Bridge Plating in Distal Radius Fractures

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The history of distal radius fractures

- 1814 Colles: description of distal radius fractures and closed treatment
- 1929 Bohler: description of pins and plaster
- 1944 Anderson and O'Neil: external fixation
- 1990's Multiple authors:
  - Internal fixation
  - Arthroscopy
  - Dorsal plating
  - Columnar plating
- 2000's Multiple authors: fragment specific plating
- 2014 AAOS Appropriate use guidelines

What is normal for the distal radius?

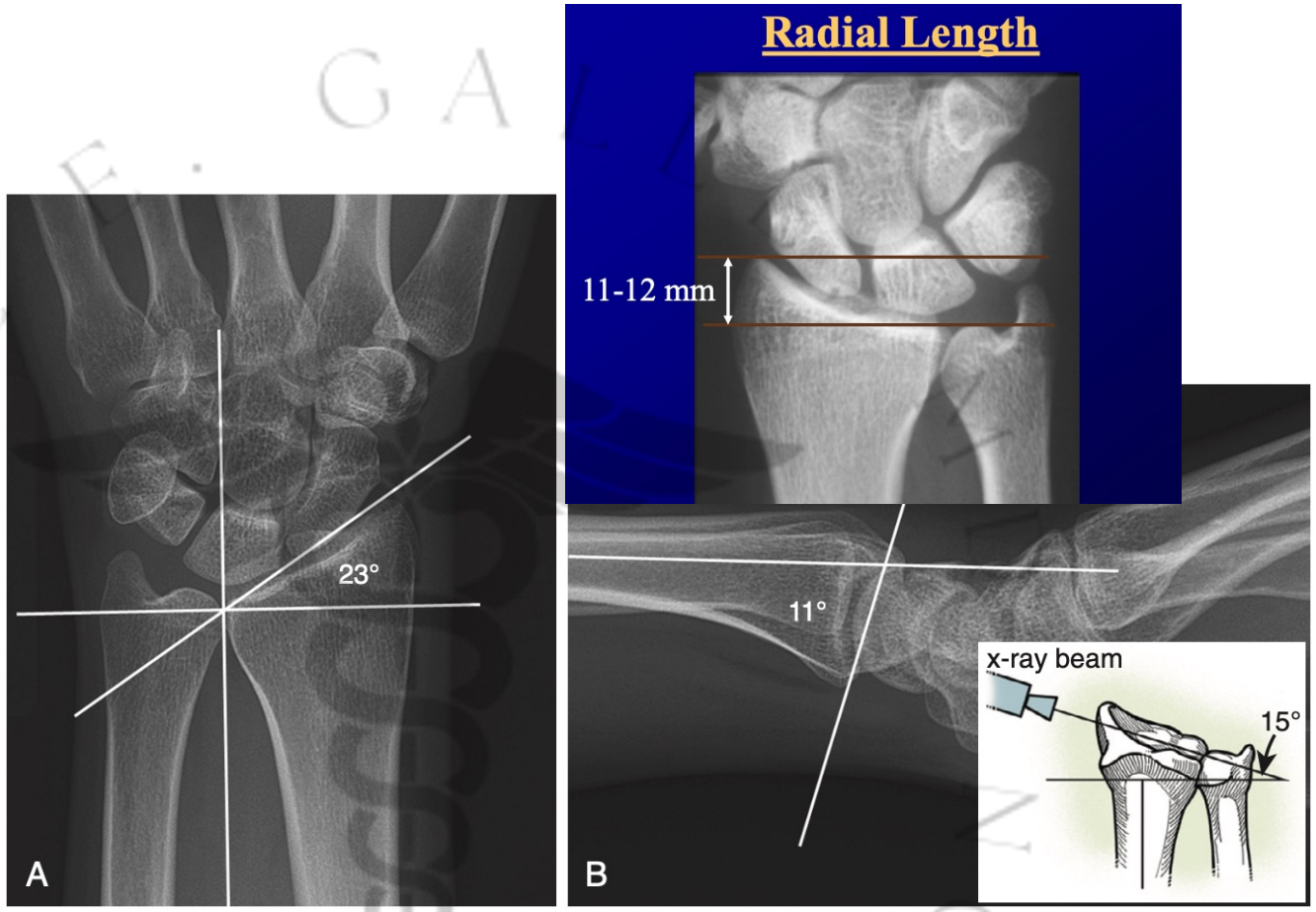

FIGURE 15.7 **A,** Posteroanterior radiograph of a wrist demonstrating radial inclination (23 degrees) and neutral ulnar variance. **B,** The "facet lateral" radiograph is performed by aligning the x-ray beam in a plane parallel to the lunate facet of the radius, approximately 15 degrees distal to proximal. (Drawing © Elizabeth Martin.)

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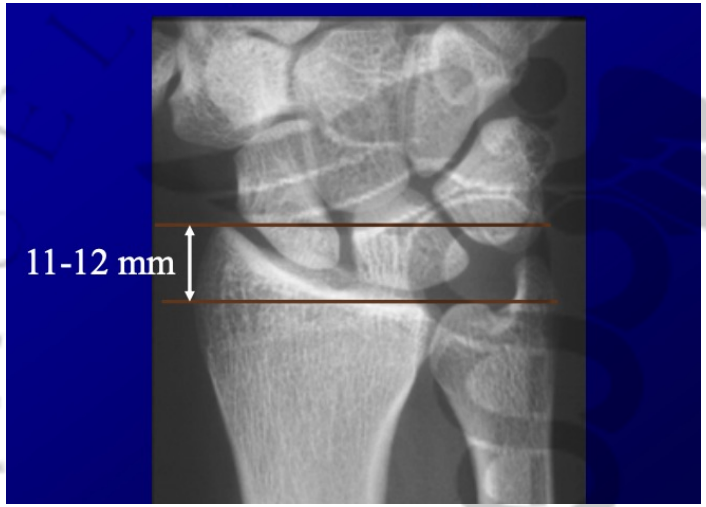
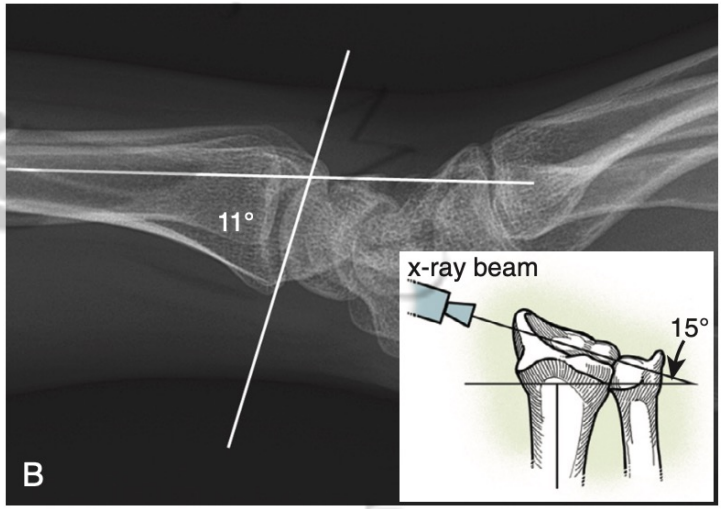
Indications for surgery





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Indications for Fixation (Non-Geriatric Patients)

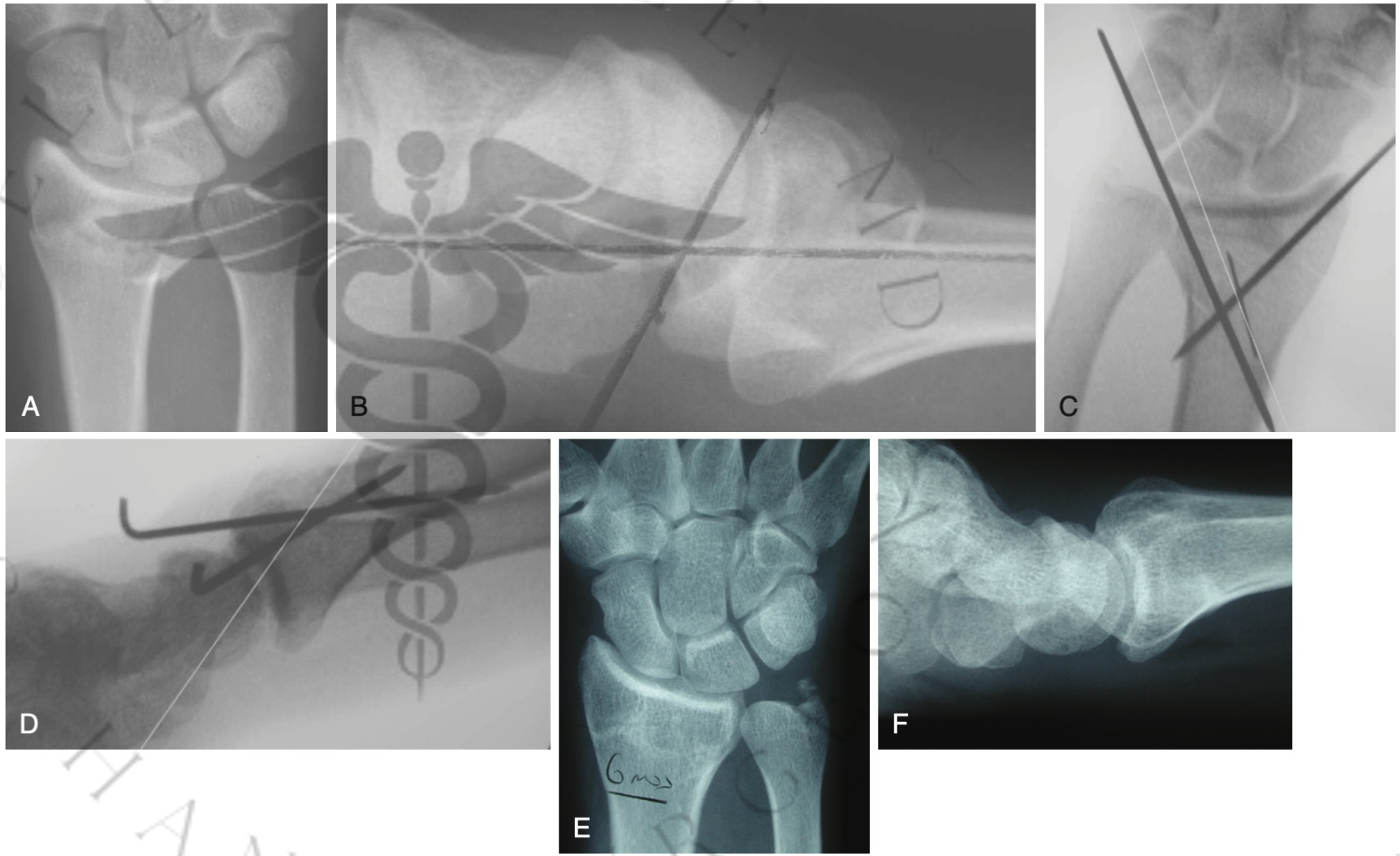
Moderate evidence supports that for non-geriatric patients (most commonly defined in studies as under 65 years of age), operative treatment for fractures with post reduction radial shortening >3mm, dorsal tilt >10 degrees, or intraarticular displacement or step off >2 mm leads to improved radiographic and patient reported outcomes.

Management of Distal Radius Fractures

This guideline was produced in collaboration with ASSH Endorsed by: AAHS, ASHT Cite this recommendation

★★★☆ MODERATE RECOMMENDATION

Early intra-focal pinning



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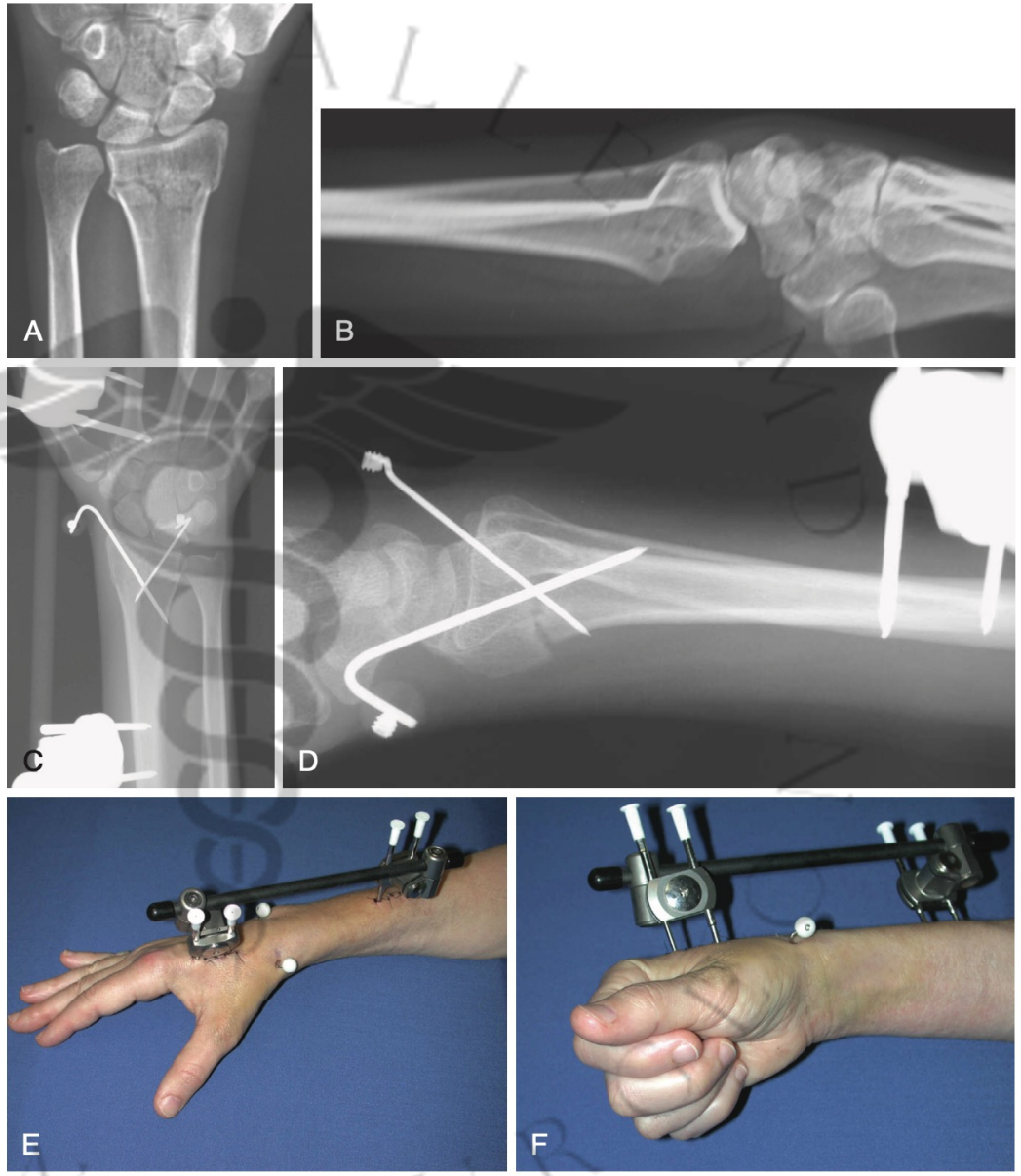
Early intra-focal pinning

Intra-focal pinning

- Pros
  - Simple
  - Cost effective
  - Quick
- Cons
  - Pin site infections
  - Patient complaints
  - Pin breakage
  - Loss of fixation
  - Stiffness

Early external fixation



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Early external fixation

External fixation

- Pros
  - Cost effective
  - Quick
- Cons
  - Pin site infections
  - Patient complaints
  - Pin breakage
  - Loss of fixation
  - CRPS, overdistraction
  - Stiffness

Early plate fixation

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Early plate fixation

Dorsal plating options

- Pros
  - Biomechanically advantageous
  - Stronger fixation
- Cons
  - Tendon irritation, synovitis, attrition, and rupture
    - May be necessary to remove

Volar fixation

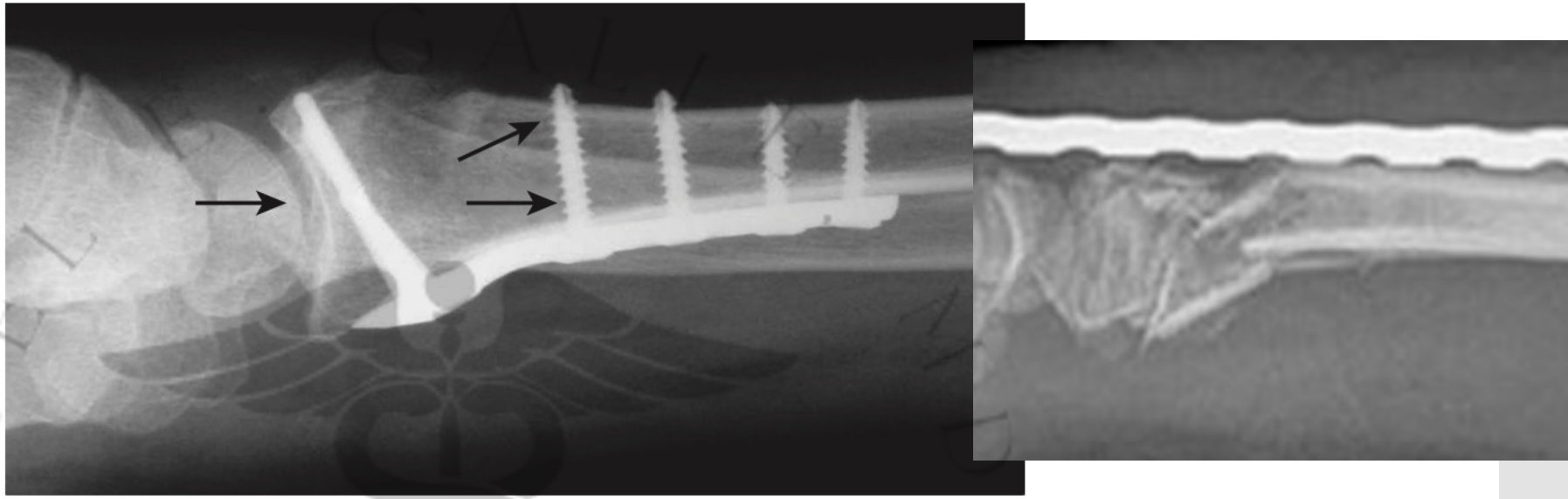
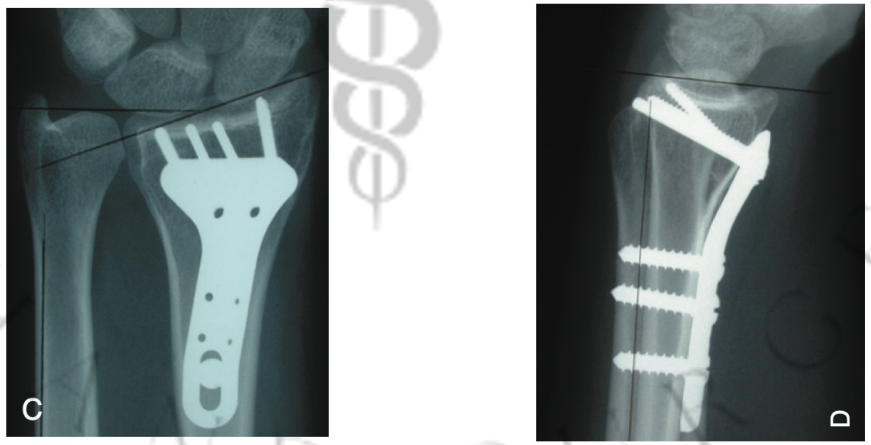


FIGURE 15.38 Ideal positioning of a volar fixed-angle plate. Notice the subchondral positioning of the distal fixed-angle pegs, by virtue of which axial loading is transmitted to the pegs and the volar plate and to the radial shaft. The dorsal comminuted area has not been grafted in this case.



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Volar approach

Volar plating options

- Pros
  - Fixed angle construct
  - Anatomic
  - Stronger construct
  - No pin site complications
- Cons
  - Cost of implants ($1k)

Combined approaches

Radiological, Clinical, and Functional Outcomes of Combined Dorsal and Volar Locking Plate Osteosynthesis for Complex Distal Radius Fractures

Simona Lüdi, MD,*† Charlotte Kurz, MD,*‡§ Manja Deforth, MS,‖ Haval Ghafoor, MD,*‖
Mathias Haefeli, MD,¶# Philipp Honigmann, MD*‖#**

Combined approaches

Combined plating options

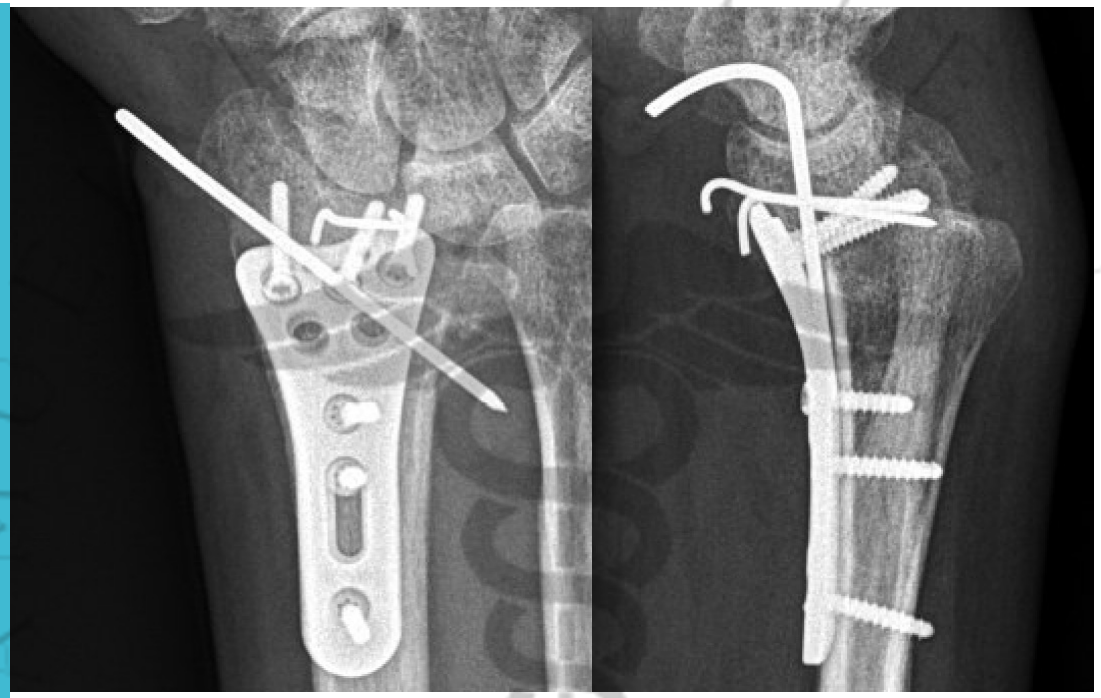
- Pros
  - Biomechanically advantageous
  - Stronger fixation
- Cons
  - Surgical time ($5k per hour)
  - Cost of implants ($1k x # of plates)

Complications of volar plating

Volar Plate Fixation Failure for Volar Shearing Distal Radius Fractures With Small Lunate Facet Fragments

John D. Beck, MD, Neil G. Harness, MD, Hillard T. Spencer, MD

Complications of volar plating



11/2020

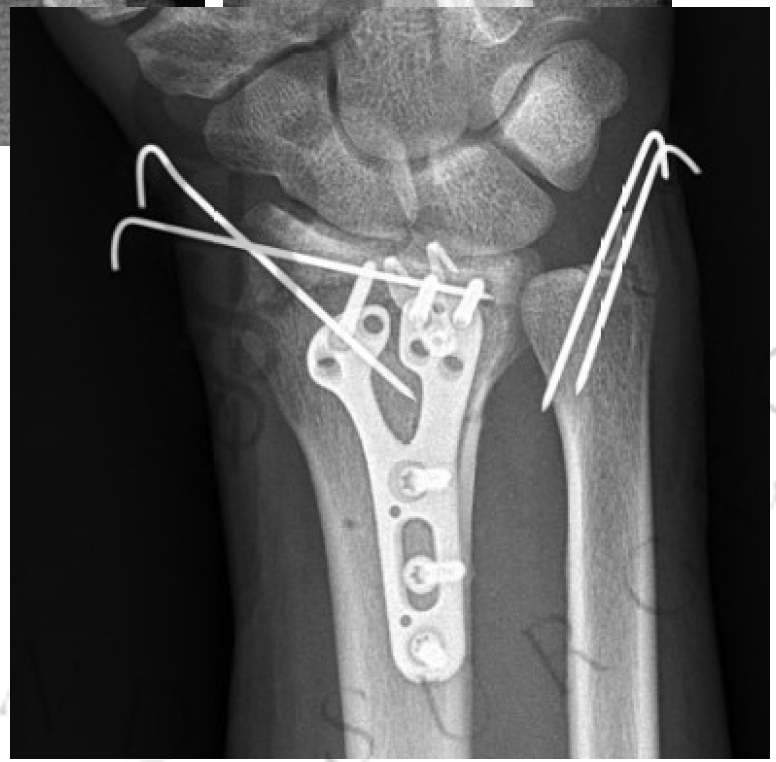
Complications of volar plating

10/2020

12/2022

Current state of affairs

Current state of affairs

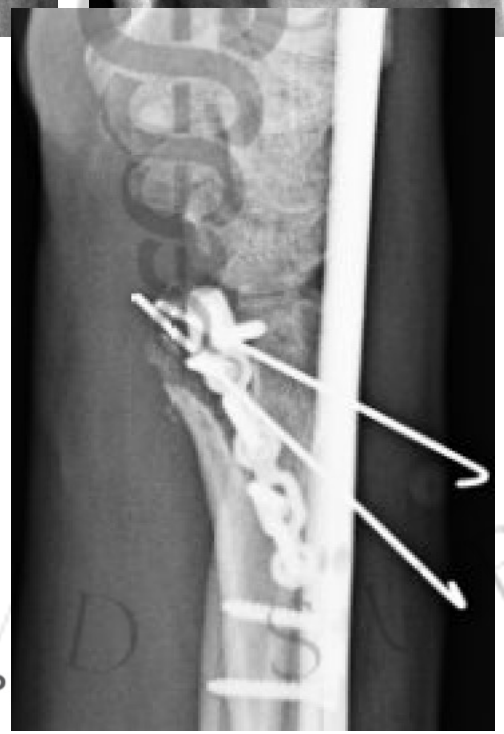


My indications for bridge plating

Delayed presentation

My indications for bridge plating

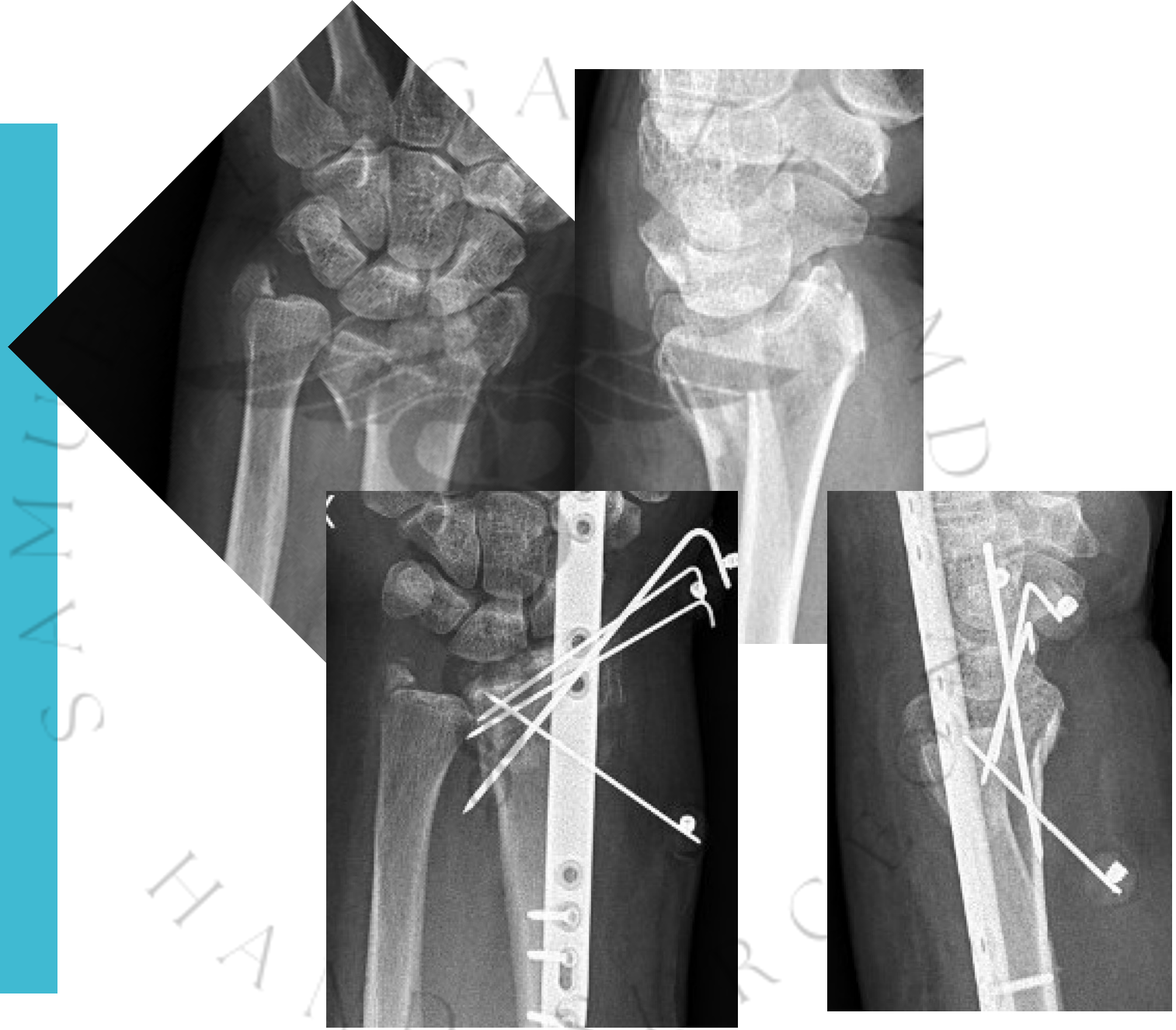
Delayed presentation



My indications for bridge plating

Delayed presentation

Age + comminution (osteoporotic)



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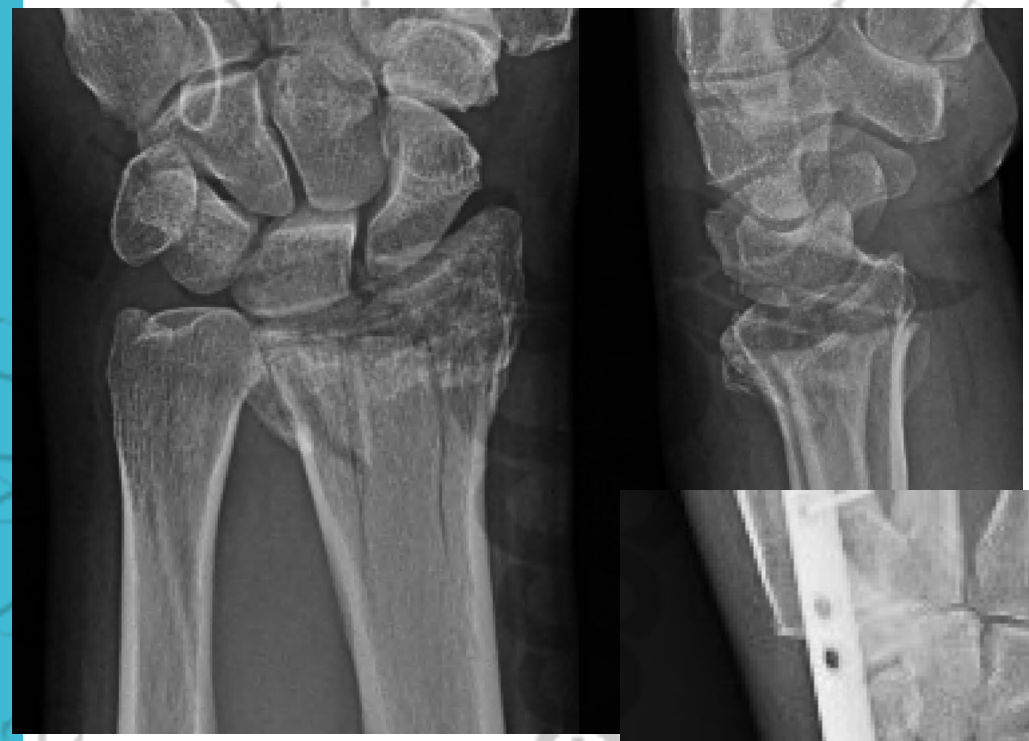

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My indications for bridge plating

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Independence & Assistive device dependence

Evidence in the literature

Distraction Plating for the Treatment of Highly Comminuted Distal Radius Fractures in Elderly Patients

Marc J. Richard, MD, Leonid I. Katolik, MD, Douglas P. Hanel, MD, Daniel A. Wartinbee, MD, David S. Ruch, MD

Dorsal Bridge Plate for Distal Radius Fractures: A Systematic Review

Austin B. Fares, MD,* Benjamin R. Childs, MD,* Michael M. Polmear, MD,* DesRaj M. Clark, MD,† Leon J. Nesti, MD, PhD,† John C. Dunn, MD*

"One systematic review of distal radius fractures treated with VLP noted 9 studies with aggregate mean ranges of 54 degrees of wrist flexion and 56 degrees of wrist extension at a follow-up of 13 months. This demonstrates that treatment of distal radius fractures with DBP compared with VLP does not demonstrate differences in arcs of motion that are clinically relevant."

"Although DBP provides reliable fixation for difficult fractures and patients often achieve a ROM that meets the functional threshold, there is a 13% complication rate, which is comparable to the rates seen in VLP."