DRUJ Degeneration

Jeff Auyeung

RA related DRUJ degeneration

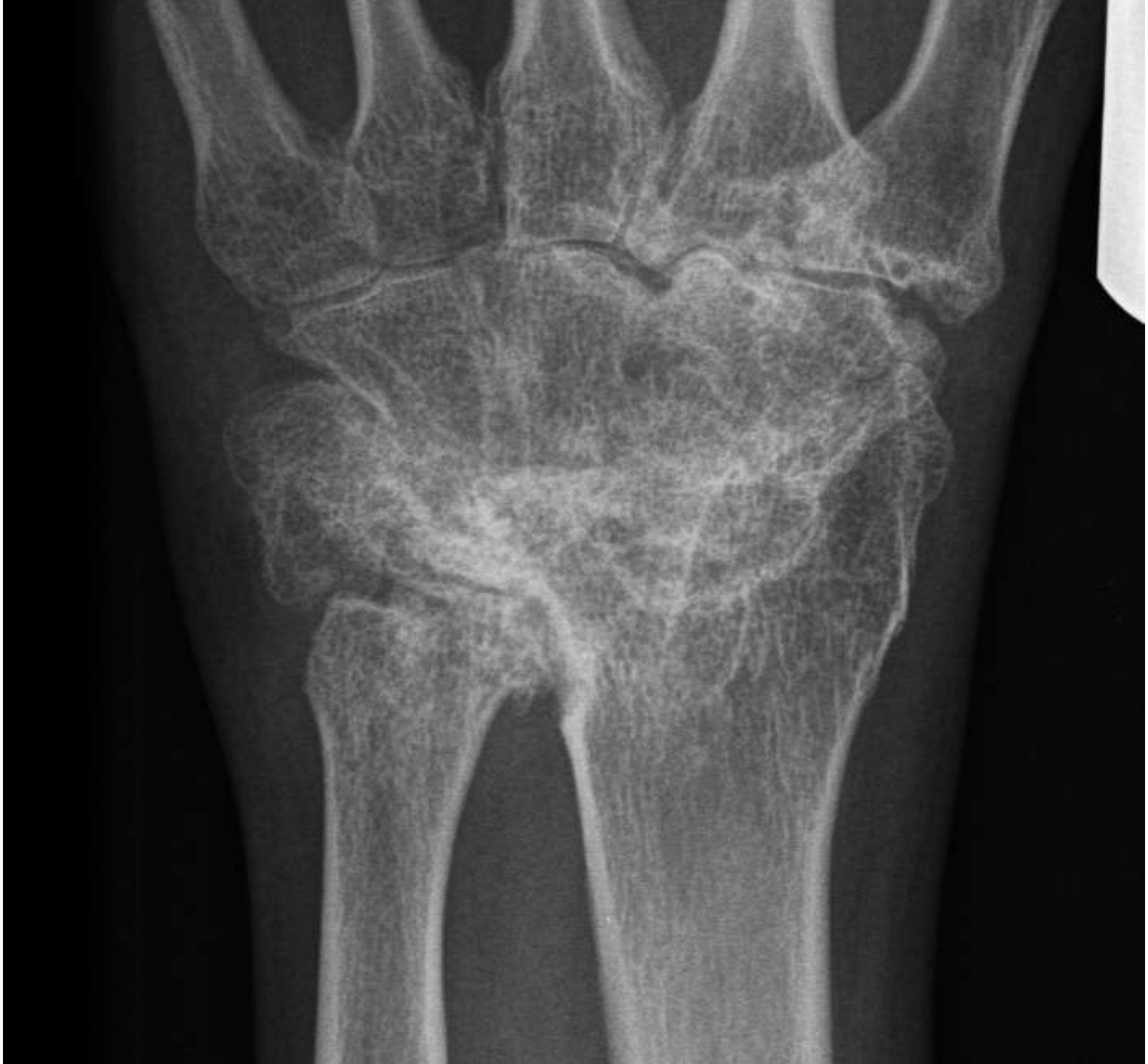
- Inflammatory process
- Often loss of ulnar head substance
- Distal radius might be osteopenic
- Might occur with Vaughan-Jackson syndrome

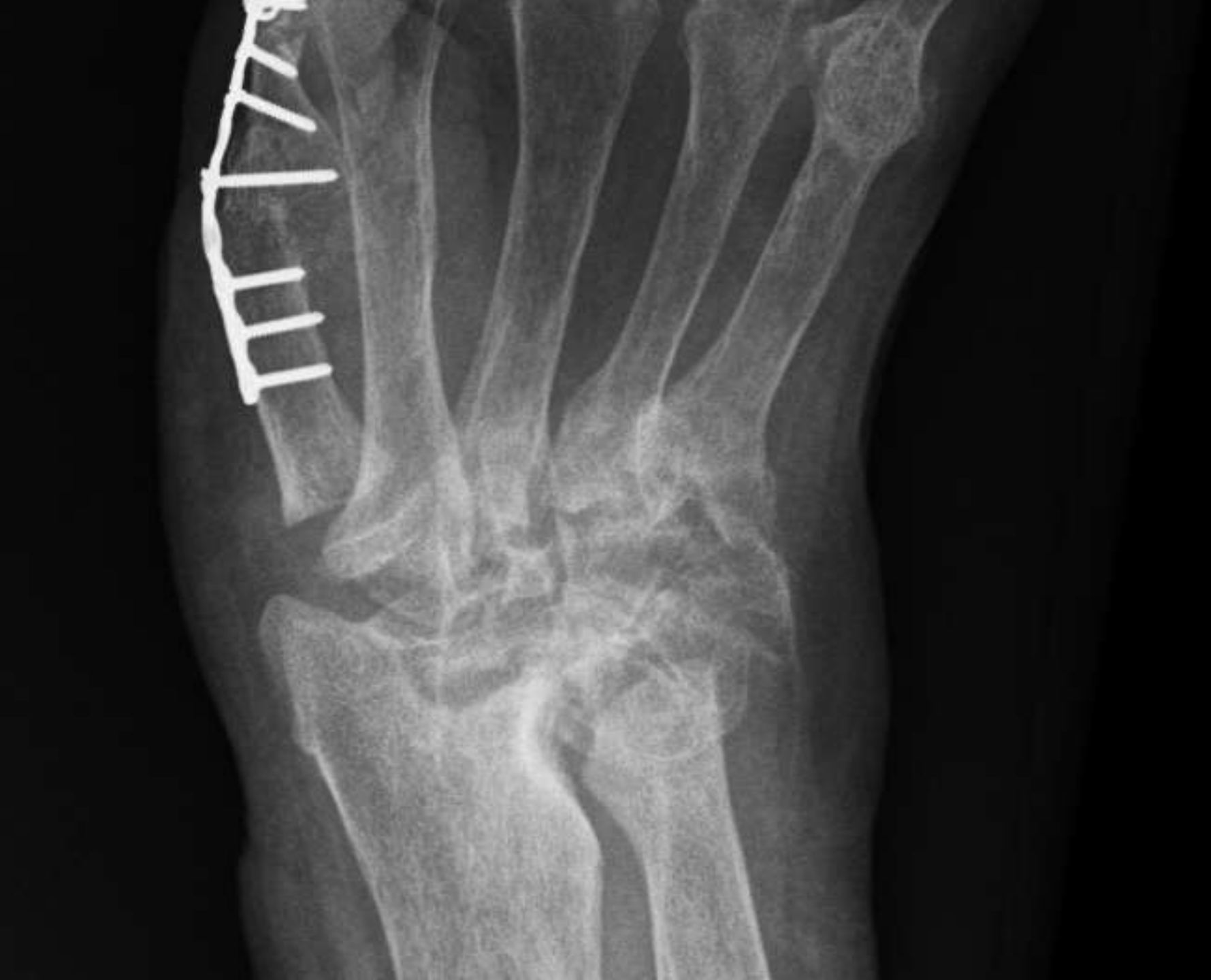
OA of DRUJ

- Rare to occur primarily
- Post-traumatic – distal ulnar or distal radius # into sigmoid notch
- Consequence of ulnar plus and impaction syndrome
- Secondary to gout/pseudogout

History and Exam

- Site of pain
- Pain on rotation of forearm
- Swelling/deformity and tenderness on exam
- Pain on compressing DRUJ
- Associated Vaughan-Jackson Syndrome

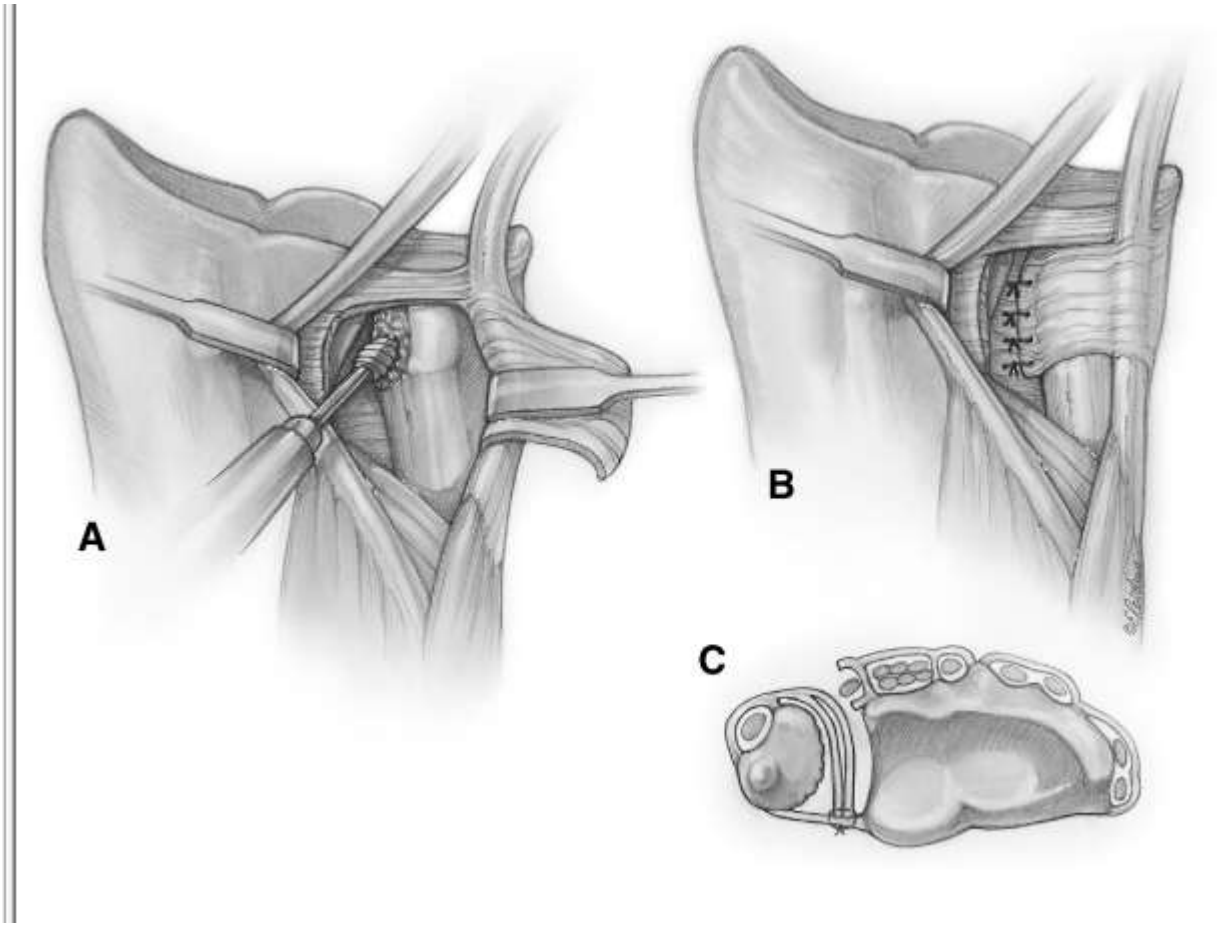




Treatment rationale

- Pain relief
- ?concurrent procedure to wrist/tendons
- Demands of patient
- Bone stock
- Carpal alignment

Hemiresection



Hemiresection

Pro

- Good for post-traumatic cases, especially with reduced rotation of forearm
- Less resection
- Less instability of DRUJ
- Retains TFCC

Cons

- Non-anatomic procedure
- Contraindicated in Carpal ulnar translation or poor soft tissue envelope
- Potential loss of ulnar carpus support
- Risks of Radio-ulnar abutment

Bowers 1985 JHS

- 38 pt – mostly rheumatoid
- 31 mths average FU
- 21 no pain, 6 mild pain, 1 moderate pain
- 4 painful pt due to stylocarpal abutment

Darrach's Procedure

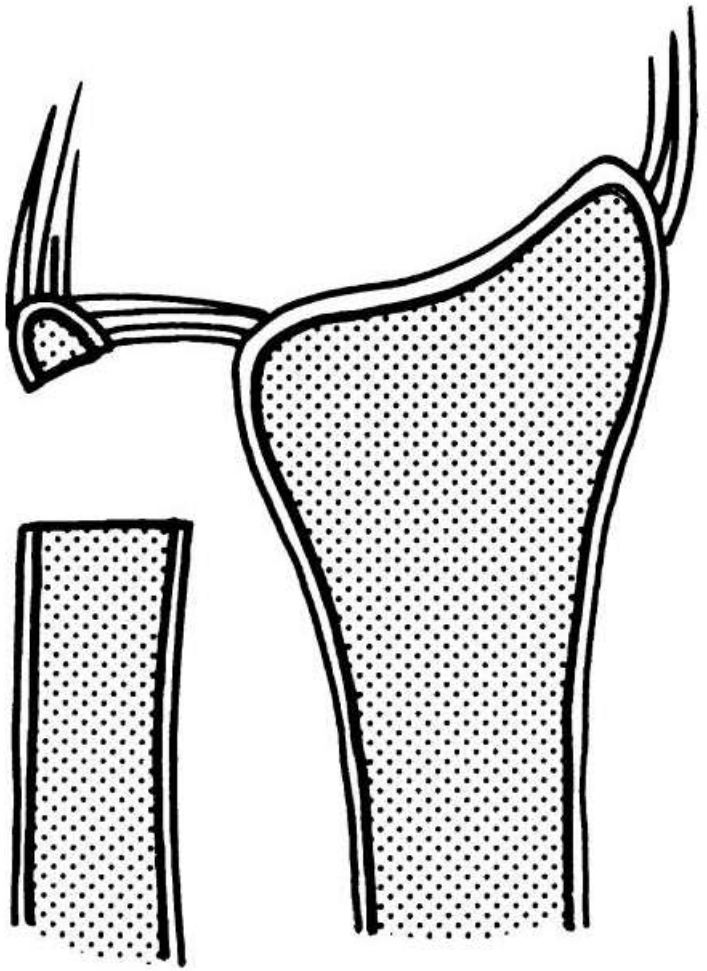


FIGURE 15-31 Darrach procedure resects the distal ulna through the ulnar neck. The ulnar styloid and its attachments can

Darrach's Procedure

Pros

- Reliably relieves pain
- Simple
- Well tolerated in low demand patients, e.g. Rheumatoid

Cons

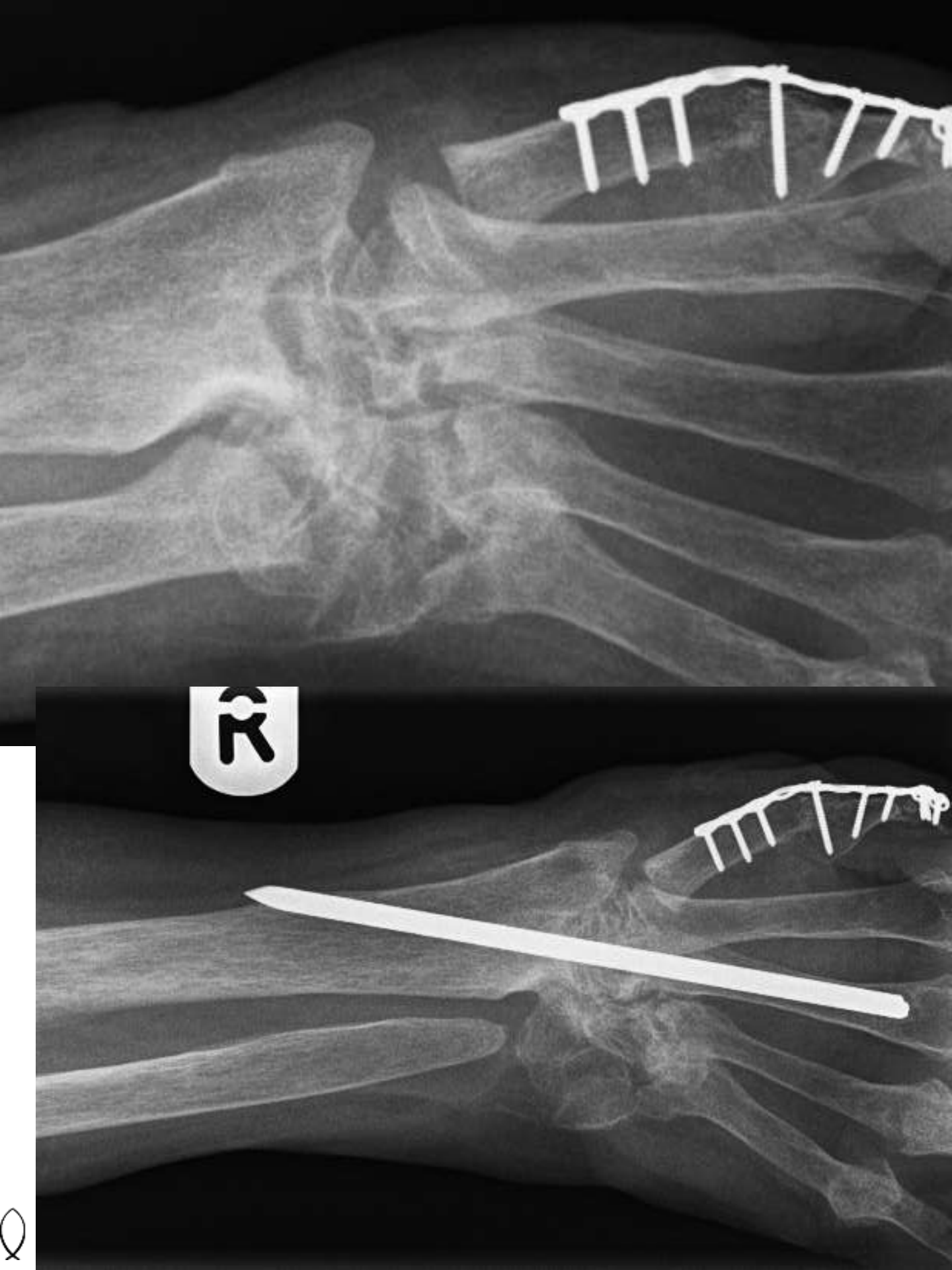
- Does not support Ulnar carpus
- Unstable Ulnar stump
- Weakness of grip

Functional Results of the Darrach Procedure: A Long-Term Outcome Study

Brian Grawe, MD, Carrie Heincelman, MD, Peter Stern, MD

(J Hand Surg 2012;37A:2475–2480.

- 98 pt in database
- Available 27 pt with 6 – 20 yrs FU (average 13 years FU)
- Average VAS pain 0.1 (scale 0-4)
- Average Quick DASH 17
- Radio-ulnar impingement not correlated with pain.



Failed resection/instability

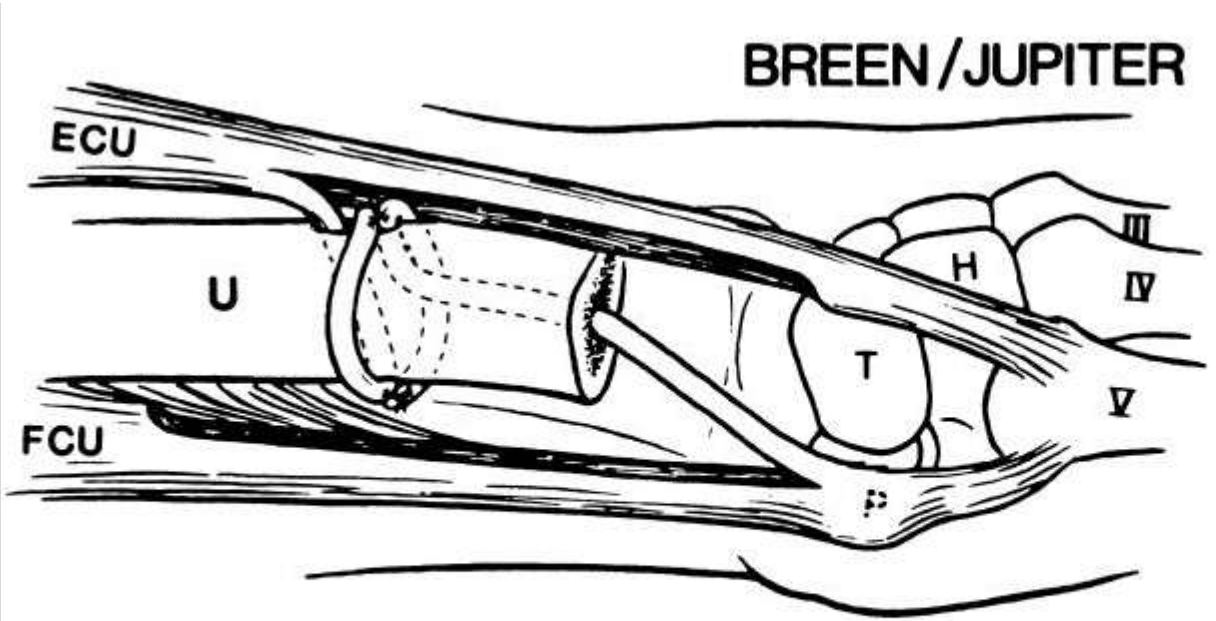


FIGURE 15-32 Tenodesis for stabilization of the resected distal ulna using strips of the FCU and ECU tendons as described by Breen and Jupiter. *(From Petersen MS, Adams BD: Biomechanical evaluation of distal radioulnar reconstructions. J Hand Surg [Am] 18:328-334, 1993.)*

- Or Replacement of ulnar head

Tendon stabilisation

- 8 pts series
- 18-63 months (mean 28 months) follow up
- 7 return to previous occupation
- All had stable ulnar stump

Allograft

- 4 pts
- 14 – 34 months follow up
- 3 excellent result
- 1 failure – inadequate graft

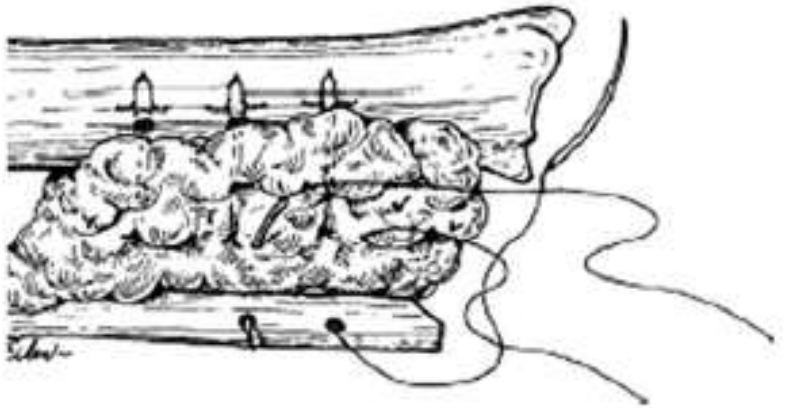


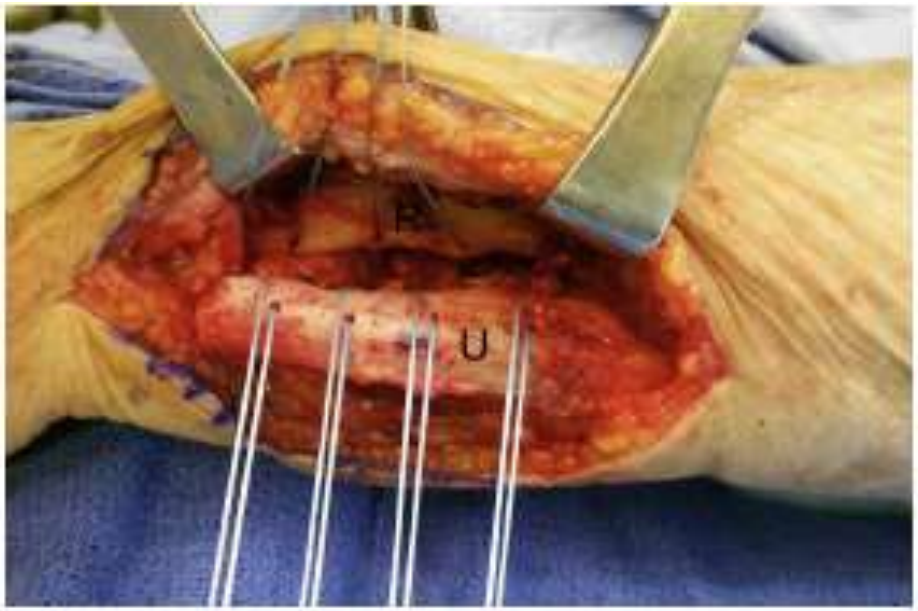
Fig. 2. Allograft interposition procedure described by Sotereanos. (*From* Sotereanos DG, Gobel F, Vardakas DG, et al. An allograft salvage technique for failure of the Darrach procedure: a report of four cases. J Hand Surg Br 2002;27:317; with permission.)

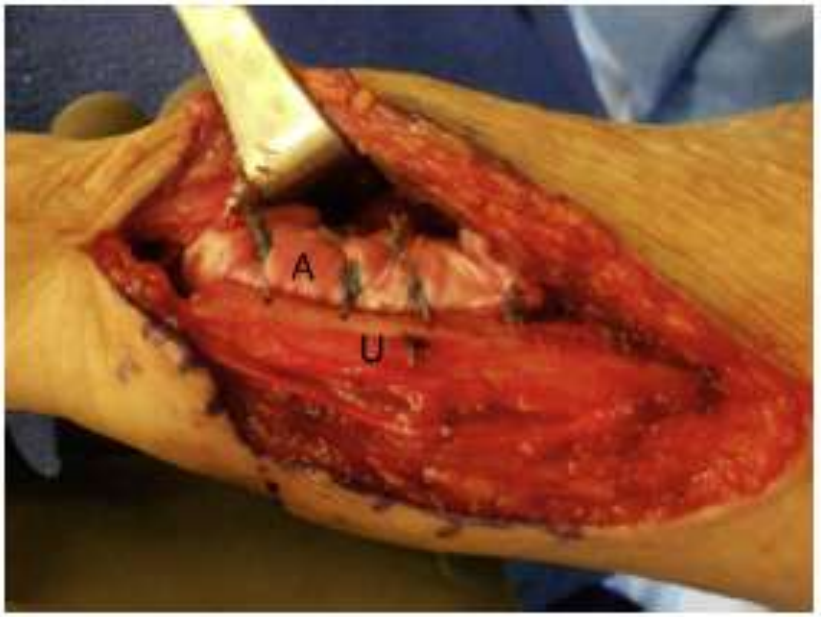
Tendon Allograft Interposition for Failed Distal Ulnar Resection: 2- to 14-Year Follow-Up

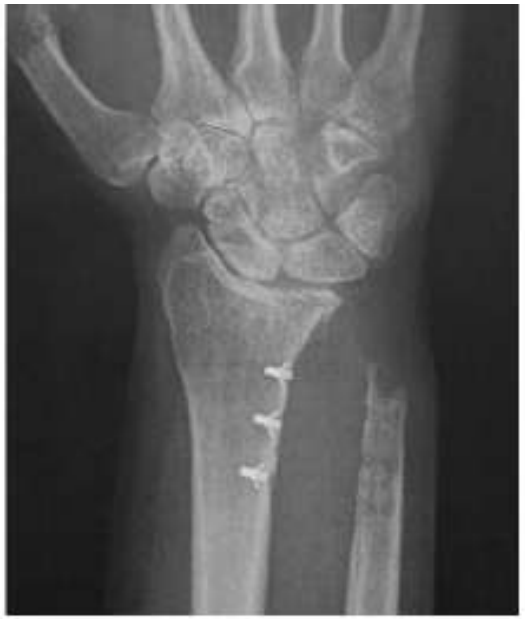
Dean G. Sotereanos, MD, Loukia K. Papatheodorou, MD, Benjamin G. Williams, MD

J Hand Surg Am. 2014;39(3):443–448.

- 26/31 with complete data
- 26 pts – minimum 24 mths FU
- Pain and satisfaction improved
- No instability reported
- 93% average grip strength
- 3 pts had scalloping of ulnar shaft – asymptomatic at 3 years post op







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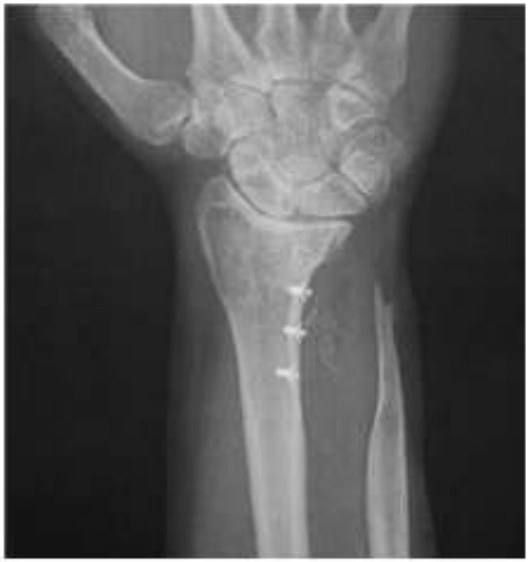
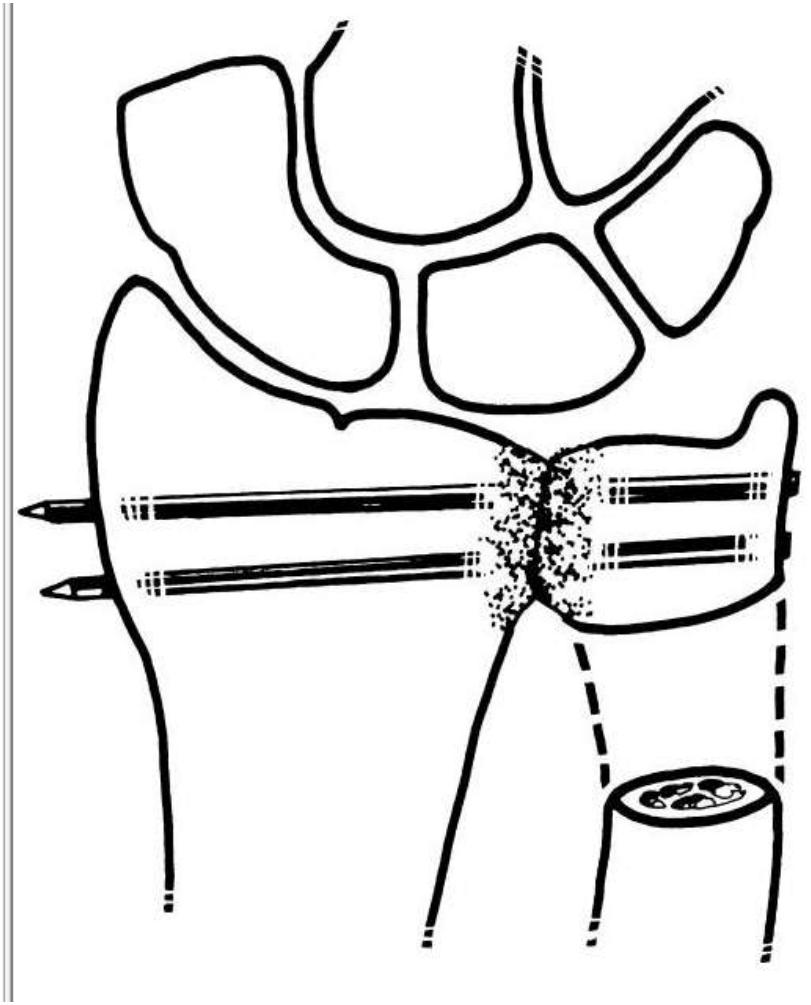
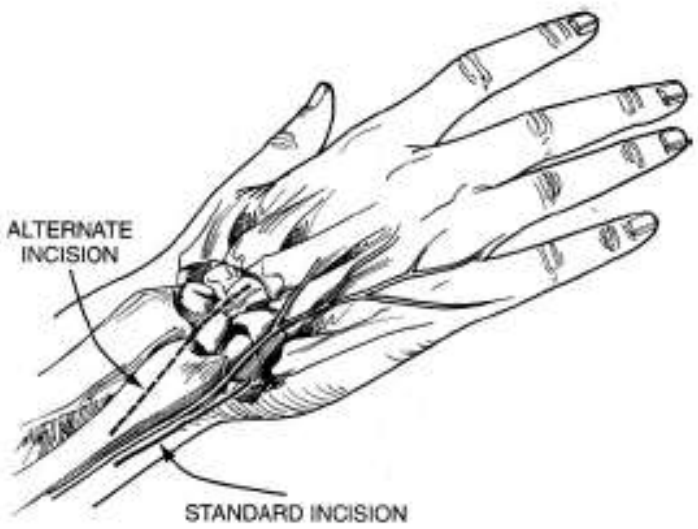
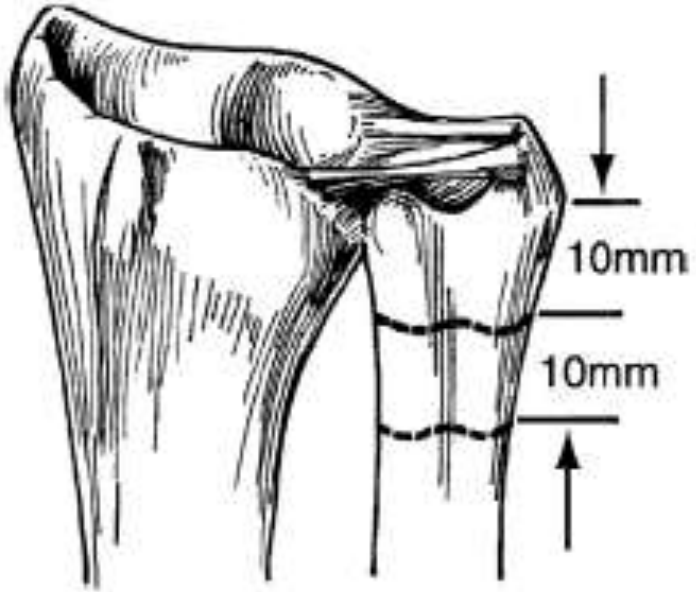


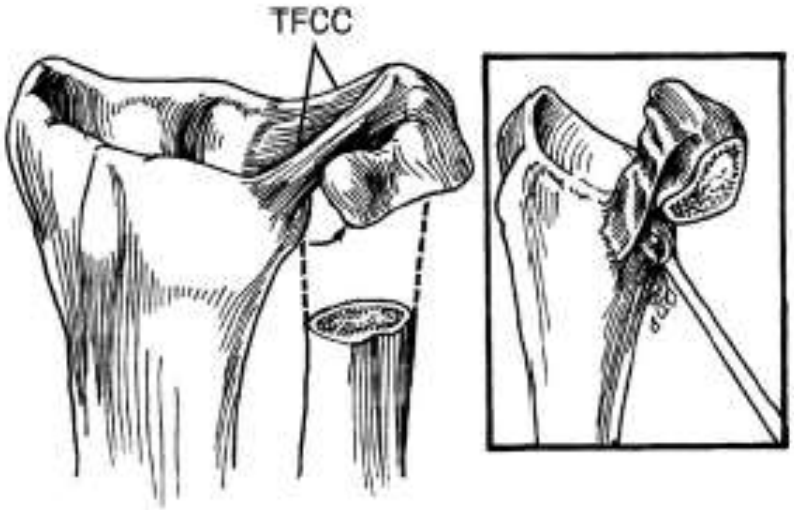
B

Sauve Kapandji Procedure

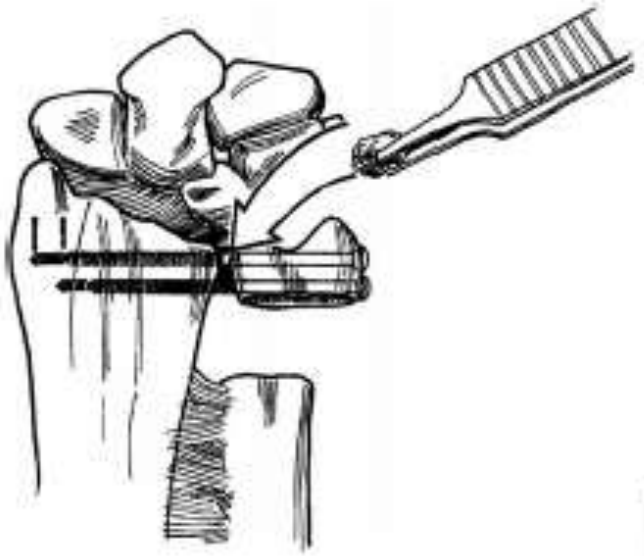



ALTERNATE
INCISION
STANDARD INCISION


10mm
10mm


TFCC


CANNULATED
DRILL BIT




DORSAL
PRONATOR
QUADRATUS
EXTENSOR
CARPI ULNARIS
TENDON SHEATH


FINAL
APPEARANCE

The Sauvé-Kapandji Procedure: Indications and Tips for Surgical Success

Alberto Lluch, MD, PhD

Hand Clin 26 (2010) 559–572

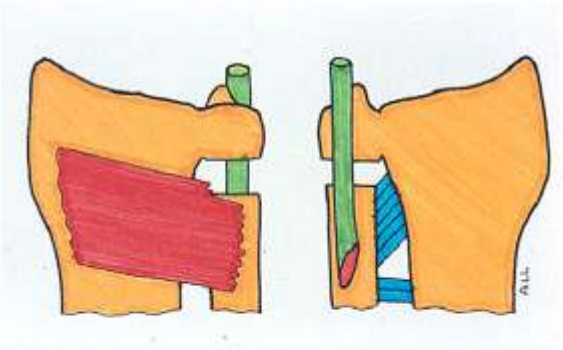
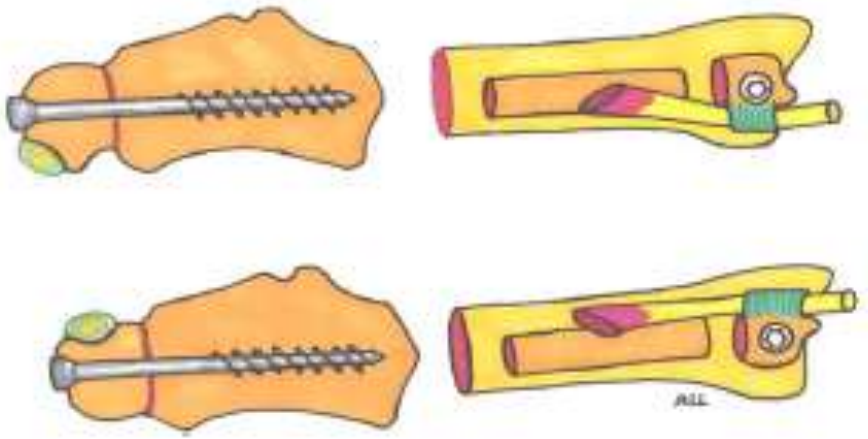
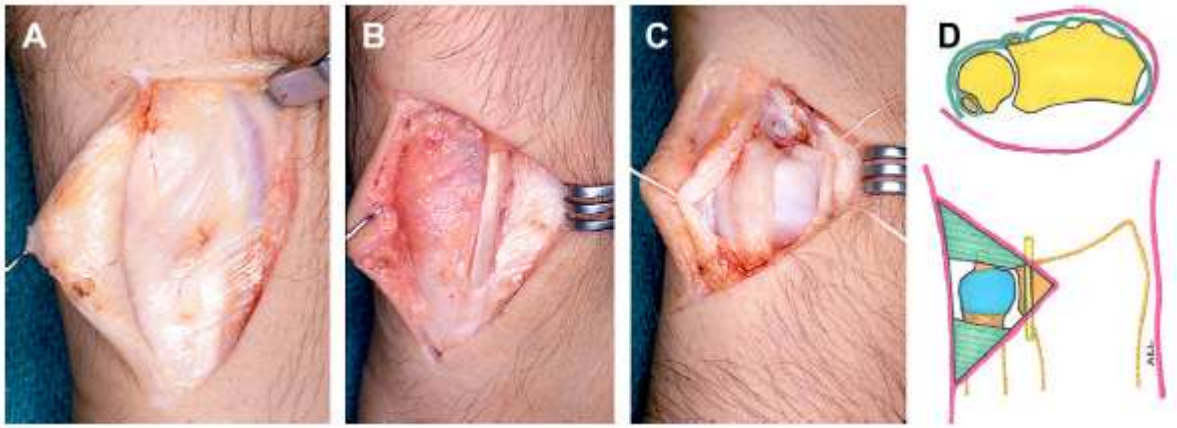


Fig. 10. The structures stabilizing the proximal ulna should not be damaged during the procedure: interosseus membrane, pronator quadrates, and flexor carpi ulnaris muscles anteriorly, and extensor carpi ulnaris muscle and sheath posteriorly. (*Adapted from* Lluch A, Garcia-Elias MD. The Sauvé-Kapandji procedure. In: Slutsky DJ, editor. Principles and practice of wrist surgery. Philadelphia: Saunders-Elsevier; 2009. p. 335–44; with permission.)

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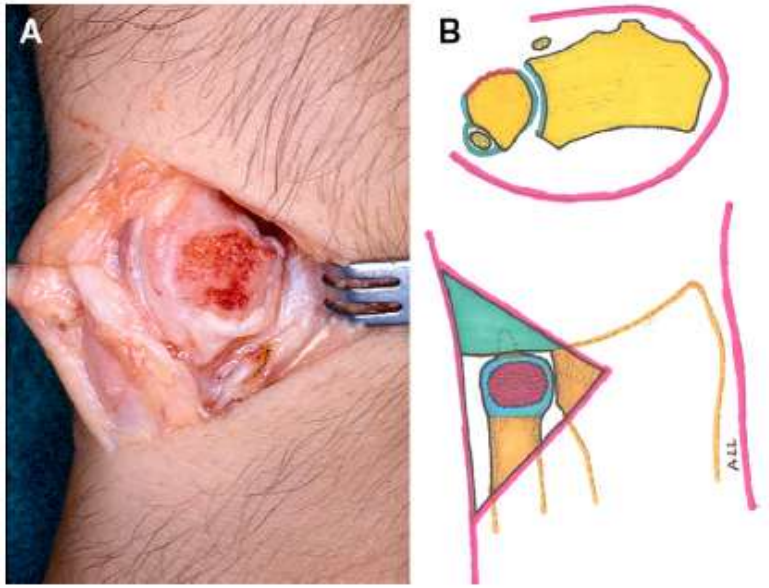
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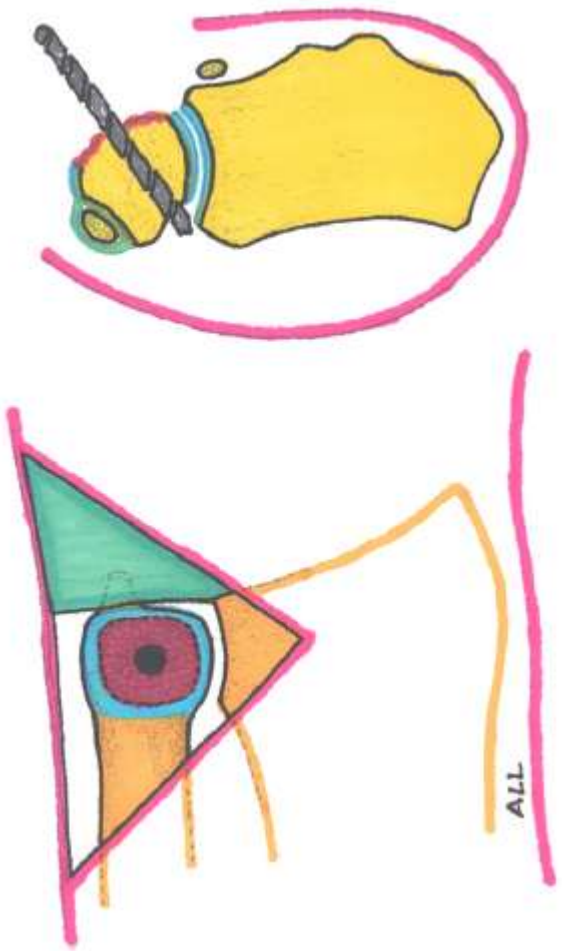
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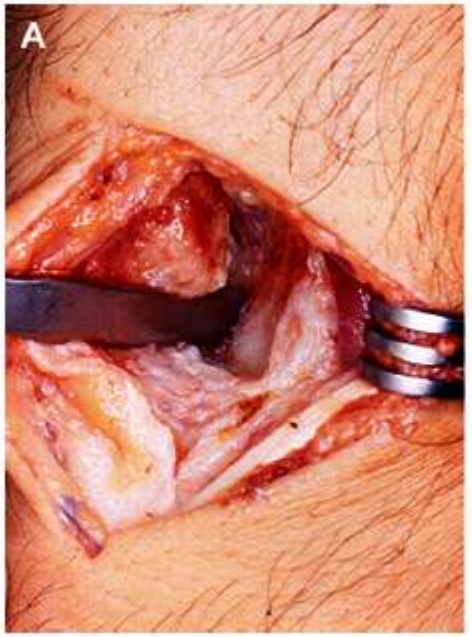
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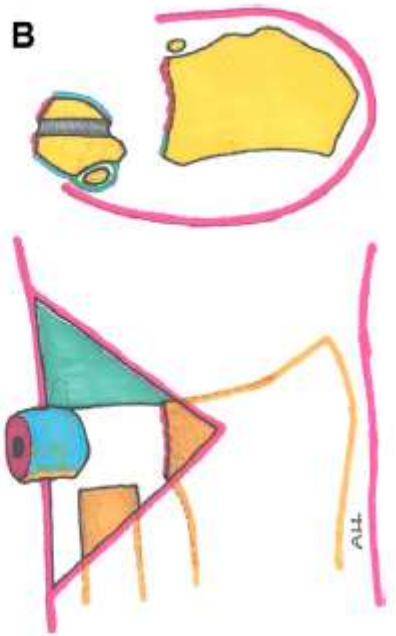
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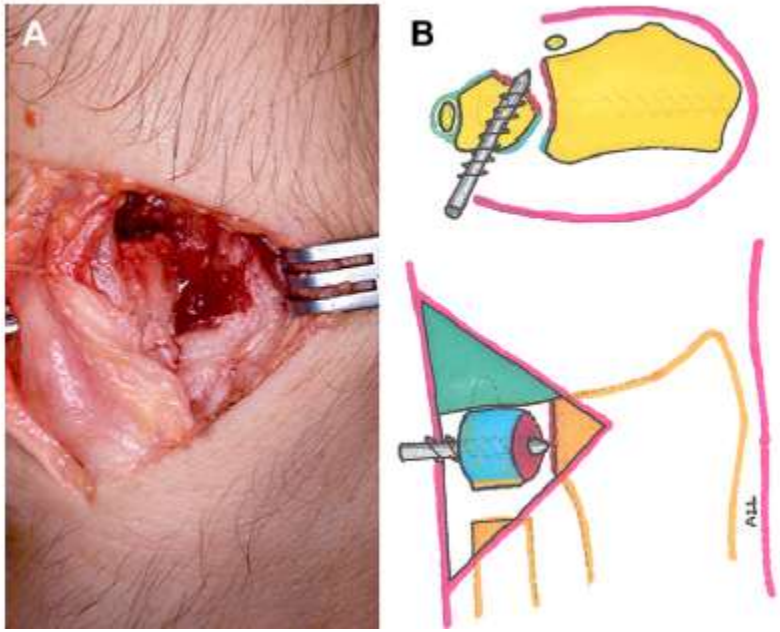
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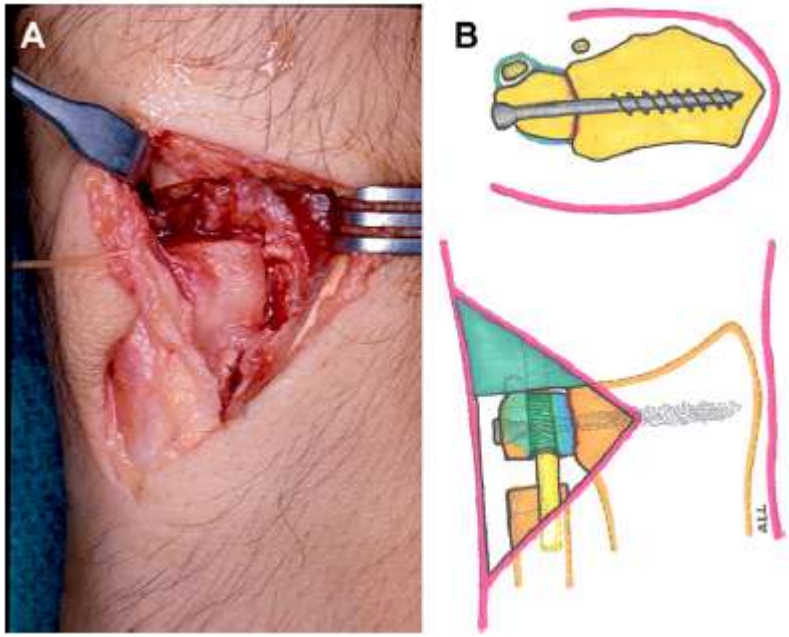
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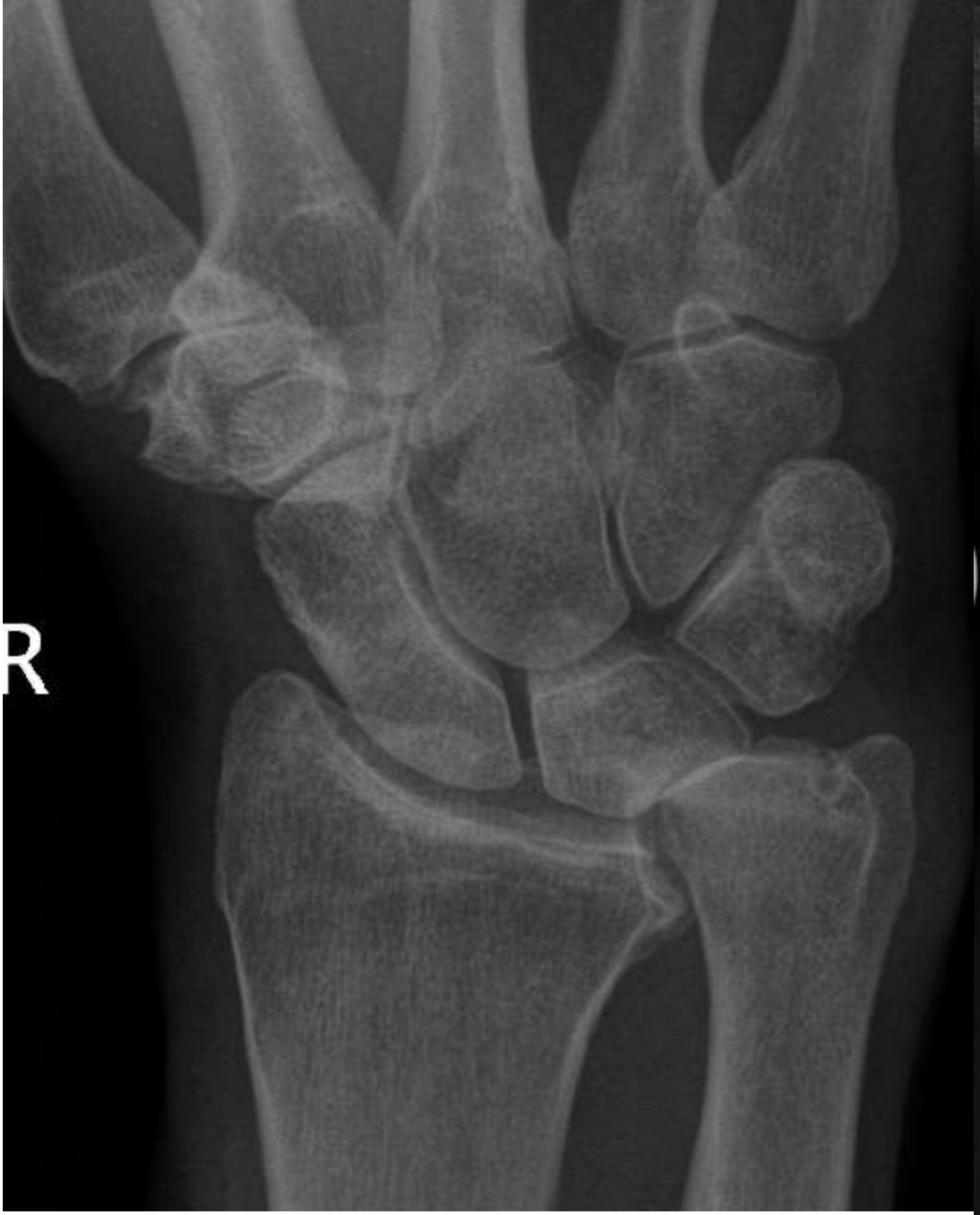
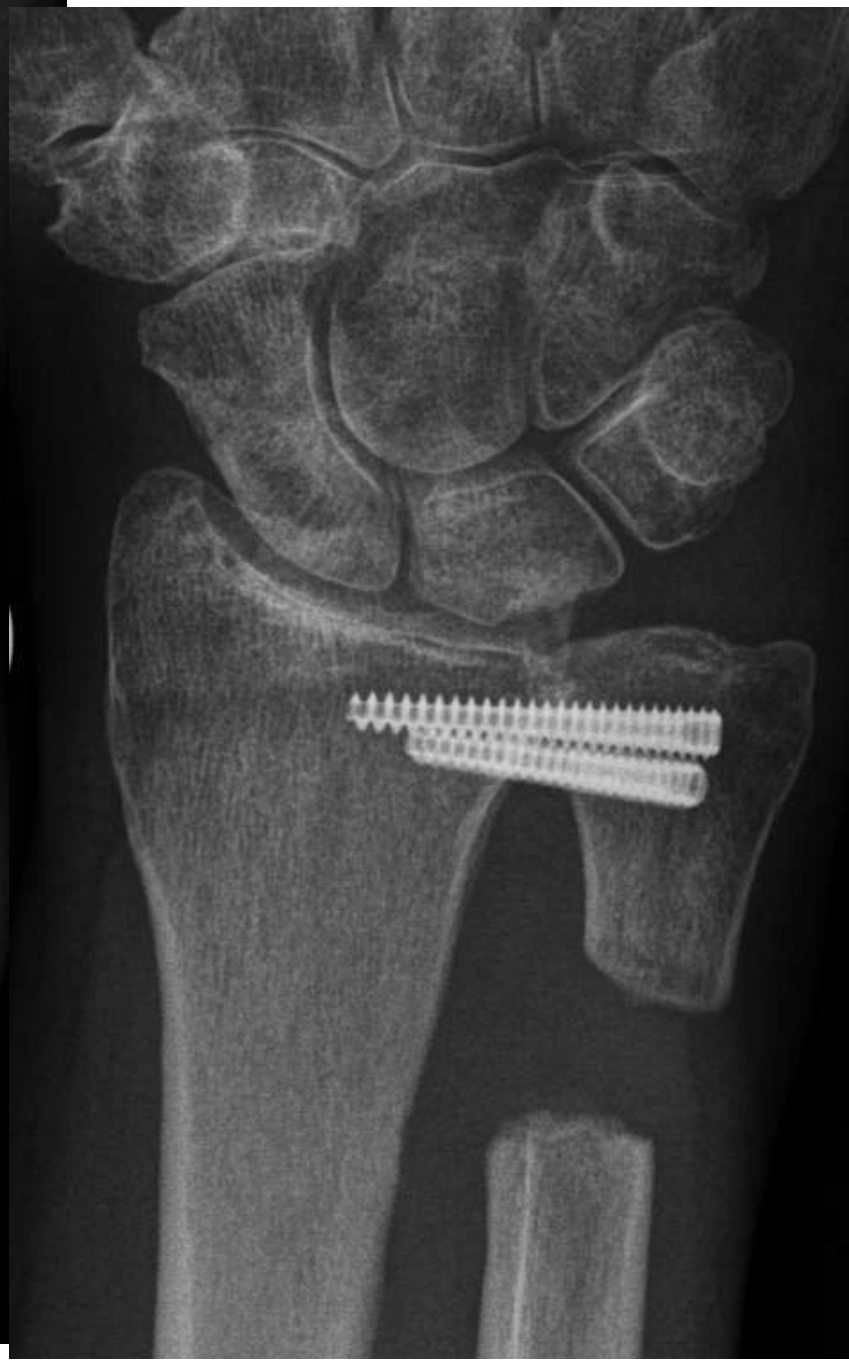
- 8 year follow up
- 70 pts – variety of indication incl DRUJ instability, RA, Madelung and TFCC
- Passive ROM = increased movement of ulnar stump
- No instability of stump on active use at last follow up
- 4 Calcification of pseudoarthrosis, 3 of which had distal radius osteotomy


R


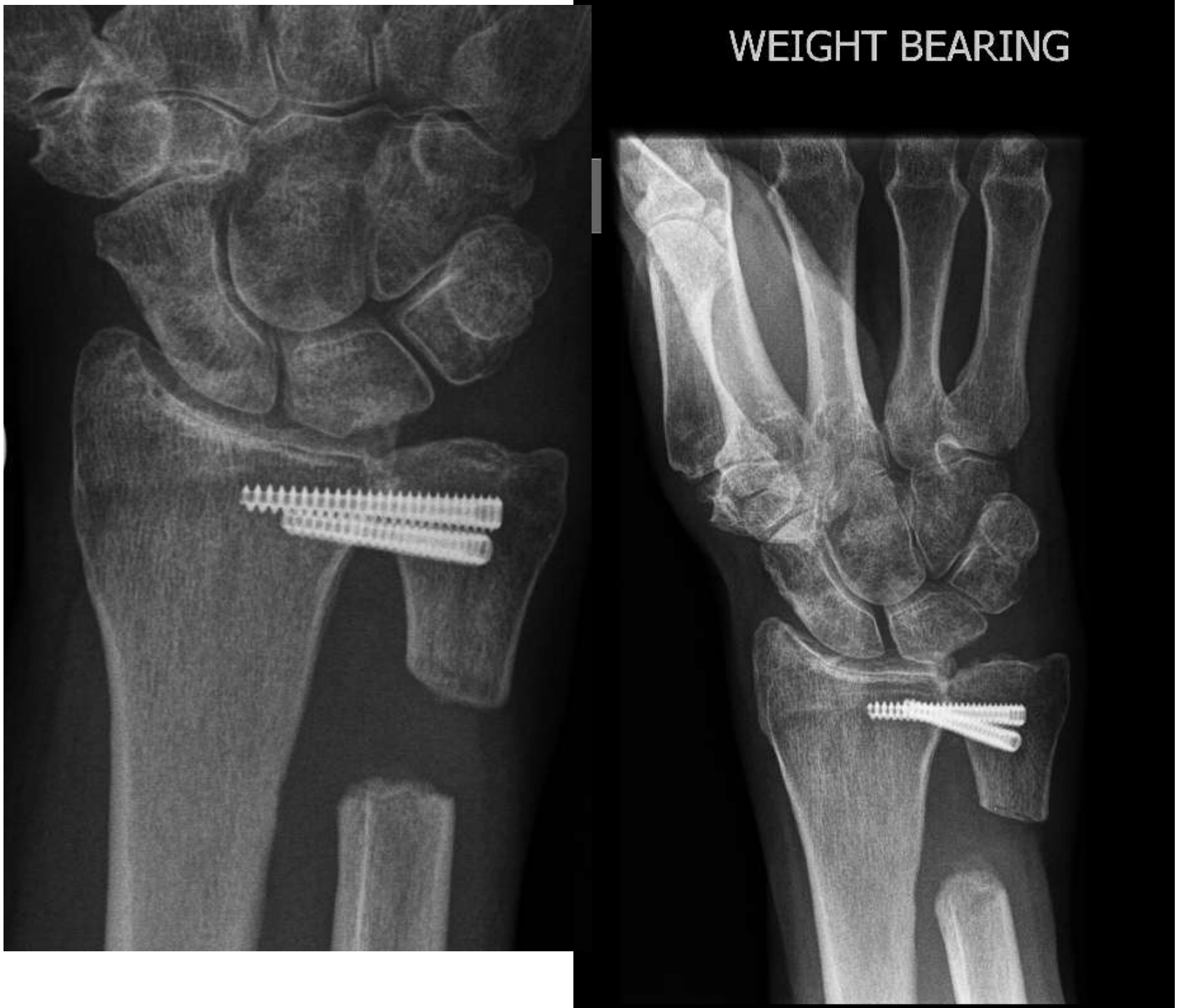
Sauve Kapandji

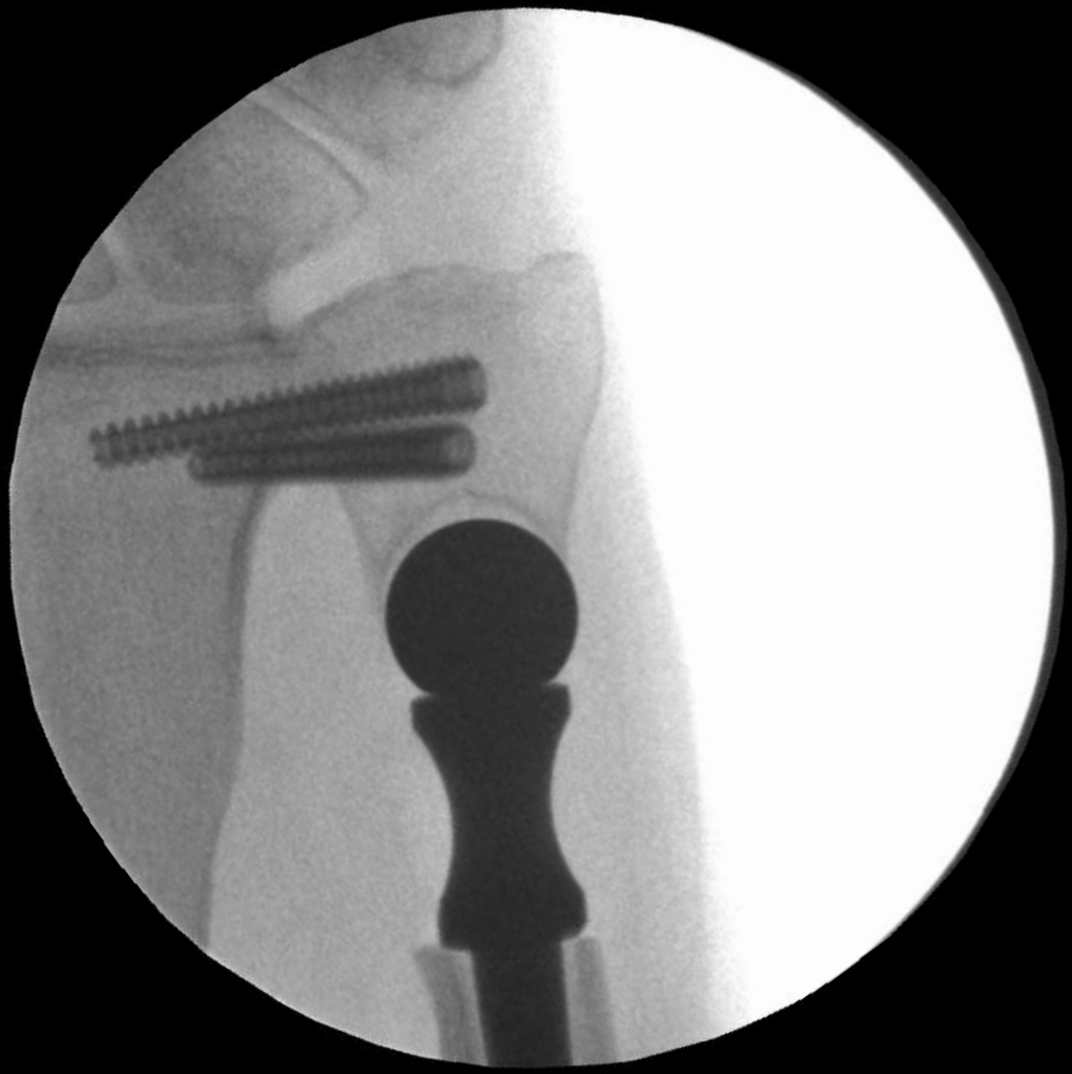
Pro

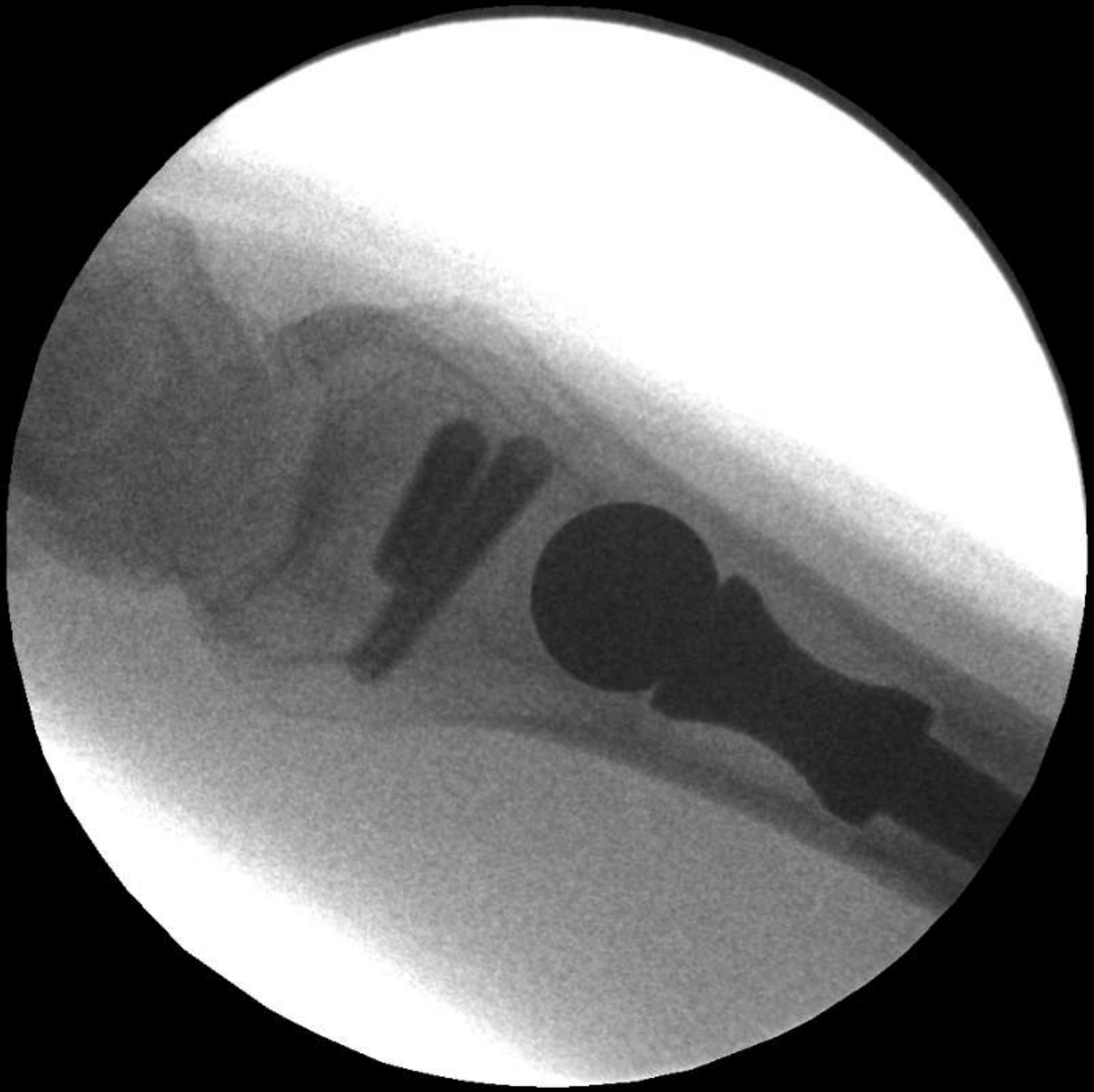
- Maintains TFCC
- Can be done if there is risk of Ulnar translation of carpus

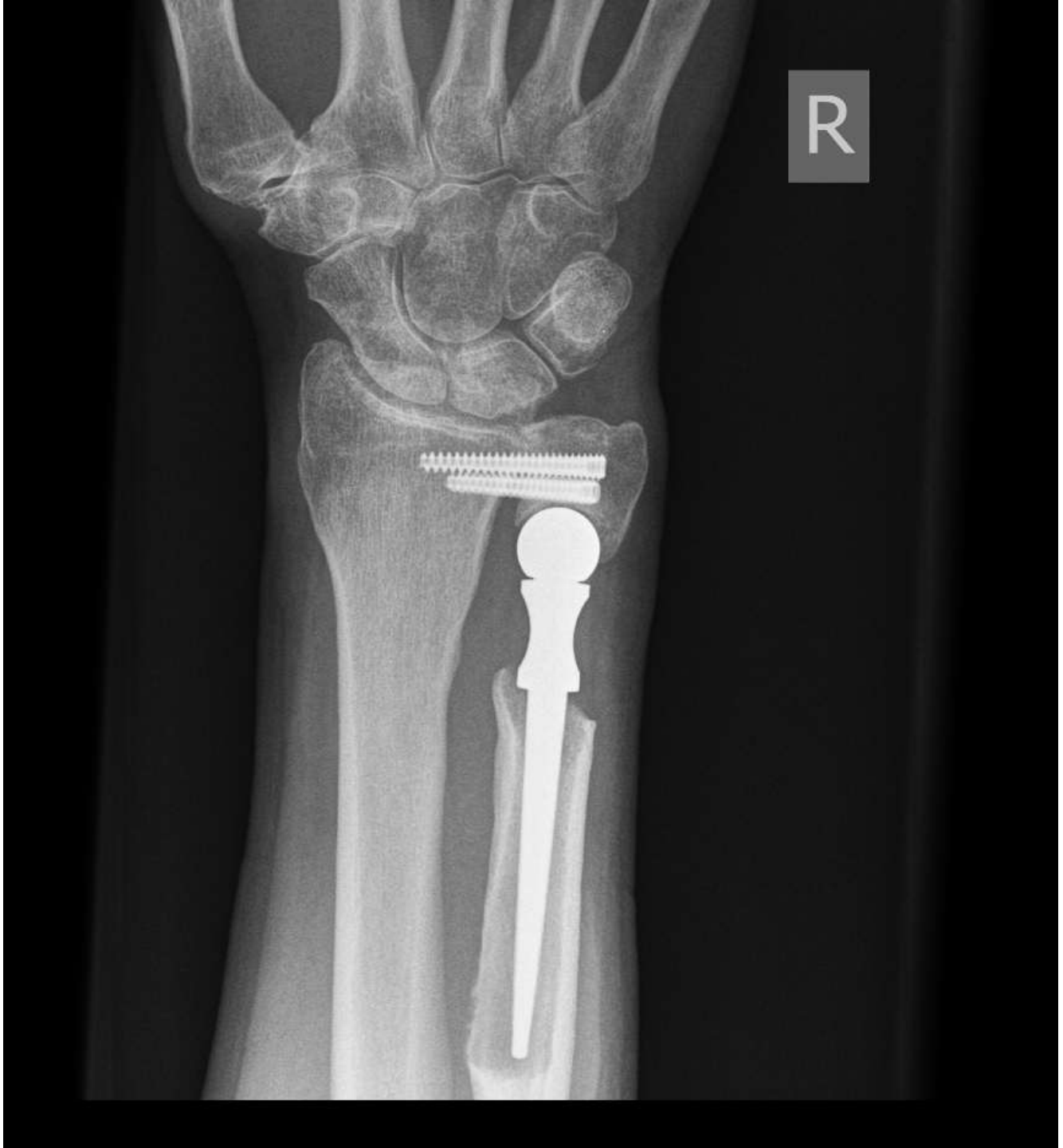
Cons

- Unstable ulnar stump
- Needs reasonably normal bone stock


WEIGHT BEARING






R

- Fernandez et al (CORR 2006)
- 10 pts (8-78 months FU- mean 31months)
- 6 pain free, 4 mild pain
- All prosthesis stable
- 9 return to previous occupation

Ulnar head Replacement

Ulnar head replacement

- Restores anatomy with implant
- Two types – complete or partial ulnar head resection
- Complete
  - complete control of ulnar variance
  - Risks of instability if soft tissue poor
- Partial
  - Does not interfere with stability
  - +/- 4 mm of ulnar variance alteration

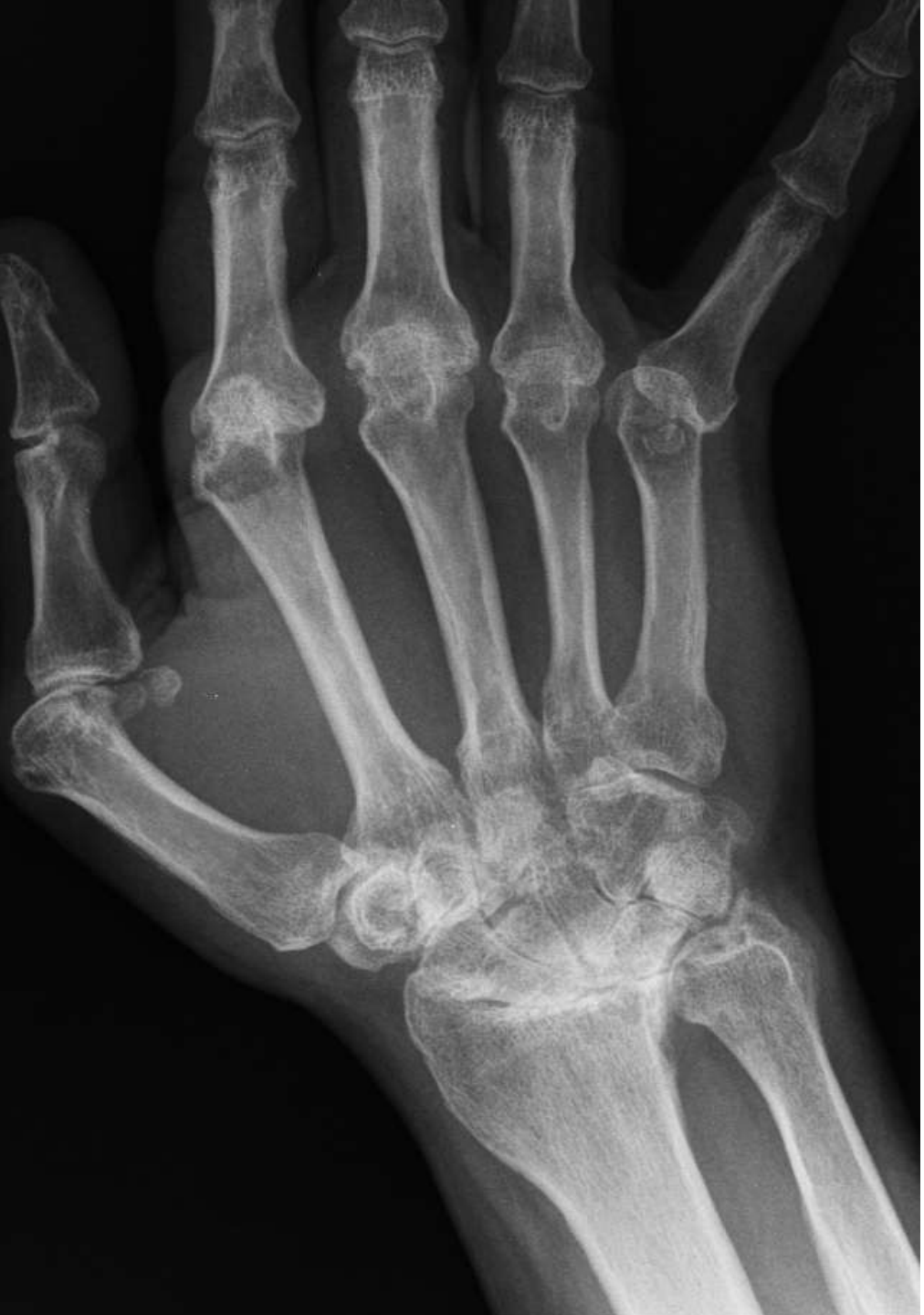
Ulnar head replacement

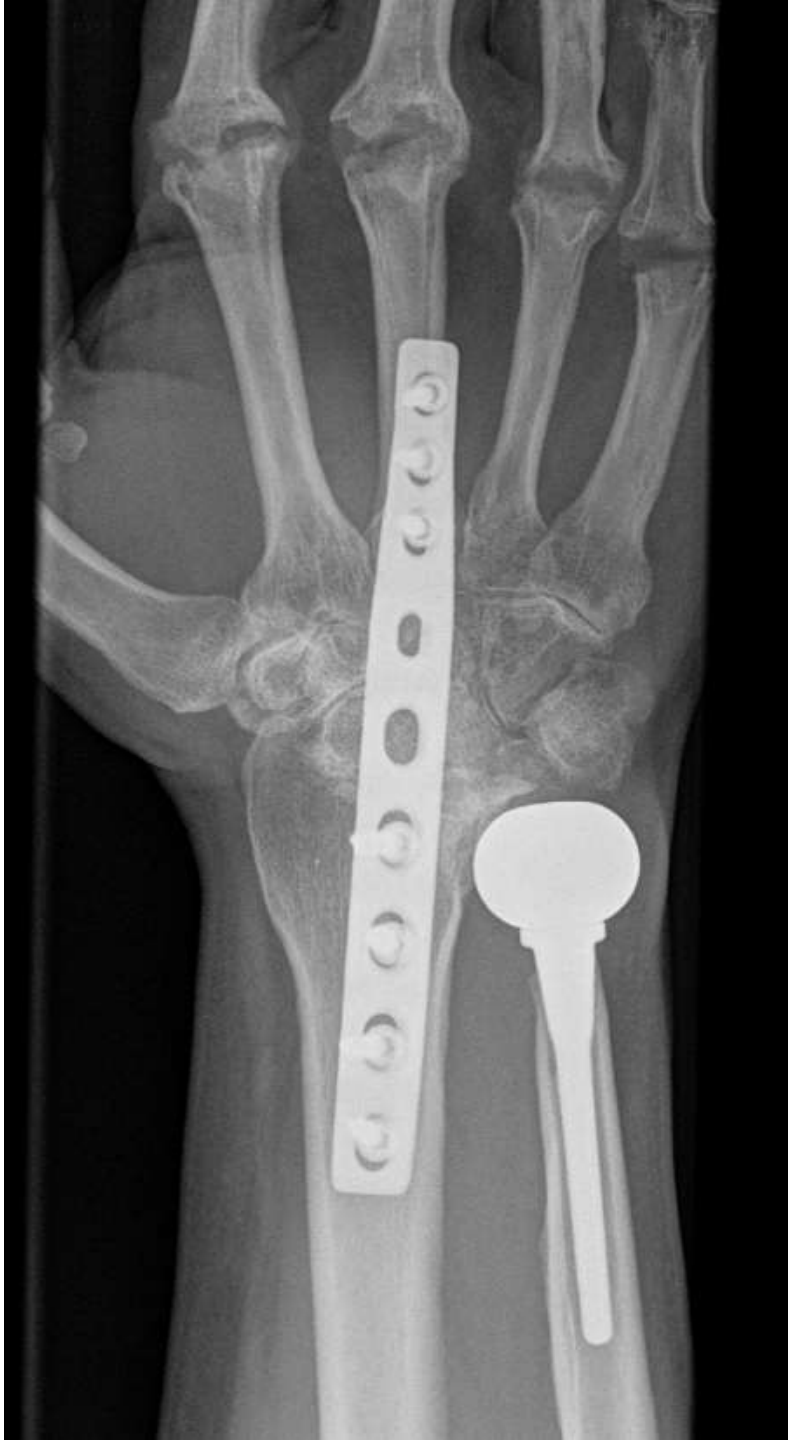
Pros

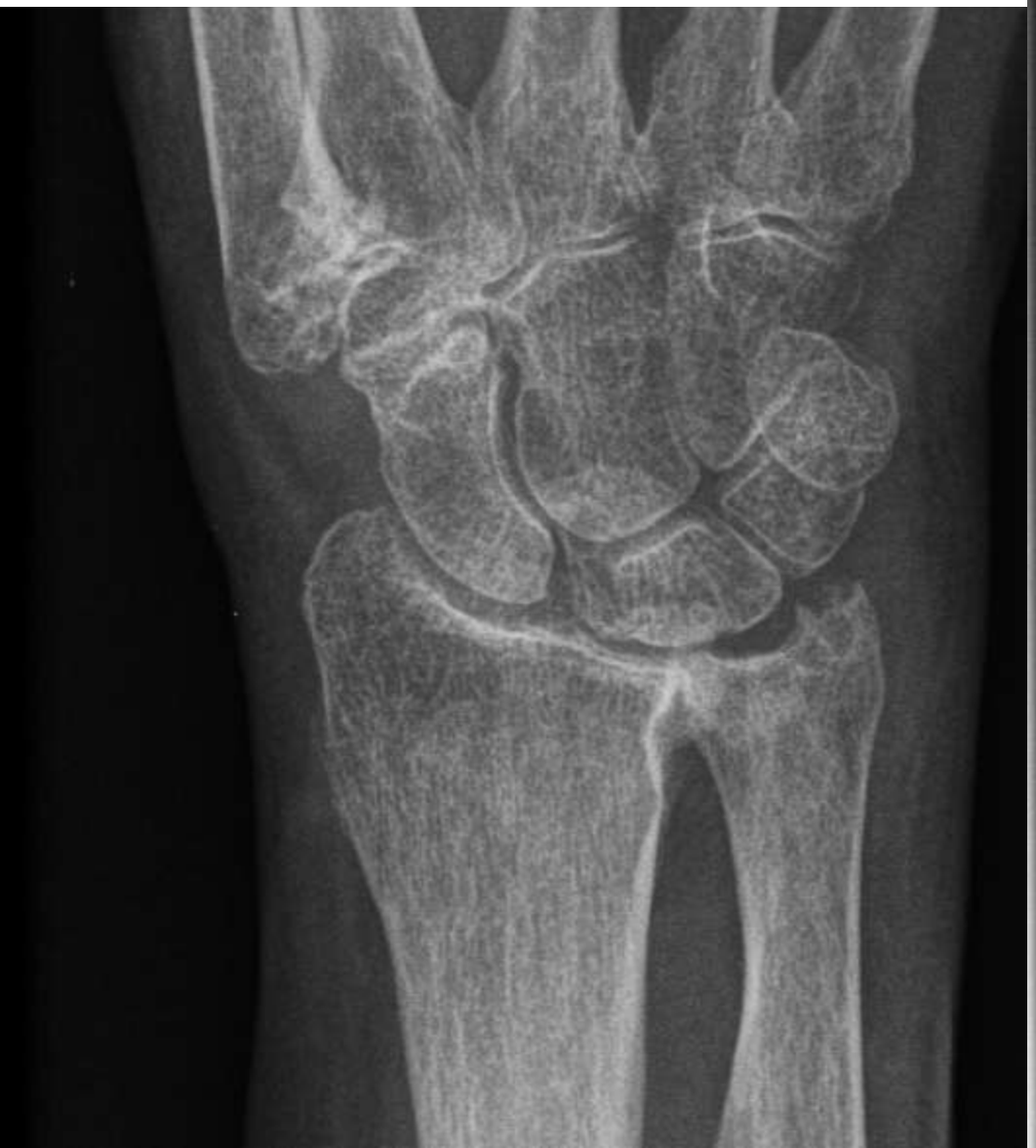
- Restores anatomy
- Can adjust ulnar variance
- Prevents radio-ulnar impingement
- Supports ulnar carpus
- Can be done with other procedures

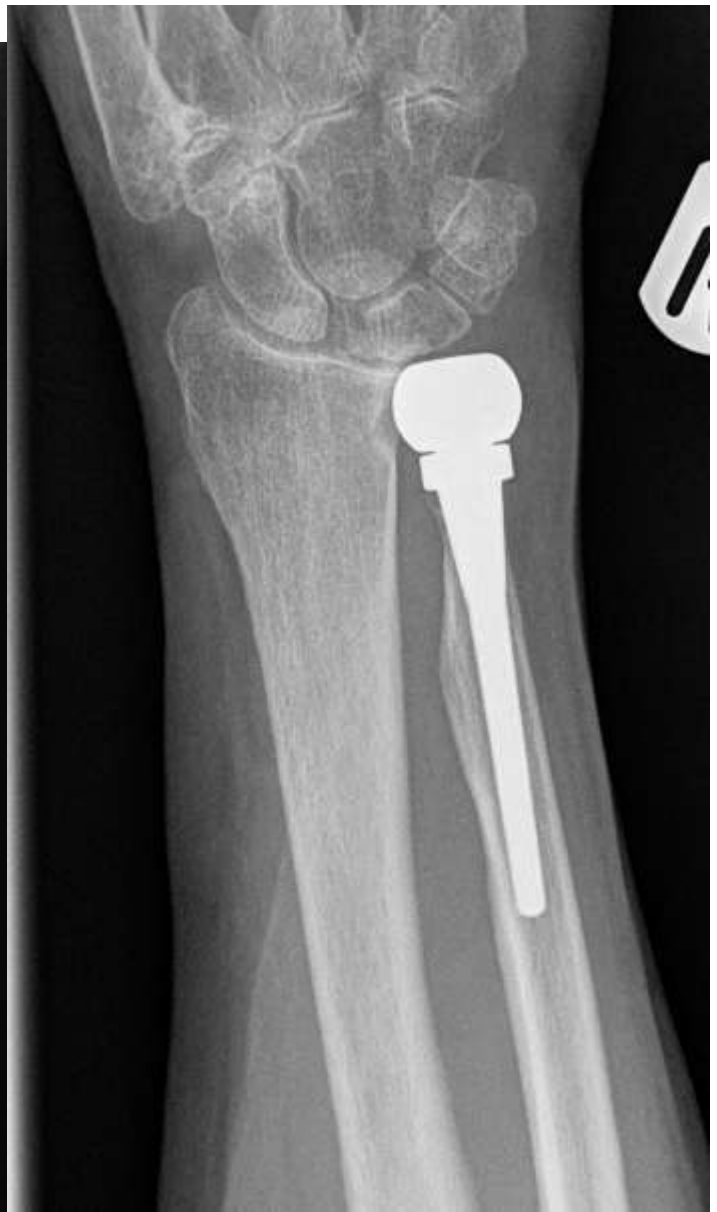
Cons

- Usual implant risks – wear/loosening/infection
- Instability in total ulnar head replacement if soft tissues poor.
- May still get symptoms from degenerate sigmoid notch.
- Previous wrist fusion?









SCIENTIFIC ARTICLE

Ulnar Head Replacement: 21 Cases; Mean Follow-Up, 7.5 Years

Peter Axelsson, MD,* Christer Sollerman, MD,* Johan Kärrholm, MD†

Clinical relevance Increased knowledge of performance for ulnar head implant arthroplasty may aid surgical decision making for distal radioulnar joint disorders. *(J Hand Surg Am. 2015;40(9):1731–1738.*

- Outcome:
- Maintained gain in supination
- Grip strength 25 kg on average
- No loosening in all cases

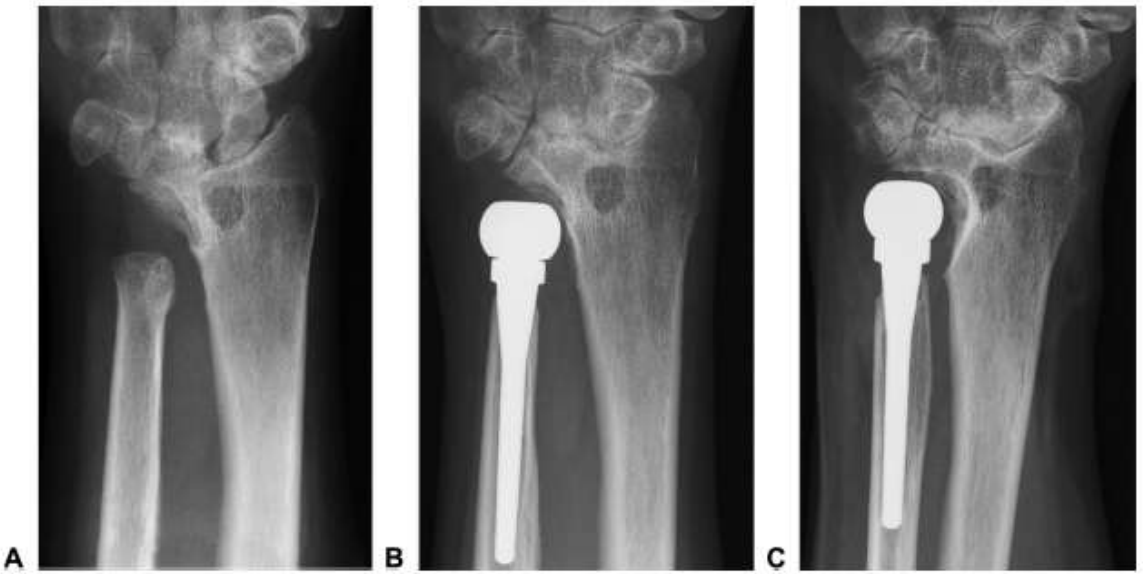
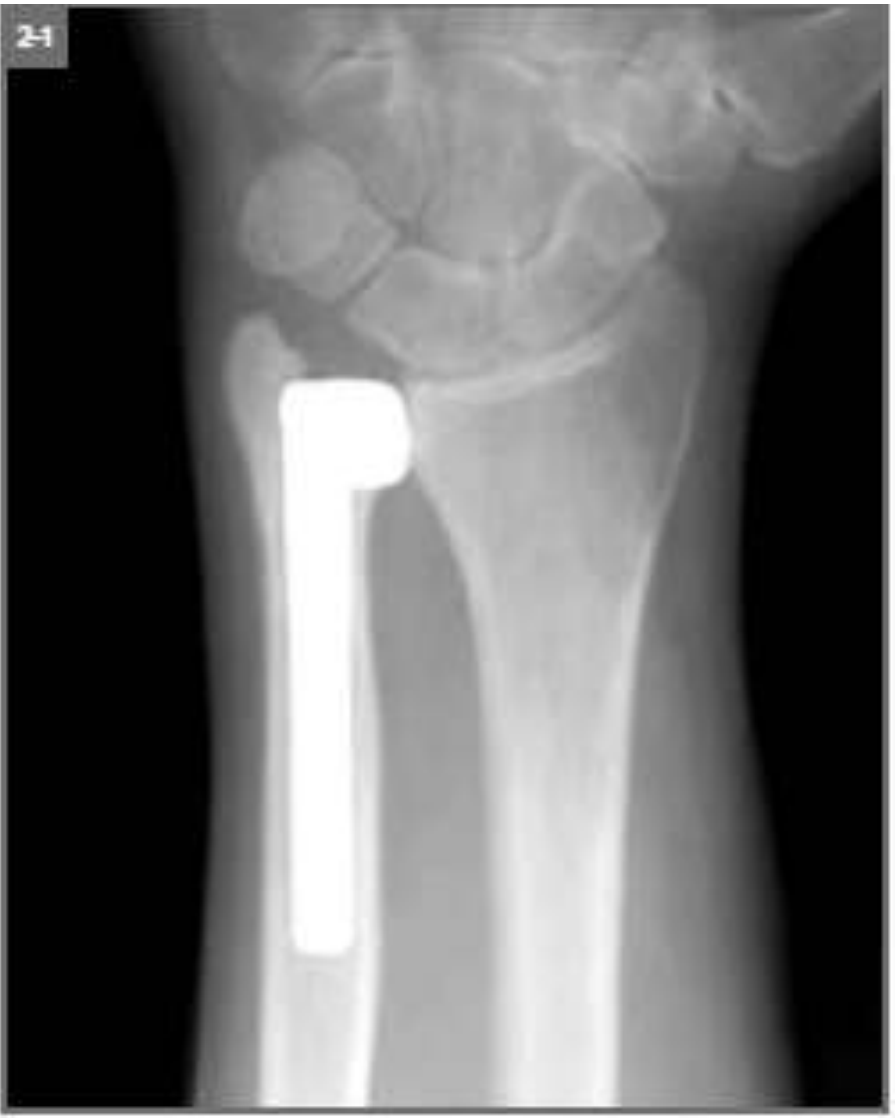
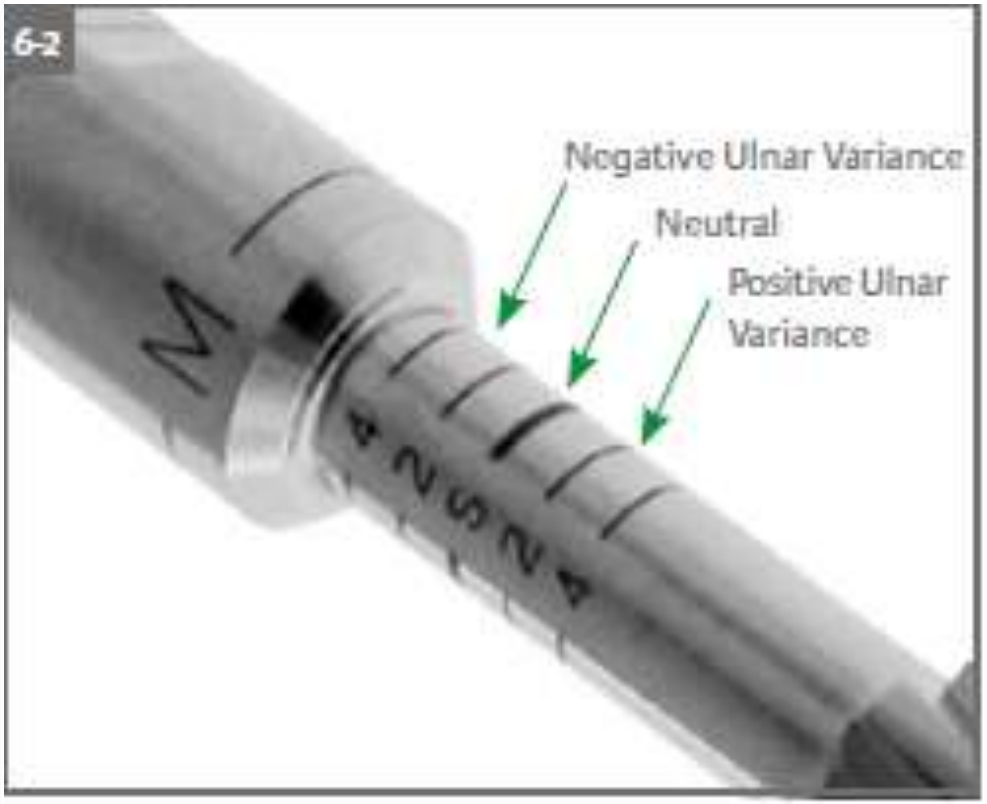
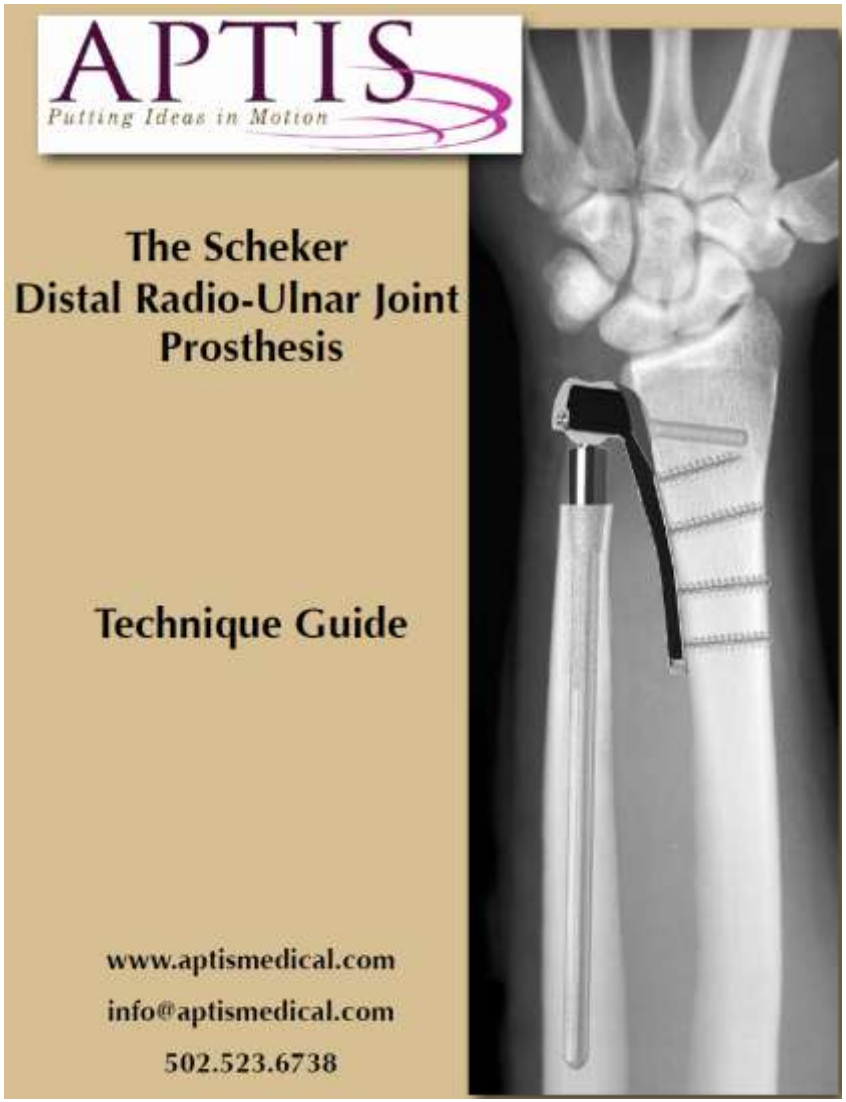


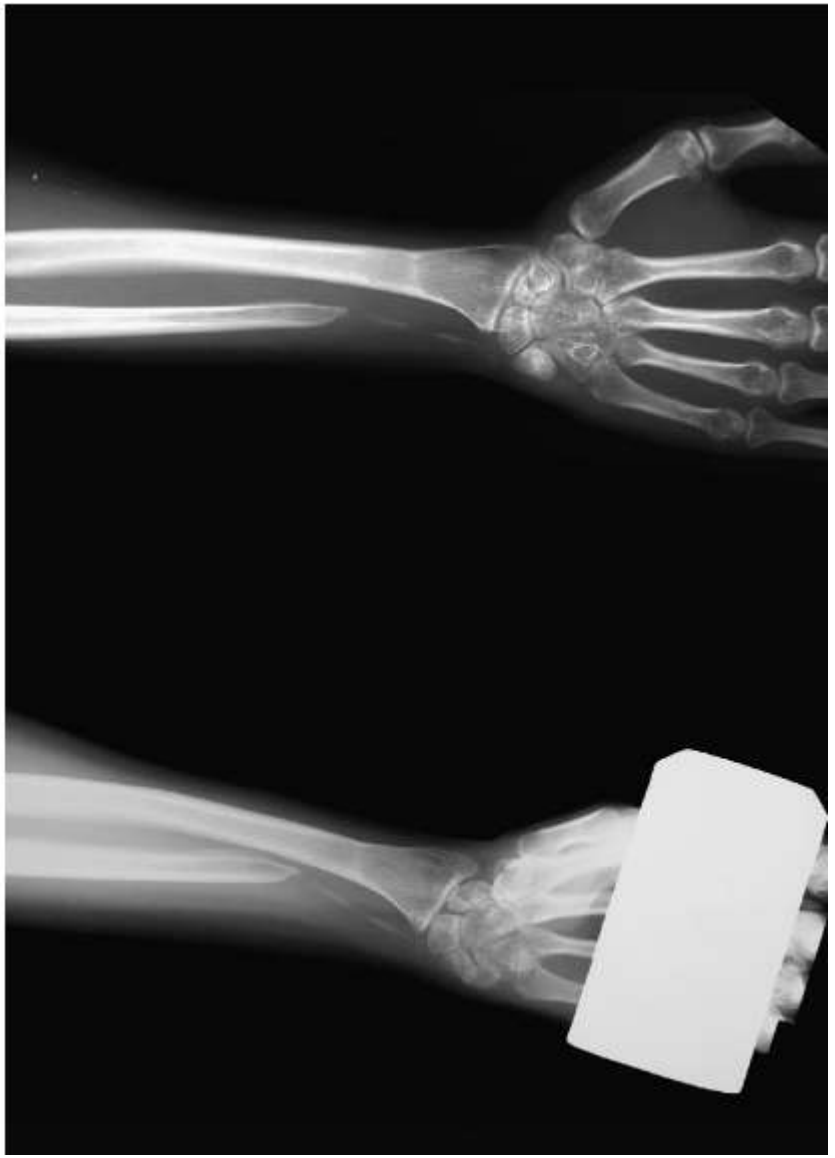
FIGURE 2: Case 10. Progressive radius erosion. VAS-pain 0.7. **A** Before surgery. **B** One year after surgery. **C** Eight years after surgery.

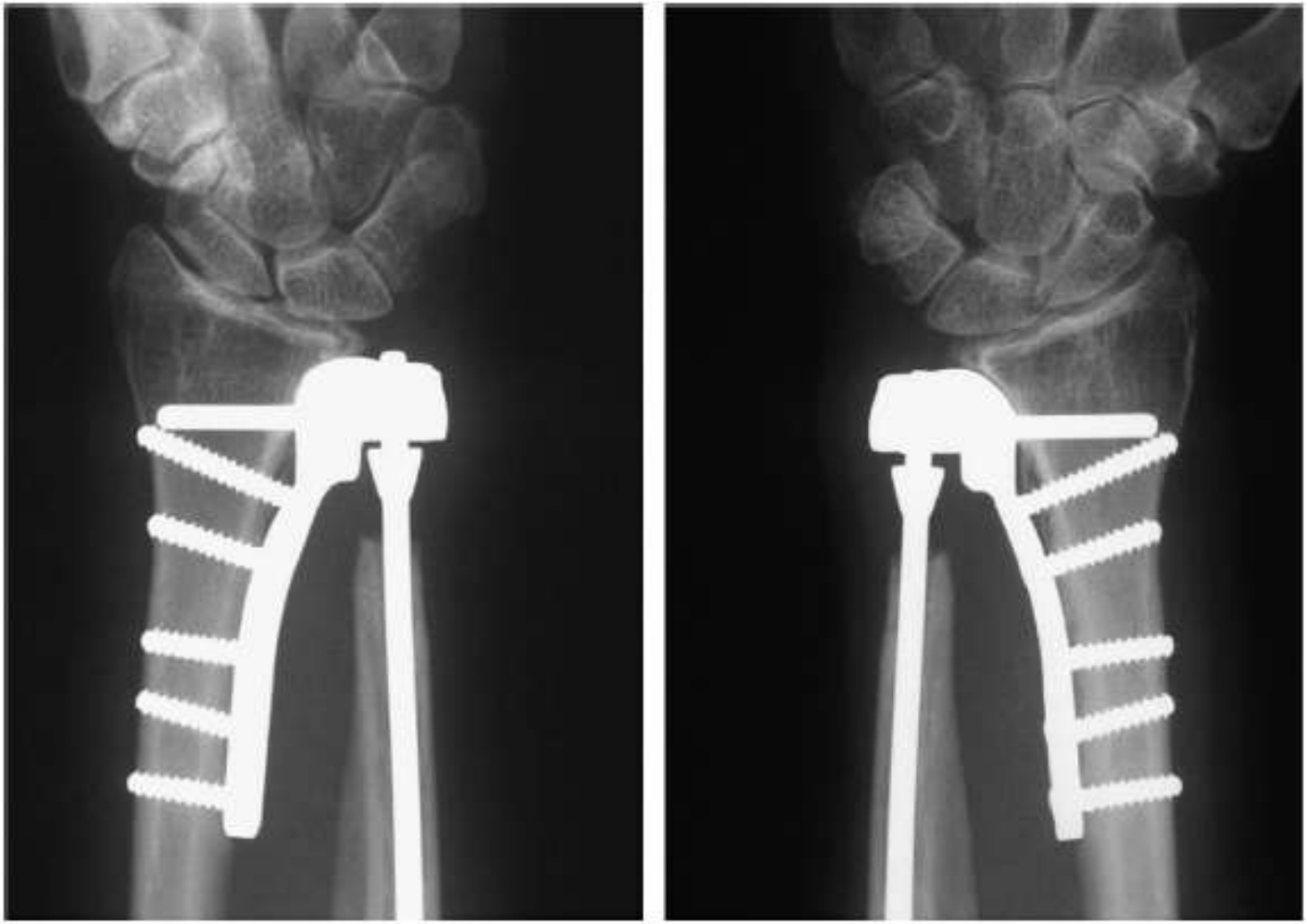

2-1


6-2
Negative Ulnar Variance
Neutral
Positive Ulnar Variance
M
4 N 5 N 4

Total DRUJ Replacement







A STUDY OF FUNCTIONAL OUTCOMES FOLLOWING IMPLANTATION OF A TOTAL DISTAL RADIOULNAR JOINT PROSTHESIS

L. A. LAURENTIN-PÉREZ, A. N. GOODWIN, B. A. BABB and L. R. SCHEKER

From the Christine M. Kleinert Institute for Hand and Microsurgery, Louisville, KY, USA

The Journal of Hand Surgery (European Volume, 2008) 33E: 1: 18–28