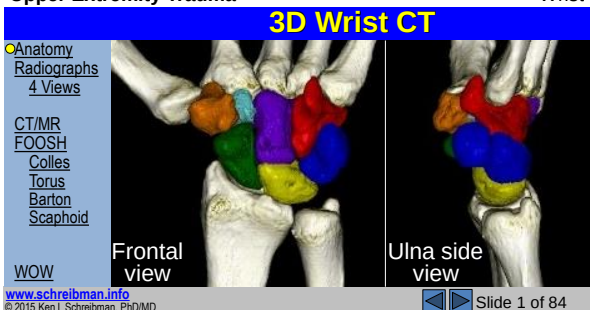


Upper Extremity Trauma: Wrist

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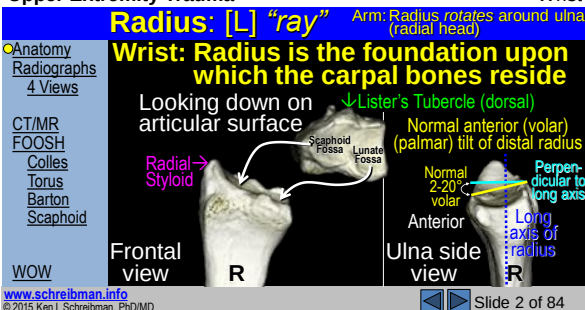
Upper Extremity Trauma

Wrist



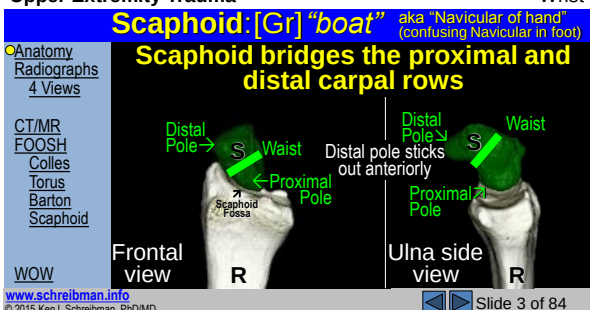
Upper Extremity Trauma

Wrist



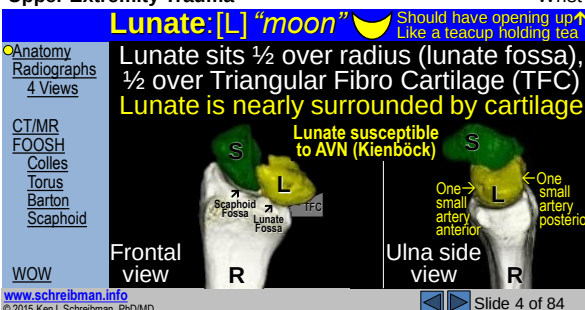
Upper Extremity Trauma

Wrist



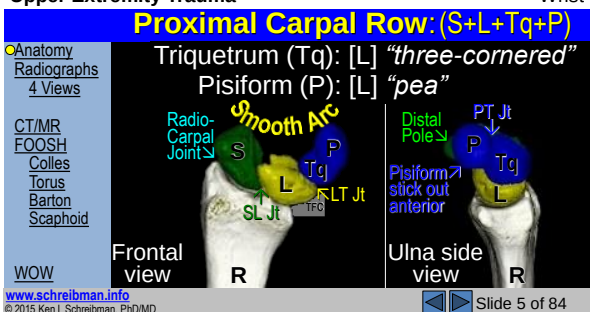
Upper Extremity Trauma

Wrist



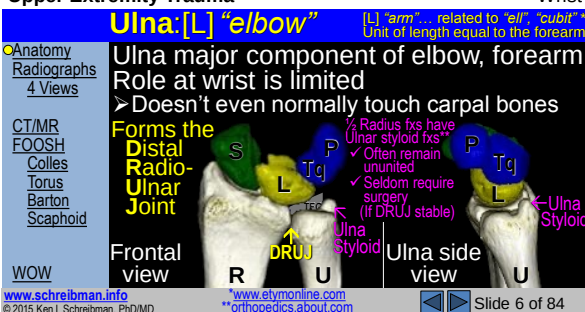
Upper Extremity Trauma

Wrist



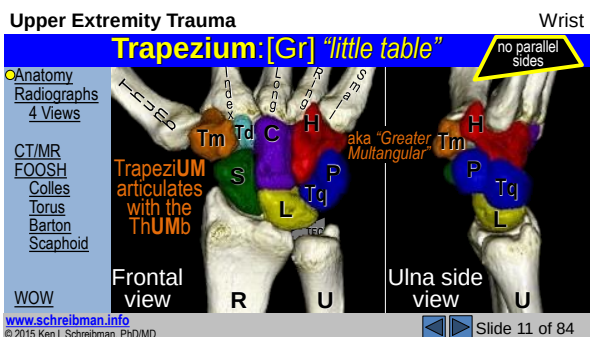
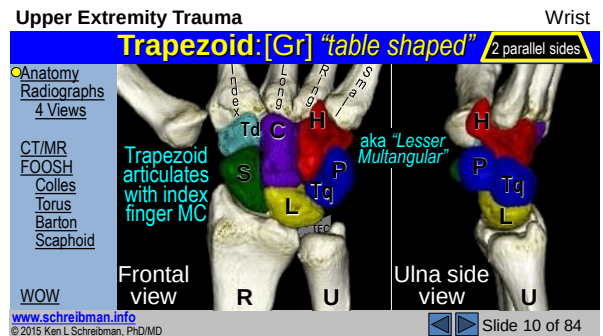
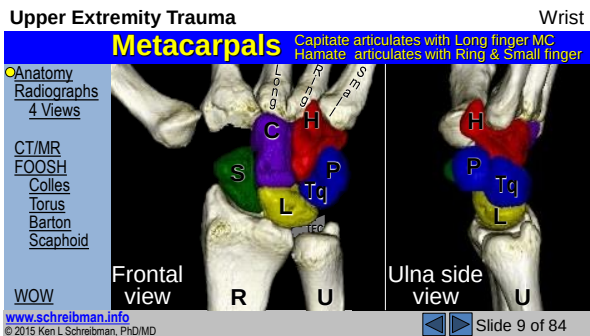
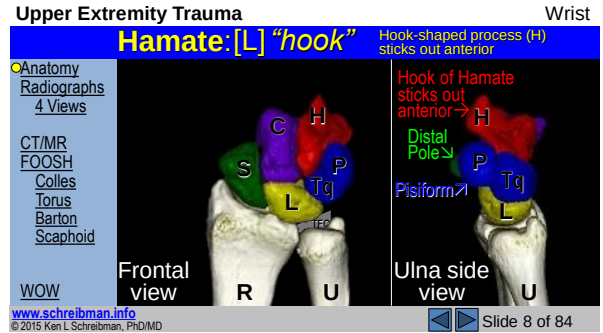
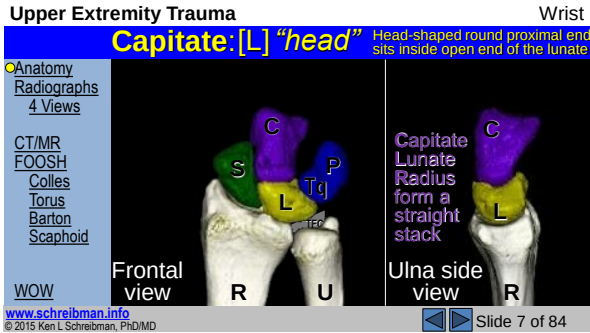
Upper Extremity Trauma

Wrist



Upper Extremity Trauma: Wrist

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Upper Extremity Trauma: Wrist

page 3 of 14

Upper Extremity Trauma Wrist

Hand ≠ Wrist

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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Hand PA Hand Obl Hand Lat

All Negative

R, A 27yoM, fell off bike

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Upper Extremity Trauma Wrist

Hand ≠ Wrist

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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Wrist PA Wrist Obl Wrist Lat

Still Negative...

Bennett Fracture!

R, A 27yoM, fell off bike

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Upper Extremity Trauma Wrist

Hand ≠ Wrist

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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PA Hand PA Wrist (next day)

G, M 44yoM

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Upper Extremity Trauma Wrist

Hand vs Wrist: X-ray Beam

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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Hand radiographs: X-ray beam centered @ 3rd MC head

Wrist radiographs: X-ray beam centered @ capitate

G, M 44yoM

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Upper Extremity Trauma Wrist

Wrist: PA = Standard View

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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✓ Elbow @ shoulder height
✓ Elbow @ 90°

← Raise cassette

Shield → X-rays

↑ Low chair

X-ray beam Posterior → Anterior = "PA"

X-ray beam centered on Capitate

Marty age 15

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Upper Extremity Trauma Wrist

Wrist: PA View

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

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PA: Standard view

R-C Jt

Proximal Carpal Row

Ulna shorter than Radius

DRUJ

C-MC

D, H 21yoF

Slide 18 of 84

Upper Extremity Trauma: Wrist

page 4 of 14

Upper Extremity Trauma

Wrist

Ulnar Variance

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW
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Ulna shorter than Radius
➤ "Negative Ulnar Variance"
➤ Risk AVN Lunate (Kienbock)

Ulna longer than Radius
➤ "Positive Ulnar Variance"
➤ Ulna can punch hole in TFC
➤ Ulna can impact upon Lunate "Ulna Abutment Syndrome"

AVN Lunate with collapse

Ulna is only slightly shorter than Radius

Radius shortening

Premature fusion radius, continued ulna growth → 45 UV

Treated with ulna shortening osteotomy

T,C 14yoM

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Upper Extremity Trauma

Wrist

Wrist: Lateral View

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

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Anterior

Normal 2-20° volar

C,S 48yoM

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Upper Extremity Trauma

Wrist

Can see most carpal bones on Lateral

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

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Hard to see Ulna as it overlaps Radius on a good lateral view

C,S 48yoM

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Upper Extremity Trauma

Wrist

Triquetral Fracture

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW
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Classically presents as a tiny avulsion fracture dorsal to the mid-carpus

➤ There are no normal ossicles dorsal to the carpal bones

✓ If you see a small bone back there, it's a fracture

✦ May be old, as these tiny fractures don't always heal

M,G 50yoM

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Upper Extremity Trauma

Wrist

Wrist: Standard 3 Views

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

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PA View

Oblique View

Lateral View

Thumb Down

Thumb Halfway Between

Thumb Up

Slide 23 of 84

Upper Extremity Trauma

Wrist

Wrist: Oblique View

Anatomy Radiographs
4 Views

CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW
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Best view of:

➤ STT joint

➤ Thumb C-MC joint

✓ Common sites for OA

Additional view of:

➤ Carpals (scaphoid)

➤ Metacarpals

➤ Radius (styloid)

✓ Sometimes a fracture is seen **only** on this view

K,M 20yoF

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Upper Extremity Trauma: Wrist

page 5 of 14

Upper Extremity Trauma Wrist

Scaphoid (Ulnar Deviation) View

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

Patient holds wrist in ulnar deviation



Yields an elongated view of the scaphoid. Helps when looking for fractures.

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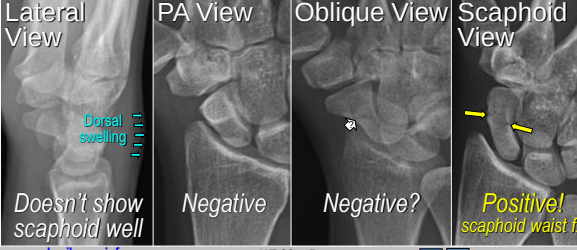
S,B 21yoF

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Upper Extremity Trauma Wrist

4 View Series for Scaphoid Fracture

Lateral View PA View Oblique View Scaphoid View



Doesn't show scaphoid well

Negative

Negative?

Positive! scaphoid waist fx

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K,T 32yoF

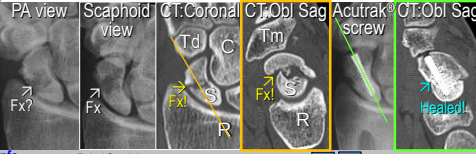
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Upper Extremity Trauma Wrist

Wrist: CT

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

Good for complex fractures
➢ Aid in surgical planning
Good to assess fracture healing
➢ Even in the presence of metal



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E,A 18yoM

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Upper Extremity Trauma Wrist

Wrist CT: Positioning

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW



We don't scan patients with their wrist down at their side

➢ Excess radiation across torso

➢ X-ray scatter decreases res.

We scan patients with their wrist over the head

➢ No excess radiation to body

➢ No x-ray scatter

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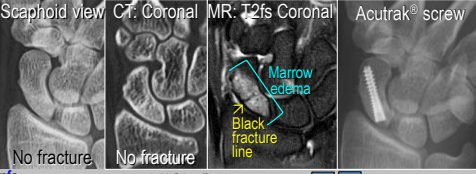
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Upper Extremity Trauma Wrist

Wrist: CT

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

NOT good for occult fractures
➢ Fractures non-displaced on radiographs...
...are non-displaced on CT



No fracture

No fracture

Marrow edema

Black fracture line

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L,N 21yoF

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Upper Extremity Trauma Wrist

Wrist MR: Positioning

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

We scan patients with their wrist over the head

➢ In a wrist coil

➢ Functions best in the center of the magnetic field



Wrist coil

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Upper Extremity Trauma: Wrist

page 6 of 14

Upper Extremity Trauma Wrist

Fall On Out-Stretched Hand (FOOSH)

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

Most injuries to the wrist are due to one common mechanism
Perhaps THE most common injury

- ✓ 1-in-6 ER fractures occur in the distal radius*
- Humans are a clumsy species
 - ✓ We walk upright
 - ✓ We're top heavy
 - ✓ When falling, we instinctively protect our head, by
 - ✦ Extending our arm
 - ✦ Striking the ground with our hand

This mechanism of injury is perhaps **UNIQUE** to humans

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orthopedics.about.com
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Upper Extremity Trauma Wrist

The most famous penguin on the Internet

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

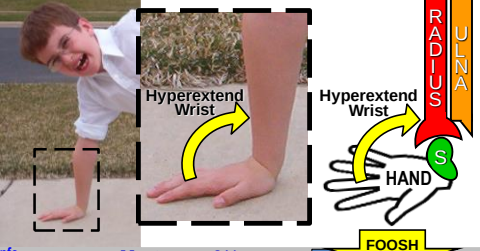


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Upper Extremity Trauma Wrist

Fall On Out-Stretched Hand (FOOSH)

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW



Hyperextend Wrist
RADIUS
ULNA
HAND
FOOSH
Marty age 8½

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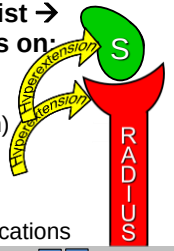
Upper Extremity Trauma Wrist

Fall On Out-Stretched Hand (FOOSH)

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

Hyperextension of wrist →
Hyperextensive forces on:

- Radius
 - ✓ Colles fracture
 - ✓ Torus fracture (children)
- Carpal bones
 - ✓ Barton fracture
 - ✓ Scaphoid fracture
 - ✓ Lunate/perilunate dislocations



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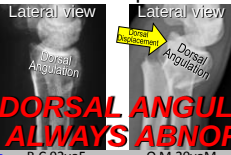
Upper Extremity Trauma Wrist

Colles Fracture

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

Transverse Fx distal radius

- Hyperextension forces cause:
 - ✓ Dorsal angulation
 - ± Dorsal displacement



Lateral view
Dorsal Angulation
Dorsal Displacement
DORSAL ANGLULATION ALWAYS ABNORMAL!

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R,C 92yoF
O,M 20yoM
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Upper Extremity Trauma Wrist

Dorsal Angulation is Bad ☹️

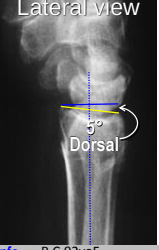
Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

Lateral view

To measure angle:

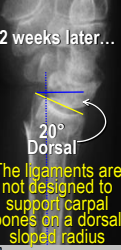
- Draw line along distal radius
 - ✓ From front corner
 - ✓ To back corner
- Draw line along shaft of radius
 - ✓ Perpendicular to this
- Measure this angle
 - ✓ Normal is VOLAR
 - ✓ 2-20°

Dorsal = Abnormal



5° Dorsal

2 weeks later...



20° Dorsal

The ligaments are not designed to support carpal bones on a dorsal sloped radius

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Upper Extremity Trauma: Wrist

page 7 of 14

Upper Extremity Trauma Wrist

Must reduce angle to heal right

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

ER lateral view: Marked dorsal angulation ☹️

Following reduction & casting in ER: Volar angulation ☹️

6 weeks later: Healing, normal volar angulation ☺️

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Upper Extremity Trauma Wrist

Colles fractures very common

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

In children
➤ Fall a lot
➤ Torus fracture

In women
➤ Osteopenia
➤ 2 women in my life...

In the media...

Secretary Judy

Wife Lynn

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Upper Extremity Trauma Wrist

Colles vs Smith Fracture

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

LAW & ORDER

Anatomically impossible?

www.schreibman.info Season 15, Episode 2 original air date 9/22/04
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Upper Extremity Trauma Wrist

Smith Fracture = Reverse Colles

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

Smith:
➤ Hyperflexion
➤ VOLAR angulation

Lateral view: Too much volar angulation ☹️

Reduction & cast: Normal volar angulation ☺️

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Upper Extremity Trauma Wrist

Mechanisms: Colles vs Smith

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

FOOSH

Colles:
➤ Hyperextension
➤ DORSAL angulation

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Upper Extremity Trauma Wrist

Mechanisms: Colles vs Smith

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid
WOW

FOOSH → Hyperextension → Colles
whether fall *Forwards* or *Backwards*

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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma

Wrist

Mechanisms: Colles vs Smith

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW

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Fall onto **Back** of hand
Hyperflexion
Smith Fx
VOLAR angulation

Smith fracture is much less common than Colles

Colles:
Hyperextension
DORSAL angulation

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Upper Extremity Trauma

Wrist

Abraham Colles (1773-1843)

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW

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EDINBURGH
MEDICAL AND SURGICAL JOURNAL:

On the Fracture of the Carpal extremity of the Radius. By A. Colles, M.D. one of the Professors of Anatomy and Surgery in the Royal College of Surgeons in Ireland.

"I should consider this as by far the most common injury to which the wrist or carpal extremities of the radius and ulna are exposed."

"The injury to which I wish to direct the attention of surgeons, had not, as far as I know, been described by any author."

VOLUME TENTH. 1814. (81 years before Roentgen)

babel.hathitrust.org

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Upper Extremity Trauma

Wrist

Robert William Smith (1807-1873)

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
Scaphoid

WOW

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TREATISE ON FRACTURES
OF THE VICINITY OF JOINTS,
OR OF CERTAIN FORMS OF ACCIDENTAL AND CONGENITAL DISLOCATIONS.
BY ROBERT WILLIAM SMITH, M.D., M.R.S.A.
(1847?) MDCCCL=1850
HOUGHTON AND SONS, CALIFORNIA STREET, NEW YORK.

FRACTURE OF THE LOWER EXTREMITY OF THE RADIUS, WITH DISPLACEMENT OF THE LOWER FRAGMENT FORWARD.

This is an injury of exceedingly rare occurrence, and one which presents characters closely resembling those of dislocation of the carpus forwards. It generally occurs in consequence of a fall upon the back of the hand, and the situation of the fracture is from half an inch to an inch above the articulation; it is accompanied by great deformity, the principal features of which are a dorsal and a palmar tumour, and a striking projection of the head of the ulna at the posterior and inner part of the forearm; the dorsal tumour occupies the entire breadth of the forearm.

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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma Wrist

Fractures in Children

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma Wrist

FOOSH Fractures in Children

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma Wrist

Torus Fractures: Lateral View

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma Wrist

Torus Fractures: PA View

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma Wrist

Torus Fractures: Common... Subtle

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma Wrist

Torus Fractures: Common... Subtle

Anatomy Radiographs 4 Views
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Colles
Torus
Barton
Scaphoid
WOW

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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma Wrist

"Torus"

[L]: "swelling, protuberance, bulge"

[Architecture]:
A large convex molding, semicircular in cross section, at base of a classical column.

Capital
Shaft
Base

Wisconsin State Capitol
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RadioGraphics 2004; 24:p1025

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Upper Extremity Trauma Wrist

Fall On Out-Stretched Hand (FOOSH)

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid

Hyperextension of wrist → Hyperextensive forces on:

- Radius
 - ✓ Colles fracture
 - ✓ Torus fracture (children)
- Carpal bones (Proximal carpal row)
 - ✓ Barton fracture

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Upper Extremity Trauma Wrist

Barton Fracture

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid

Hyperextension of wrist → Impaction of carpal bones on radius dorsal rim → Fracture radius rim

- Intra-articular fracture
 - ✓ Potentially more serious than Colles (extra-articular fracture)
 - ✓ May require surgical fixation
 - ✓ Surgeon may order CT for planning

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Upper Extremity Trauma Wrist

Dorsal Barton Fracture

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid

Dorsal Barton

- Due to FOOSH is much more common than

Volar Barton

- Due to blow to back of wrist

(Just as Colles is much more common than Smith fracture)

M,M 58yoF S,G 37yoM

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Upper Extremity Trauma Wrist

Volar Barton Fracture

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid

Volar Barton Fracture

Lateral view CT, Sagittal Open Reduction Internal Fixation

A,D 43yoM

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Upper Extremity Trauma Wrist

John Rhea Barton (1794-1871)

Anatomy Radiographs 4 Views
CT/MR
FOOSH
Colles
Torus
Barton
Scaphoid

Views and Treatment of an important Injury of the Wrist. By J. RHEA BARTON, M. D.

Any further observations on a class of accidents, so common, and which have been so often the subject of inquiry, as that of injuries of the forearm and wrist-joints, may be deemed superfluous by those who read, but have no personal experience in surgery. But to those engaged in the active pursuits of our profession, it is well known that, notwithstanding the volumes that have been written on this subject, there are yet certain injuries involving these parts which are not fully understood, and consequently not successfully treated.

My attention was early fixed upon such cases, and through a series of years they have been particularly interesting to me; and it is from my conviction that, up to this time, error prevails, both as to the nature and the treatment of them, that I am induced to publish my views and practice therein.

I do not know any subject on which I have been more frequently consulted than on deformities, rigid joints, inflexible fingers, loss of the pronator.

It was said that Barton was ambidextrous and that once he had positioned himself for an operation, he did not move about.

WOW
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The Medical Examiner Nov 7, 1838; 1, 23; p 365-8 www.kmla.co.uk whonamedit.com

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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma Wrist

Fall On Out-Stretched Hand (FOOSH)

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

Hyperextension of wrist → Hyperextensive forces on:

- Radius
 - ✓ Colles fracture
 - ✓ Torus fracture (children)
- Carpal bones (Proximal carpal row)
 - ✓ Barton fracture (Distal carpal row)
 - ✓ Scaphoid fracture



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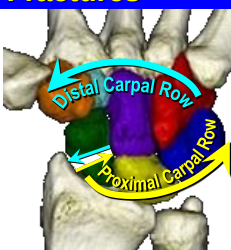
Upper Extremity Trauma Wrist

Scaphoid Fractures

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

Scaphoid THE most common carpal bone to be fractured.

- 71% of all carpal fx's*
- Scaphoid bridges the carpal rows
 - ✓ Traumatic shear forces between the rows ⇄ ... shearing fracture across the scaphoid



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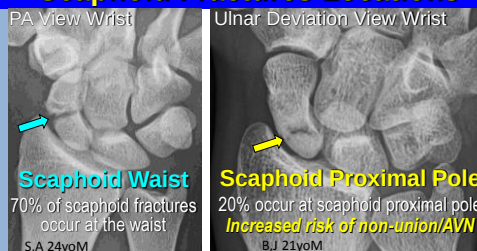
Upper Extremity Trauma Wrist

Scaphoid Fractures Locations

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

PA View Wrist
Scaphoid Waist
70% of scaphoid fractures occur at the waist
S,A 24yoM

Ulnar Deviation View Wrist
Scaphoid Proximal Pole
20% occur at scaphoid proximal pole
Increased risk of non-union/AVN
B,J 21yoM



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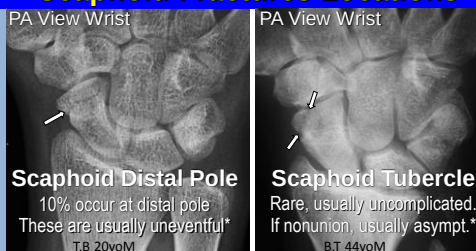
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Scaphoid Fractures Locations

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

PA View Wrist
Scaphoid Distal Pole
10% occur at distal pole
These are usually uneventful*
T,B 20yoM

PA View Wrist
Scaphoid Tubercle
Rare, usually uncomplicated.
If nonunion, usually asympt.*
B,T 44yoM



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Upper Extremity Trauma Wrist

Scaphoid & Radius Fractures

Anatomy Radiographs 4 Views
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WOW

Same common mechanism (FOOSH)

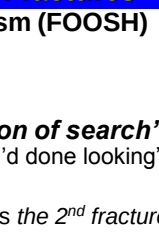
- Distal Radius Fracture
- Scaphoid Fracture
- ... BOTH!

Watch out for "satisfaction of search"

- "Aha, I found the fracture... I'd done looking"

Old Radiology Axiom:

- The hardest fracture to find is the 2nd fracture



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Upper Extremity Trauma Wrist

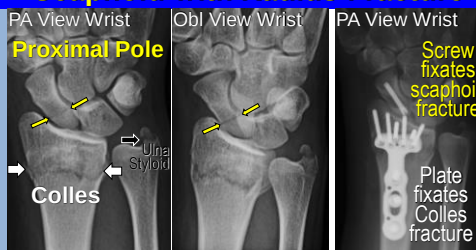
Scaphoid with Radius Fracture

Anatomy Radiographs 4 Views
CT/MR FOOSH Colles Torus Barton Scaphoid
WOW

PA View Wrist
Proximal Pole
Colles
Ulna Styloid

Obl View Wrist
Screw fixates scaphoid fracture
Plate fixates Colles fracture

W,M 19yoF



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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma Wrist

Scaphoid doesn't heal as well as other bones

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
● Scaphoid
WOW
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PA View Hand
2 months later...

V,G 22yoM
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Upper Extremity Trauma Wrist

Scaphoid doesn't heal as well as other bones

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
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after 4 months...
CT: Coronal
CT: Sagittal Oblique

V,G 22yoM
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Upper Extremity Trauma Wrist

Scaphoid has a tenuous blood supply

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
● Scaphoid
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Radial artery supplies:
✓ Distal Pole (DP) of Scaphoid (S)
× Not Proximal Pole (PP)
The more proximal the fracture, the greater the risk of non-union.
The more distracted the fracture, the greater the risk of non-union.

Oblique Hand
Heavy arterial calcification
Pt w/ diabetes, renal failure
L,T 60yoM
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Upper Extremity Trauma Wrist

Scaphoid Non-Union → AVN

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Colles
Torus
Barton
● Scaphoid
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PA View Wrist
CT: Coronal
CT: Sagittal Oblique

Q,B 62yoF
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Upper Extremity Trauma Wrist

Proximal Row Carpectomy

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CT/MR FOOSH
Colles
Torus
Barton
● Scaphoid
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PA View Wrist
Lateral View Wrist

➤ Resection: Scaphoid, Lunate, Triquetrum
➤ Radius articulates with Capitate (distal row)
➤ Only treatment for fragmented scaphoid AVN

Q,B 62yoF
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Upper Extremity Trauma Wrist

To avoid non-union → AVN → PRC

Anatomy Radiographs 4 Views
CT/MR FOOSH
Colles
Torus
Barton
● Scaphoid
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All scaphoid fx's require early treatment!
➤ Probably with a screw if displaced
➤ At least with a splint or cast if non-displaced
But non-displaced fractures are hard to see *because they are non-displaced*
So how do we know if a patient has a non-displaced scaphoid fracture?
SNUFFBOX TENDERNESS = PRESUMED SCAPHOID FRACTURE

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www.schreibman.info M,D 55yoM, cutting tree branches, FOOSH 15ft
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Upper Extremity Trauma: Wrist

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Upper Extremity Trauma Wrist

Wrist: What to Order When (WOW)

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

Radiographs: Trauma

- Pain
 - ✓ Arthritis (Hand radiographs)
- CT
 - Surgical planning known fractures
- MR
 - Occult fractures (scaphoid)
 - Synovitis (w/Gd) (Usually includes MCPs ± IPs)
 - ...pain?

RG 95% MR 3% CT 2%

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Upper Extremity Trauma Wrist

Wrist: What to Order When (WOW)

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

Wrist Radiographs (95%)

- 3-view wrist series
 - ✓ PA (not AP)
 - ✓ Lateral
 - ✓ Oblique
- If snuffbox tenderness, add 4th view
 - ✓ Scaphoid (ulnar deviation)
- If snuffbox tenderness + negative radiographs
 - ✓ **TREAT AS PRESUMED SCAPHOID FRACTURE**
 - ✓ Cast/splint, follow-up in 2 weeks
 - ✓ If still has snuffbox tenderness, keep treating

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Upper Extremity Trauma Wrist

Wrist: What to Order When (WOW)

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

Wrist CT

- Predominantly used for surgical planning of known radius/carpal bone fractures
 - ✓ Ordered by Orthopedics from ER or clinic
- Assess healing of known scaphoid fracture
 - ✓ With or without prior screw fixation
 - ✦ Small screws cause virtually no CT artifacts
- We always reformat in 3 orthogonal planes
 - ✓ For scaphoid, we add oblique sagittal
- We have a specialized protocol for DRUJ instability
- All protocols at: www.radiology.wisc.edu

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Upper Extremity Trauma Wrist

Wrist: What to Order When (WOW)

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

Wrist MR

- Occult fractures (scaphoid)
 - ✓ Persistent symptoms despite negative radiographs
- Synovitis (RA)
 - ✓ Needs IV contrast
 - ✦ Normal synovium does not enhance
 - ✦ Vascularized pannus greatly enhances
 - ✓ Ordering provider should specify area of concern
 - ✦ Just intercarpal joints
 - ✦ Also Metacarpal-phalangeal joints
 - ✦ Also Interphalangeal joints
 - ↑ Field of View = ↓ Resolution

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Upper Extremity Trauma Wrist

Wrist: What to Order When (WOW)

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

Wrist Charges

- Wrist Radiographs
 - ✓ 3 views = 4 views = \$137
 - ✦ It costs nothing to add the scaphoid view to a 3 view series
 - ✓ 1 view = 2 views = \$128
 - ✦ Going from 2 views to 4 views adds only \$9 (7%)
- Wrist CT
 - ✓ (without contrast) = \$1,460
- Wrist MR
 - ✓ (without contrast) = \$2,921
 - ✓ (with contrast) = \$3,377

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Upper Extremity Trauma Wrist

That's all we have on wrists...

Anatomy Radiographs 4 Views

CT/MR FOOSH Colles Torus Barton Scaphoid

WOW

Marty age 7

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