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РЕНТГЕНОДИАГНОСТИКА: ПЛЕЧЕВОЙ И ЛОКТЕВОЙ СУСТАВЫ, КИСТЬ

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

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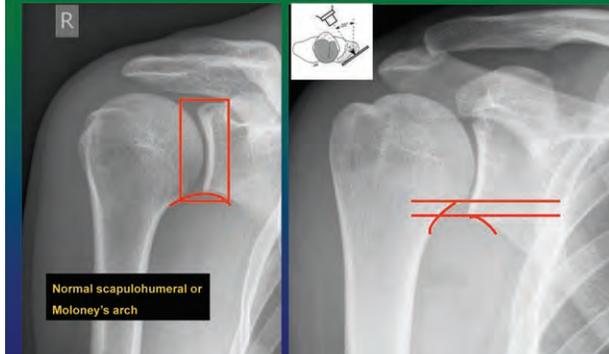
Trauma shoulder: basic views

- AP : internal and external rotation
- **Grashey**  or 
- Apical oblique – **Garth**
- No general agreement
- Other views supplementary to injured parts

• Lee Rogers, Radiology of Skeletal Trauma



Grashey or posterior oblique or "True" AP



Normal scapulohumeral or Moloney's arch

Posterior dislocation
Glenoid fx-Bony Bankart
Hill Sachs

Apical oblique – Garth



Posterior dislocation
Glenoid fx-Bony Bankart
Hill Sachs

Anatomy



Os acromiale

✓ Fractures



clavicle

Satter Harris I

18yo/ mountain bike

Fx acromion

Pathologic fx

9-y/o boy

Breast ca, met

Osteoporotic intra-articular Fx

ACJ

Grade I: stretching AC ligaments, no capsular disruption
 Grade II: ligamentous disruption, separation
 Grade III: complete disruption of both AC ligaments.

Post traumatic osteolysis of outer end of clavicle

21 yrs m
3m history of trauma
Coracoclavicular pain

Anterior dislocation

95%
FOOS arm in abduction

- Loss of normal half moon overlap between the glenoid and the hh
- Moloney's arch disruption
- Bony Bankart lesion
- Hill Sachs impaction fracture

Hill Sachs

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

R

M N

Posterior dislocation

Trough line

Elbow

AP

Oblique

Lateral

Radial head
Capitulum 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 - capitulum
- R - radial head
- I - internal epicondyle
- T - trochlea
- O - olecranon
- E - external epicondyle

Myositis ossificans
Olecranon fx
Dislocation
Osteochondritis 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

Hx: dislocation

Recurrent instability 2w after closed reduction

Open repair medial and lateral ligaments

Stable joint

Wrist-hand

Scaphoid tuberosity/waist fx
Dorsal margin triquetrum fx

How to read the wrist x ray

- Gilula's Arcs
 - Roughly 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

Palmar or volar tilt: 11° volar to 4° dorsal

Radial inclination: 13-30°

Radial length: 11-22mm

Vulnerable zone

Fracture dislocations

Dislocations

Wrist fractures

4.3%	0.4%	1.9%	1.7%
68.2%		18.3%	1.3%
		3.9%	

Scaphoid

PA ulnar deviation, lateral oblique scaphoid view

anatomical snuffbox

Scaphoid Bone/Vascular Supply

Radial artery

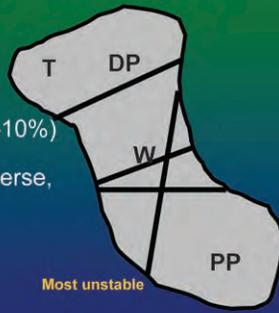
Volar

Dorsal

Radial artery

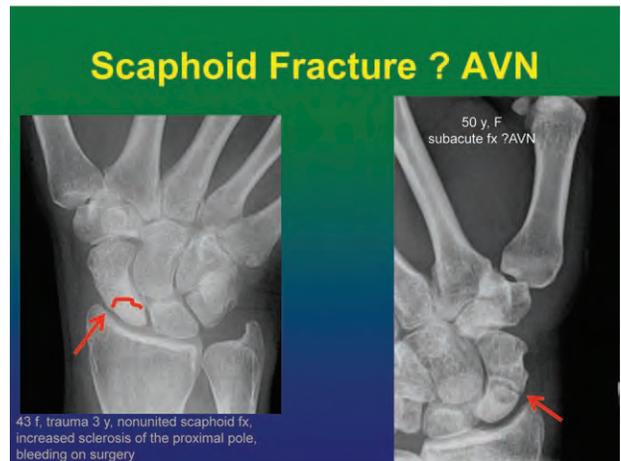
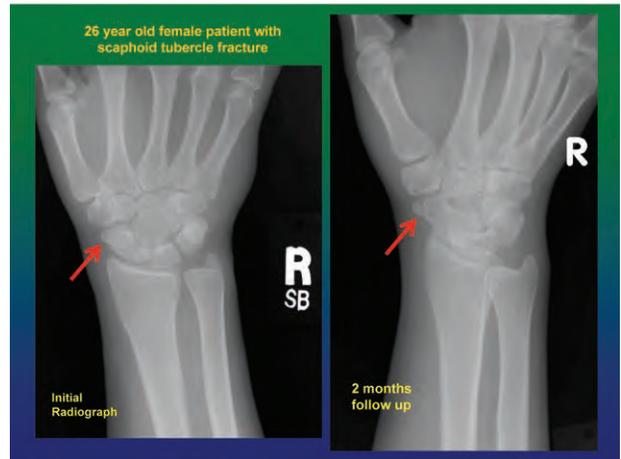
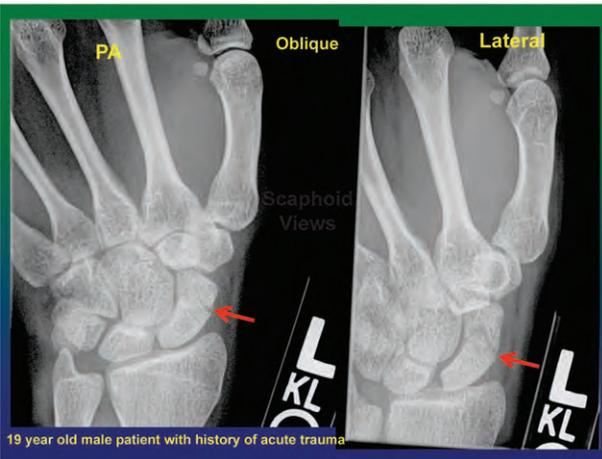
Scaphoid Fractures- Location and Direction of the Fracture Line

- 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



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

Lunate - Perilunate dislocation

ARCS

Sports injuries related fxs

Contact sports

Boxer's fx Base 5th metacarpal fx

Sports injuries related fxs

Bennett's fx dislocation

Rotator-Comminuted Bennett's

Skier's thumb

Sports injuries related fxs

Avulsion fx, extension 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