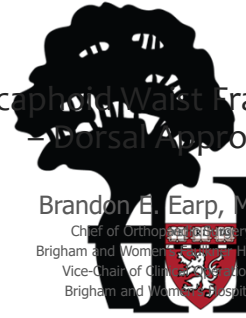



Scaphoid Waist Fractures – Dorsal Approach




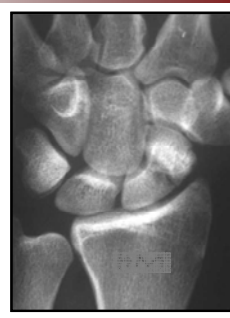
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Tampa, Florida
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Scaphoid Waist Fractures – Dorsal Approach


- Heard all about the volar approach
- Pro's / Con's of Dorsal Approach
- When to consider this approach




Scaphoid Waist Fractures – Dorsal Approach




Where is the fracture?



Scaphoid Waist Fractures – Dorsal Approach





Where is the fracture?





Scaphoid Waist Fractures – Dorsal Approach

But...when it is a waist fracture – how do you choose?





Scaphoid Waist Fractures – Dorsal Approach

But...when it is a waist fracture – how do you choose?



Scaphoid Waist Fractures – Dorsal Approach

But...when it is a waist fracture – how do you choose?



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Scaphoid Waist Fractures – Dorsal Approach

Indications for Surgery

- Displaced/angulated fractures
 - denotes major stripping of blood supply
- proximal pole fractures
 - high risk of nonunion by casting
- evidence of slow healing in cast
- cast poses major imposition
- concomitant distal radius fracture

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Scaphoid Waist Fractures – Dorsal Approach

What about the stable nondisplaced ones?

- Can be treated with casting (often 12 wks or more)




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Scaphoid Waist Fractures – Dorsal Approach

What about the stable nondisplaced ones?

- Can be treated with casting
- However....
- Patients with surgically treated fractures:
 - Heal faster
 - Have earlier return to work/function
 - Have improved time to union (fewer delayed unions)




Scaphoid Waist Fractures – Dorsal Approach




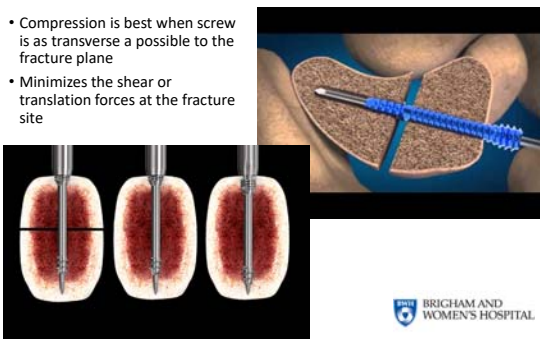
In Common:

- Headless
- Cannulated
- Differential pitch of screw threads



Scaphoid Waist Fractures – Dorsal Approach

- Compression is best when screw is as transverse a possible to the fracture plane
- Minimizes the shear or translation forces at the fracture site



Scaphoid Waist Fractures – Dorsal Approach

Herbert and Fisher's Classification

Type A: Stable acute fractures

- A1 Fracture of tubercle
- A2 Incomplete fracture through waist

Type B: Unstable acute fractures

- B1 Distal oblique fracture
- B2 Complete fracture of waist
- B3 Proximal pole fracture
- B4 Trans-scaphoid perforate fracture-dislocation of carpus

Type C: Delayed union

- C Delayed union

Type D: Established nonunion

- D1 Fibrous union
- D2 Pseudarthrosis

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Scaphoid Waist Fractures – Dorsal Approach

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Scaphoid Waist Fractures – Dorsal Approach

CT computer model of cadavers

Soubeyrand et al. JHS 2009

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Scaphoid Waist Fractures – Dorsal Approach

CT computer model of cadavers – VOLAR approach

Maximal Flexion Neutral Maximal Extension

Soubeyrand et al. JHS 2009

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Scaphoid Waist Fractures – Dorsal Approach

CT computer model of cadavers- DORSAL approach

Neutral Maximal Extension

Maximal Flexion

Soubeyrand et al. JHS 2009

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Scaphoid Waist Fractures – Dorsal Approach

- B2 fractures (transverse), virtual screw placement perpendicular to the fracture was achieved equally well with the 2 approaches.
- B1 fractures (oblique), the virtual screw could not be placed perpendicular to the fracture with either approach, but the dorsal approach with maximal wrist flexion allowed the best screw placement.

Distal pole

Proximal pole

Soubeyrand et al. JHS 2009

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Scaphoid Waist Fractures – Dorsal Approach

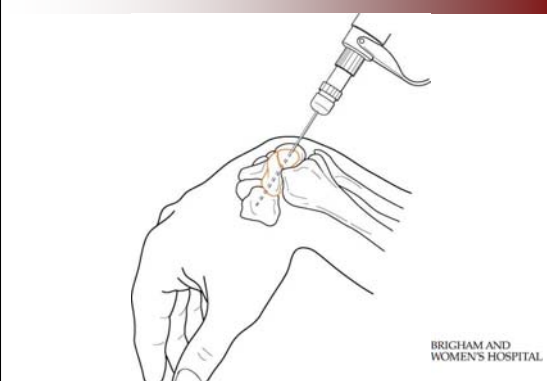
Dorsal approach – how do we do it?

- Open, mini-open, percutaneous



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Scaphoid Waist Fractures – Dorsal Approach



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Scaphoid Waist Fractures – Dorsal Approach

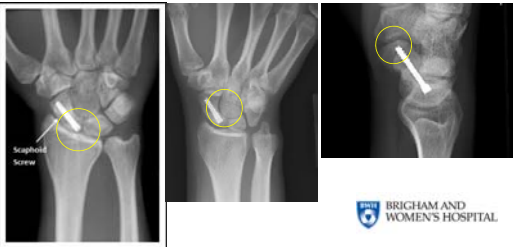
- Measure screw length (make sure you are down on the scaphoid) – this is where a mini-open may help you!
- Subtract 4mm
- An anti-rotation wire may help with stability as screw is inserted



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Scaphoid Waist Fractures – Dorsal Approach

- Make sure to bury the screw proximally
- Don't breach the scapho-capitate joint
- Make sure the screw doesn't penetrate the ST joint



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Scaphoid Waist Fractures – Dorsal Approach

- 41 patients treated with volarly or dorsally
- Computerized analysis of screw-fracture angle on multiple views
- No difference in placement on PA and lateral views
- Dorsal approach allows better central screw placement along the scaphoid axis as noted on semipronated oblique view
- Dorsal approach screws were more perpendicular to the fracture planes on all views
- No difference in fracture healing, Mayo wrist scores.

Jeon et al. JHS 2009

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Scaphoid Waist Fractures – Dorsal Approach


- Meta-analysis of 7 studies
- Dorsal approach allows better central screw placement along the long axis of the scaphoid
- Nonunion : no significant difference
- Postoperative complications : no significant difference
- Overall functional outcome : no significant difference
- Postoperative pain : no significant difference
- Grip strength : no significant difference
- Wrist flexion and extension and radial deviation : no significant difference
- Ulnar deviation was significantly greater with the volar approach

Kang et al. PLOS one 2016

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Scaphoid Waist Fractures – Dorsal Approach

- Differences:
 - Entry point on scaphoid
 - Much easier for dorsal approach but does require maximal wrist flexion which makes imaging more challenging
 - Orientation of the screw
 - Easier from the dorsal approach for many fractures to ensure the screw is down longitudinal axis and perpendicular to the fracture
 - If vascularized graft is needed, dorsal approach allows excellent access to vascularized distal radius graft options



Scaphoid Waist Fractures – Dorsal Approach

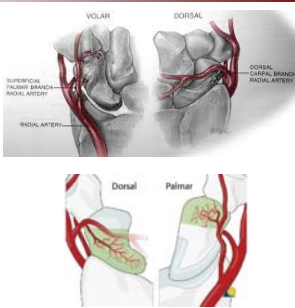
- Rehab
 - For me is the same regardless of approach
 - If excellent compression at fracture, splint until first postop, then removable splint and start moving
 - If concern about the fracture or the patient's level of compliance, sometimes will cast until 6 wks




Scaphoid Waist Fractures – Dorsal Approach

Dorsal Risks:

- Tendon injury
 - With percutaneous approach
 - Especially EIP and EDC index
- Prominent proximal screw head can cause radiocarpal arthrosis
 - More commonly unrecognized with percutaneous approach
- Blood supply to scaphoid?
 - Take care to preserve dorsal ridge blood supply





Scaphoid Waist Fractures – Dorsal Approach

- So whether you are going to do this:



Scaphoid Waist Fractures – Dorsal Approach

- So whether you are going to do this or that:



Scaphoid Waist Fractures – Dorsal Approach

- Know how to do both well so that you get excellent outcomes everytime!



