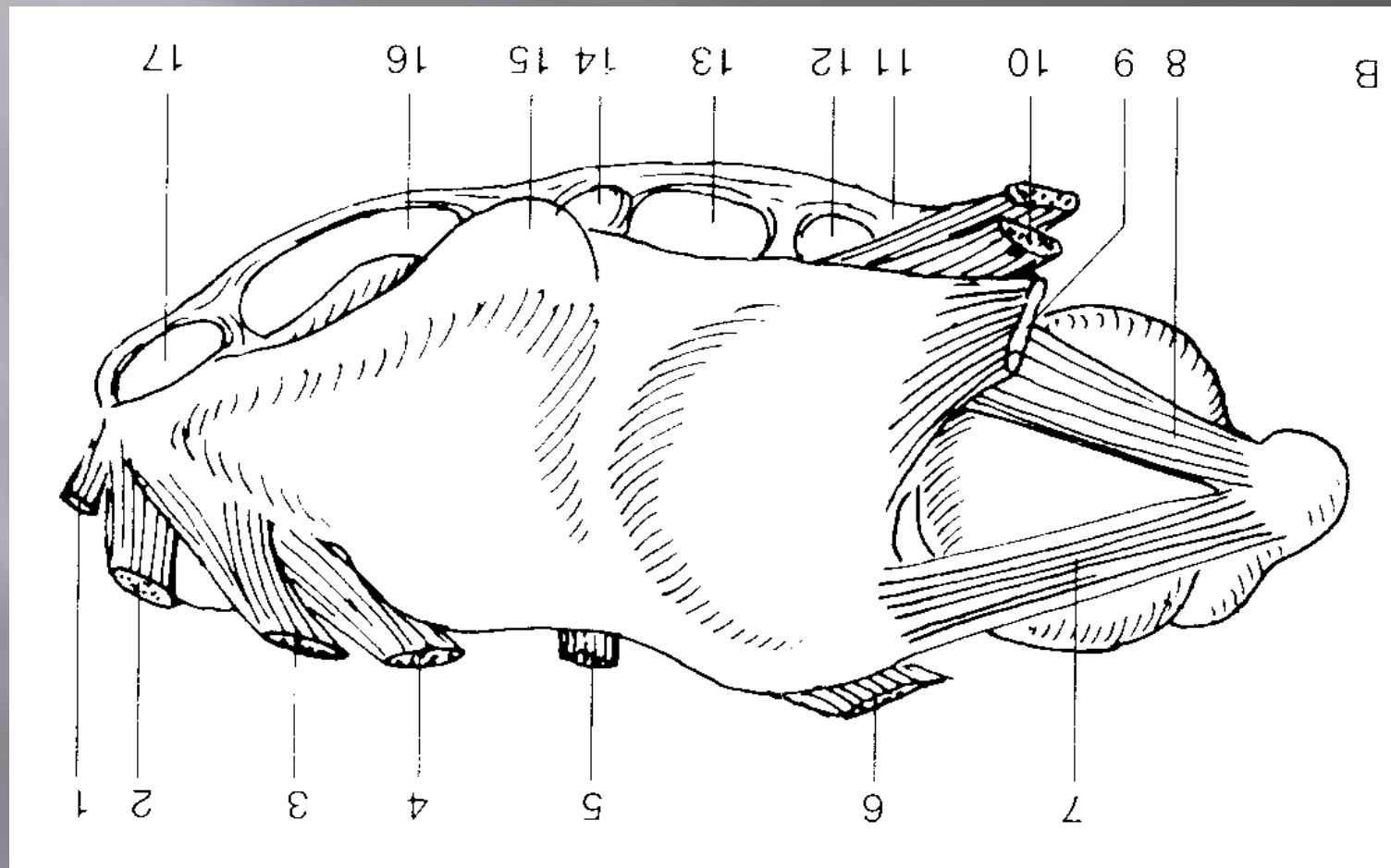
# THE DISTAL RADIO-ULNAR JOINT

The Triangular Fibro-  
Cartilage Complex

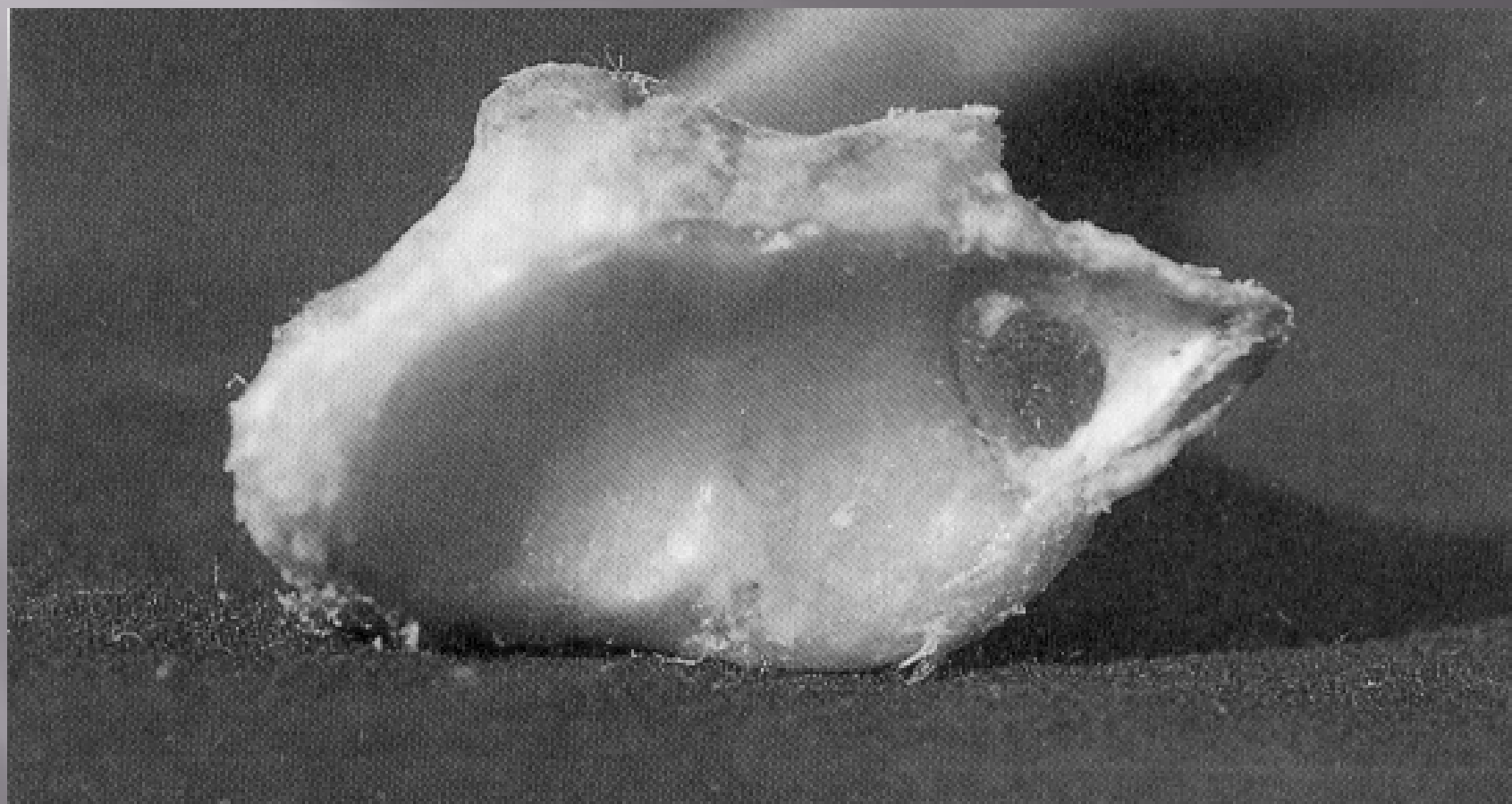
# Anatomy

- ▣ Hammock arrangement
- ▣ Sentries front and back



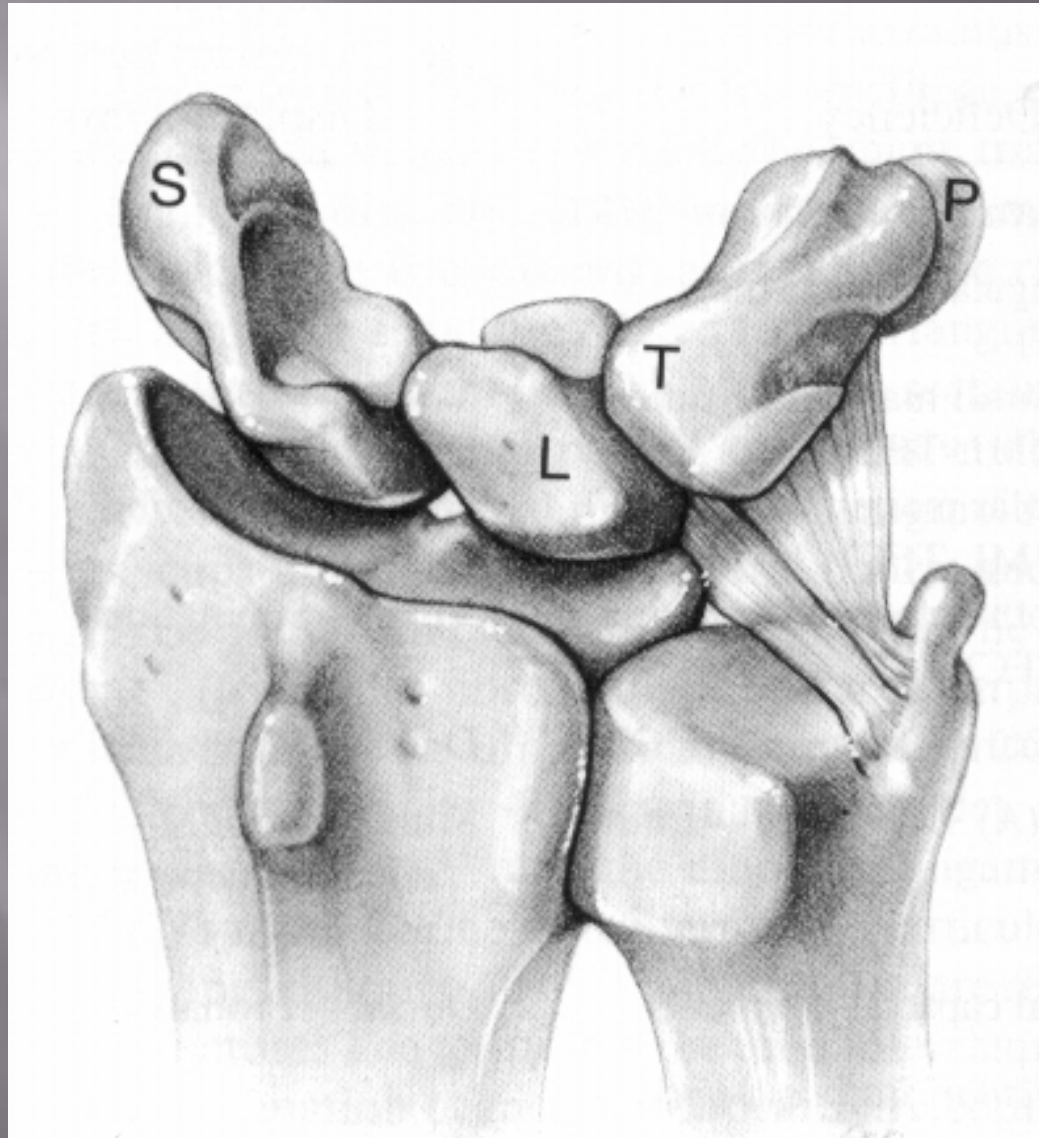


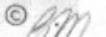




27/11/06

L.R.Irwin







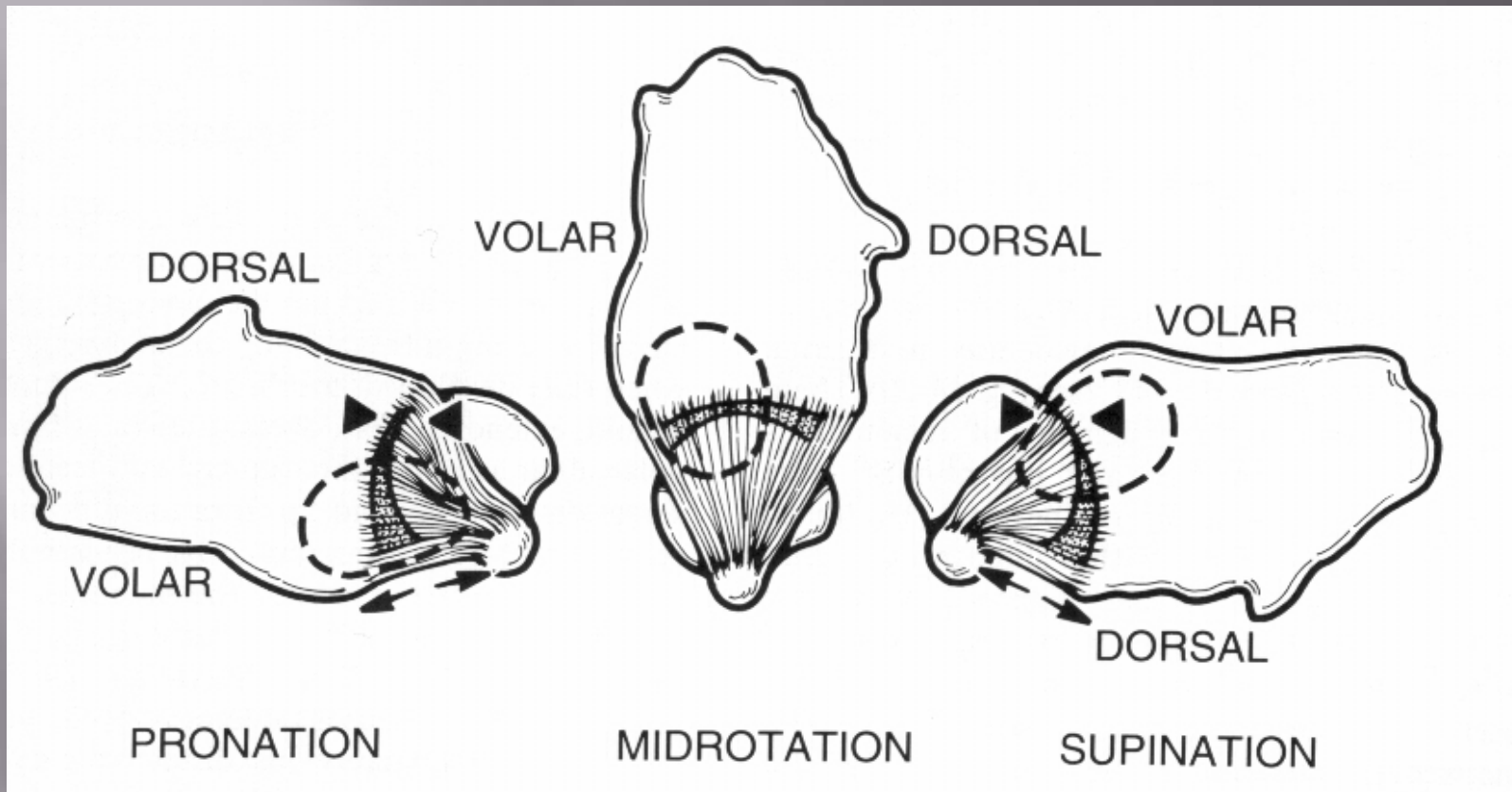
27/11/06

L.R.Irwin

# Movements

- ▣ Rotation about a fixed axis
- ▣ Prono-supination
- ▣ Minimal translation



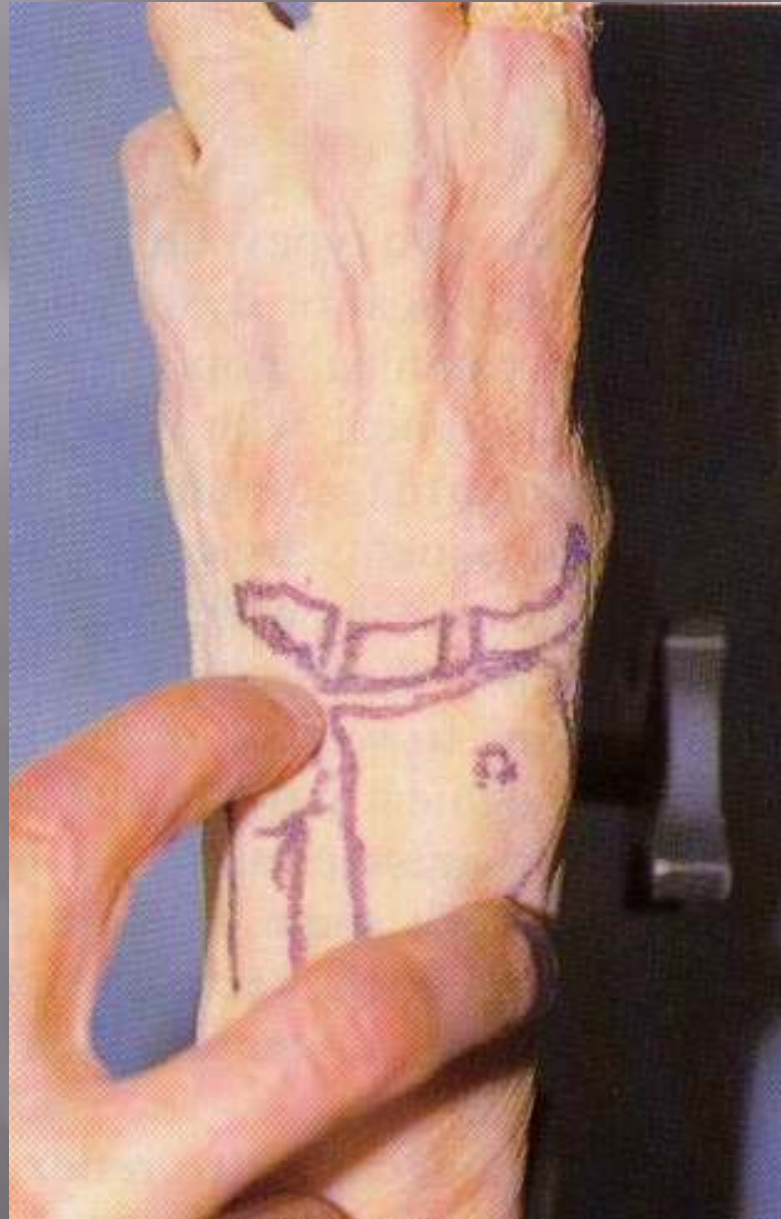


# Examination

- ▣ Arm wrestling position
- ▣ Meticulous exam of each bone & joint
- ▣ Stress tests & manoeuvres

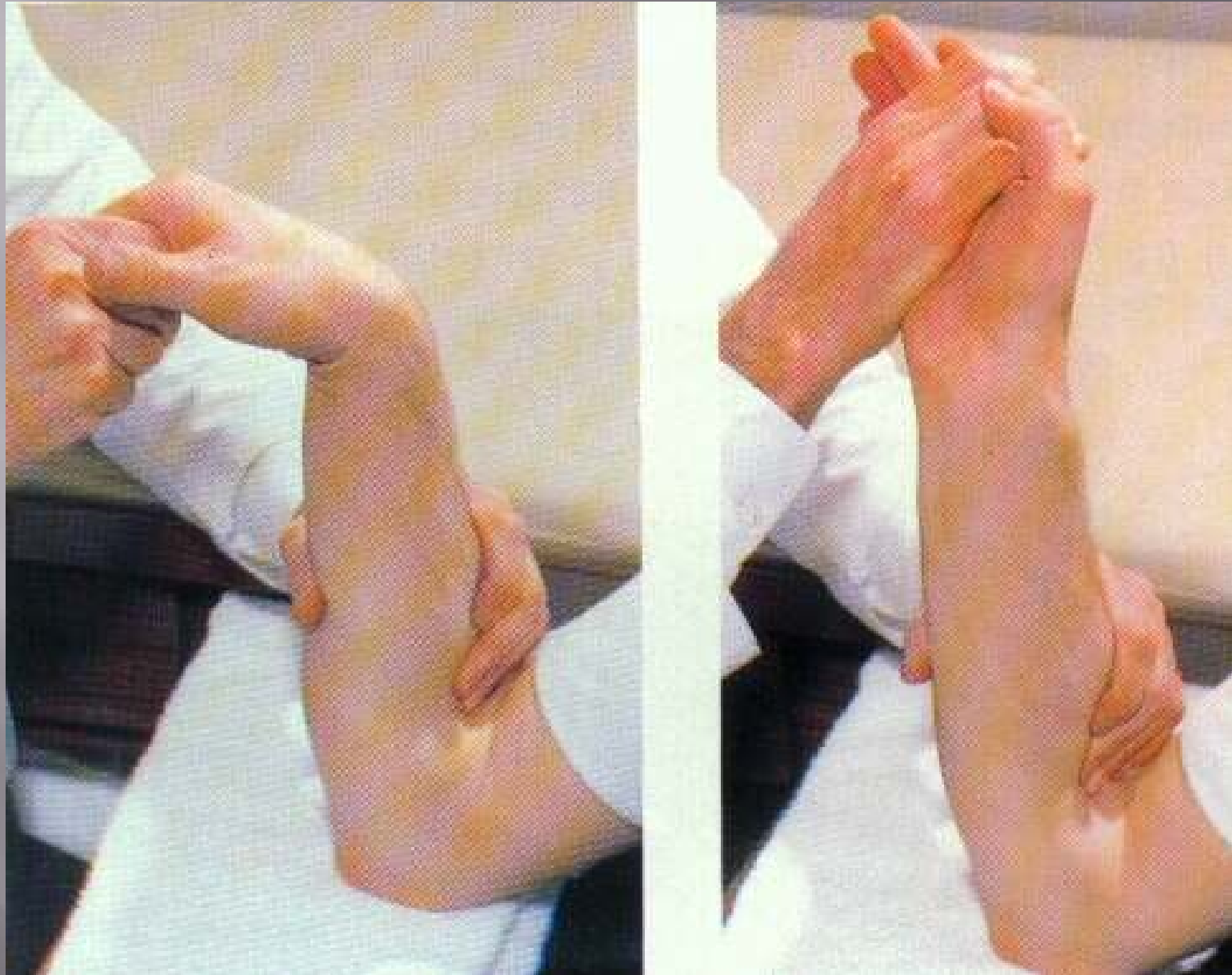






27/11/06

L.R.Irwin



27/11/06

L.R.Irwin



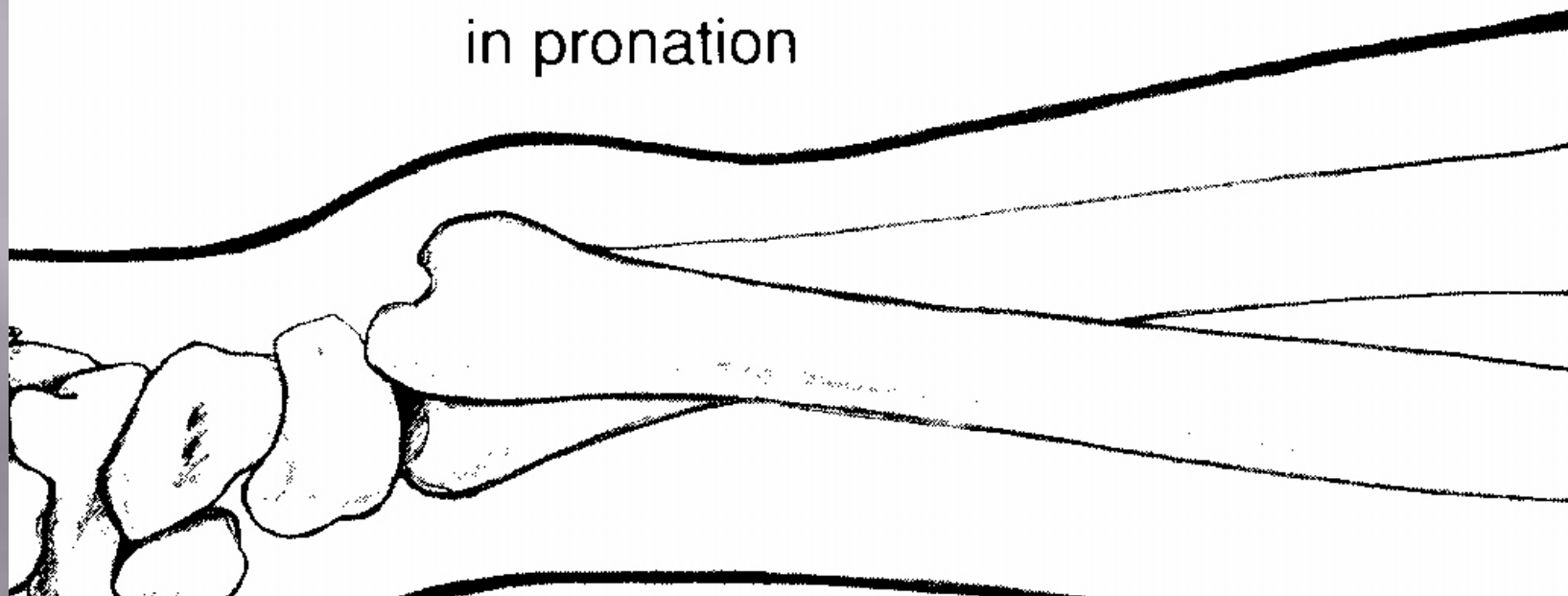
27/11/06

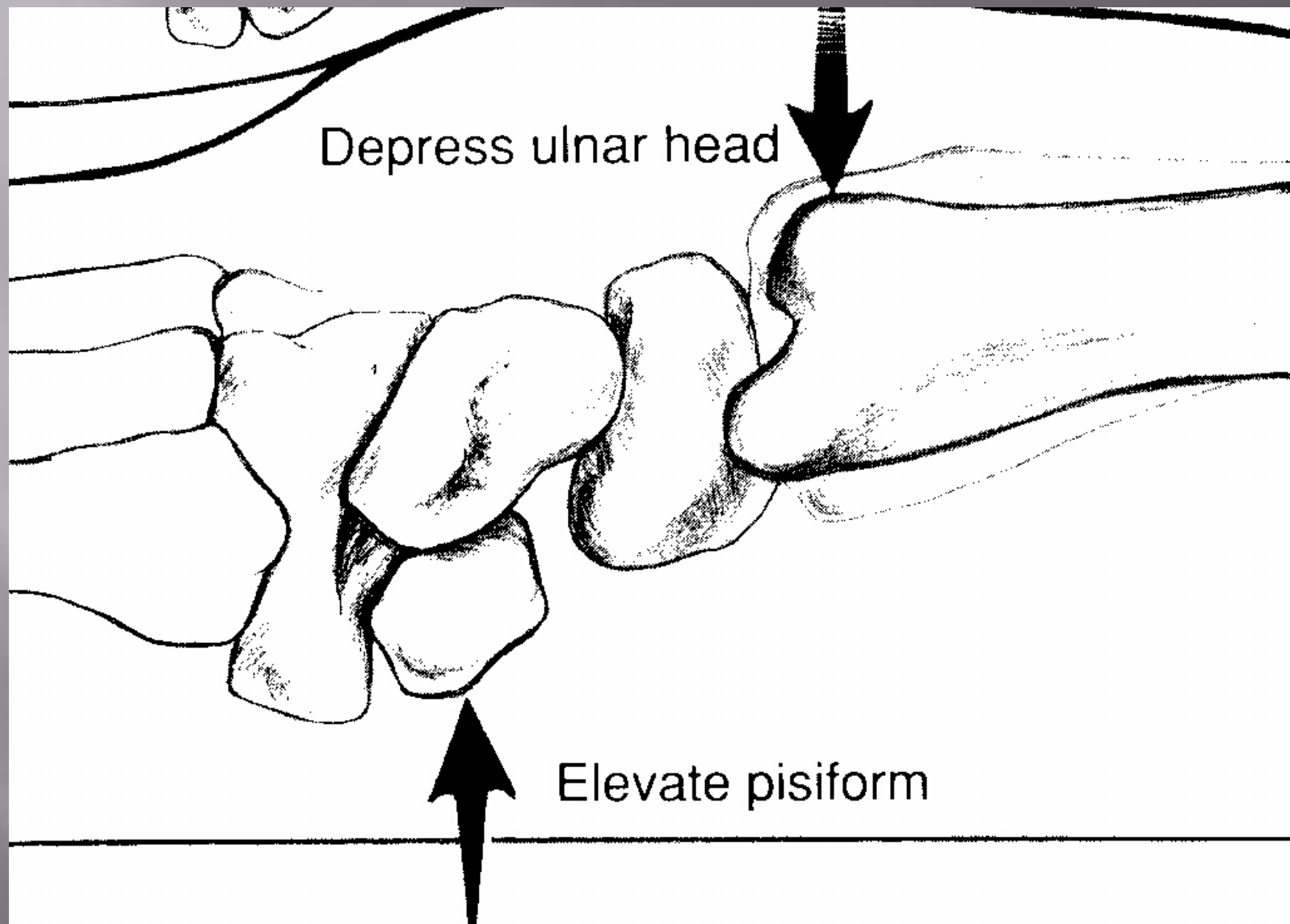
L.R.Irwin

# Examination

- ▣ Pain at joint (volar or dorsal)
- ▣ Worse on stress
- ▣ Worse in pronation
- ▣ Piano key sign

Elevated ulnar head  
in pronation









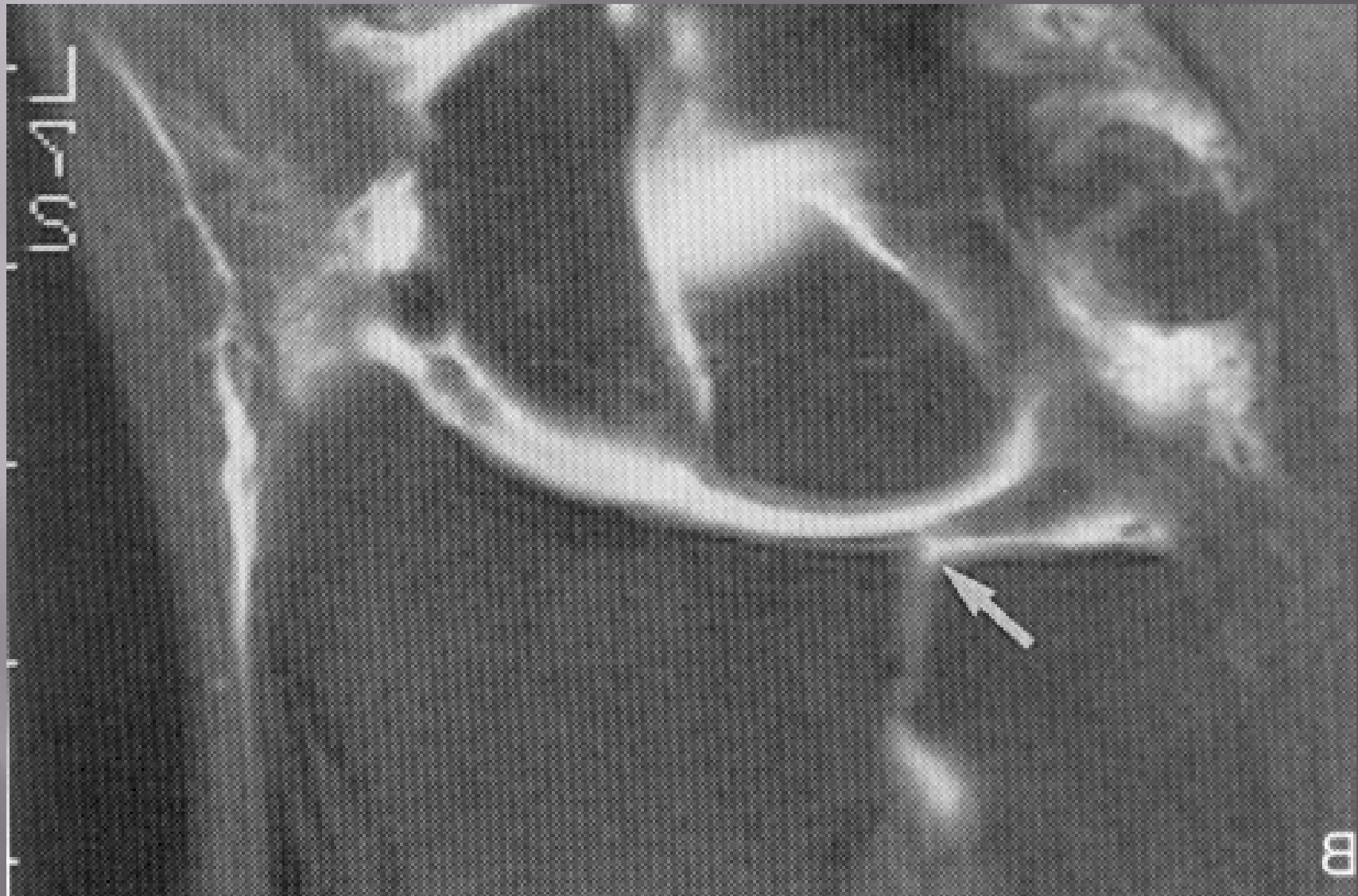
27/11/06

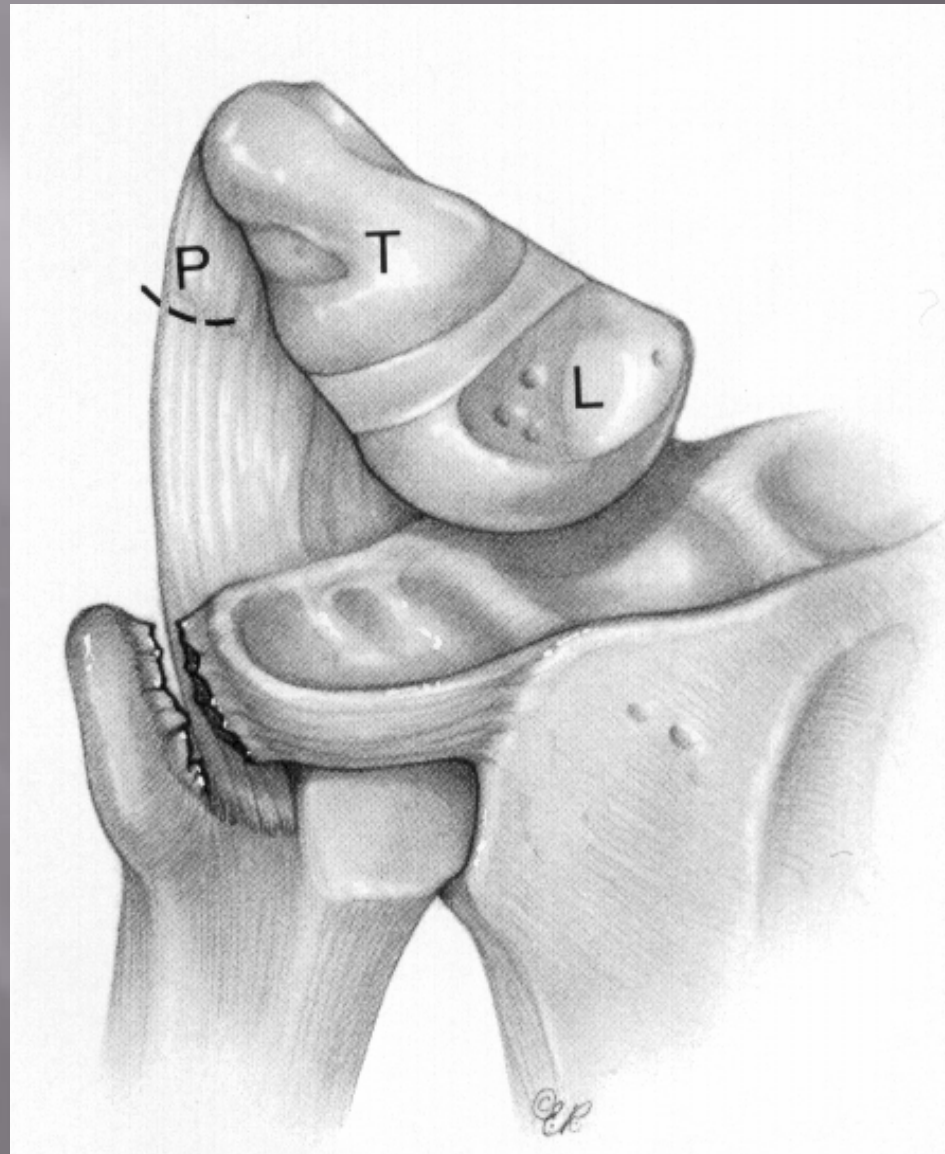
L.R.Irwin

# Imaging

- ▣ Plain radiology for fracture, ulnar plus/minus, degenerative joints
- ▣ Arthrography/CT arthrography
- ▣ MRI





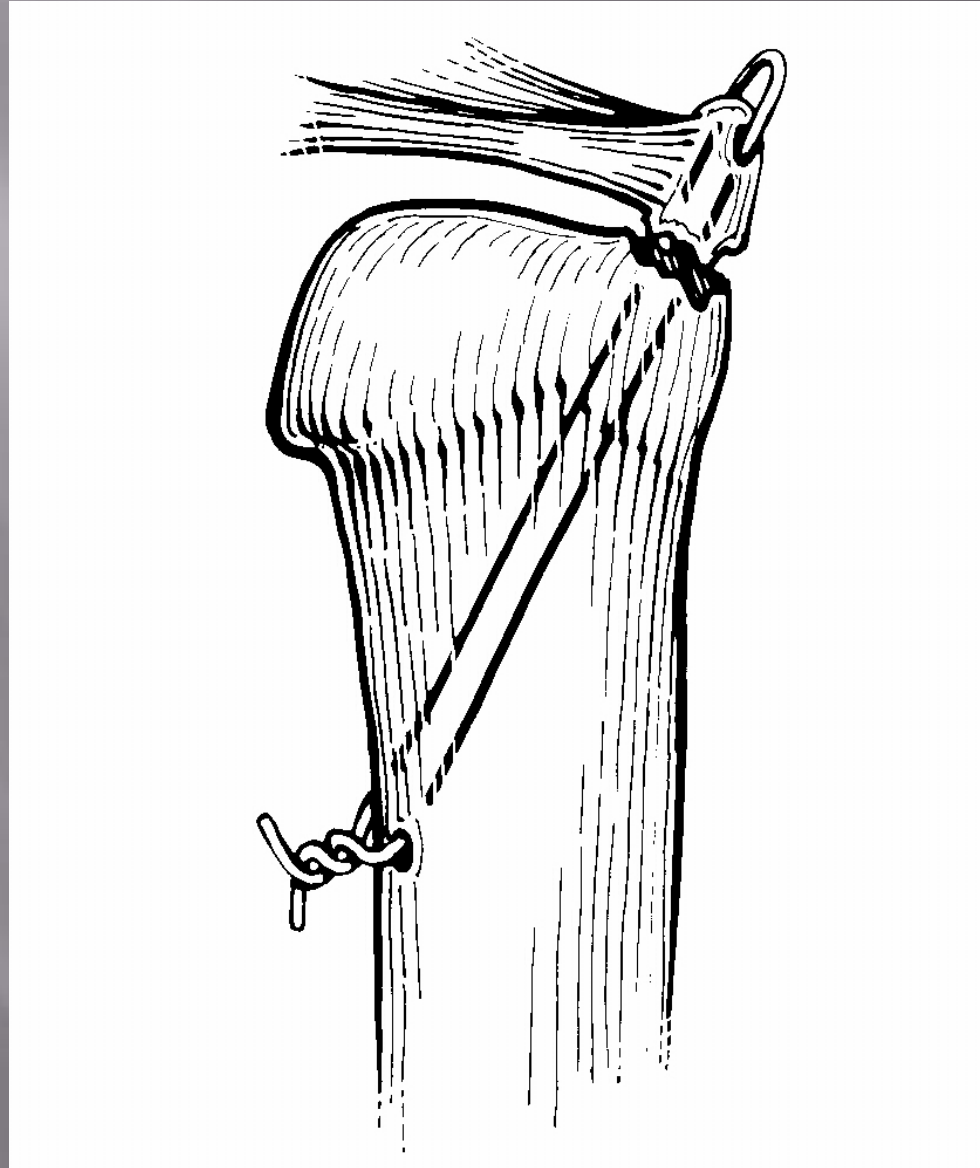


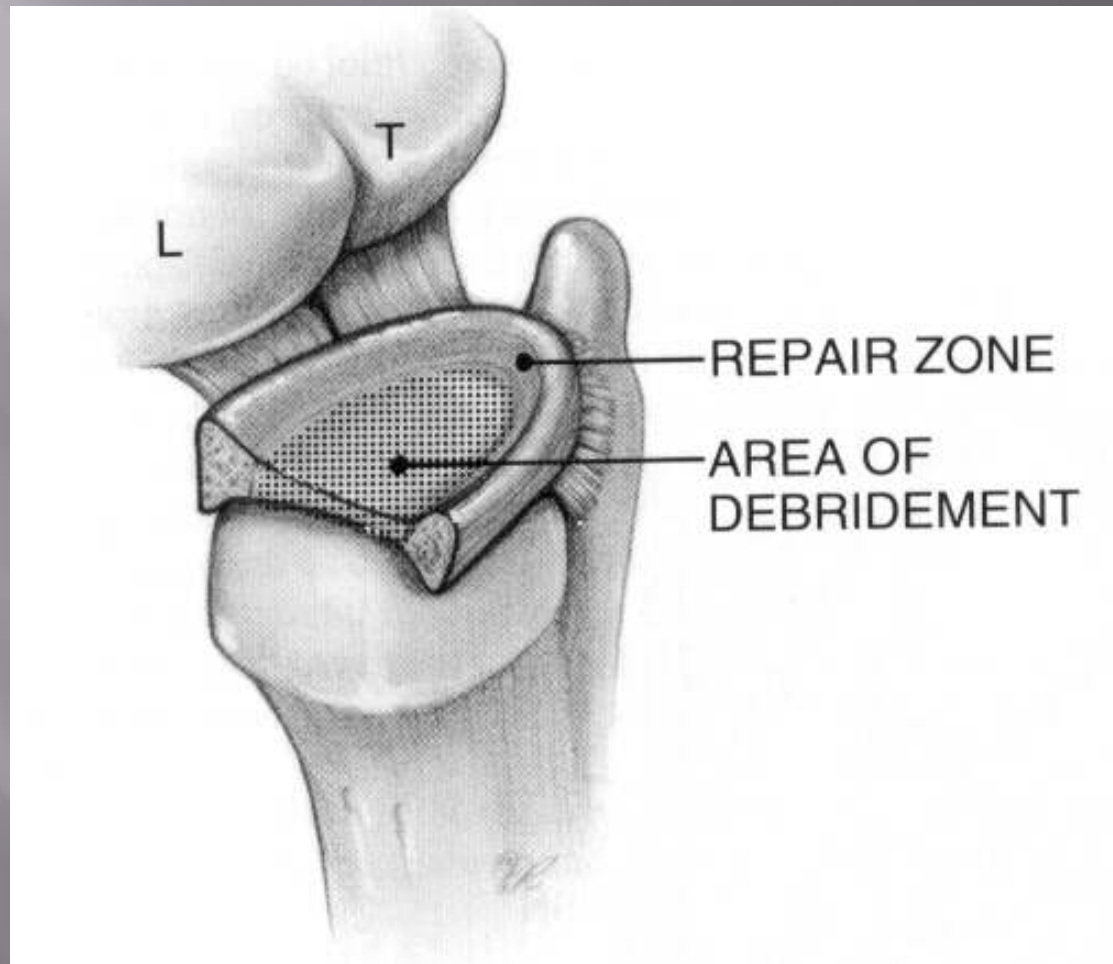


27/11/06

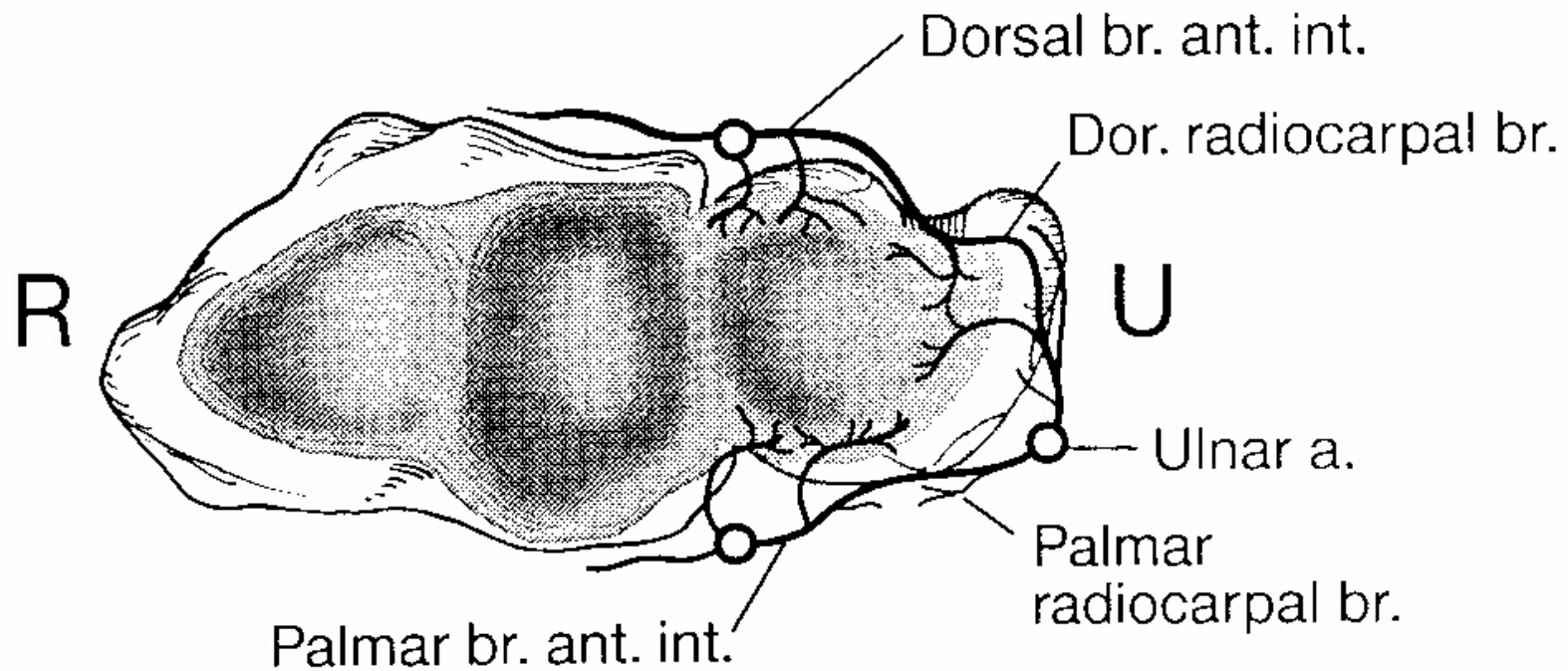
L.R.Irwin







# Vascularity

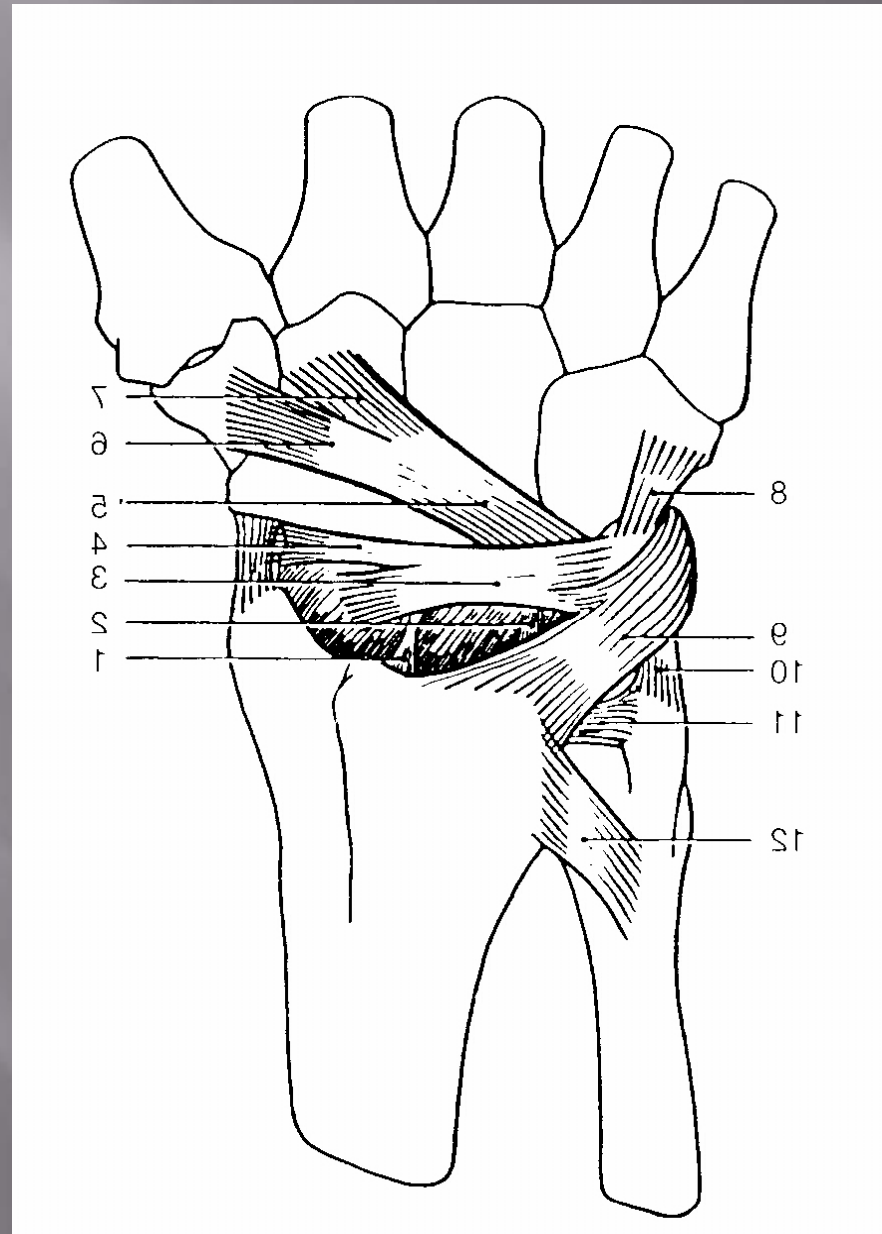


# CARPAL INSTABILITY

With subtitles for the hard of thinking

# Drivel

- ▣ Scapholunate angles
- ▣ Carpal height ratios
- ▣ Column theories
- ▣ Your boss understands the wrist





# Carpal Instability

- ▣ Usually clear injury to wrist
- ▣ May appear after e.g. radial or scaphoid fracture
- ▣ Wrist pain
- ▣ Weakness
- ▣ Worse with stress manoeuvres

# Carpal Instability

- ▣ Diagnosis
  - Clinical
  - X-rays
  - Stress series - e.g. Stanley series
  - Dynamic studies - videofluoroscopy
  - Clever tests - MRI, CT arthrography
  - Rarely arthroscopy

## DISI and VISI

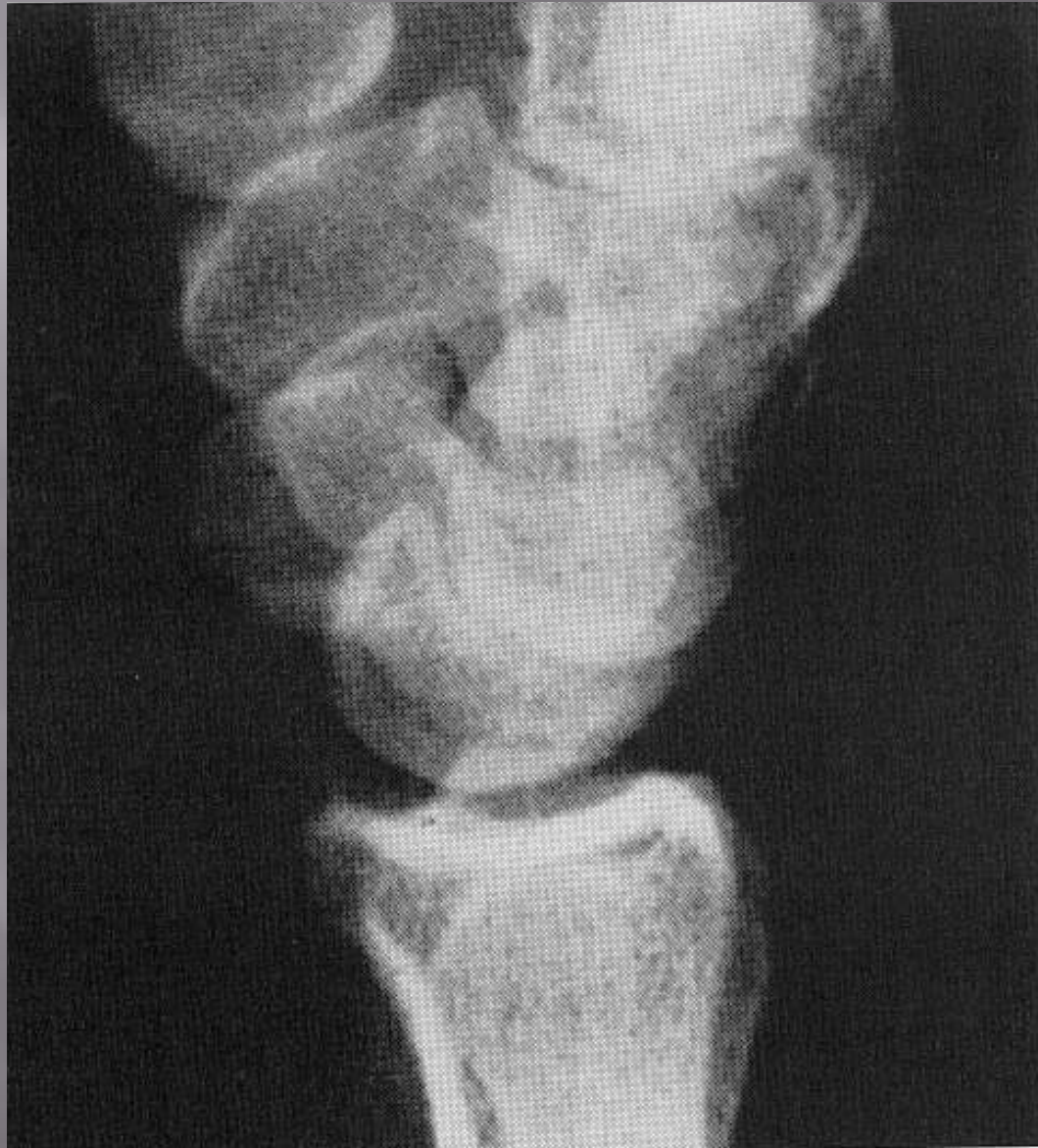
The intercalated  
segment IS THE  
LUNATE

# DISI and VISI

DISI

= dorsal lunate instability

= dorsal tilt on the lunate



27/11/06

L.R.Irwin

# DISI and VISI

VISI

= volar lunate instability

= volar tilt on the lunate





27/11/06

L.R.Irwin

# Carpal Instability

- ▣ Extrinsic or Intrinsic
- ▣ Static or Dynamic
- ▣ Bone, Ligament or Both

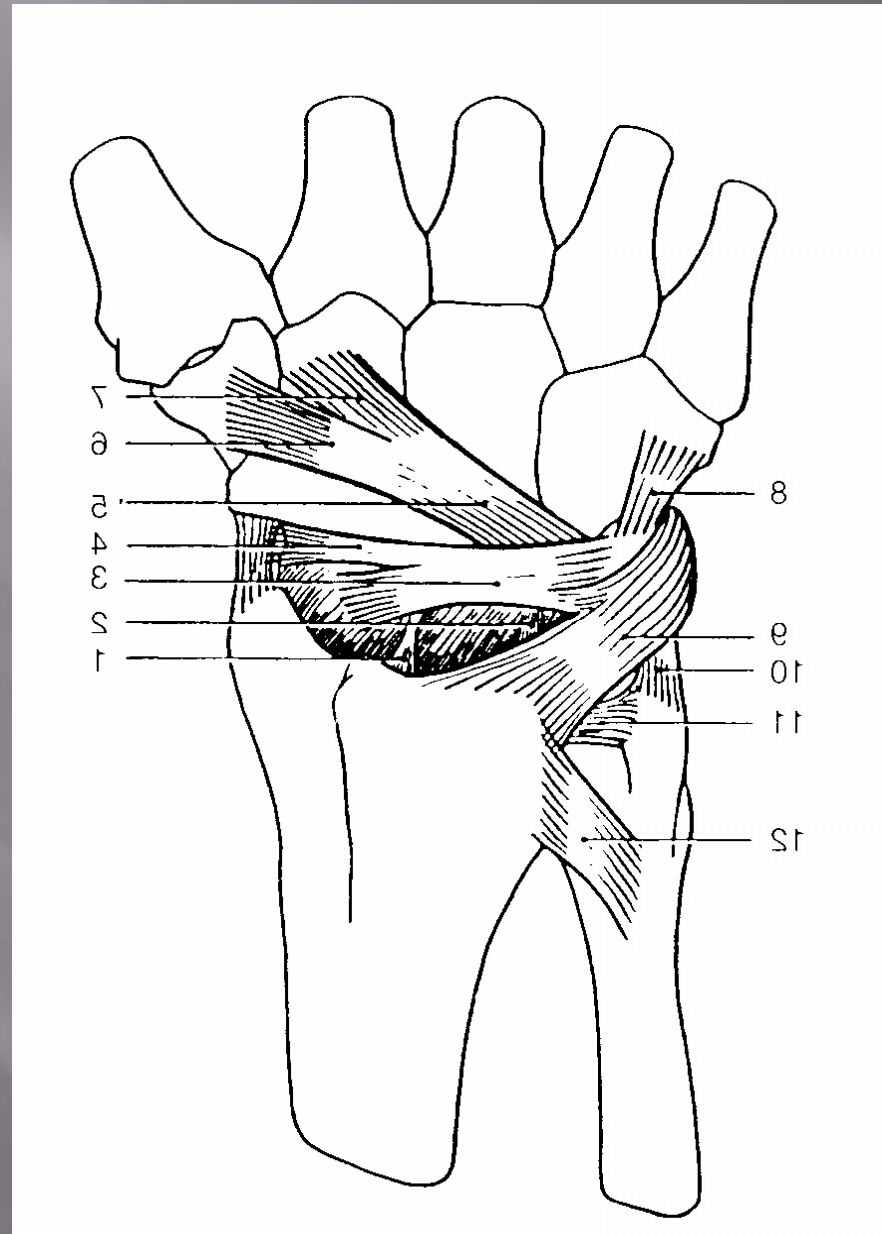
# Static vs. Dynamic

- ▣ Static is visible on plain X-ray
- ▣ Dynamic will only appear under stress views

# Extrinsic vs. Intrinsic

## Extrinsic

- ▣ Radial fracture
  - Colles → dorsal angulation → `de-tension`  
LRL → VISI deformity
- ▣ Radial head fracture / forearm fracture / Essex-Lopresti
  - Interosseous membrane / DRUJ instability





27/11/06

L.R.Irwin





27/11/06

L.R.Irwin

# Extrinsic vs. Intrinsic

## Intrinsic

- ▣ Scaphoid fracture
- ▣ Intrinsic ligament injury
- ▣ Combination injury



27/11/06

L.R.Irwin



27/11/06

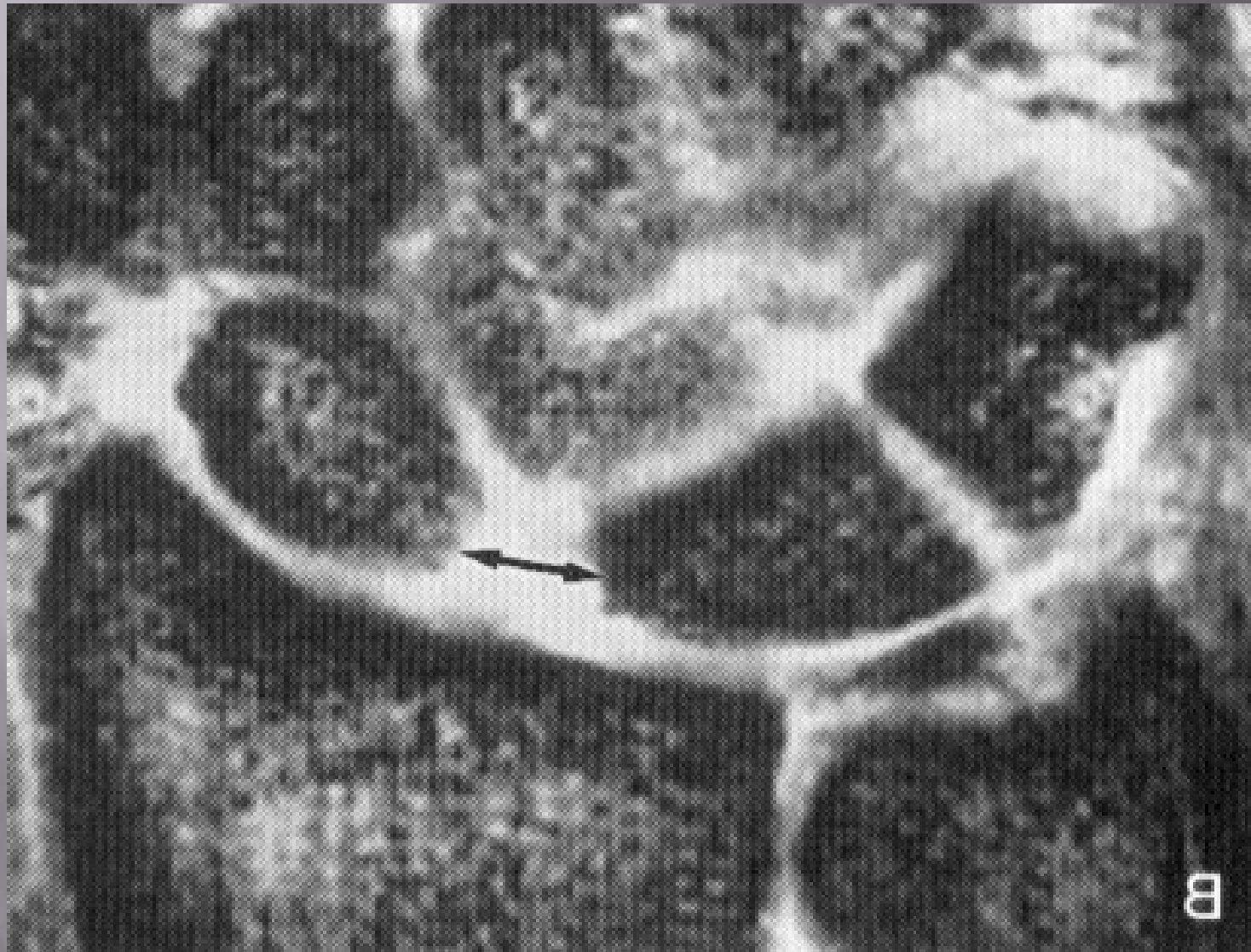
L.R.Irwin

# Carpal Instability

- ▣ Radial Side Pain
  - Scapholunate ligament injury
  - STTJ
  - Scaphoid AVN or Preiser's
  - Kienböck's







# Carpal Instability

- ▣ Ulnar Side Pain
  - TFCC tear
  - Lunotriquetral ligament injury
  - Ulnar impaction
  - Pisotriquetral disease

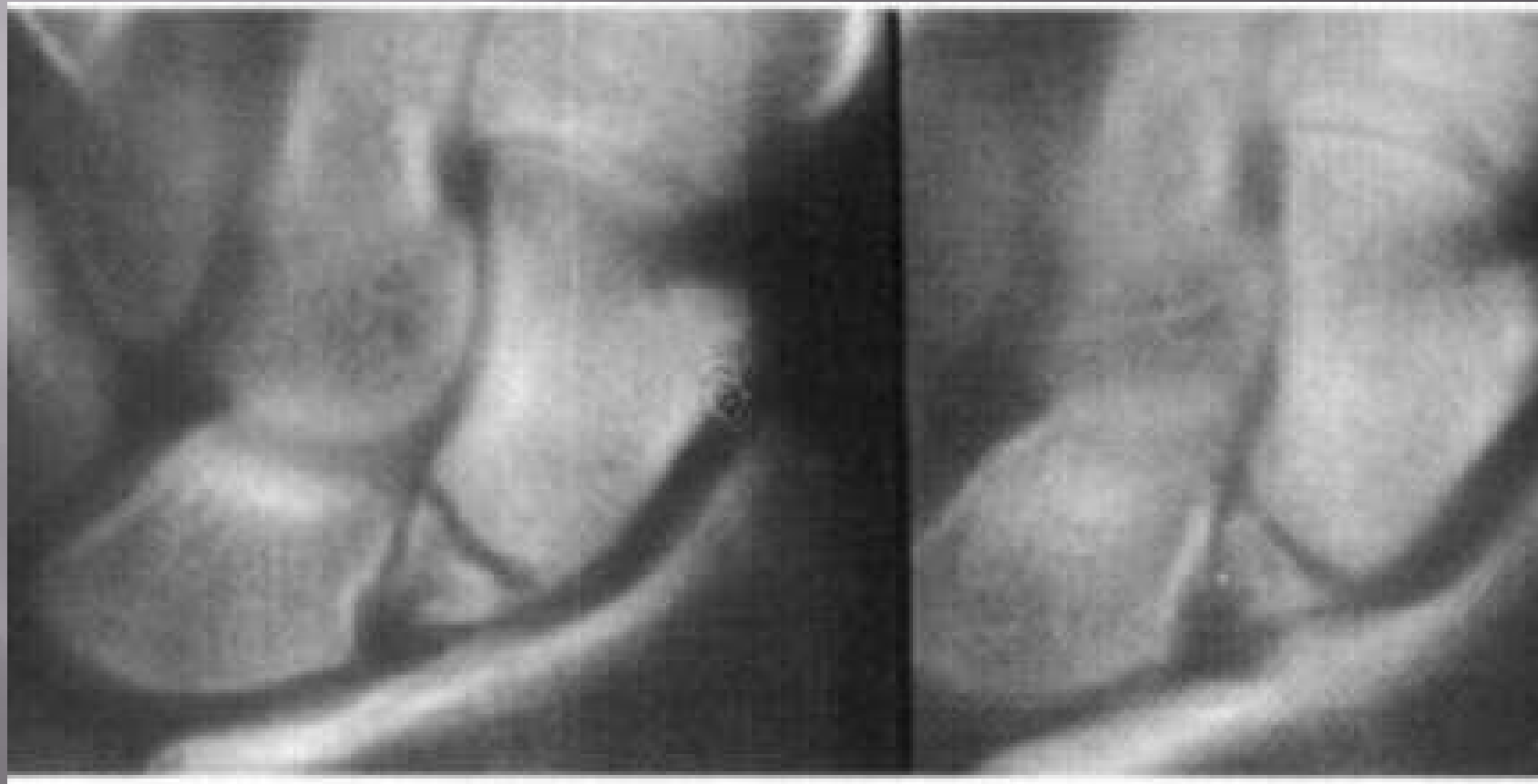
# Salvage

- ▣ AVN with collapse - vascularised graft, resect proximal pole +/- limited fusion
- ▣ SNAC wrist - PRC or scaphoidectomy + 4-corner fusion
- ▣ Advanced SNAC (III+) - wrist fusion

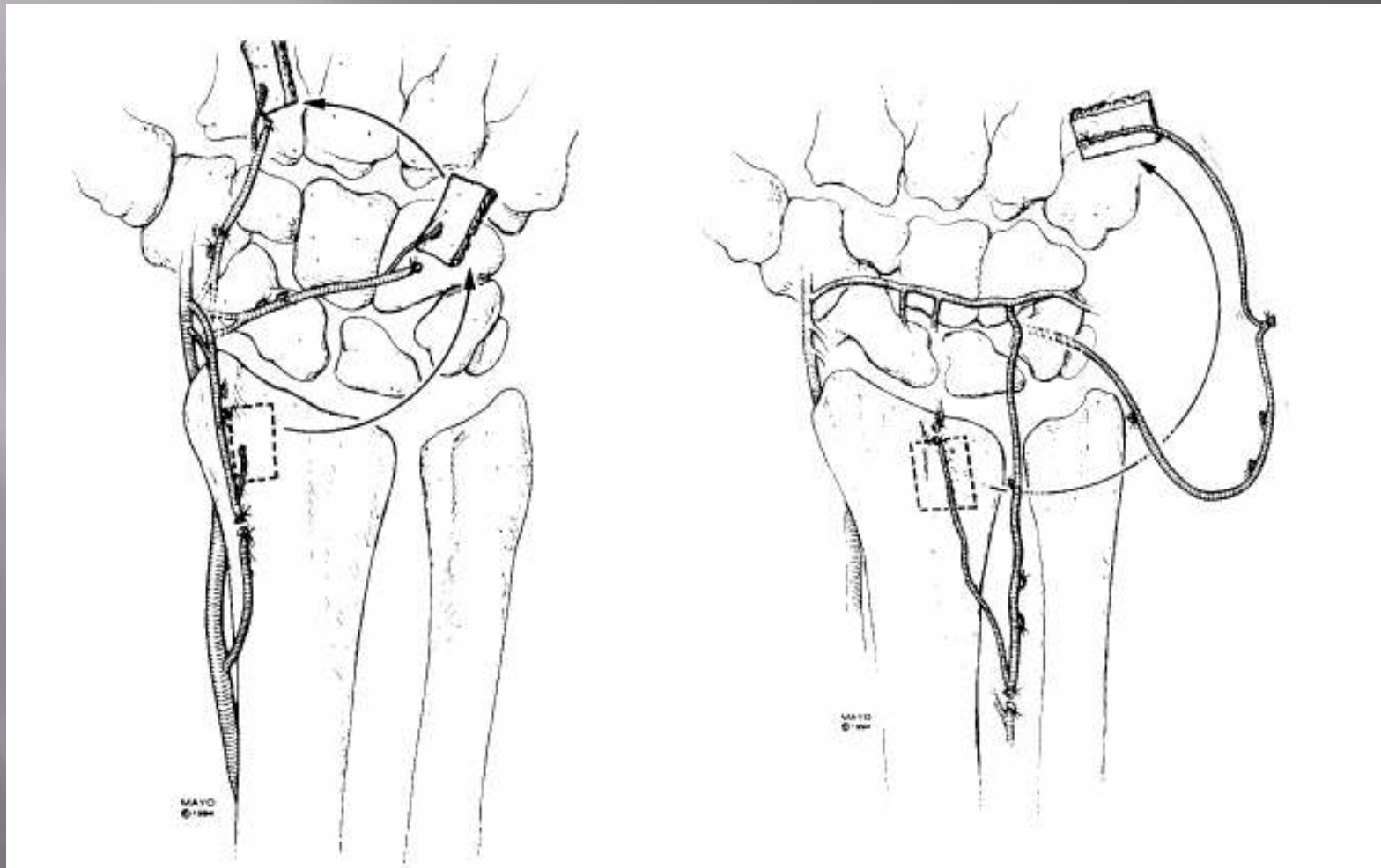




# Vascularised Bone Transfer

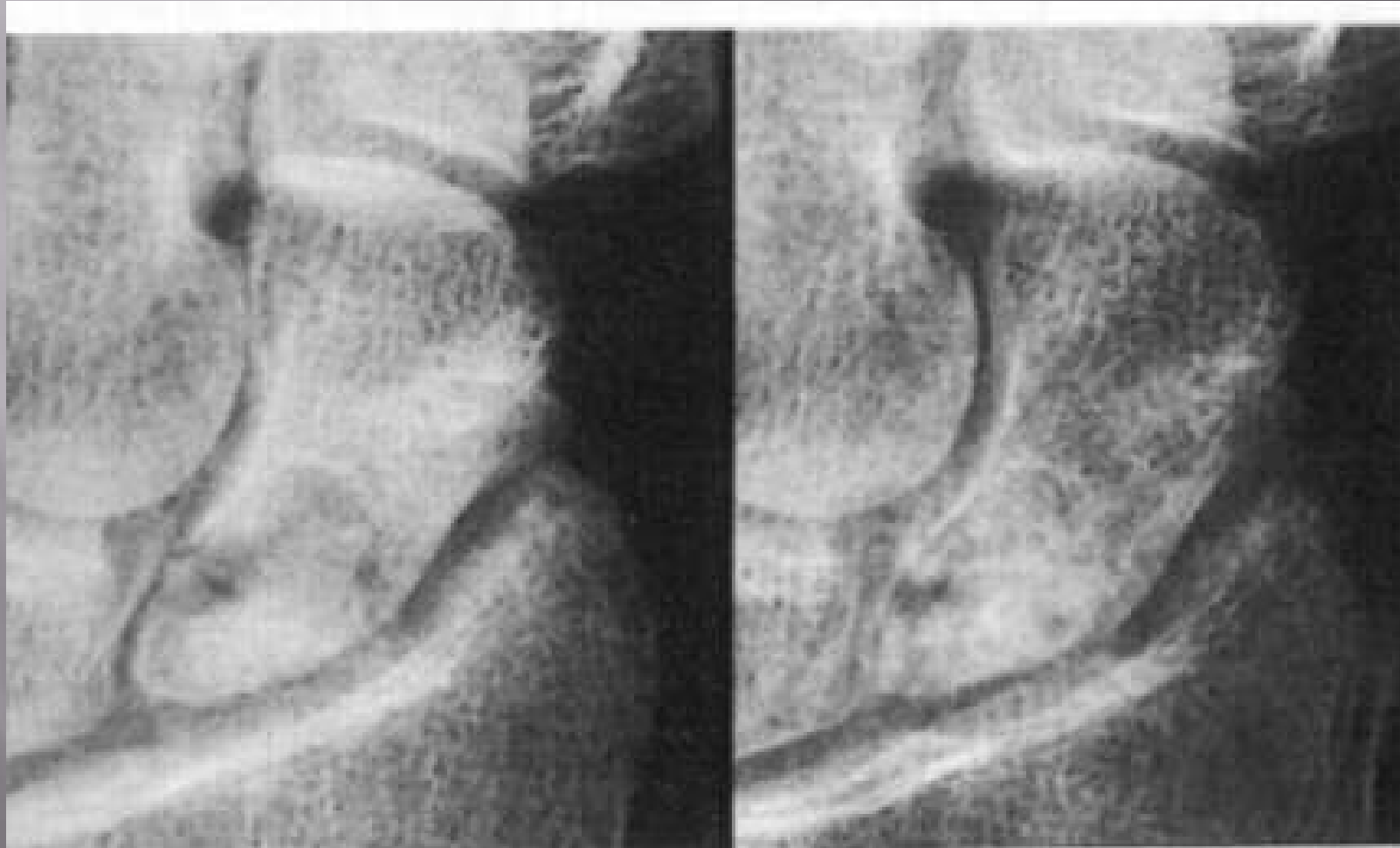


# Vascularised Bone Transfer





# Vascularised Bone Transfer

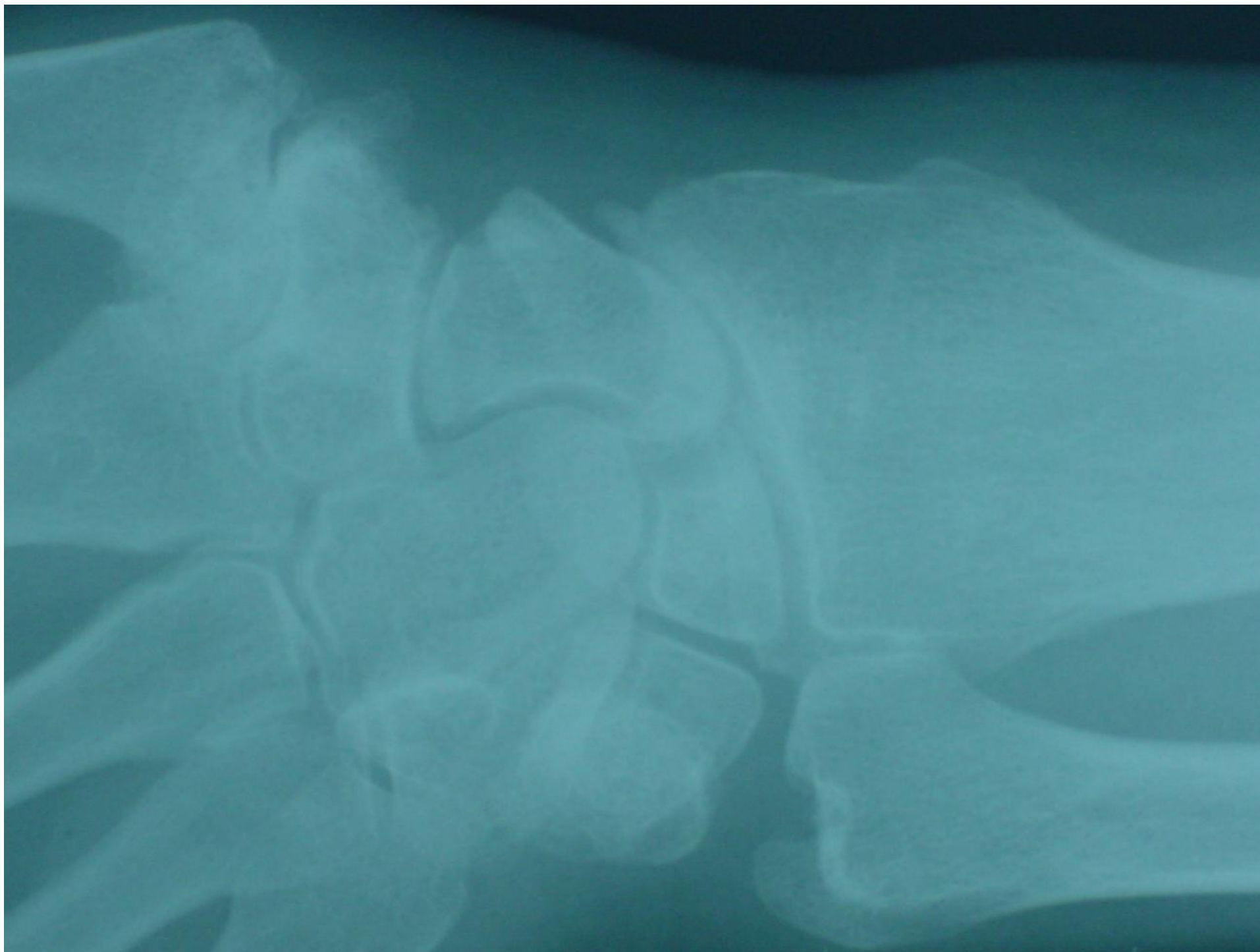


# Vascularised Bone Transfer



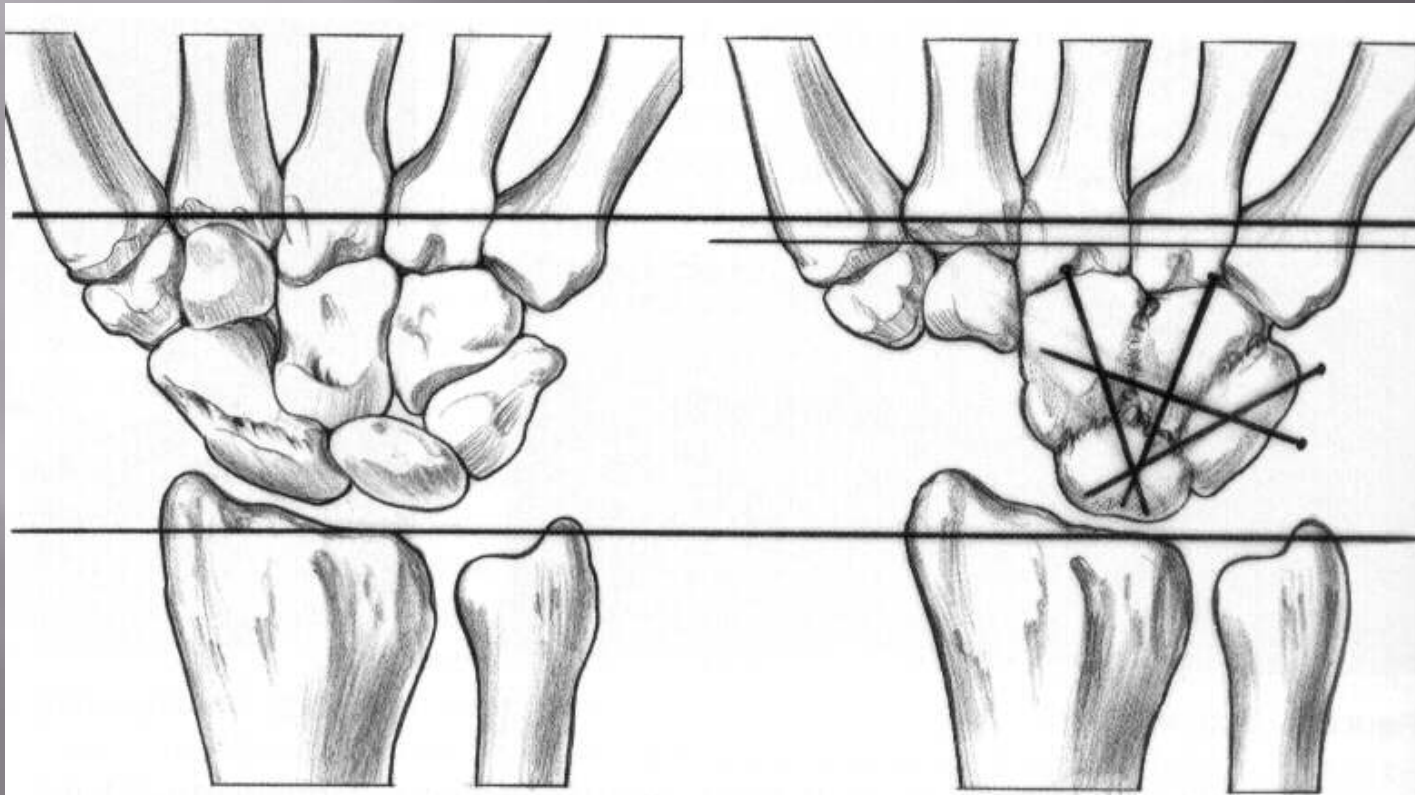
# Salvage

- ▣ AVN with collapse - vascularised graft, resect proximal pole +/- limited fusion
- ▣ SNAC wrist - PRC or scaphoidectomy + 4-corner fusion
- ▣ Advanced SNAC (III+) - wrist fusion





# Limited Fusions



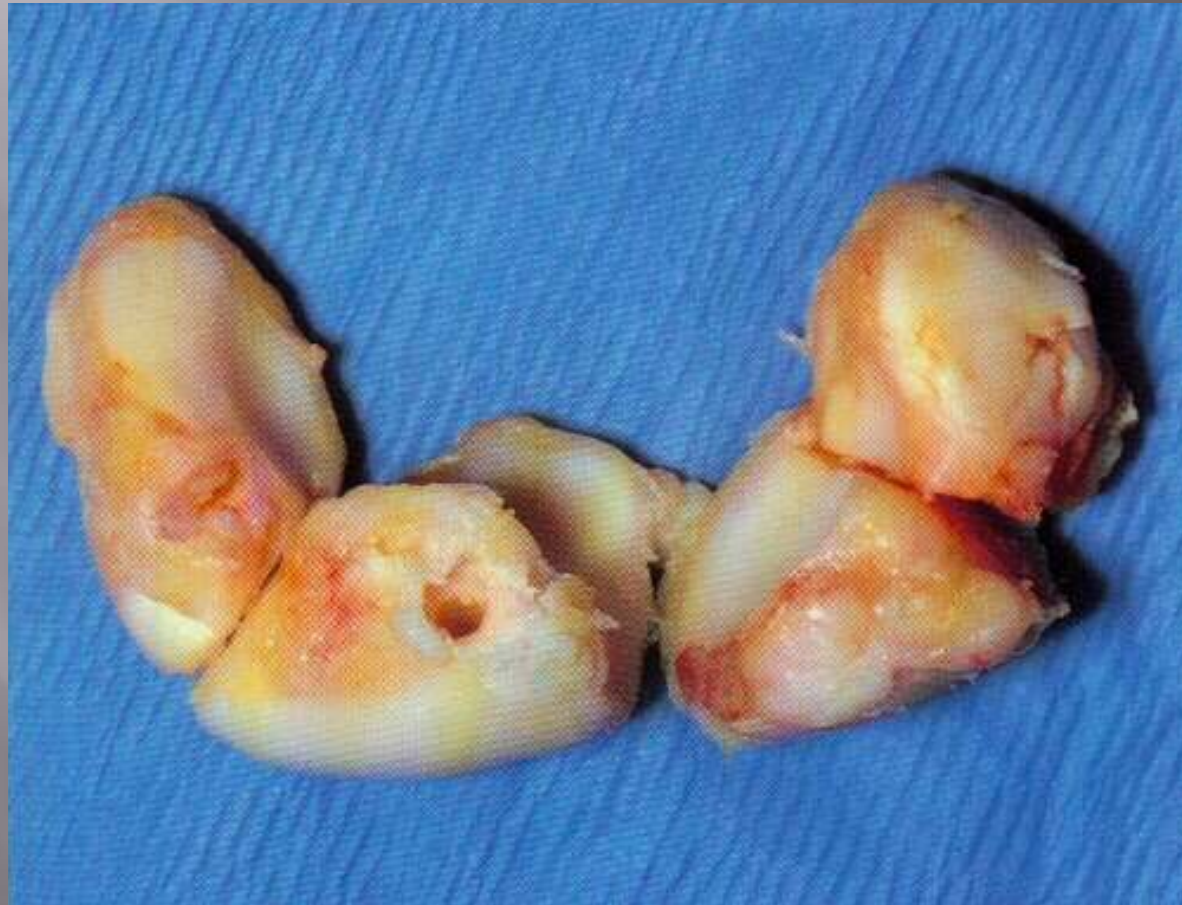


# Limited Fusions

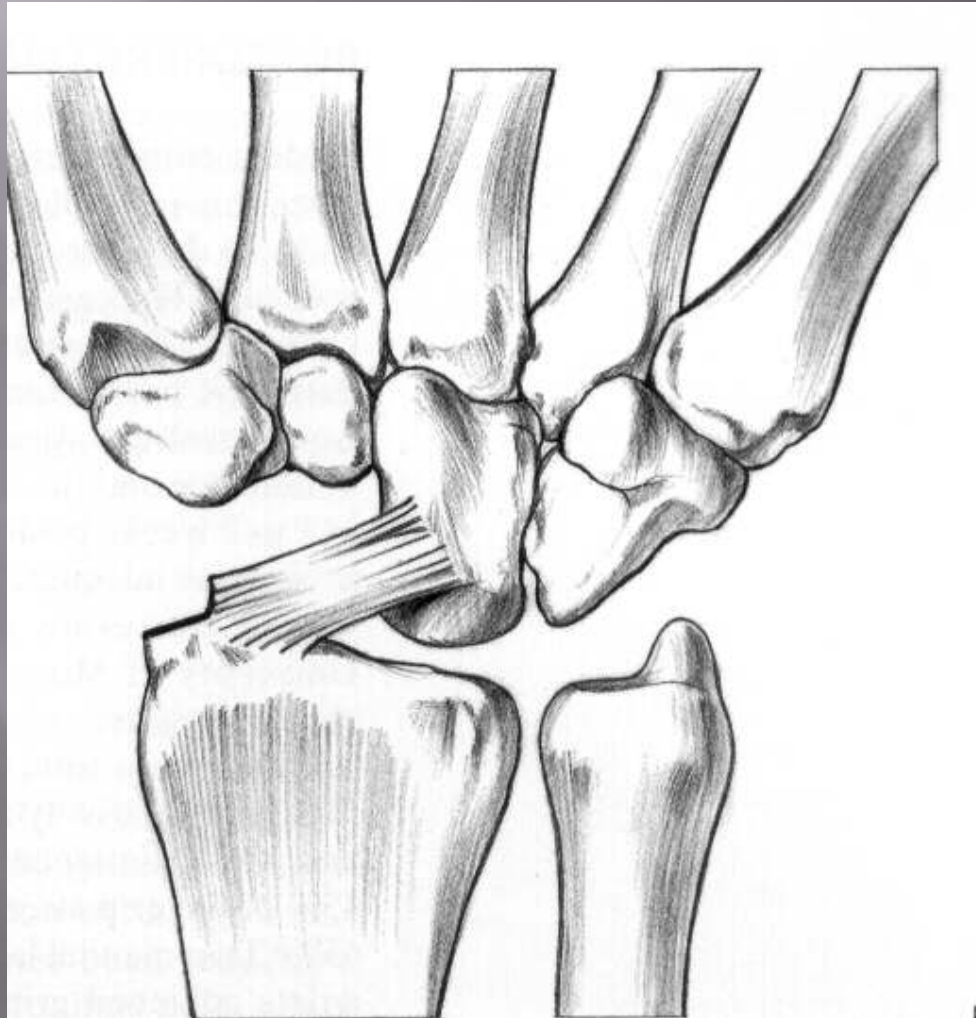




# Proximal Row Carpectomy



# Proximal Row Carpectomy

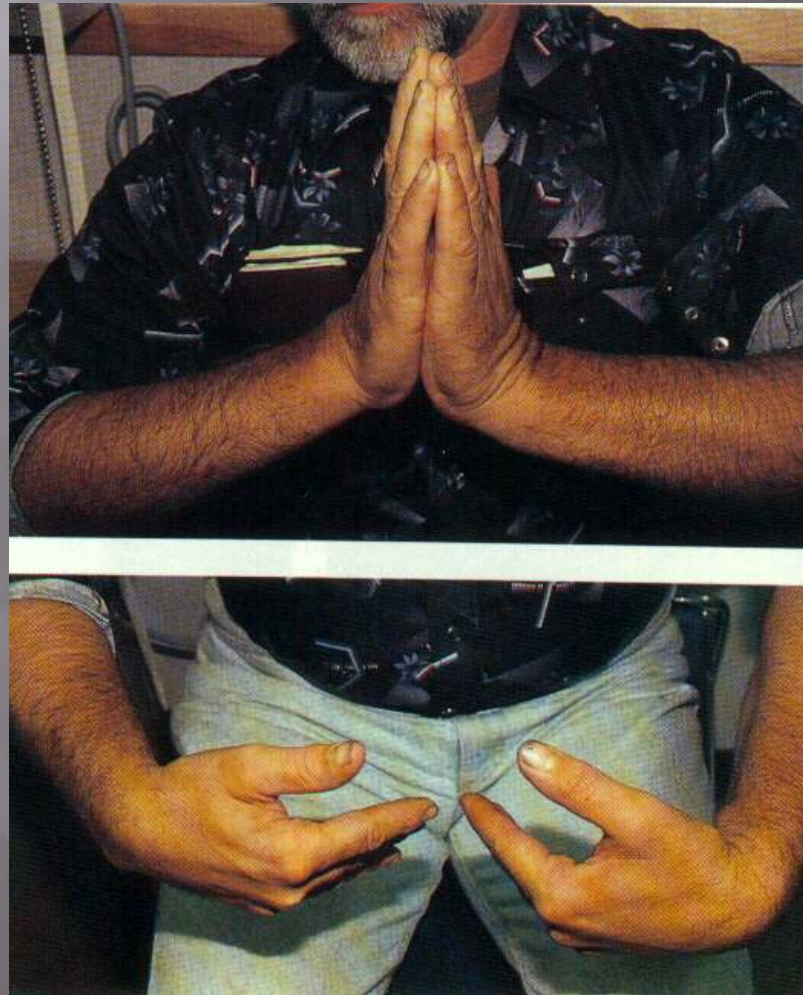


# Proximal Row Carpectomy

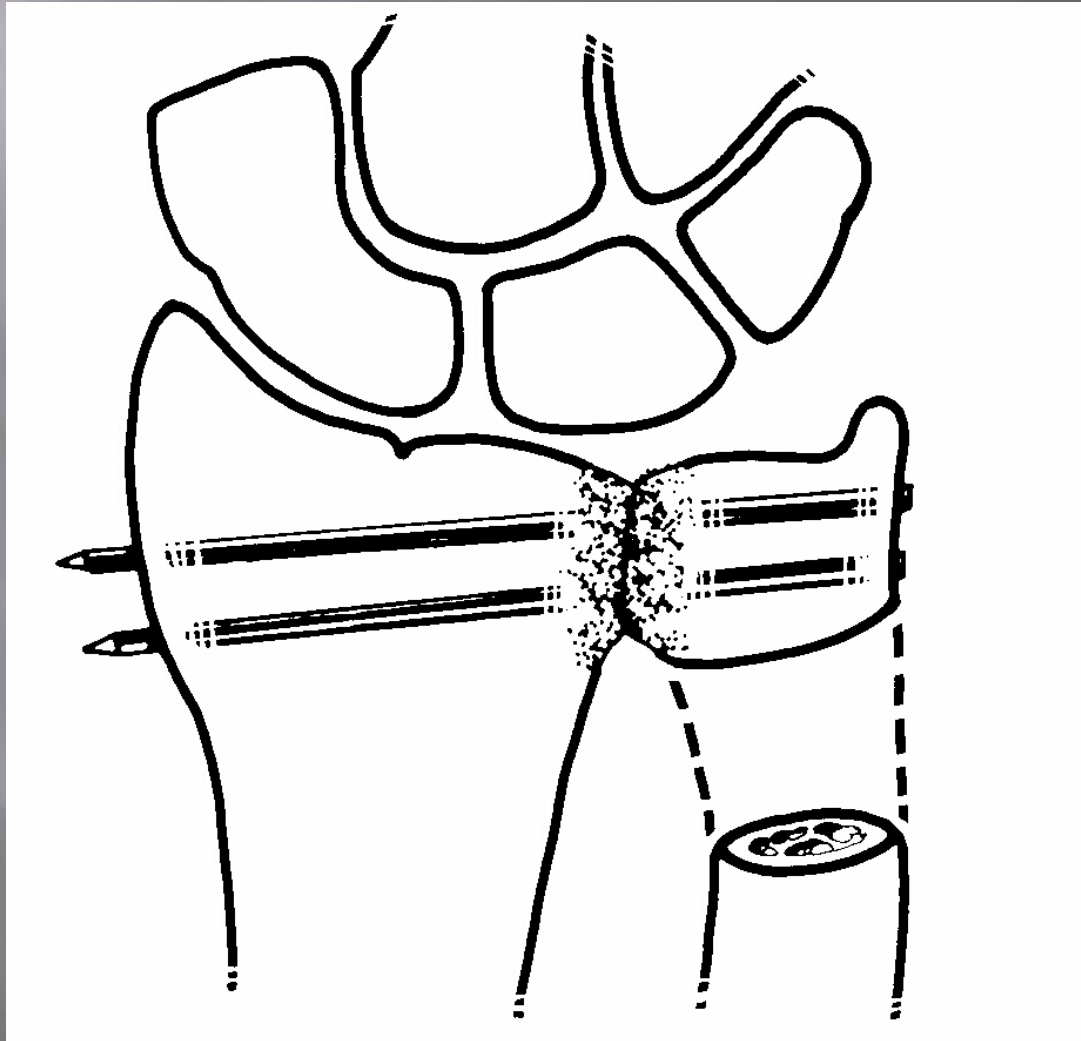




# Proximal Row Carpectomy



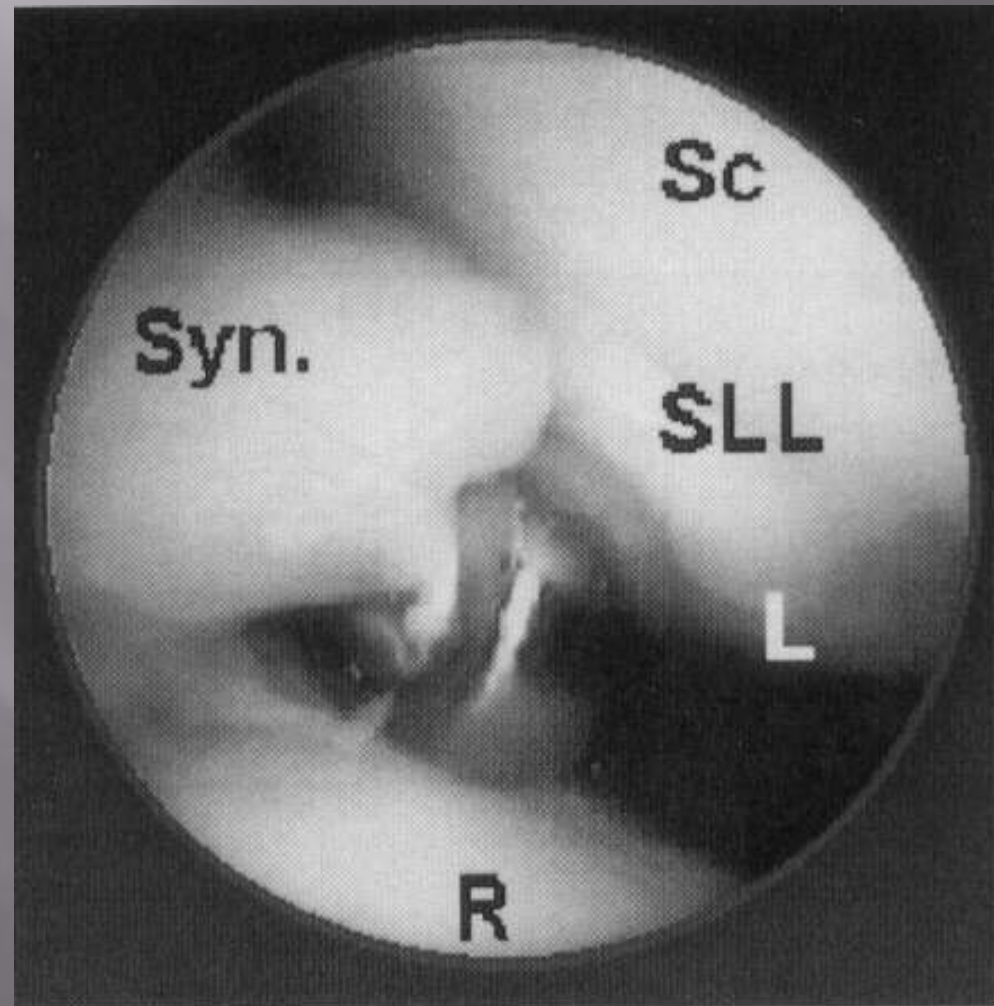
# Sauve-Kapandji



# BITS & PIECES

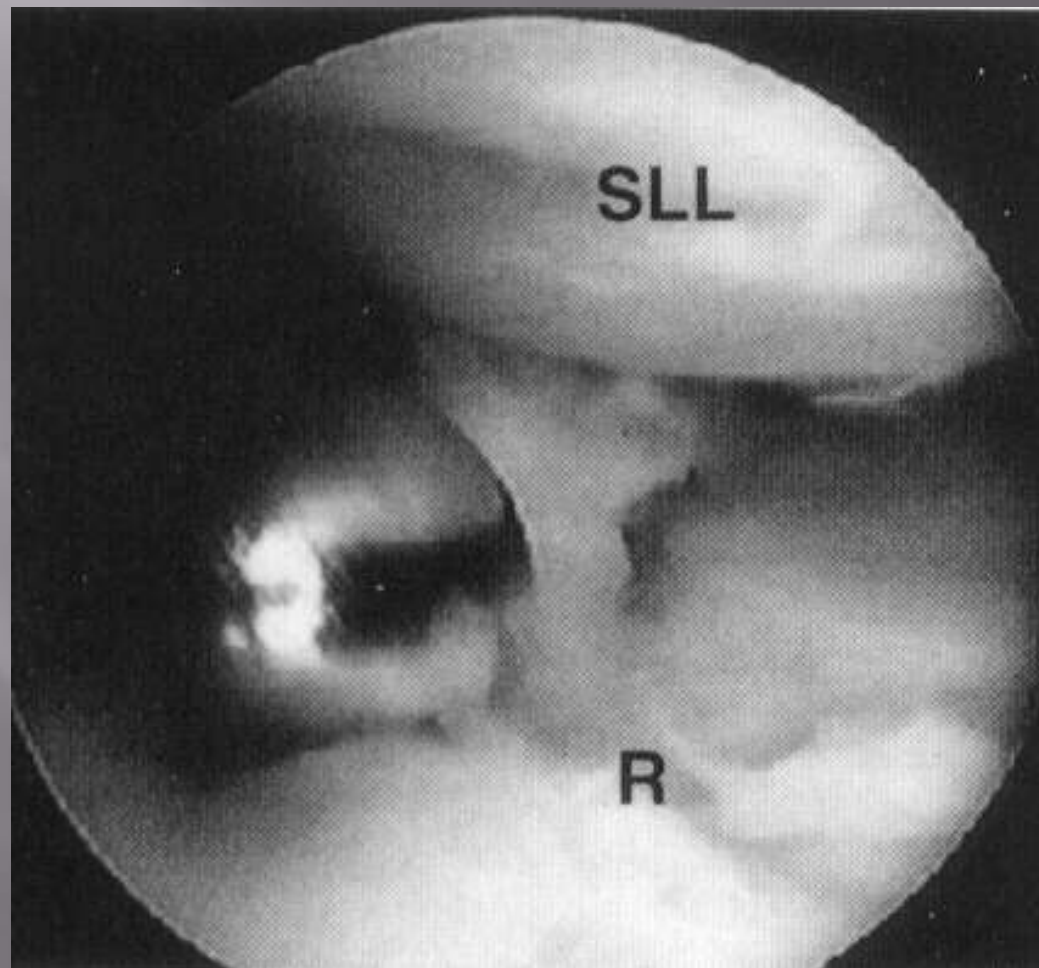
All I do is Carpal Tunnels and  
ganglia.....

# Arthroscopic Ganglion Removal

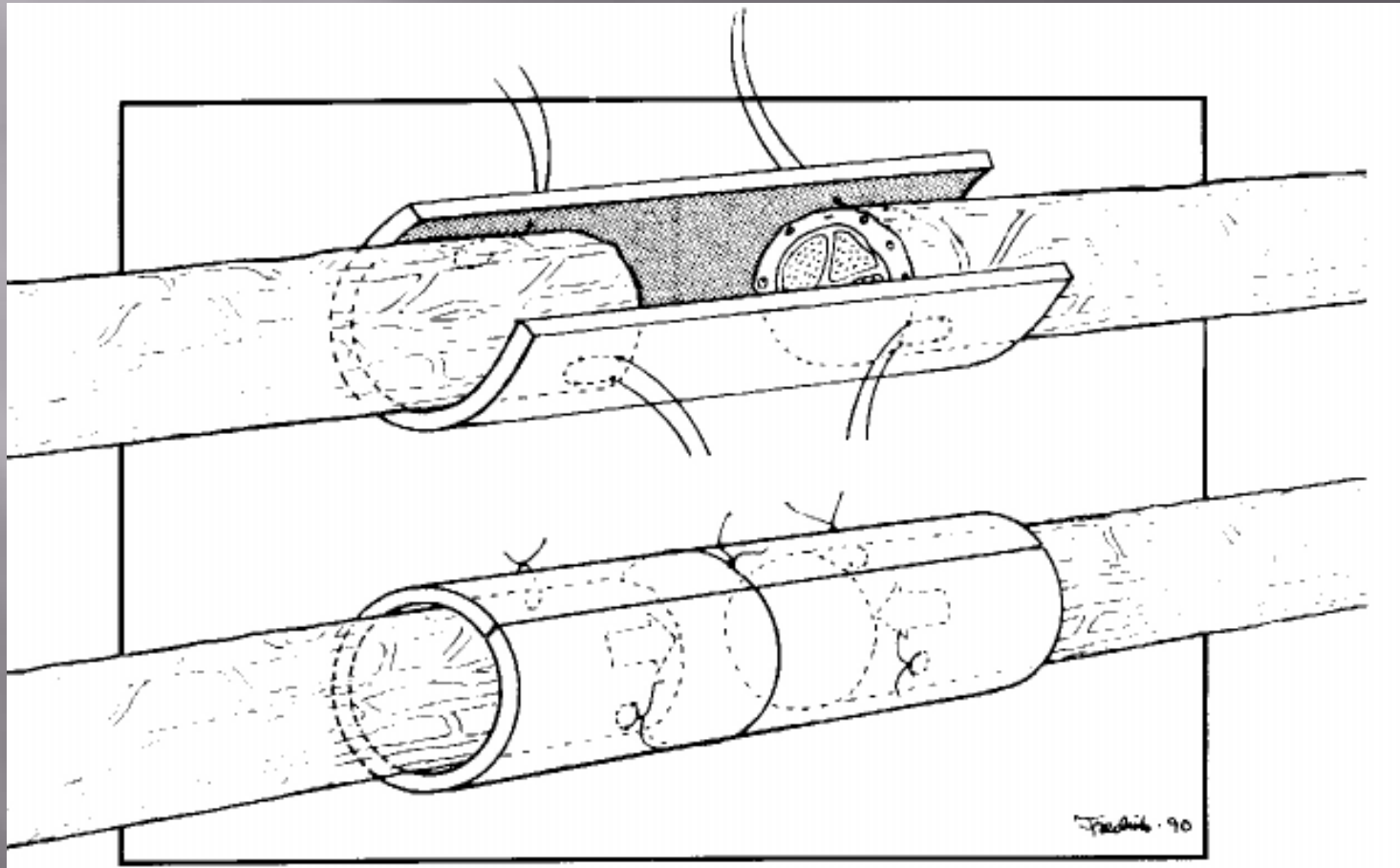




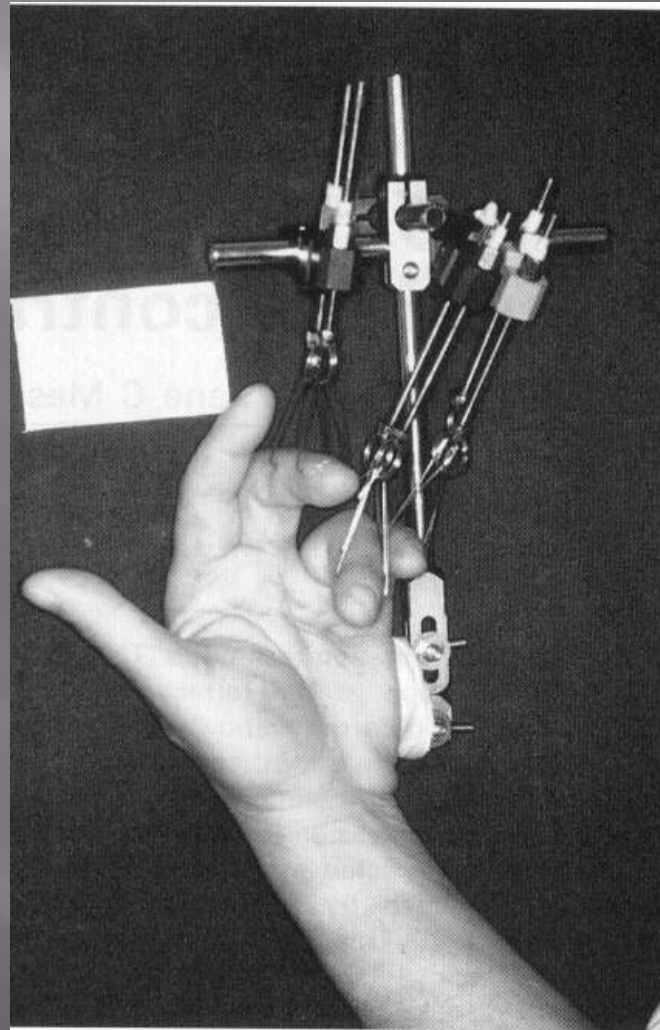
# Arthroscopic Ganglion Removal



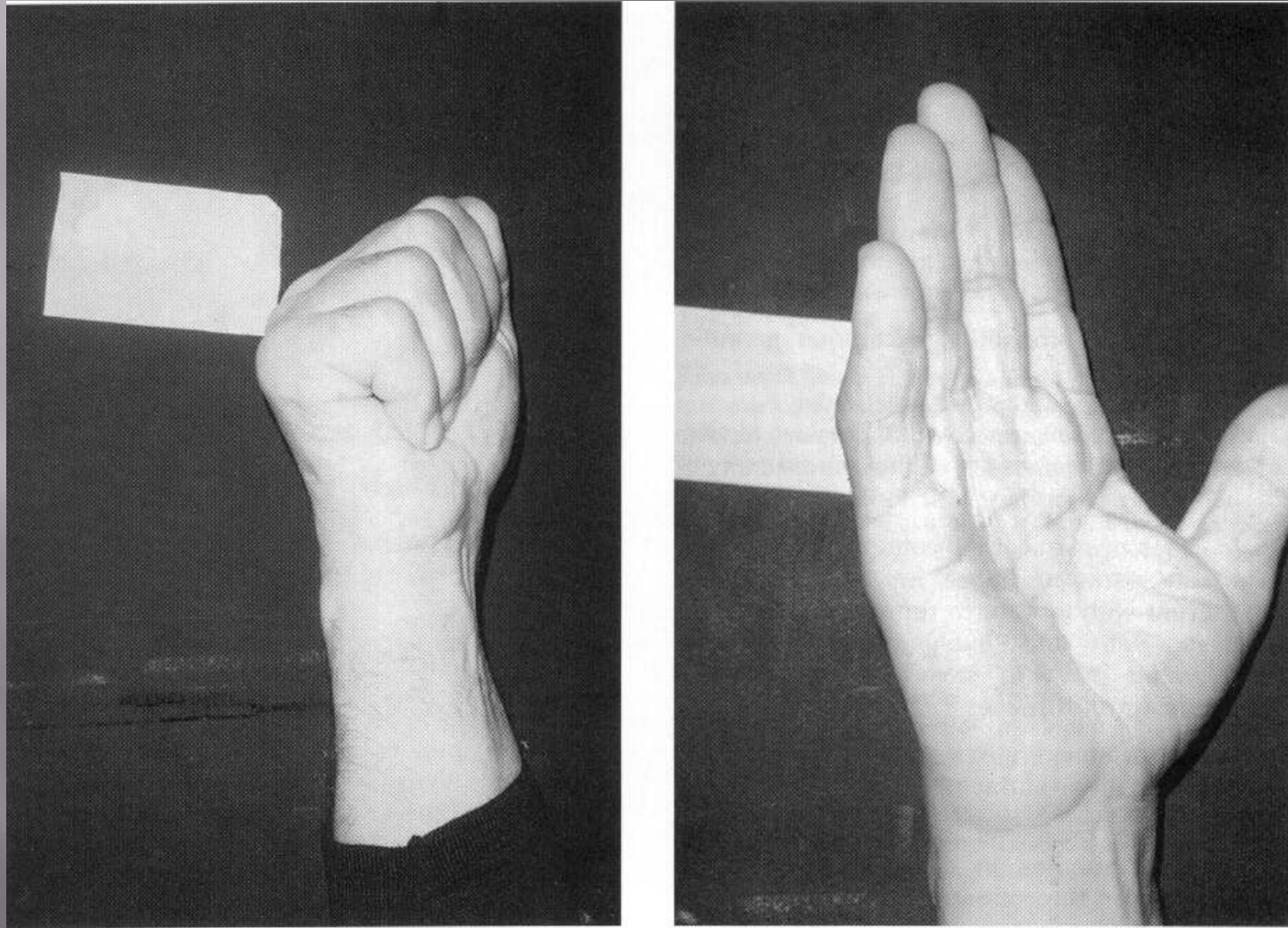
# `Tubular` Nerve Repair



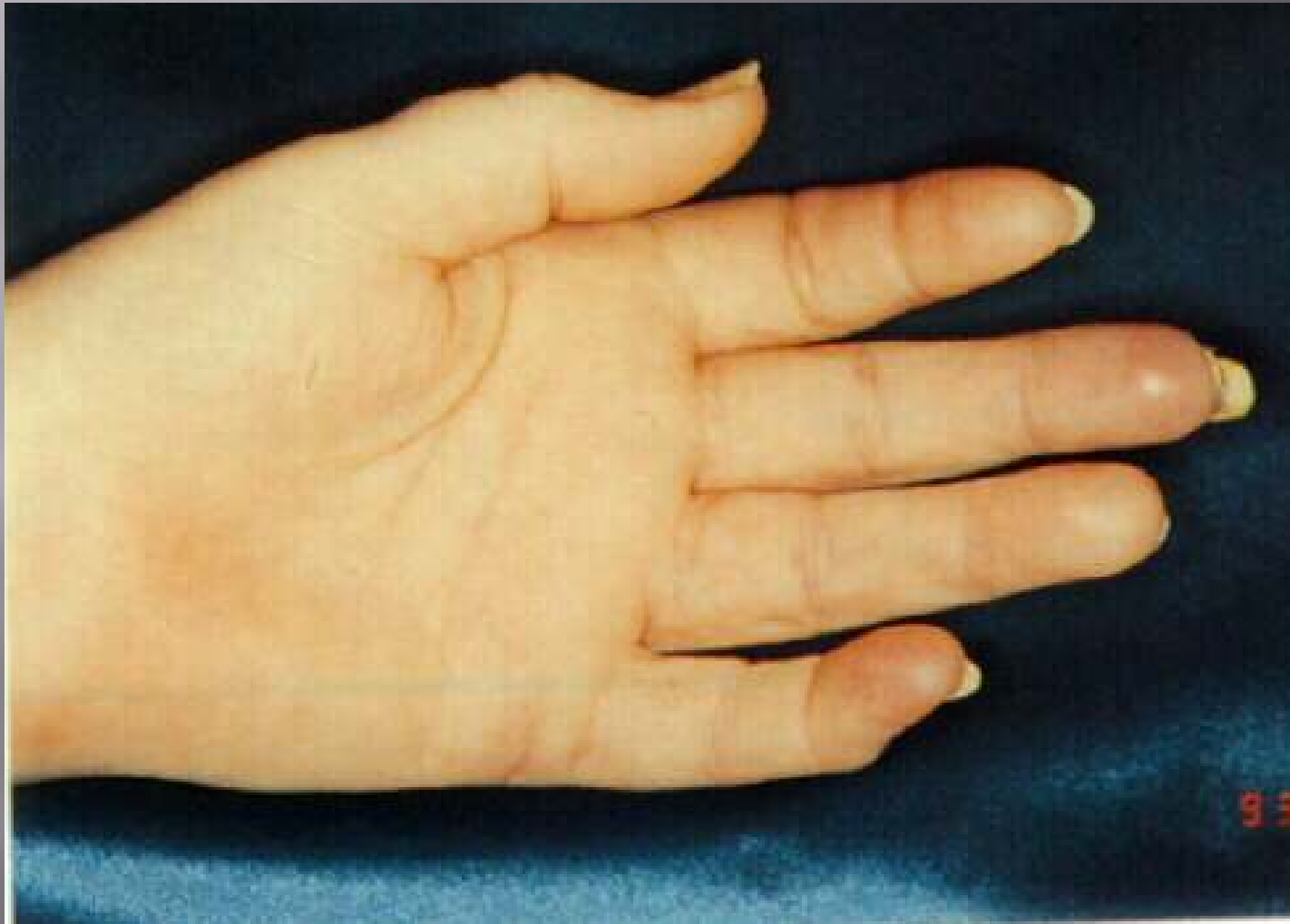
# Dupuytren's Fixators



# Dupuytren's Fixators

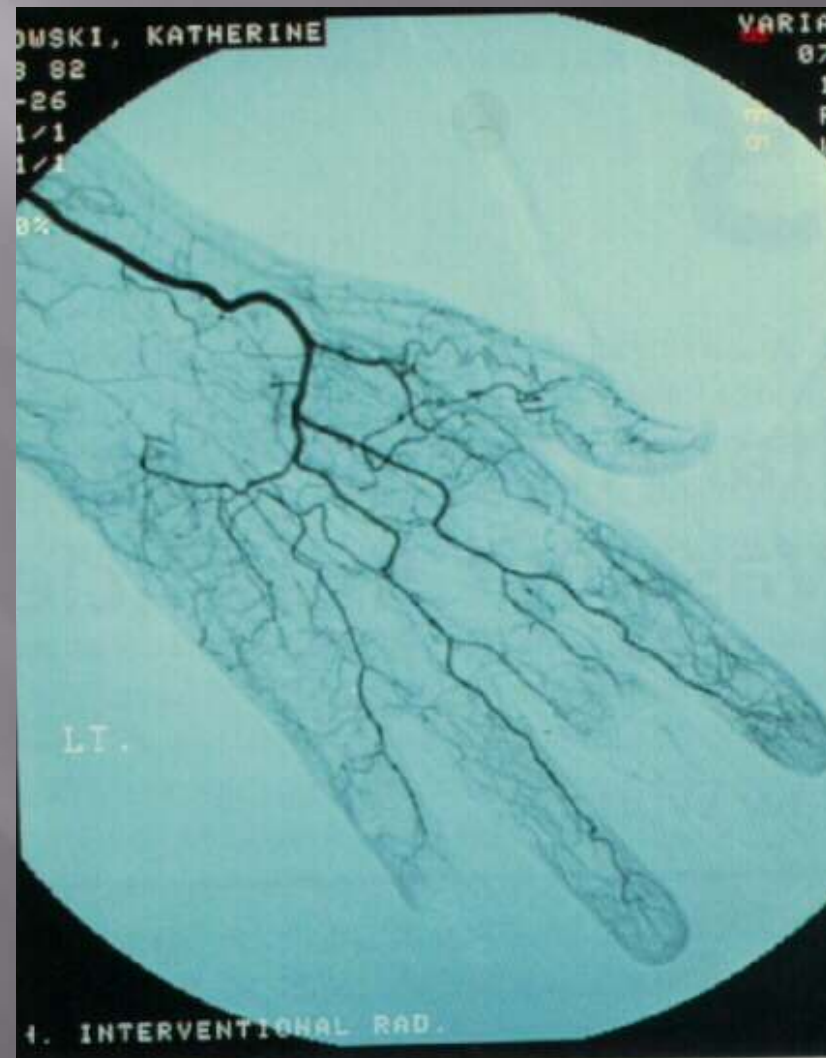


# Digital Sympathectomy





# Digital Sympathectomy

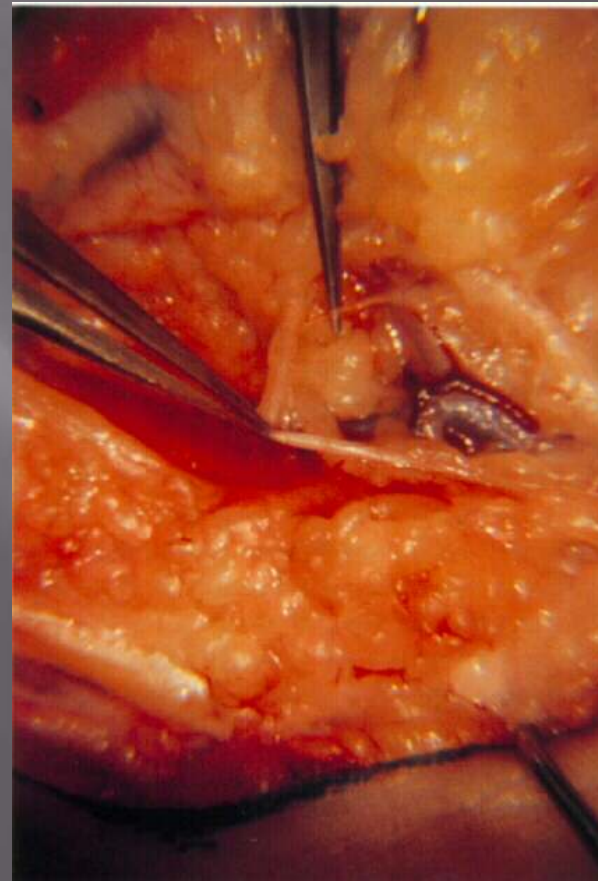
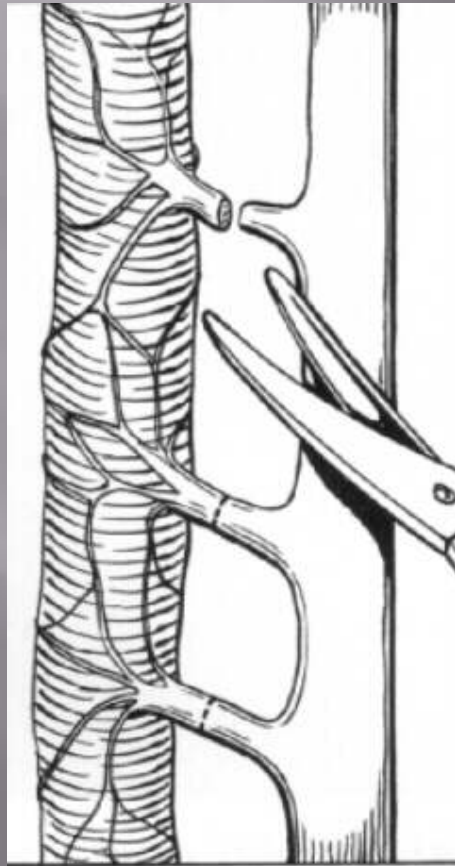


# Digital Sympathectomy

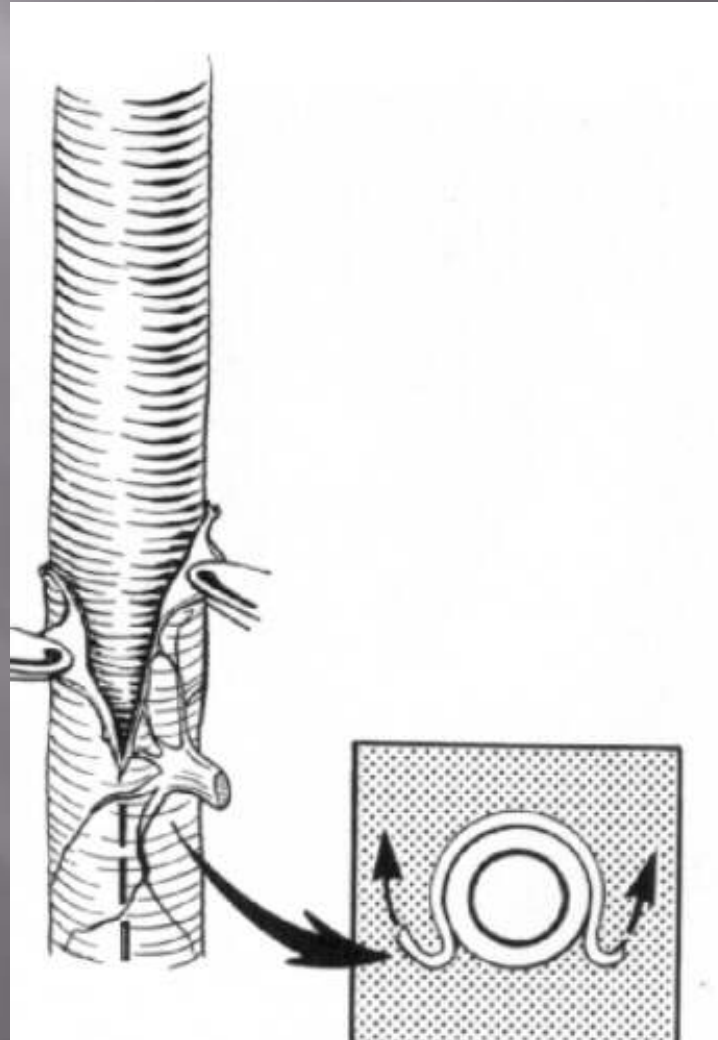




# Digital Sympathectomy



# Digital Sympathectomy



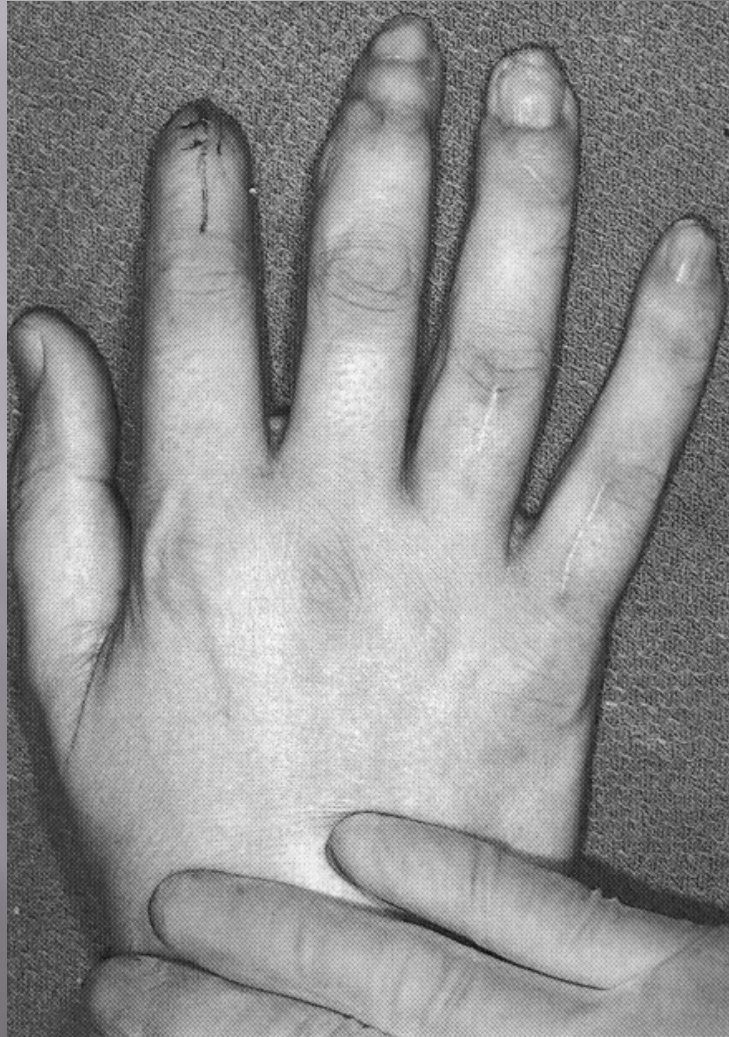
# Ilizarov Lengthening





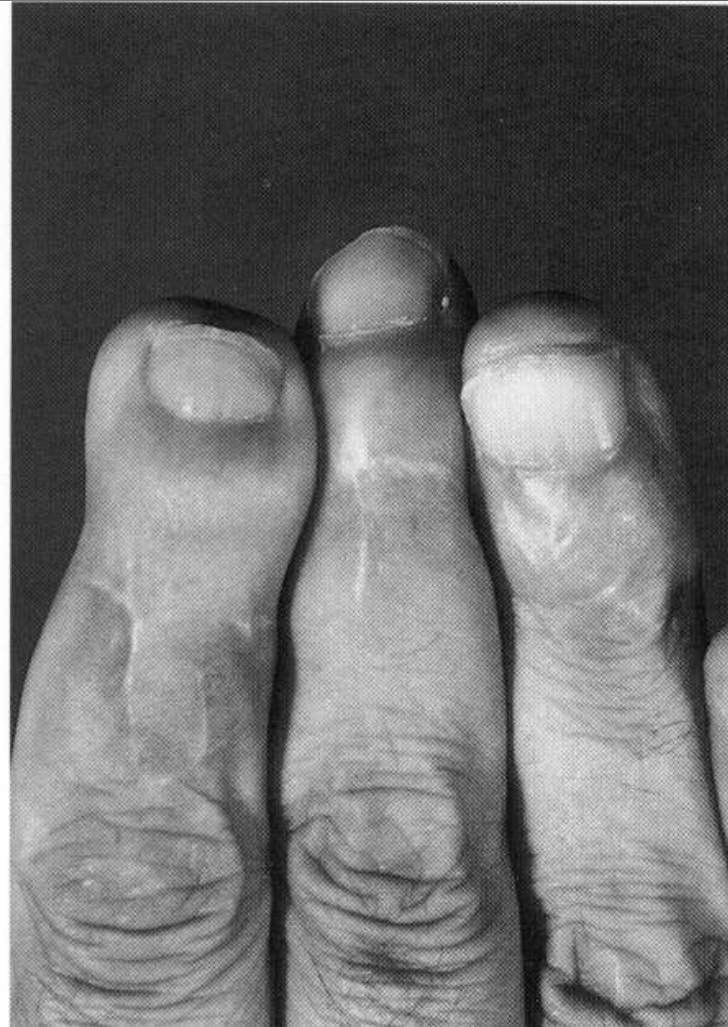
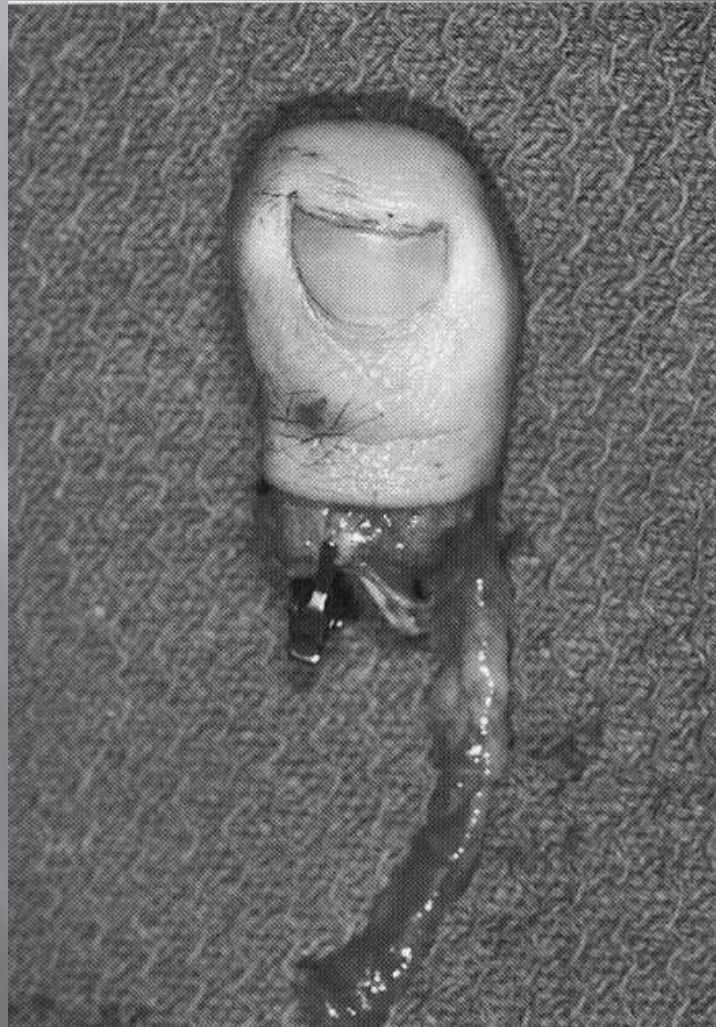


# Toe To Finger Transfers



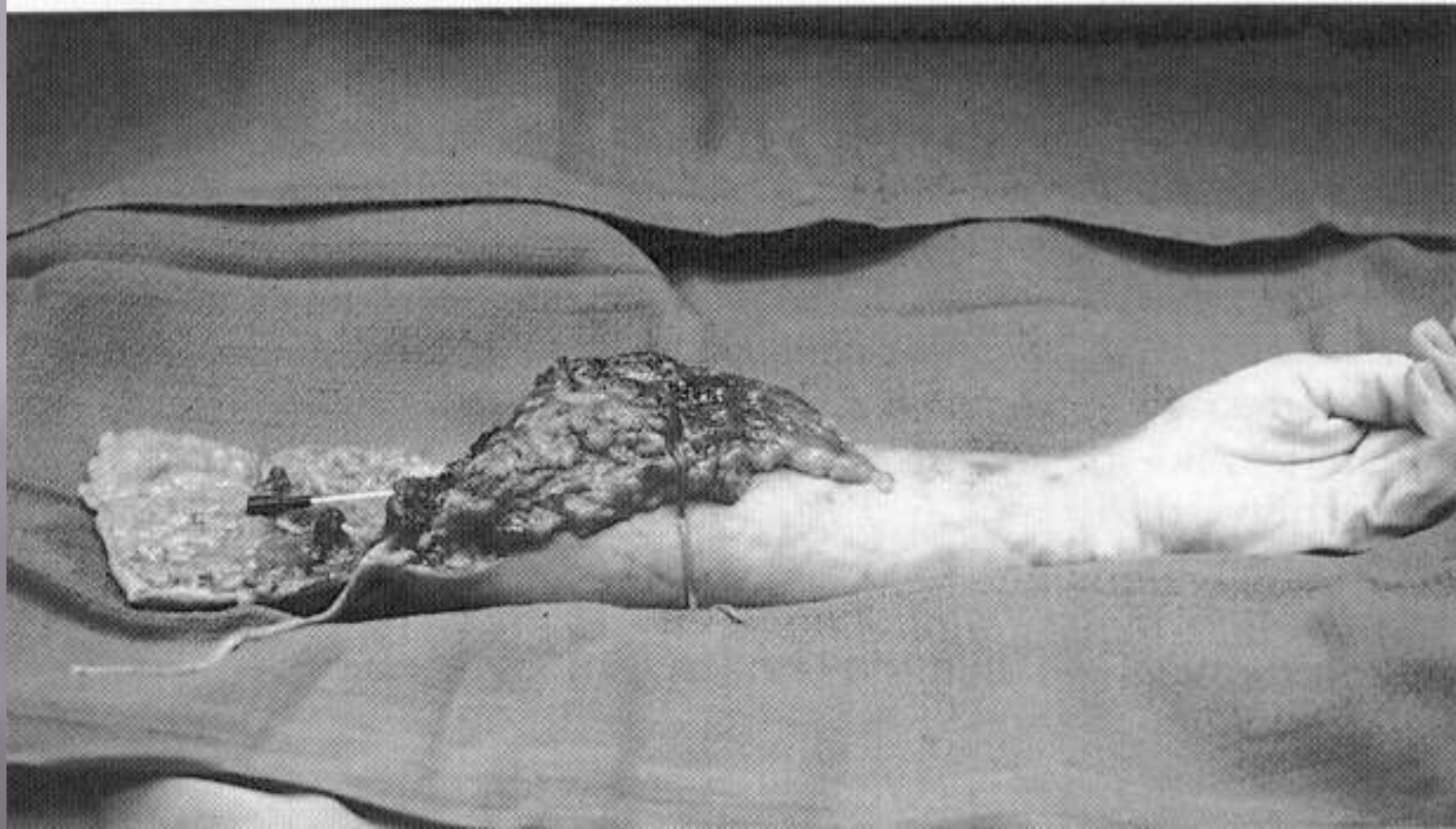


# Toe To Finger Transfers





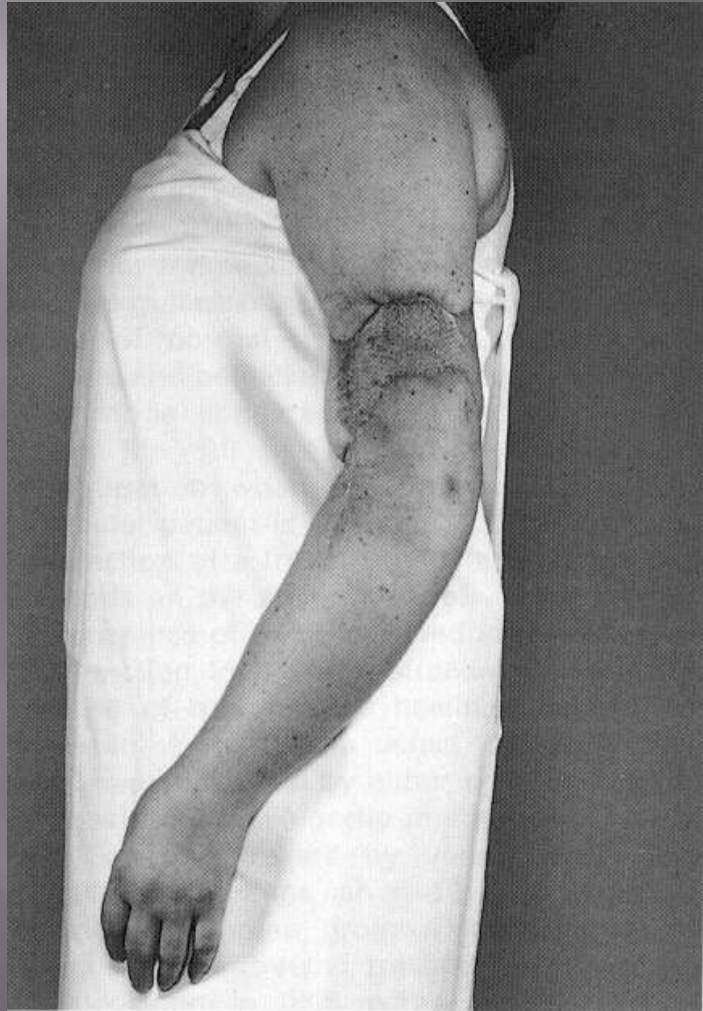
# Ectopic Limbs



# Ectopic Limbs



# Ectopic Limbs





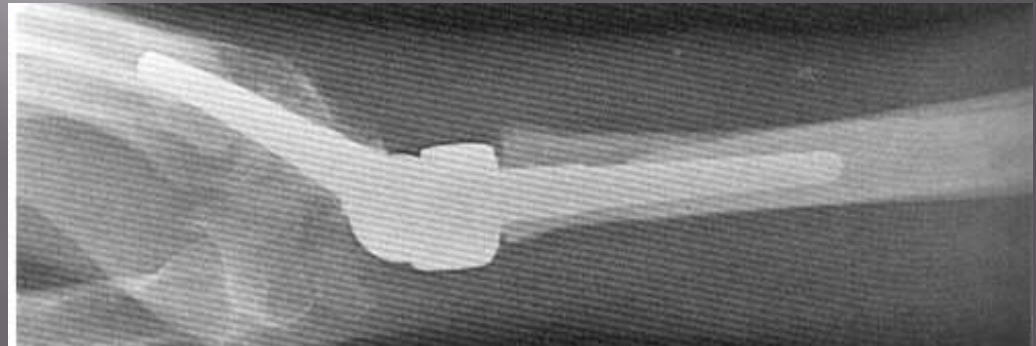
# Wrist Replacement



# Wrist Replacement

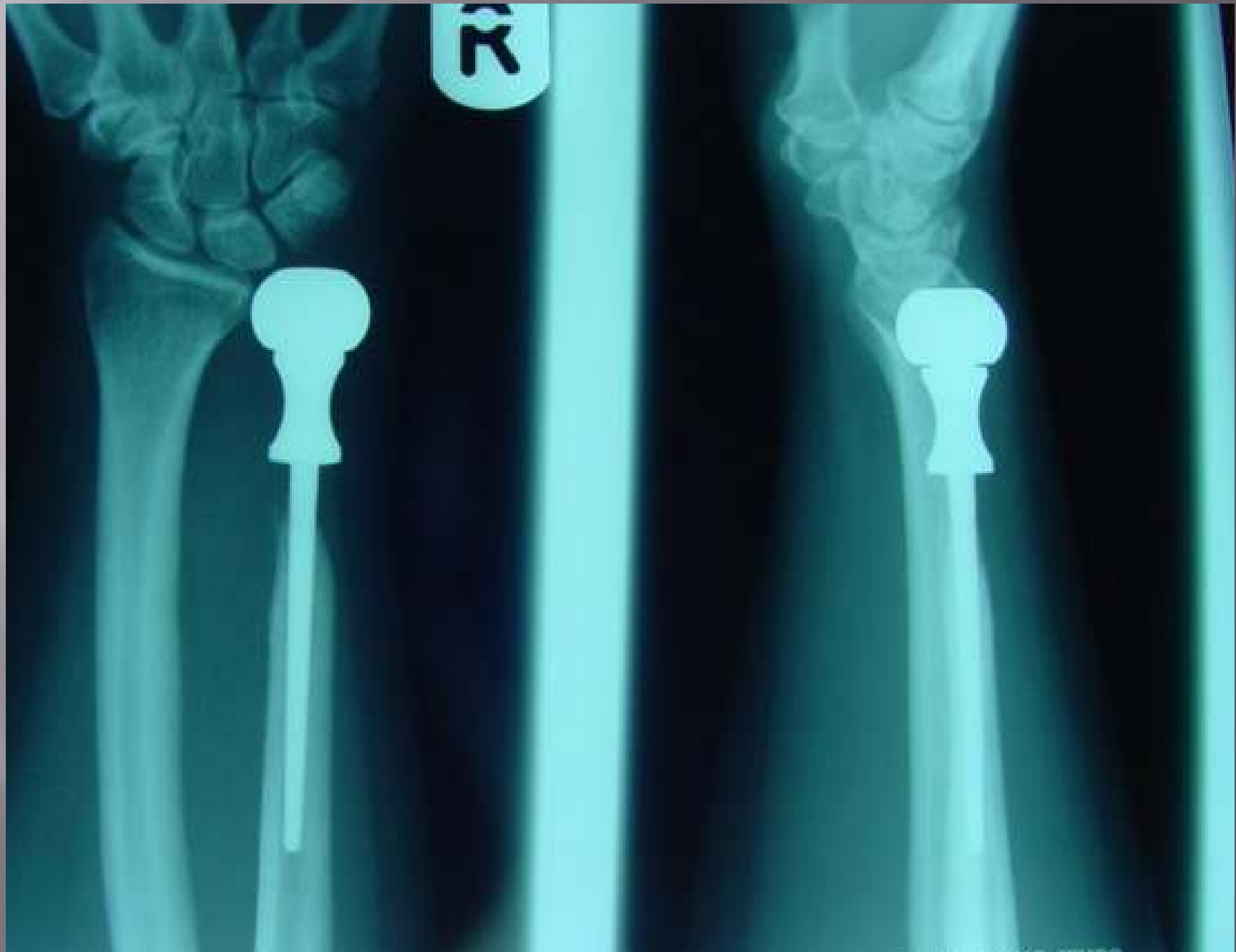


# Wrist Replacement



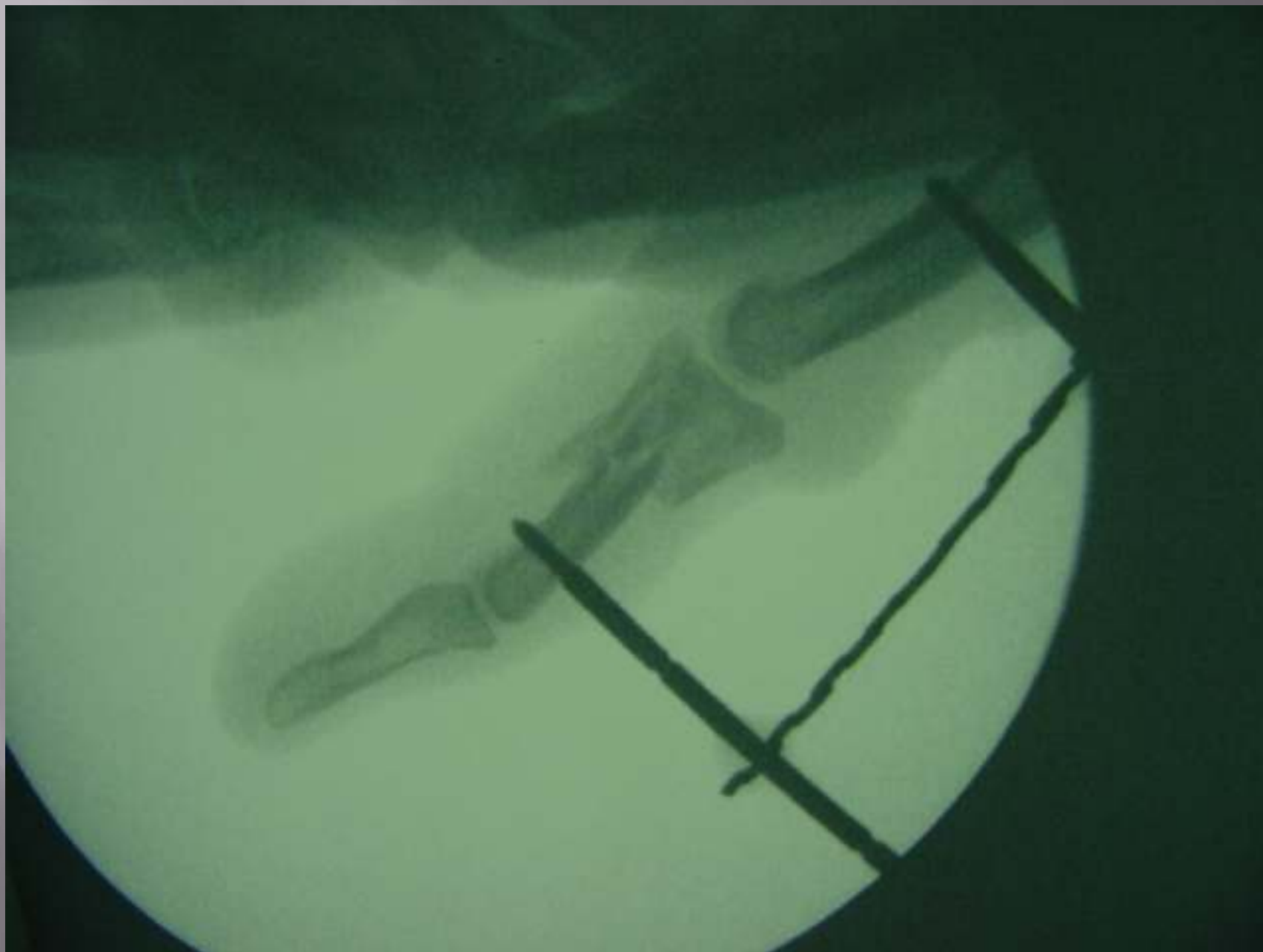


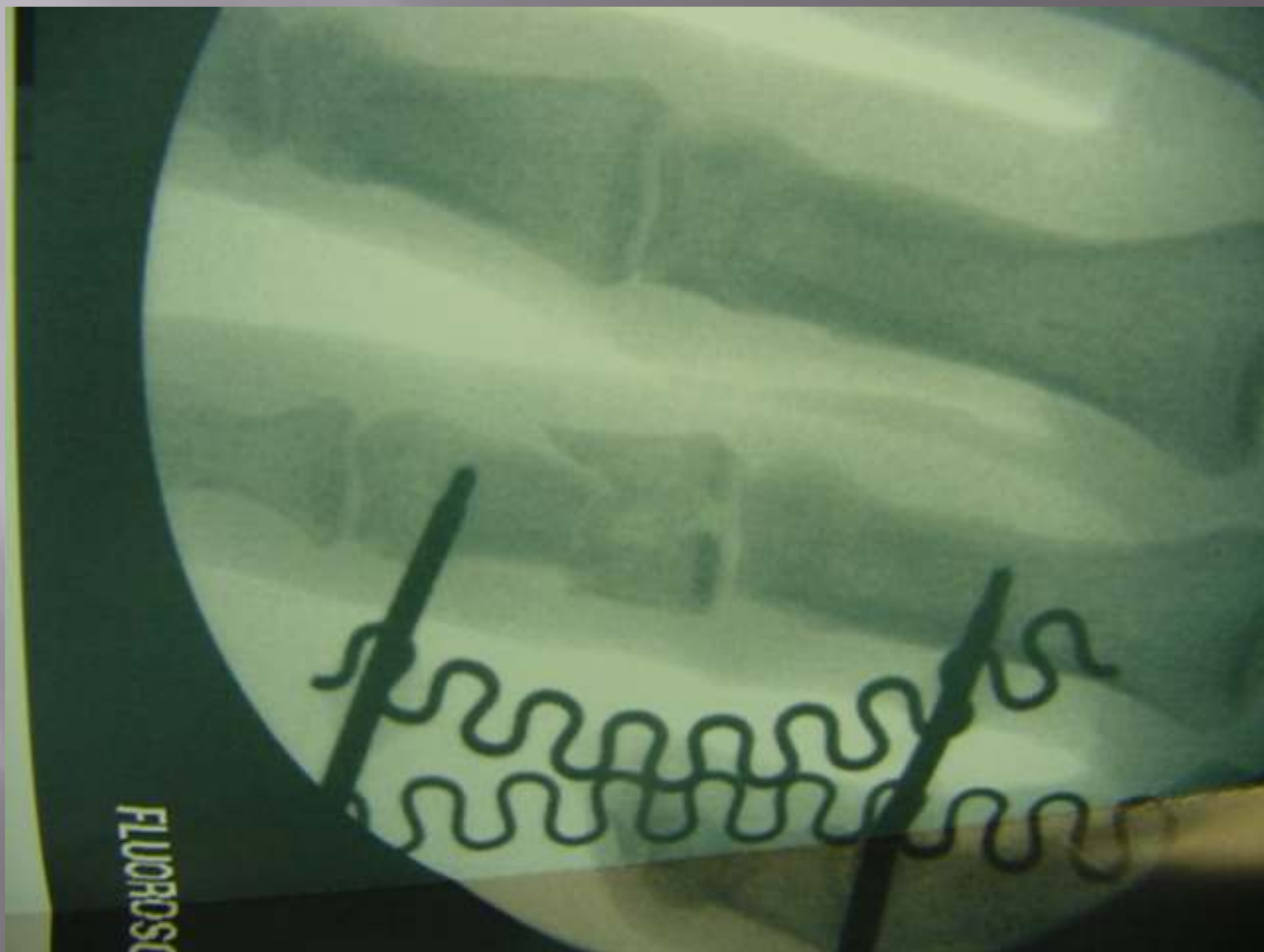






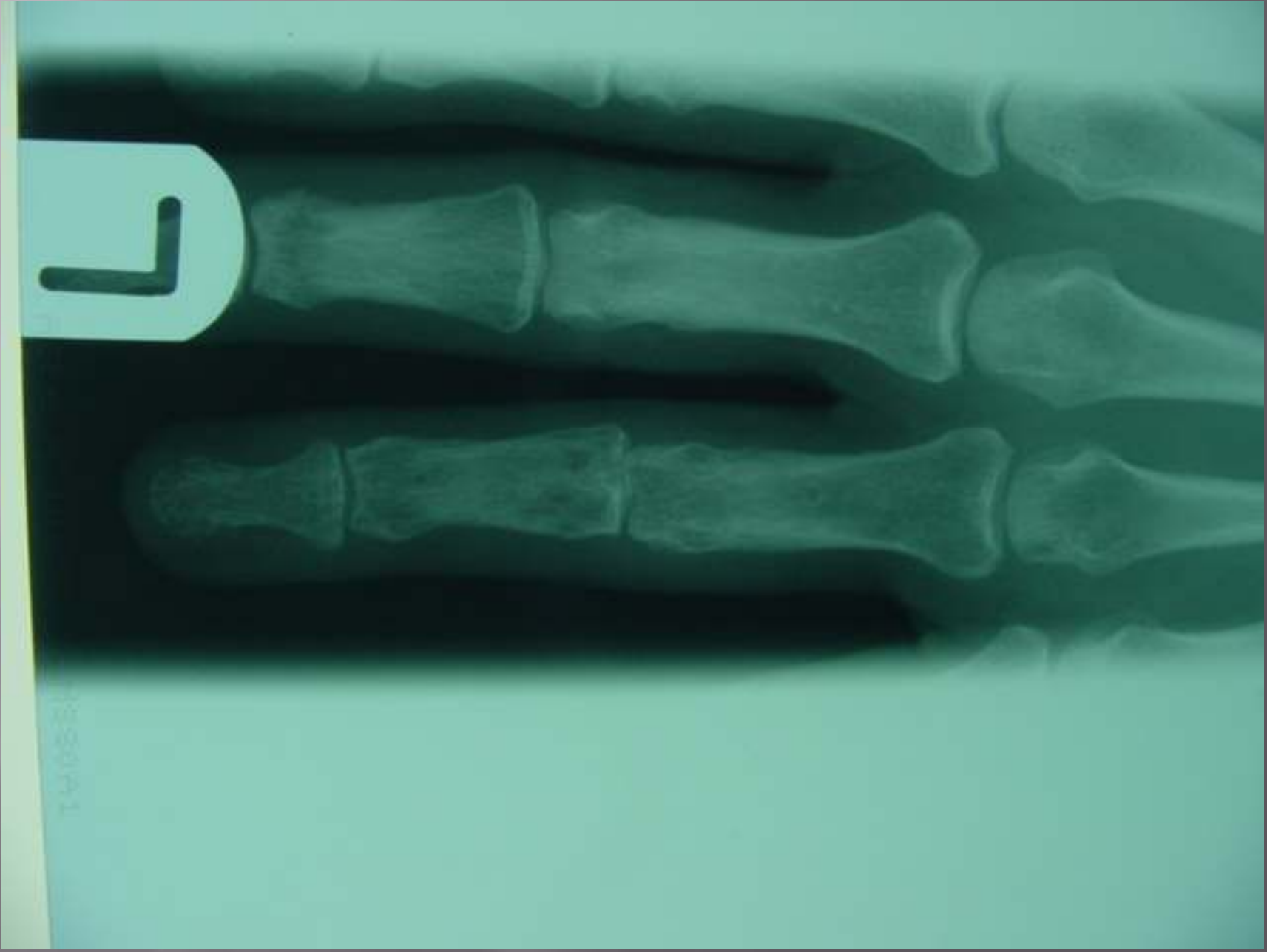


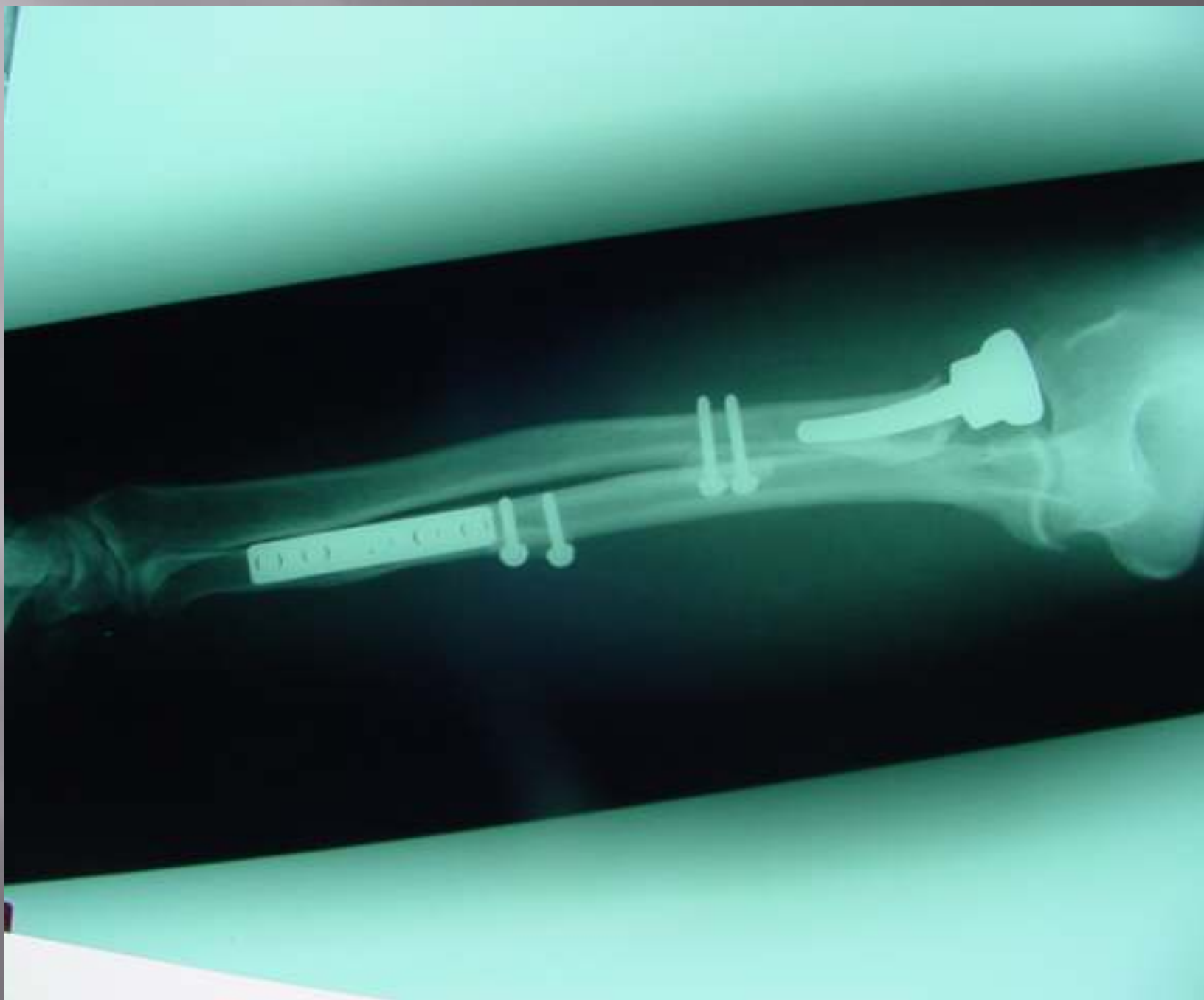






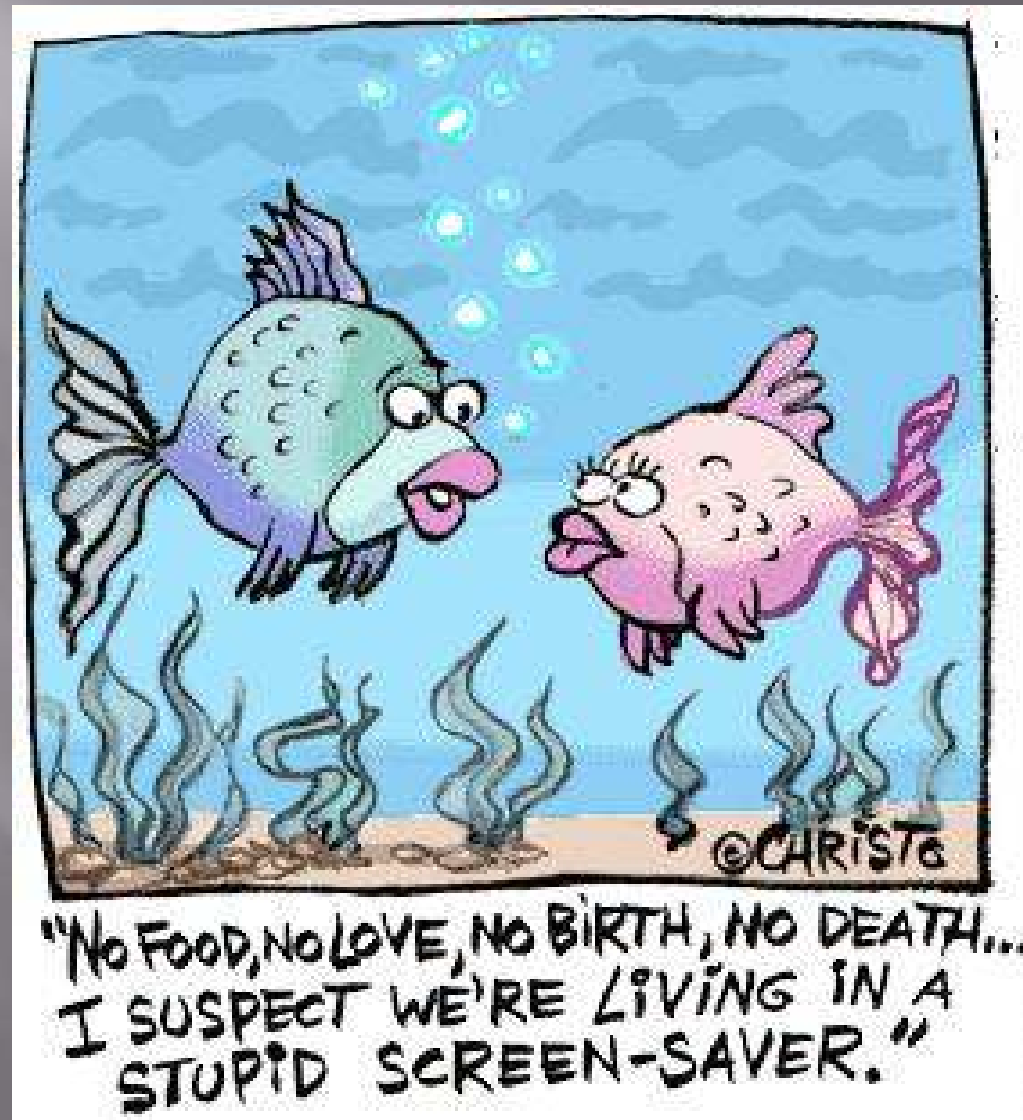








# Thank You



L.R.Irwin