Russia, St. Petersburg
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Sports Imaging Subcommittee
May 23–24, Program for SPINE & UPPER LIMB

РЕНТГЕНОДИАГНОСТИКА: ПЛЕЧЕВОЙ И ЛОКТЕВОЙ СУСТАВЫ, КИСТЬ

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X-RAY (GENERAL) SHOULDER – ELBOW – WRIST/HAND

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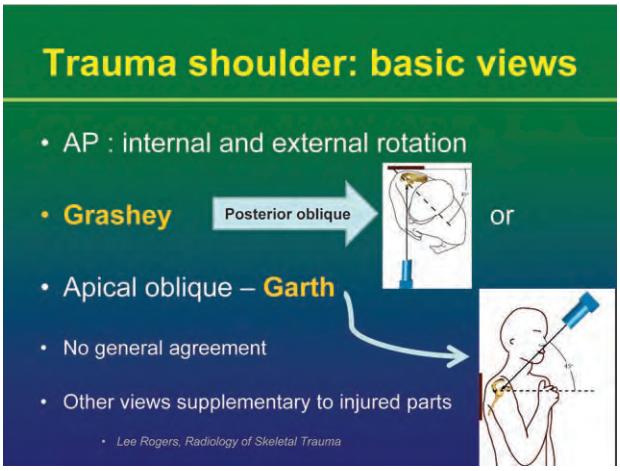
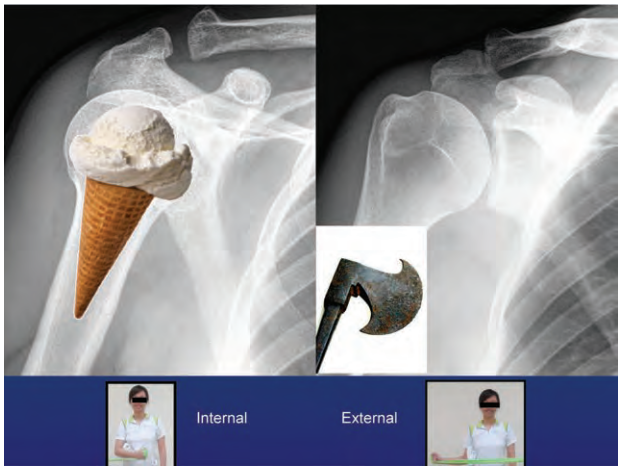
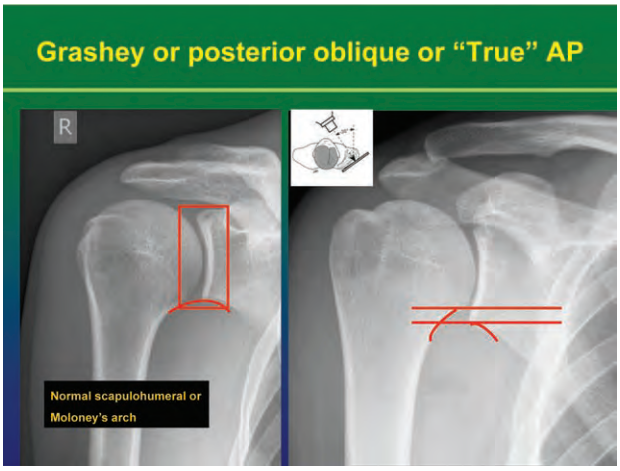
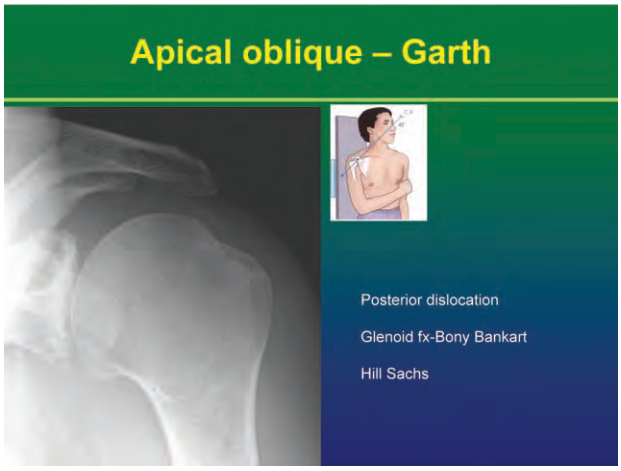
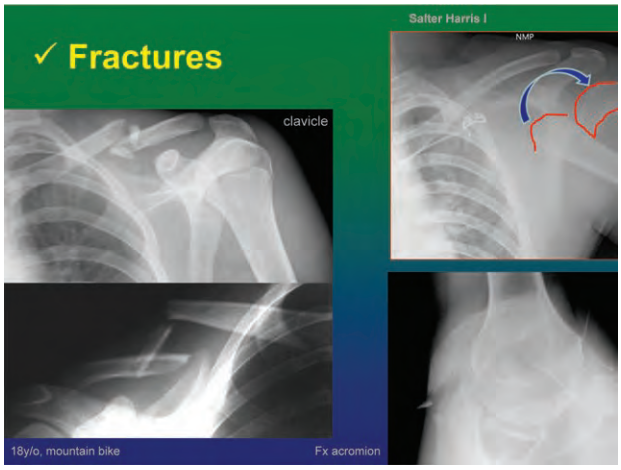
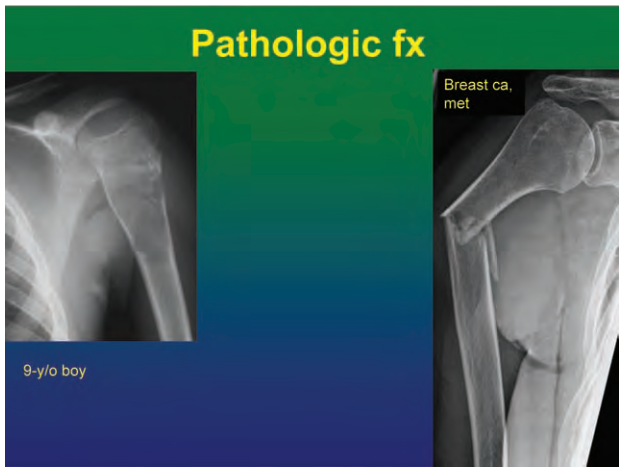


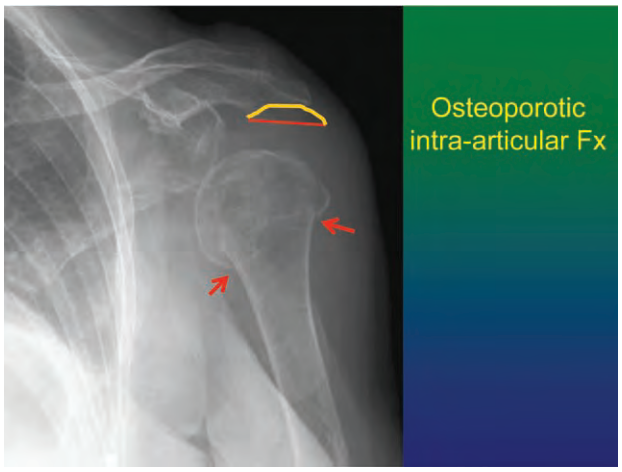


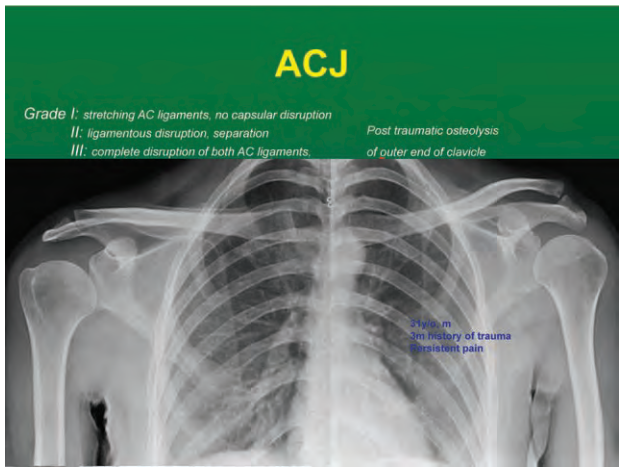


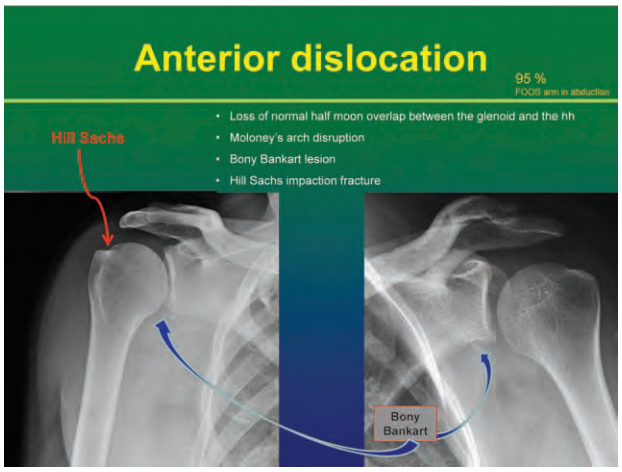


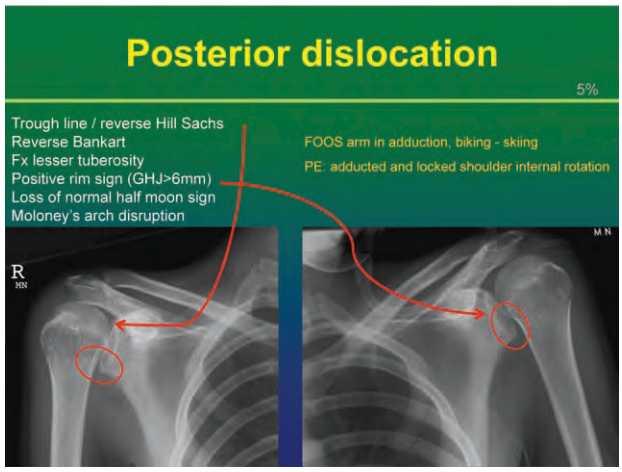


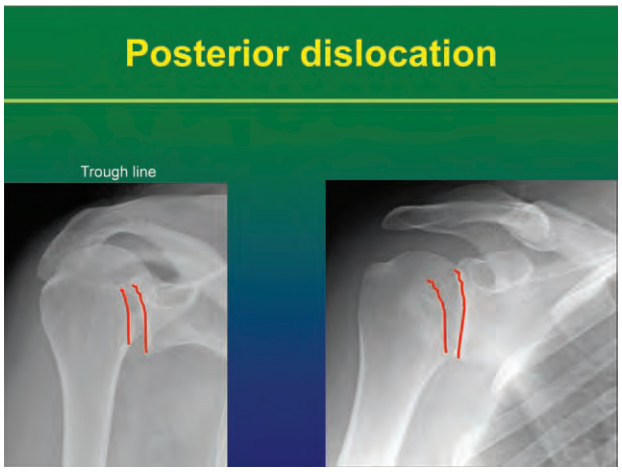

Pathologic fx
Breast ca, met
9-y/o boy

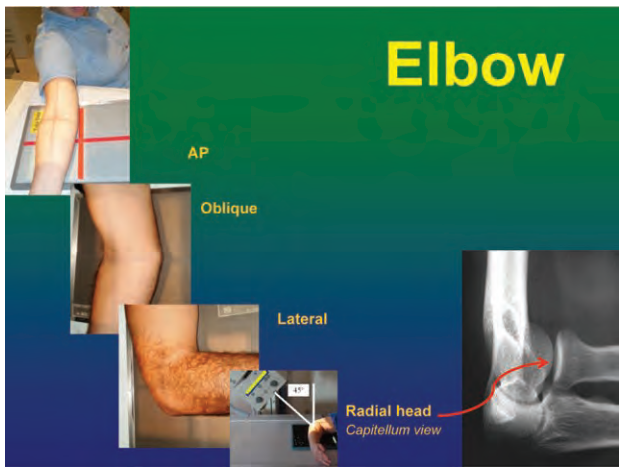

Osteoporotic intra-articular Fx

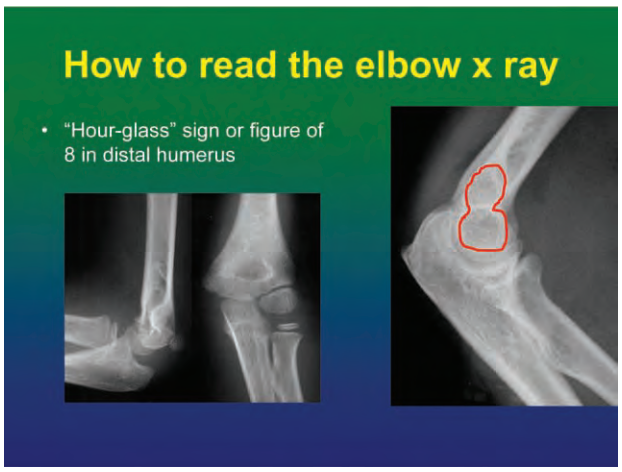

ACJ
Grade I: stretching AC ligaments, no capsular disruption
II: ligamentous disruption, separation
III: complete disruption of both AC ligaments.
Post traumatic osteolysis of outer end of clavicle
21y/o m
3m history of trauma
Persistent pain

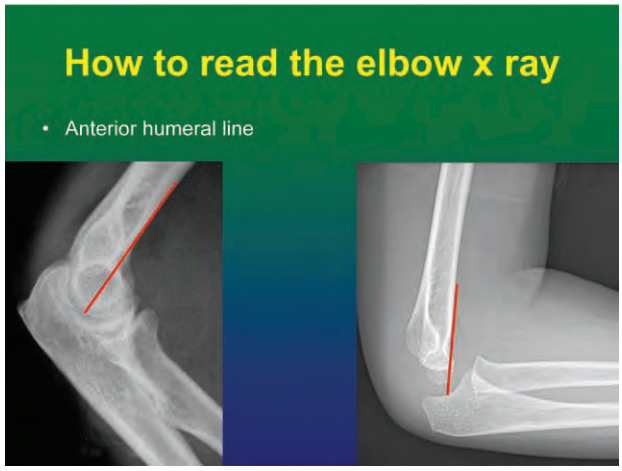

Anterior dislocation
95 %
FOOS arm in abduction
Hill Sachs
Loss of normal half moon overlap between the glenoid and the hh
Moloney's arch disruption
Bony Bankart lesion
Hill Sachs impaction fracture
Bony Bankart

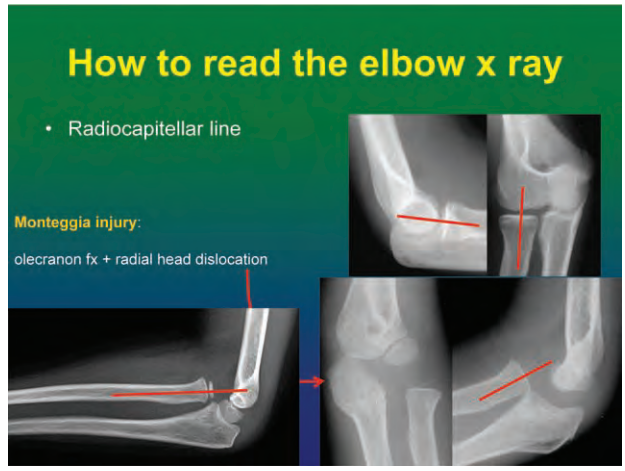

Posterior dislocation
5%
Trough line / reverse Hill Sachs
Reverse Bankart
Fx lesser tuberosity
Positive rim sign (GHJ>6mm)
Loss of normal half moon sign
Moloney's arch disruption
FOOS arm in adduction, biking - skiing
PE: adducted and locked shoulder internal rotation

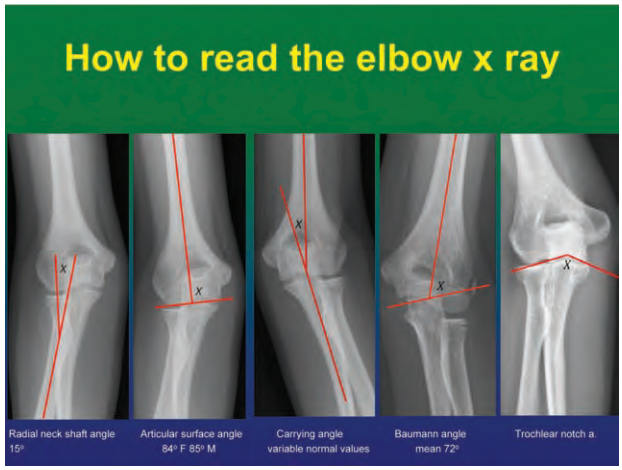

Posterior dislocation
Trough line

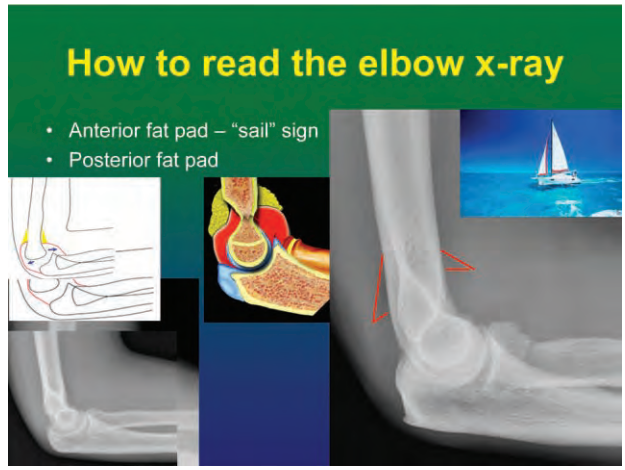

Elbow
AP
Oblique
Lateral
Radial head
Capitellum view

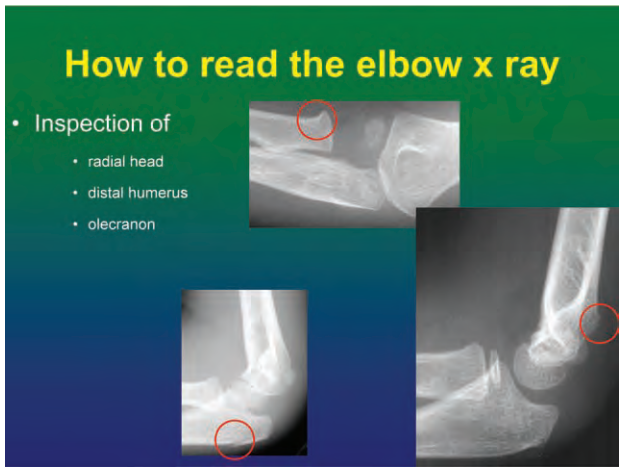

How to read the elbow x ray
"Hour-glass" sign or figure of 8 in distal humerus

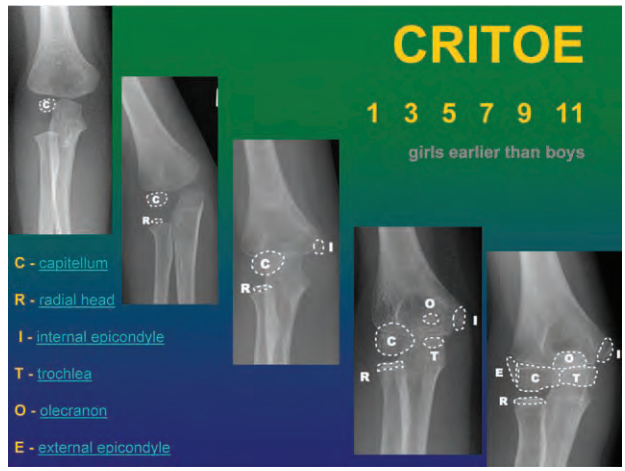

How to read the elbow x ray
• Anterior humeral line


How to read the elbow x ray
• Radiocapitellar line
Monteggia injury:
olecranon fx + radial head dislocation

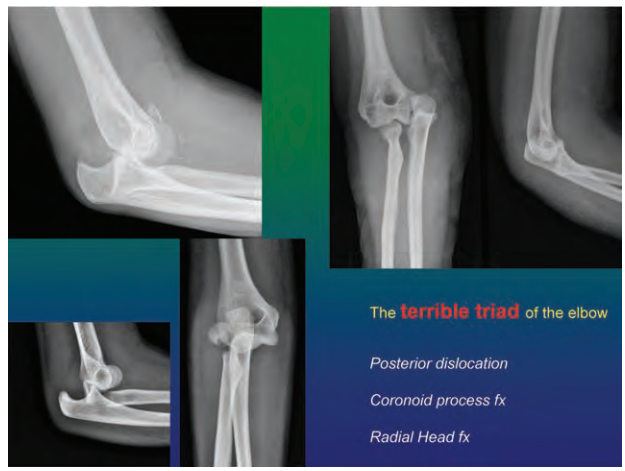

How to read the elbow x ray
Radial neck shaft angle 15°
Articular surface angle 84° F 85° M
Carrying angle variable normal values
Baumann angle mean 72°
Trochlear notch a.


How to read the elbow x-ray
• Anterior fat pad – "sail" sign
• Posterior fat pad


How to read the elbow x ray
• Inspection of
• radial head
• distal humerus
• olecranon


CRITOE
1 3 5 7 9 11
girls earlier than boys
C - capitellum
R - radial head
I - internal epicondyle
T - trochlea
O - olecranon
E - external epicondyle


Myositis ossificans
Olecaranon fx
Dislocation
Osterochondritis dissecans

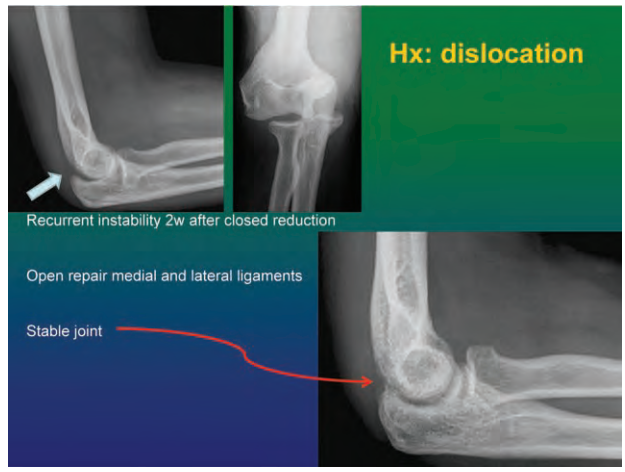

The terrible triad of the elbow
Posterior dislocation
Coronoid process fx
Radial Head fx

Dislocation

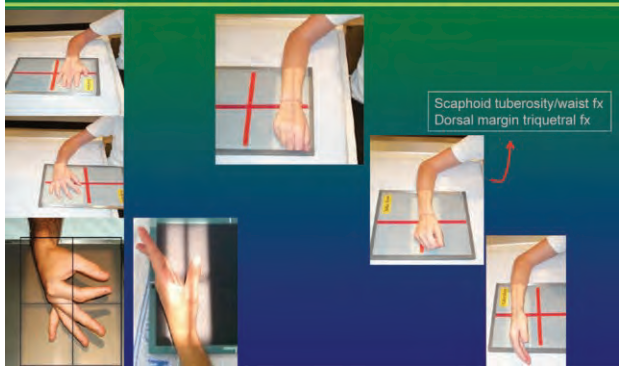
- 2nd most common in adults
- Most common in children
- 10-25% of all elbow injuries
- Mean age 30y, M/F:2,5/1
- 40% during sports, FOOSH
- **Gymnastics, wrestling, basketball, football**

Associated injuries

- Avulsion fx epicondyles
- Coronoid fx
- Osteochondral injuries 100%
- Neurovascular injuries rare



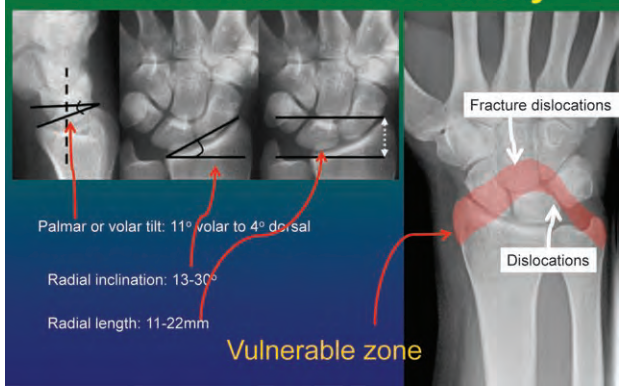
Wrist-hand

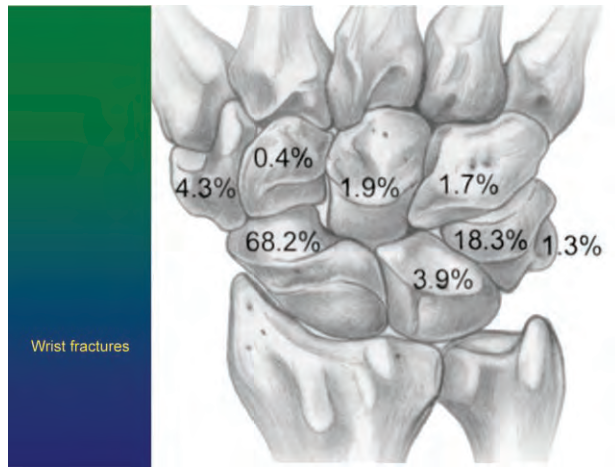


How to read the wrist x ray

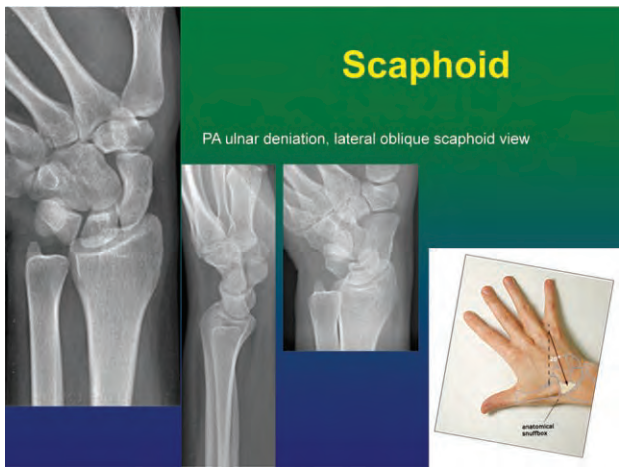
- Gilula's Arcs
  - *Rouphly parallel, no disruption*
- Distance in between carpal bones equal
- Radius and ulna on same height
- No clear space scaphoid and lunate

How to read the wrist x ray

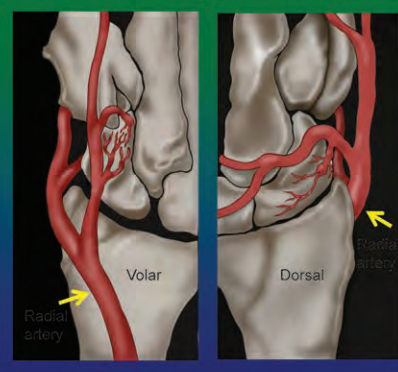




Scaphoid

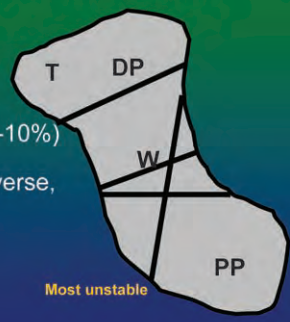


Scaphoid Bone/Vascular Supply



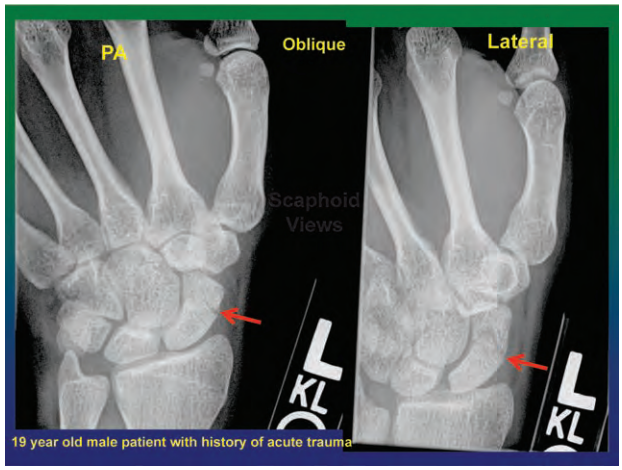
Scaphoid Fractures- Location and Direction of the Fracture Line

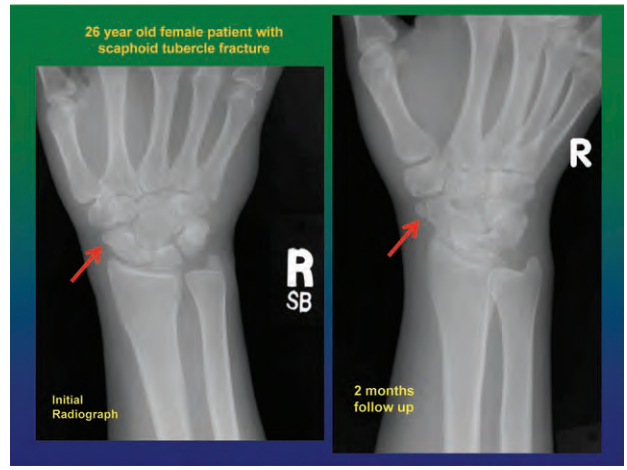
- Proximal pole (15-20%)
- Waist (70-80%)
- Tubercle or distal pole (5-10%)
- Horizontal oblique, transverse, vertical oblique (Russe)

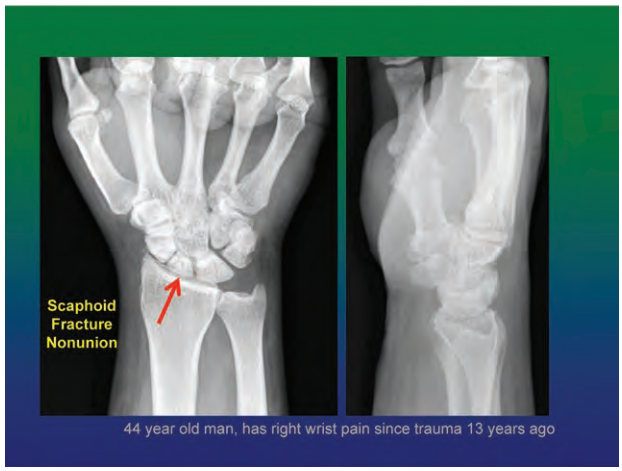


Complications of Scaphoid Fractures

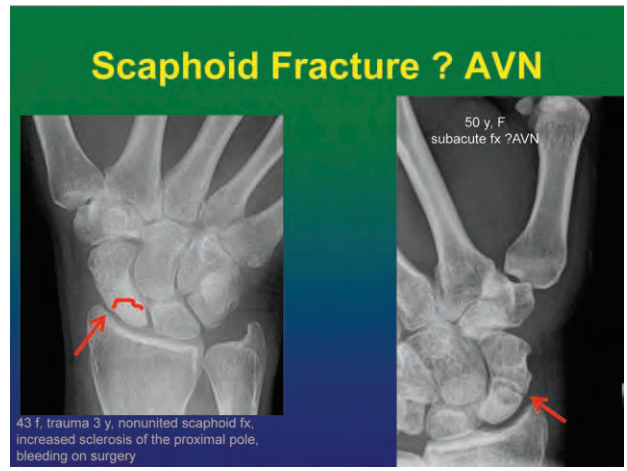
- Delayed union- after 3 months ?
- Nonunion- after 6 months
- Malunion- fragments united in faulty fashion
- Osteonecrosis (AVN)
- Scaphoid Nonunion Advanced Collapse (SNAC Wrist)
- Scapholunate Advanced Collapse (SLAC Wrist)
- Osteoarthritis







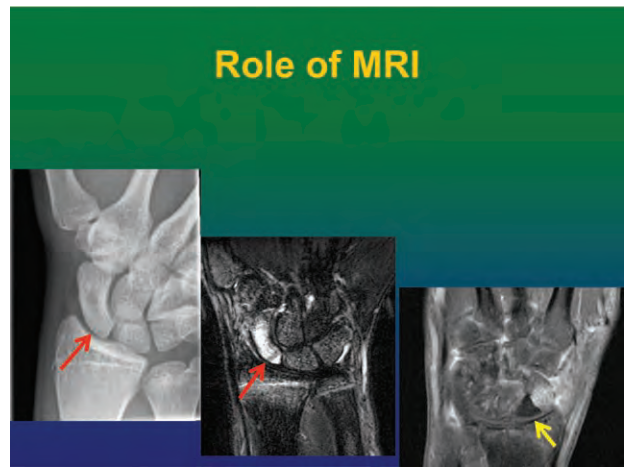
Scaphoid Fracture ? AVN

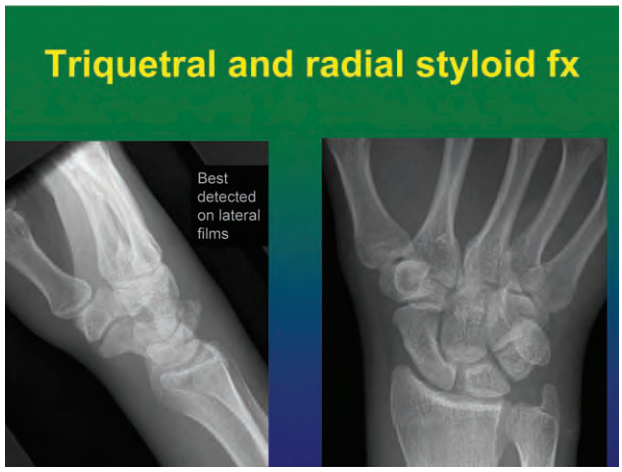


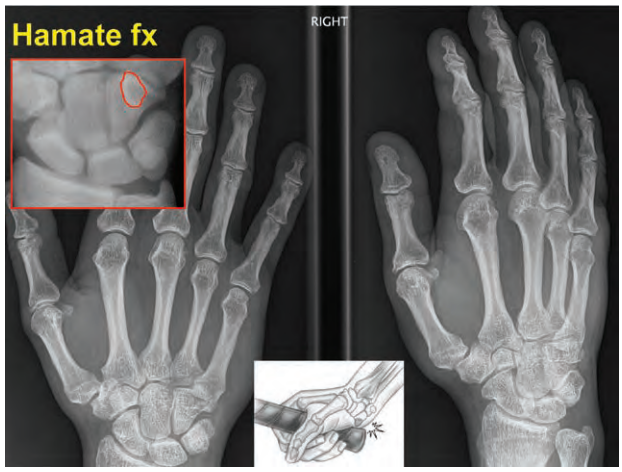
SLAC wrist

- SLAC wrist
  - Radioscaphoid joint narrowing
  - Sclerosis
  - Osteophytes
  - Cysts
  - Scapholunate dislocation
  - Carpal collapse

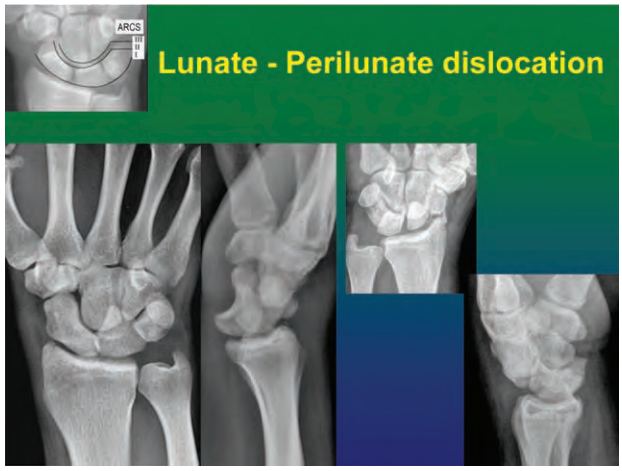
Role of MRI




Triquetral and radial styloid fx
Best detected on lateral films


Hamate fx
RIGHT

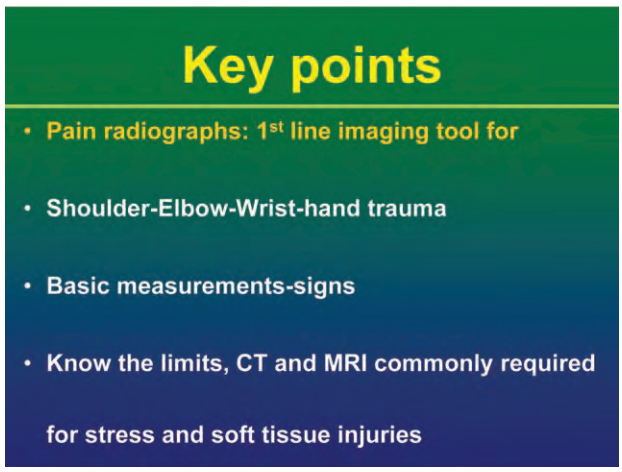

Hook of hamate, “ring” sign


ARCS
Lunate - Perilunate dislocation


Sports injuries related fxs
Contact sports
Boxer’s fx
Base 5th metacarpal fx


Sports injuries related fxs
Bennet’s fx dislocation
Ronaldo= Comminuted Bennett’s
Skier’s thumb


Sports injuries related fxs
Avulsion fx, extenson tendon
Mallet finger
Dislocation
MCL avulsion
Volar plate avulsion Hyperextension


Key points
• Pain radiographs: 1st line imaging tool for
• Shoulder-Elbow-Wrist-hand trauma
• Basic measurements-signs
• Know the limits, CT and MRI commonly required for stress and soft tissue injuries