





Scapula Fractures

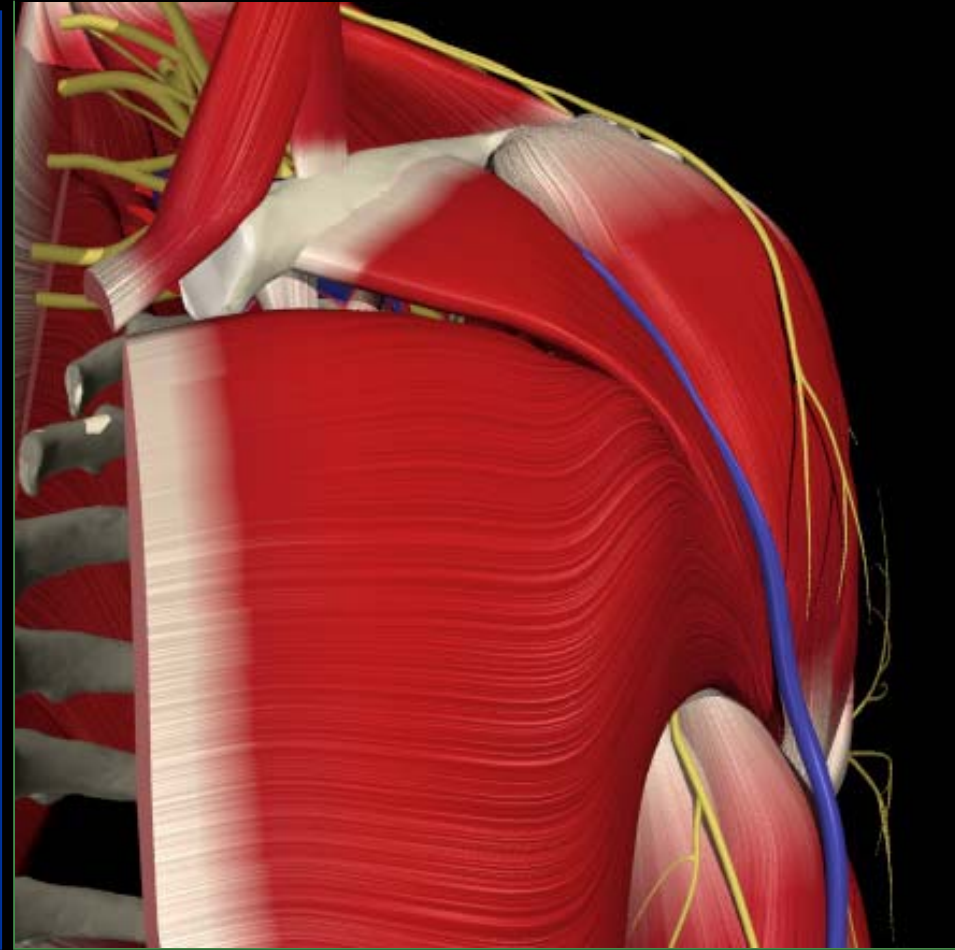
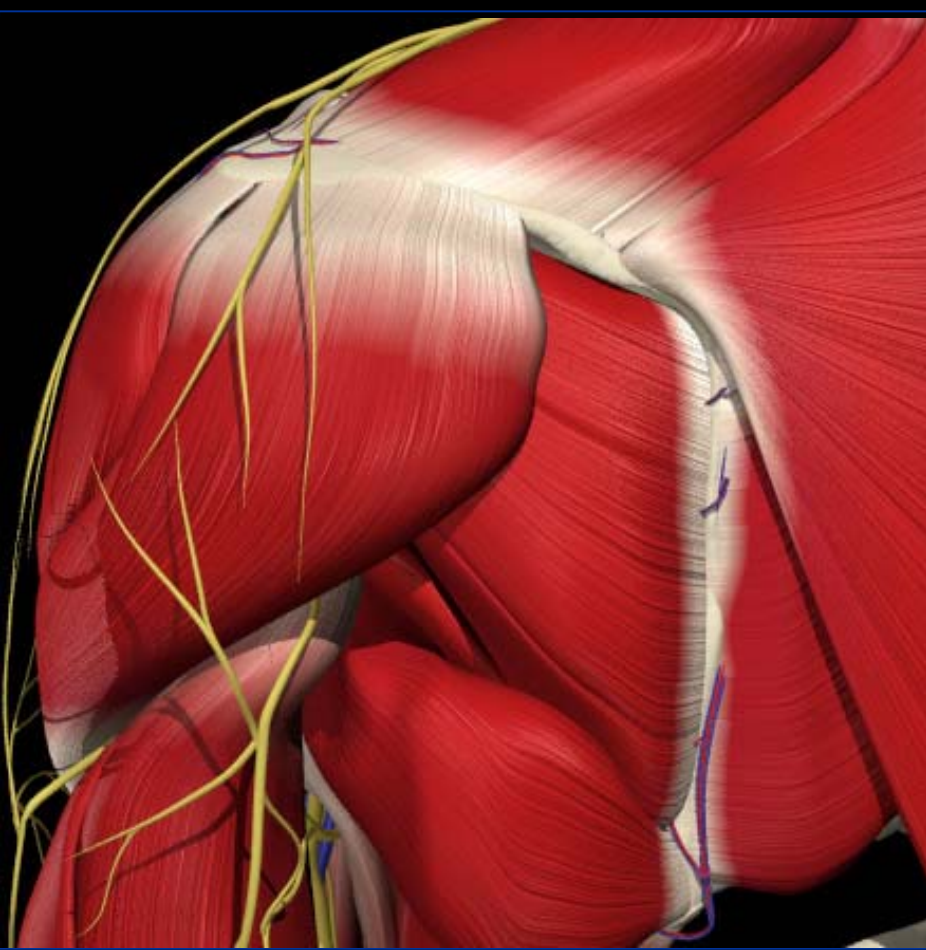
Lennard Funk

Plan

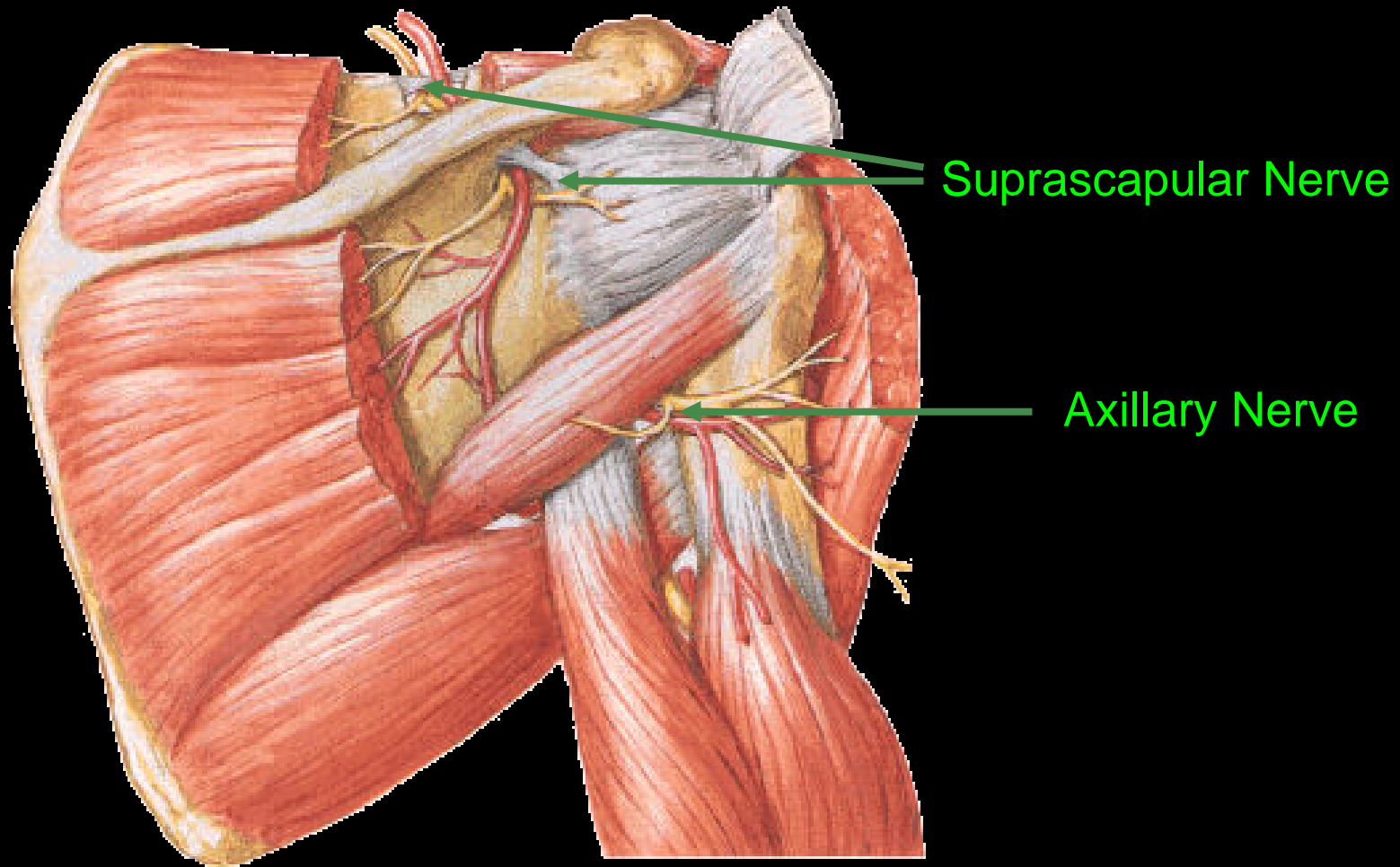
1. Anatomy & Mechanics
2. Incidence
3. Associated injuries
4. Classification & frequency
5. Floating Shoulder
6. Management
7. Surgical Approach
8. Case Examples



Anatomy

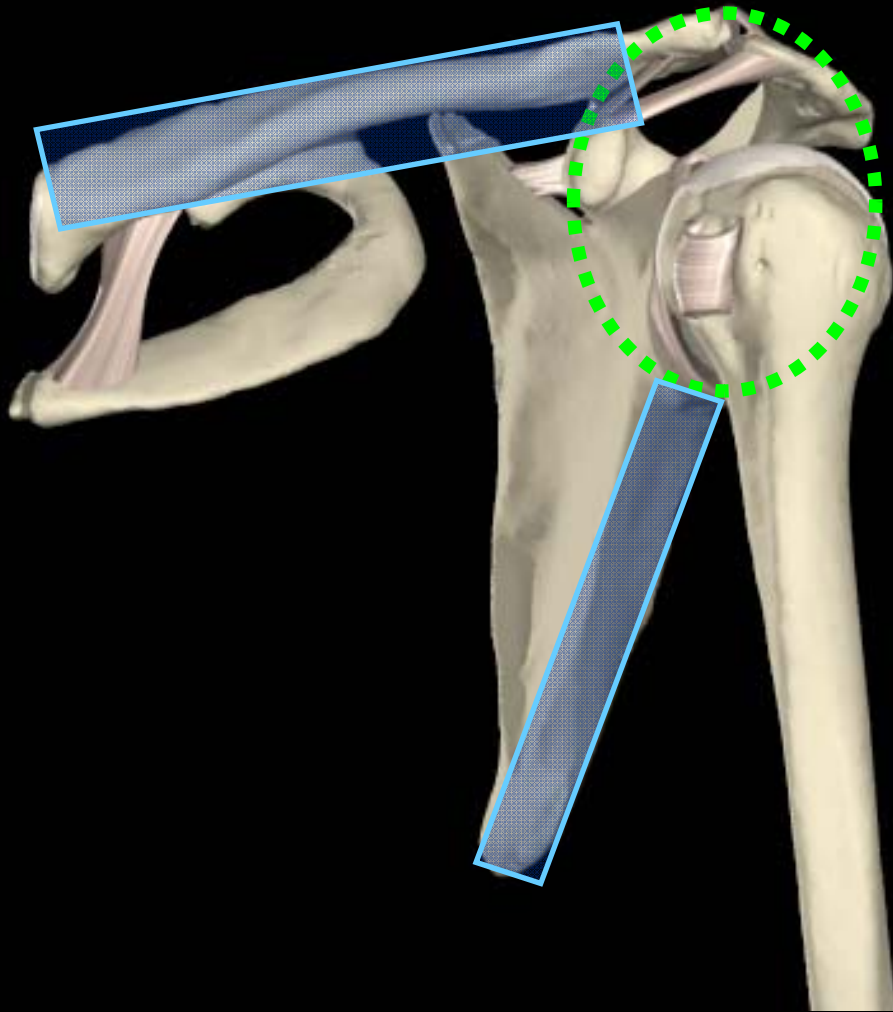


Neurovascular structures





Superior Suspensory Complex



Bony Ring:

1. Glenoid
2. Coracoid
3. Acromion
4. Distal clavicle
5. ACJ
6. CC Ligs.

Superior Strut:

Clavicle

Inferior Strut:

Lateral Border

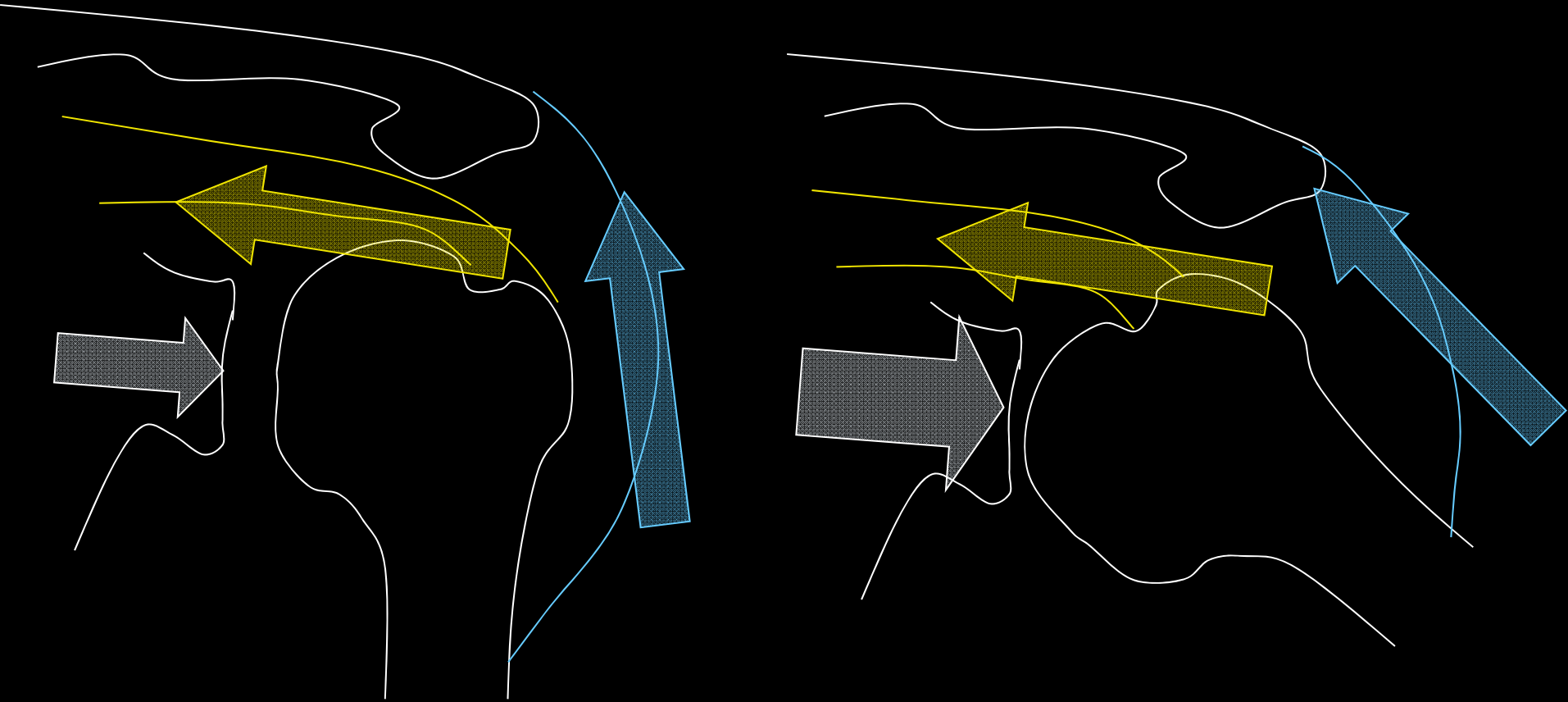


Scapula Motion





Mechanics

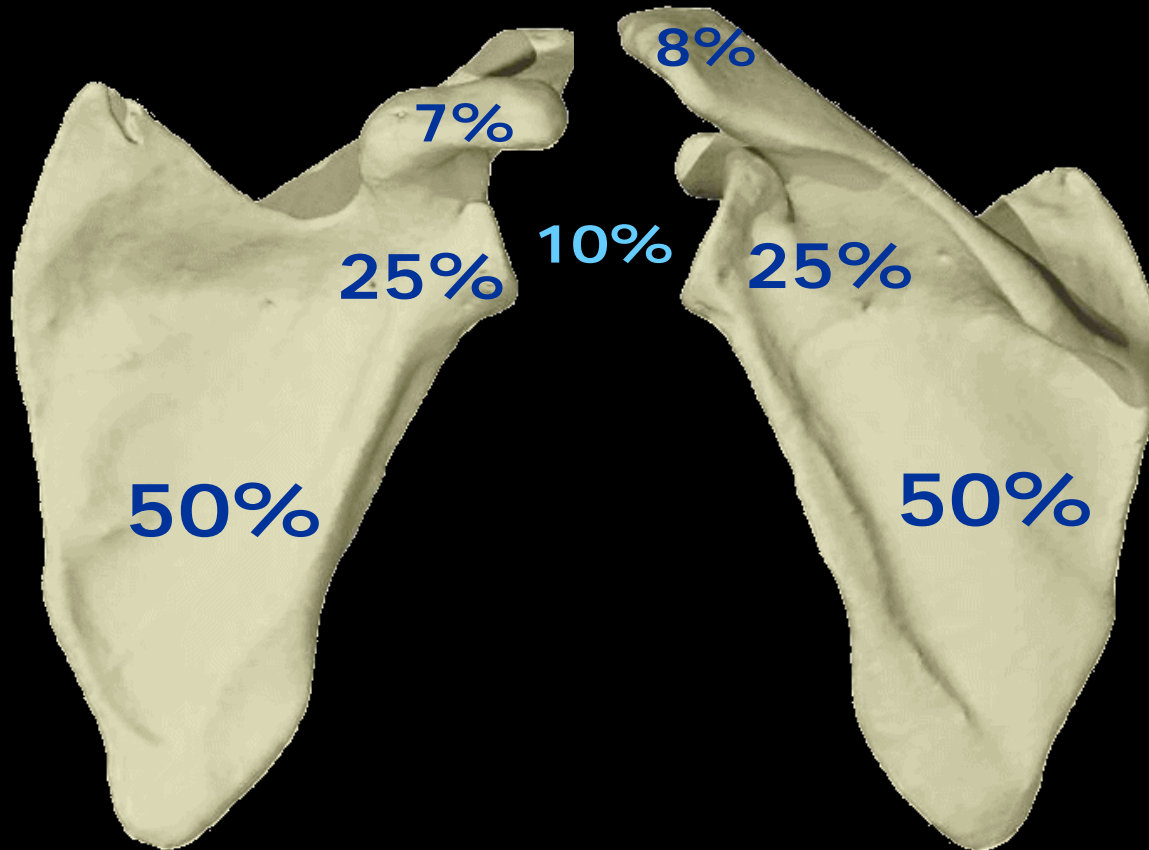




Frequency

1% of all fractures

5% of all shoulder fractures.





Associated Injuries

Rib fractures - 25-45%

Pulmonary injury - 15-55%

Humeral fractures - 12%

- (5-10% brachial plexus injury)

Skull fractures - 25%

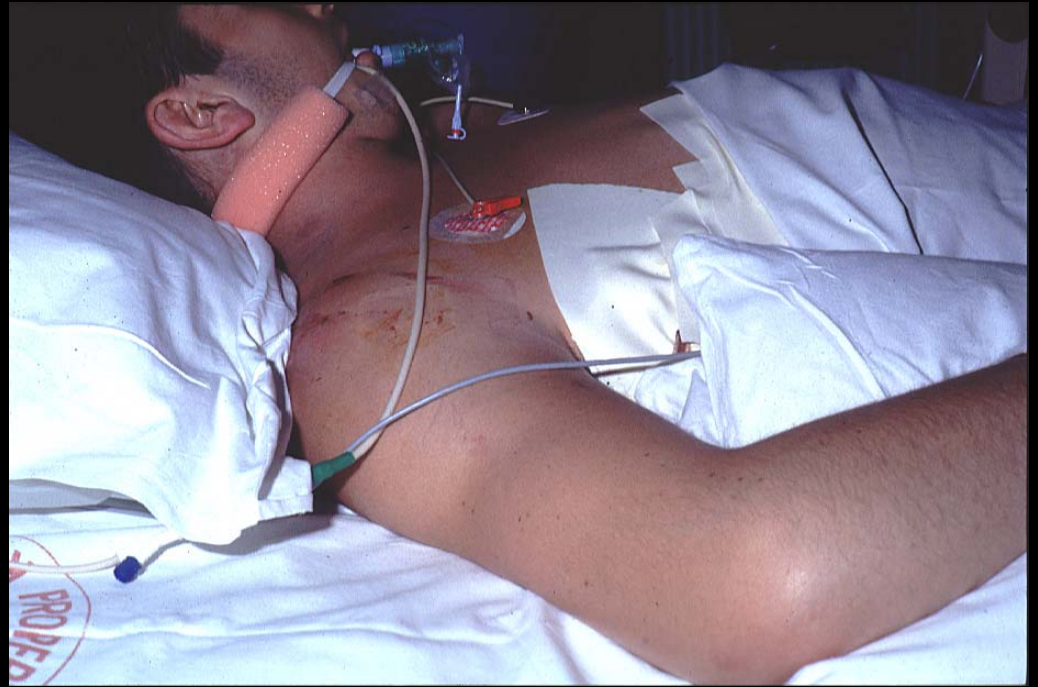
CNS deficits 5%

Major vascular injury - 11%

Splenic injury - 8%

Diagnosis

Incidental
Late
Chest x-ray
Suspicion



AP SUPINE

R





X-Rays



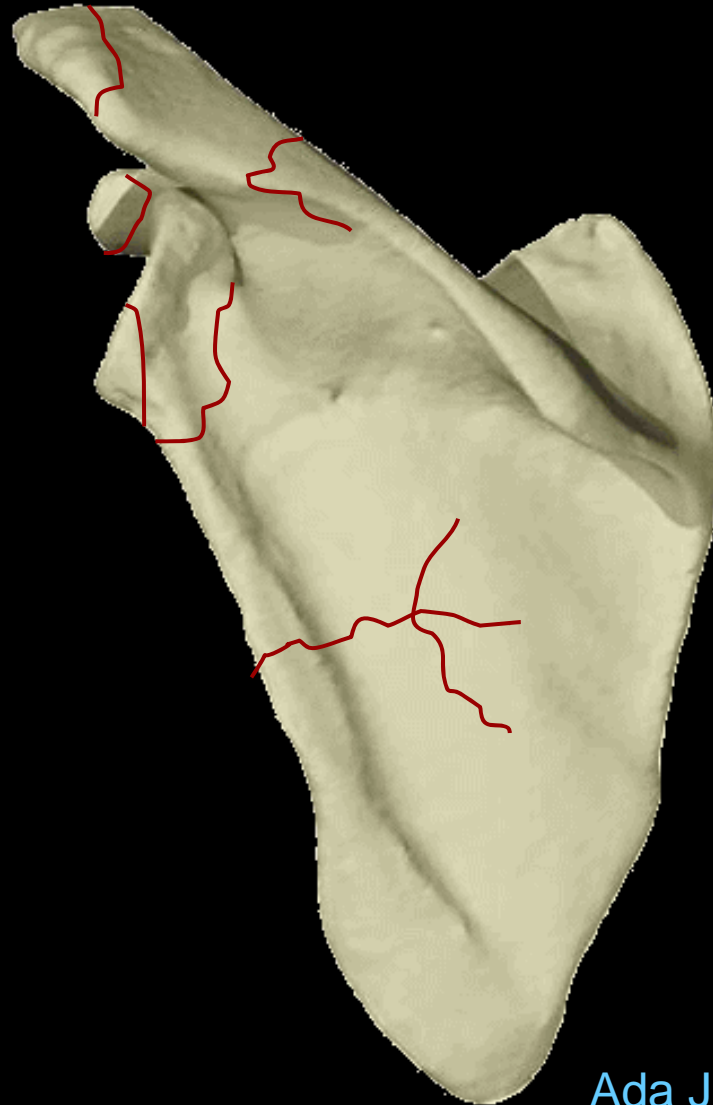


3D Print





Classification



Ada JR, Miller MD. Clin Orthop 1991



Management

#Life threatening injuries

#Often referred late

#Historically non-operative treatment

#“good results”

#“forgiving bone”



Outcomes

> 90% are undisplaced

Displaced #'s:

- 50% pain
- 40% weakness
- 20% limited function

Hardegger et al. J Bone Joint Surg Br 1984
Ada JR, Miller MD. Clin Orthop 1991
Goss. J Bone Joint Surg Am 1992
Mayo et al. CORR 1998
Nordqvist A, Petersson C. Clin Orthop 1992
Pace & Copeland. J Bone Joint Surg Br 2005

2 years after scapula



Indications for Surgery

Glenoid Fractures:

- Articular displacement (> 5mm)

Scapula Neck:

- > 40 degrees
- > 1 cm

Ada JR, Miller MD. Clin Orthop 1991
Pace & Copeland. J Bone Joint Surg Br 2005

Indications for Surgery

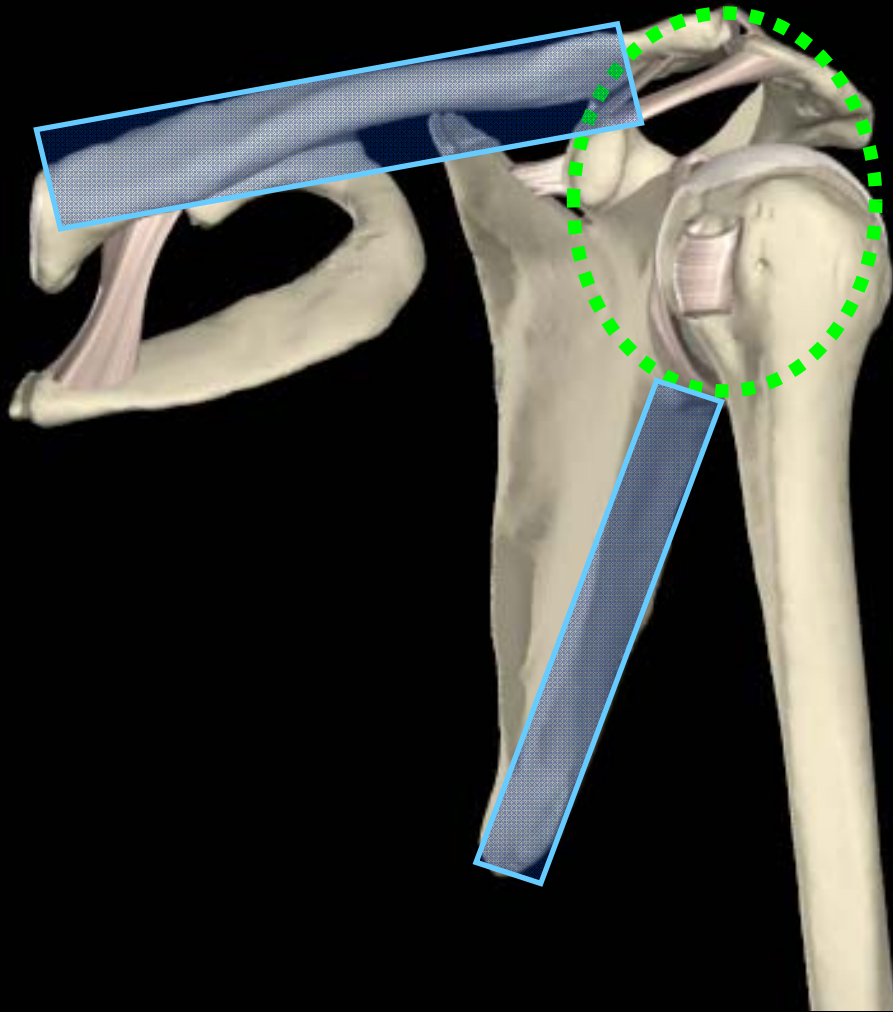
#Acromion fractures:

- Downward angulation

#Coracoid fractures:

- Displaced significantly

Floating Shoulder



Bony Ring:

1. Glenoid
2. Coracoid
3. Acromion
4. Distal clavicle
5. ACJ
6. CC Ligs.

Superior Strut:

Clavicle

Inferior Strut:

Lateral Border



Floating Shoulder



Stable



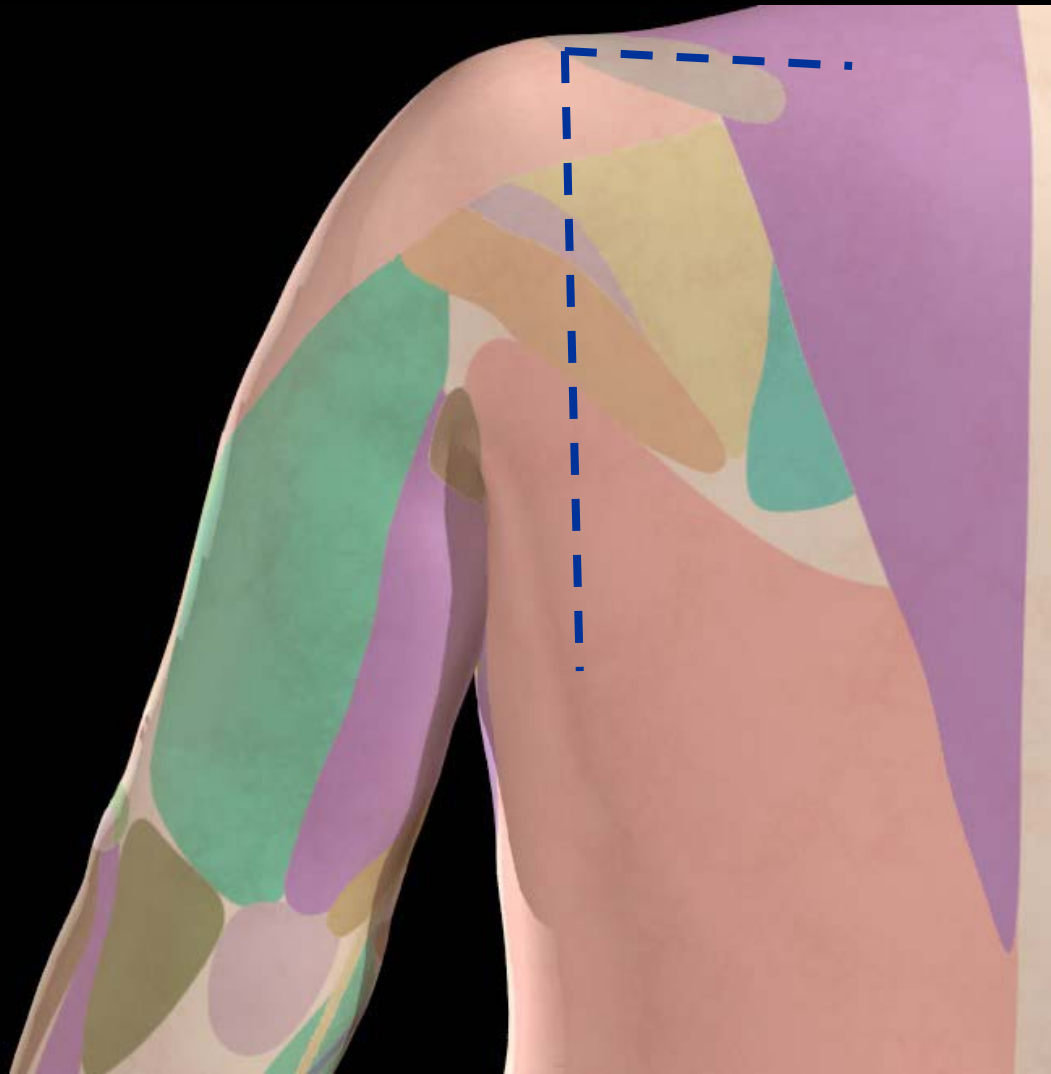
Unstable

Scapula Fixation

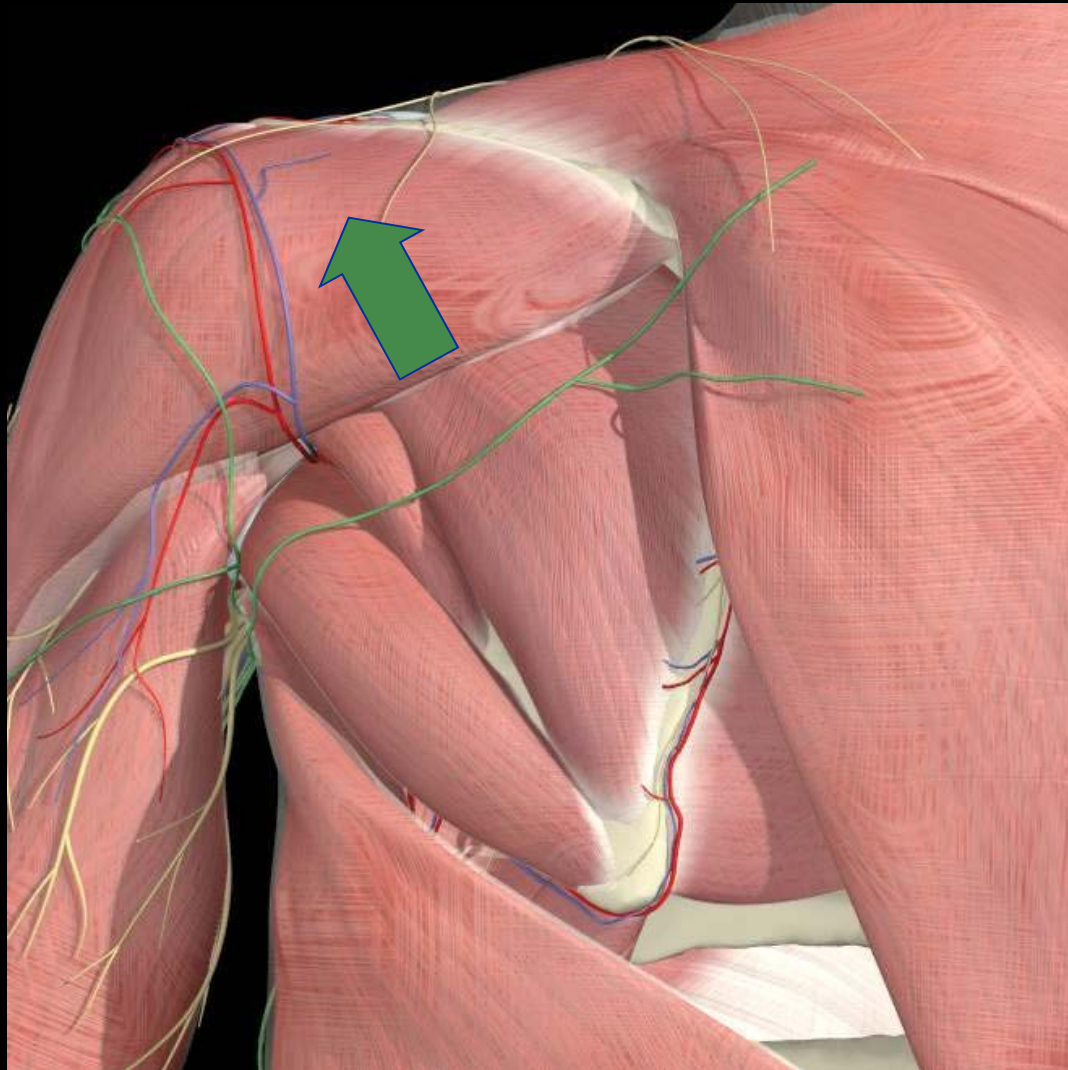
- # Prone Position with arm free on stool
- # Image intensifier from opposite side (if reqd.)



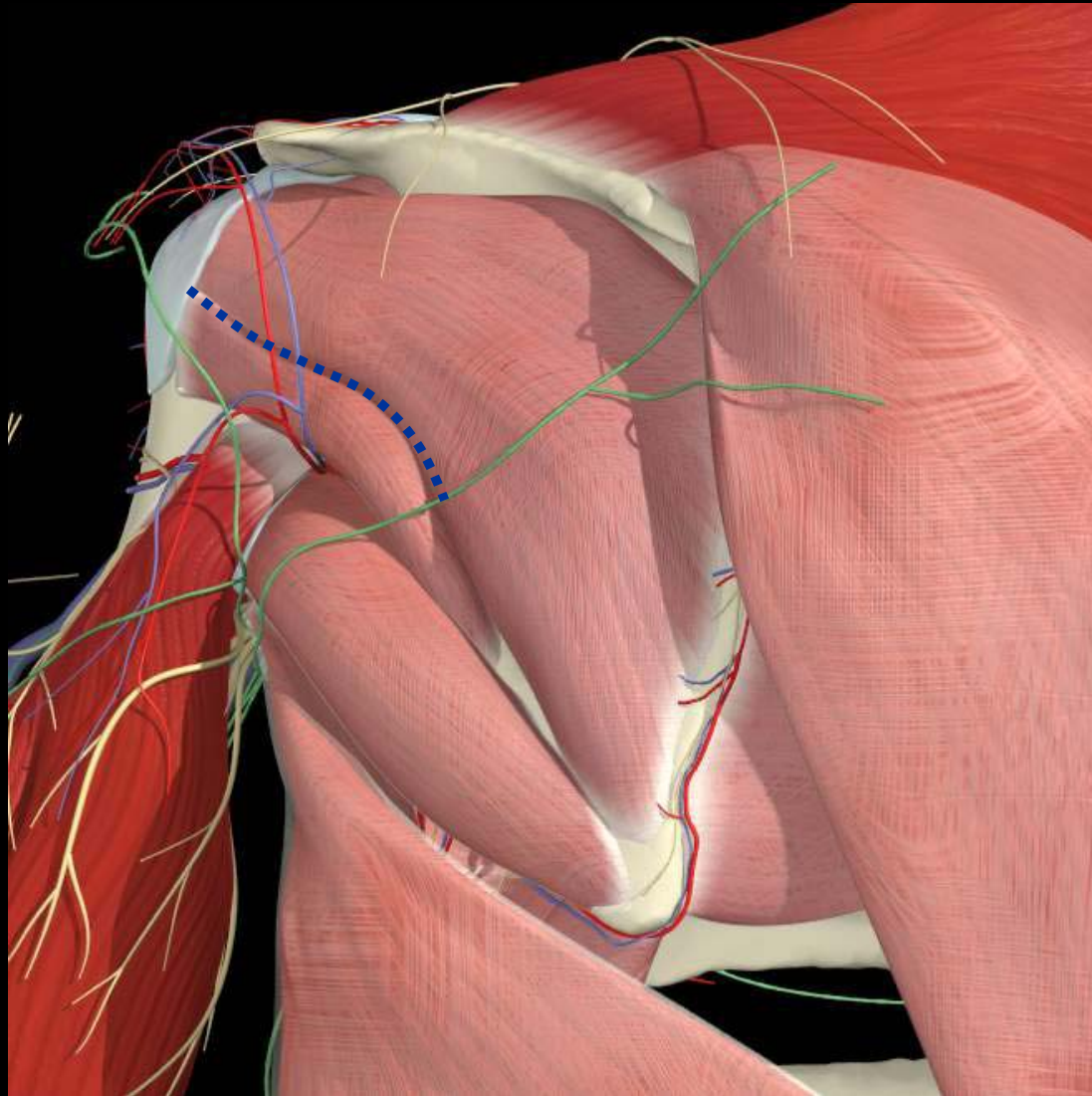
Incision



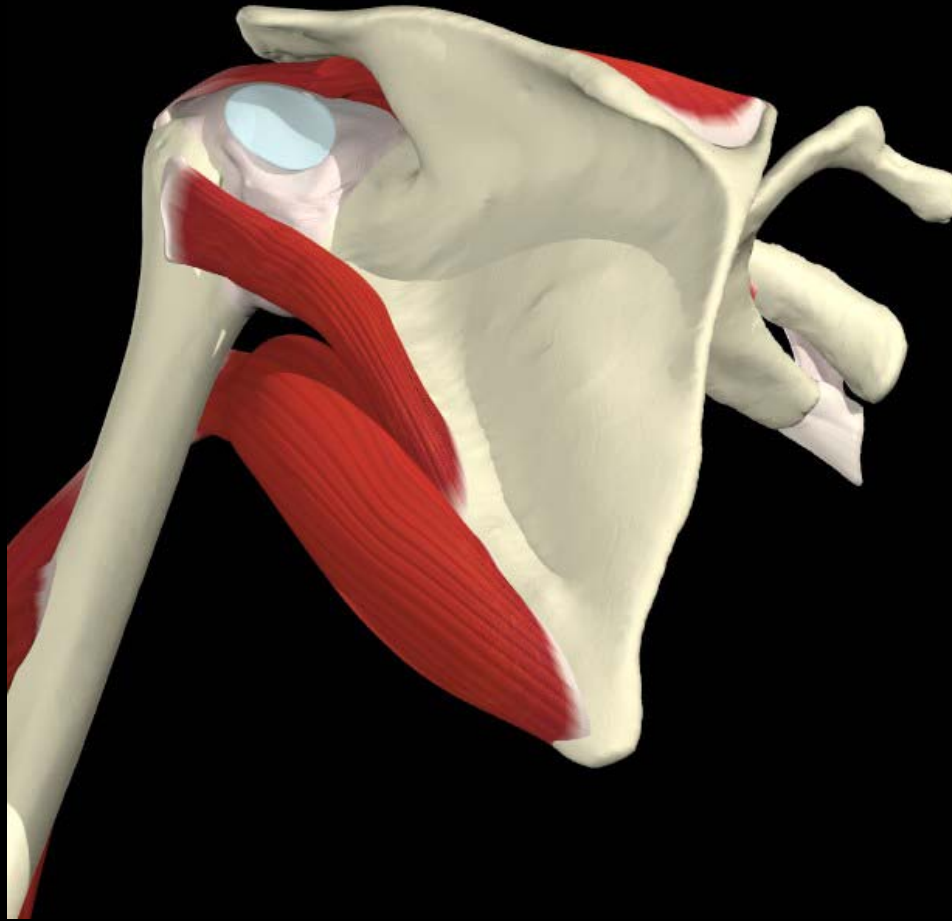
Approach



Approach Deep



Scapula Neck & Body



Case 1 - Glenoid # 8wks old



LightSpeed Plus

Ex: 13249

S 85

Hope Hospital CT Neuro

BOYLIN STEPHEN

Volume Rendering No cut

049Y M B1417704

Screen save

Nb Views: 10

Acc:

Se: 149/5

Im: 1/11

: -1.0

2004 Apr 08

Acq Tm: 10:55:54

Rotation: 36.0 deg.

512 x 512

SOFT

L
W

L
1
0
8
5

140.0 kV

0.0 mA

Tilt: 0.0

ET: 1.4 s

GP: 0.0 s

TS: 0.00 mm/s

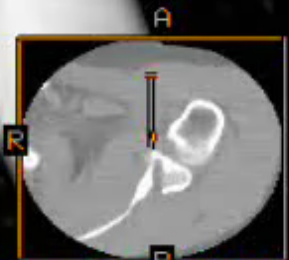
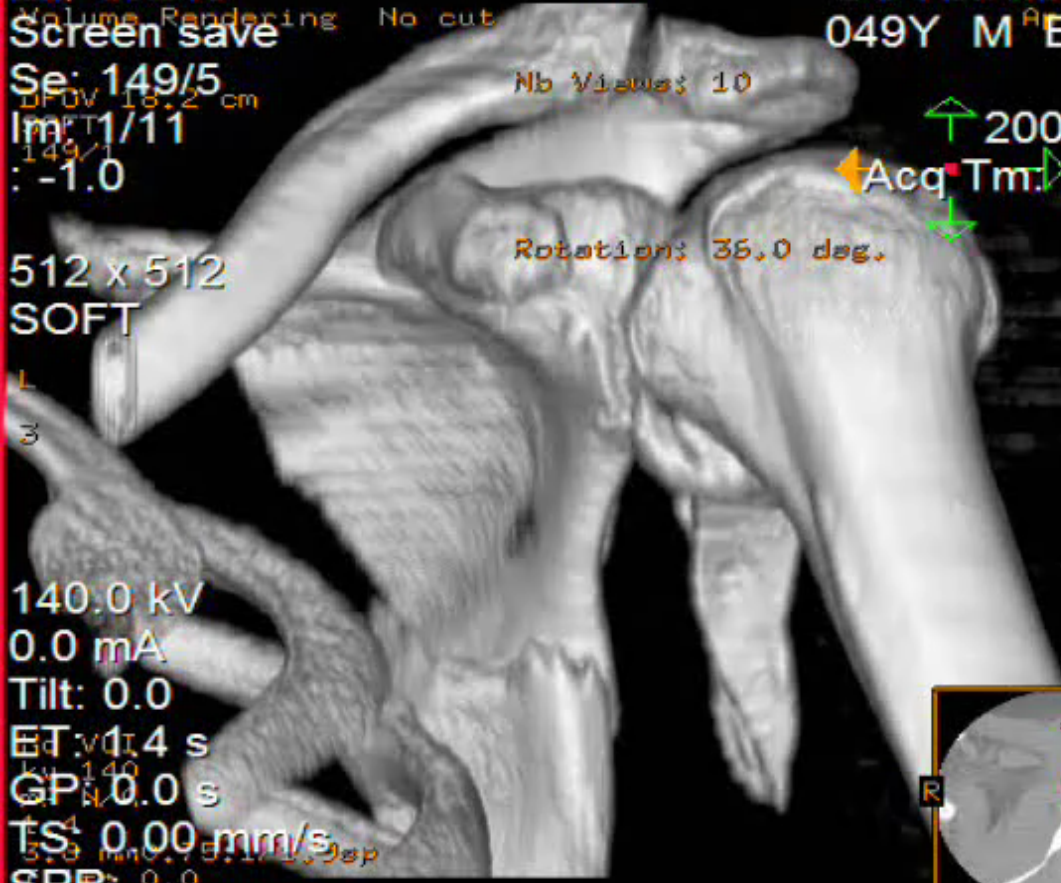
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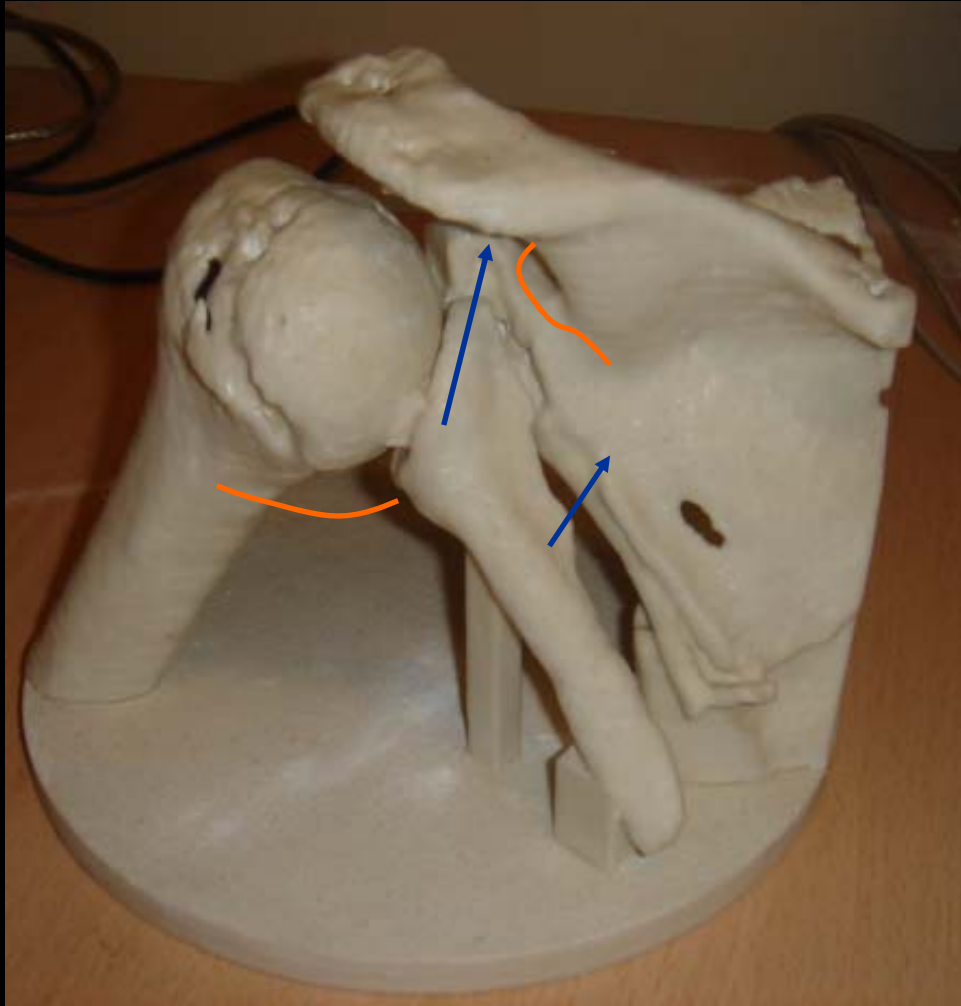
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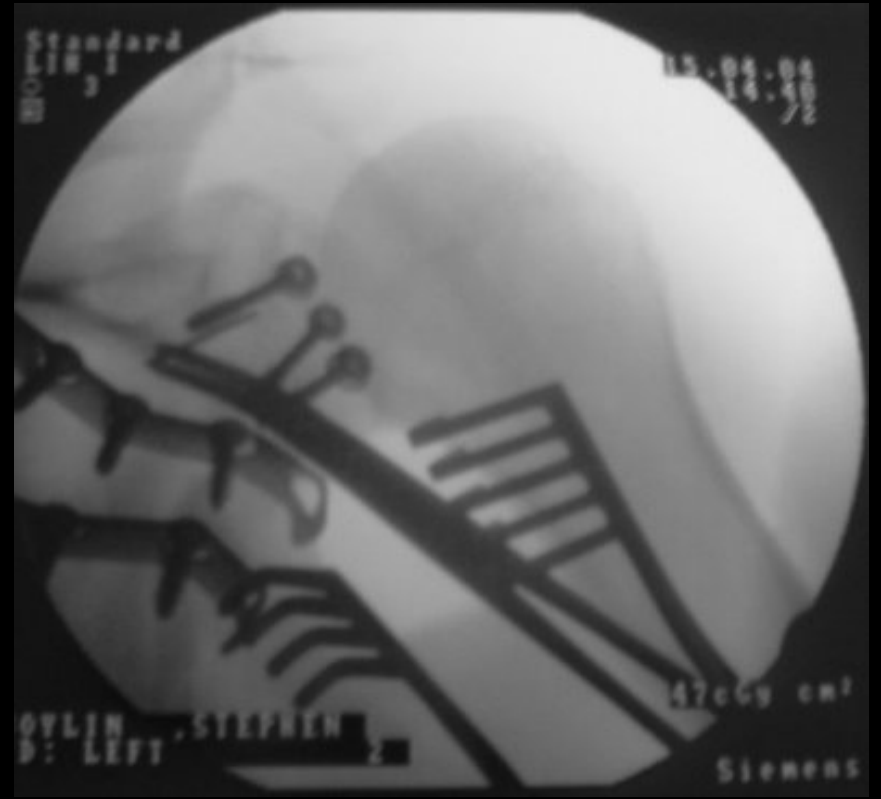
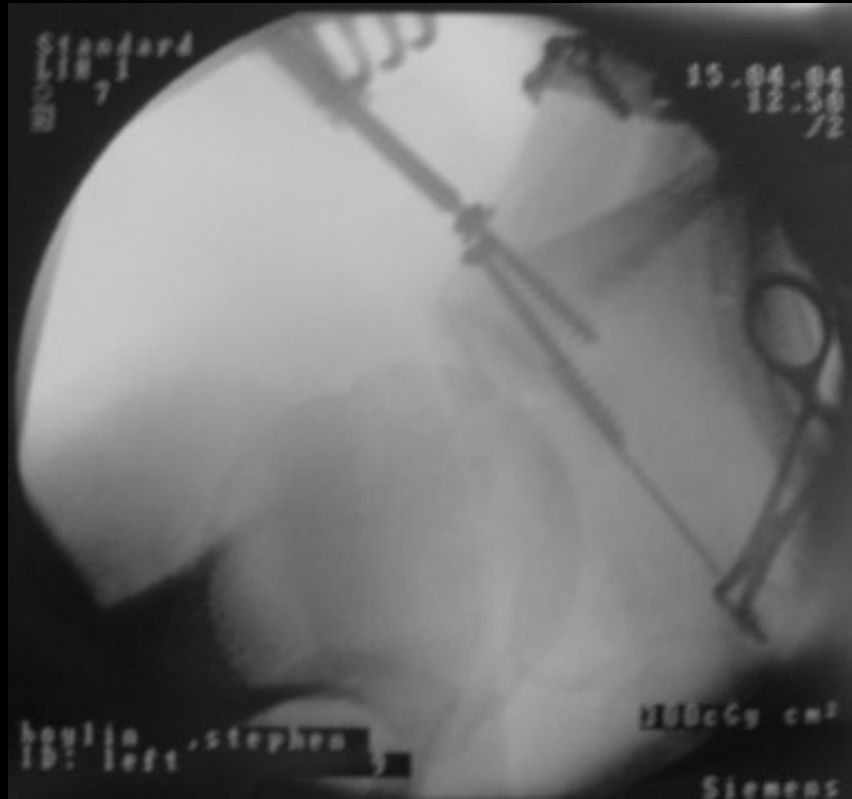
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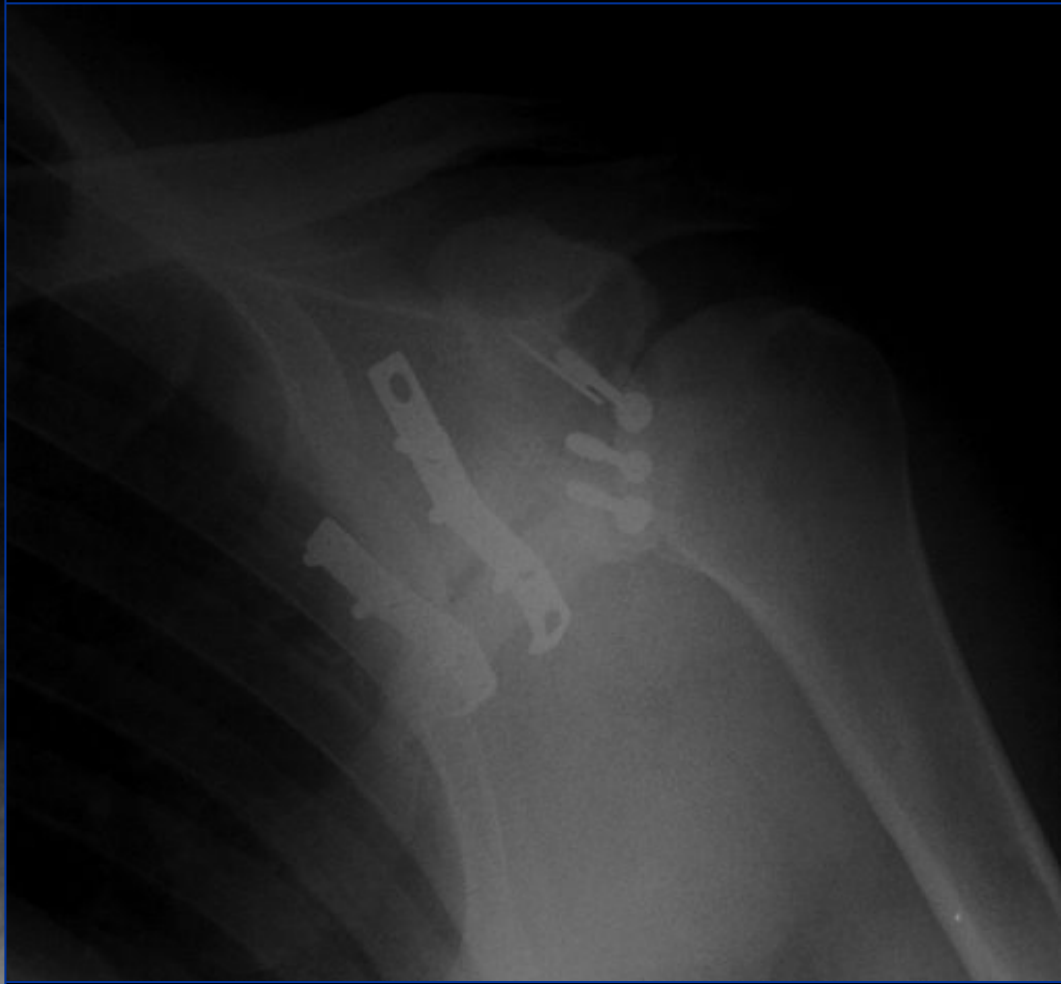
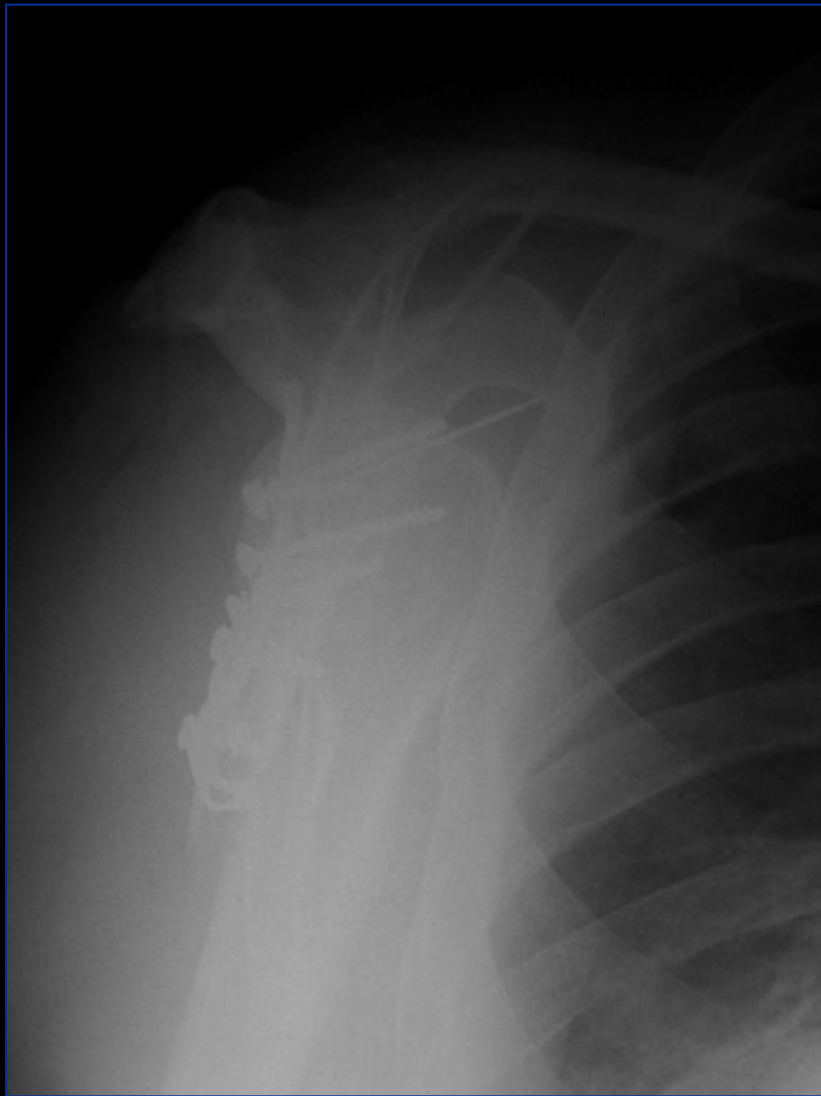
I 97

DFOV: 0.0 x 0.0cm

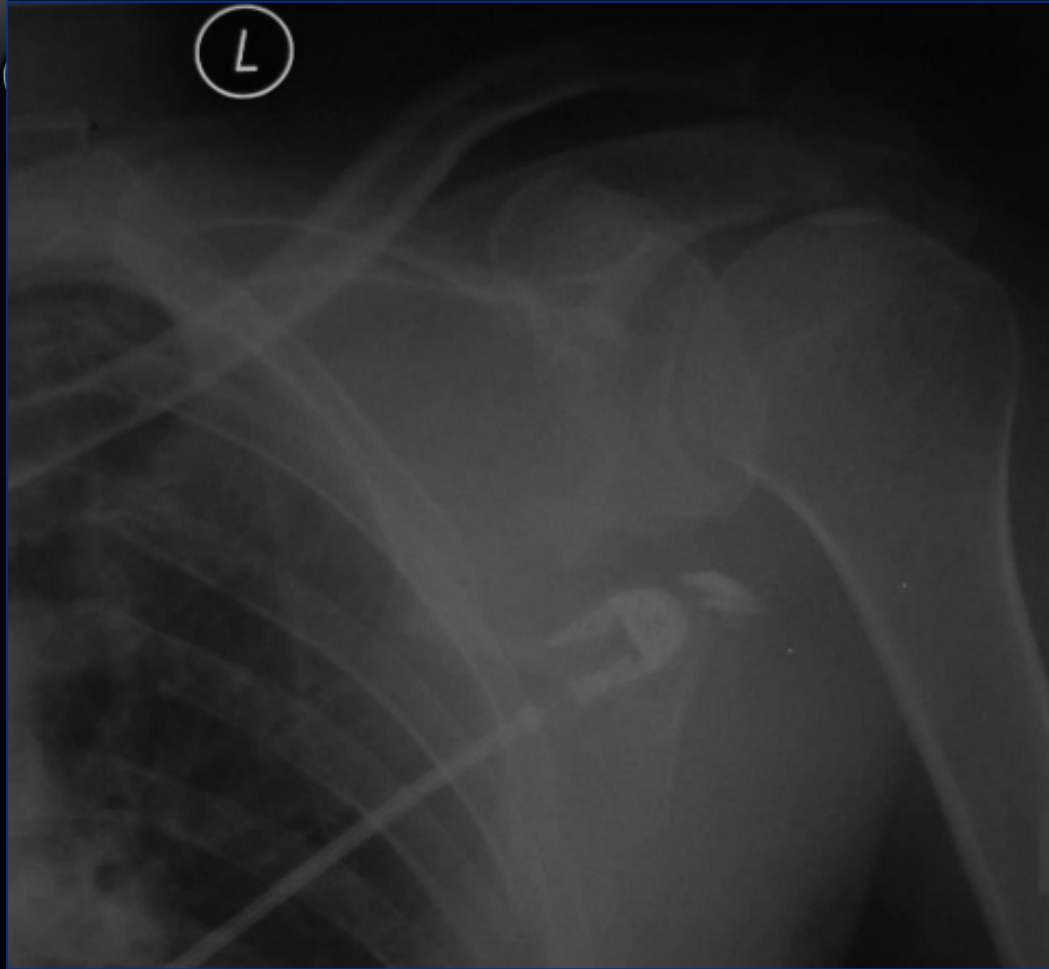


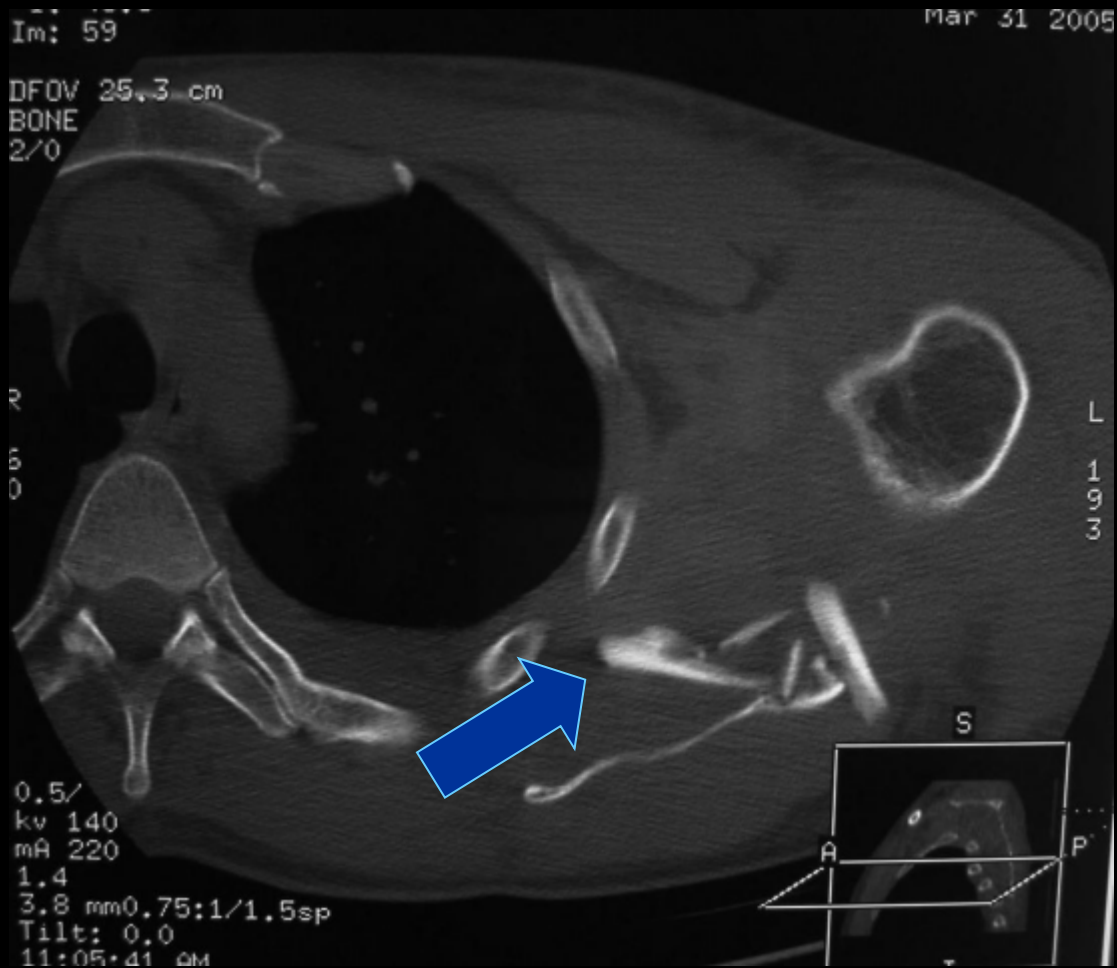


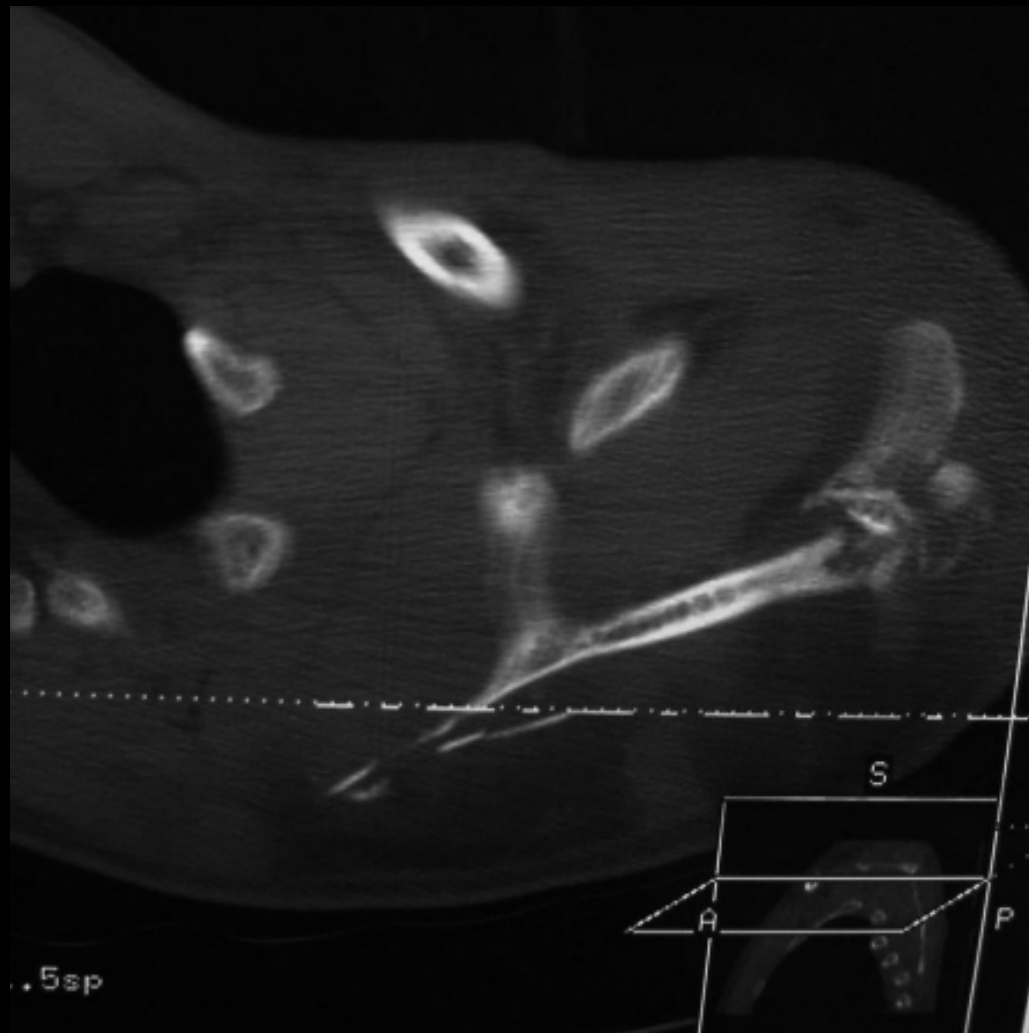




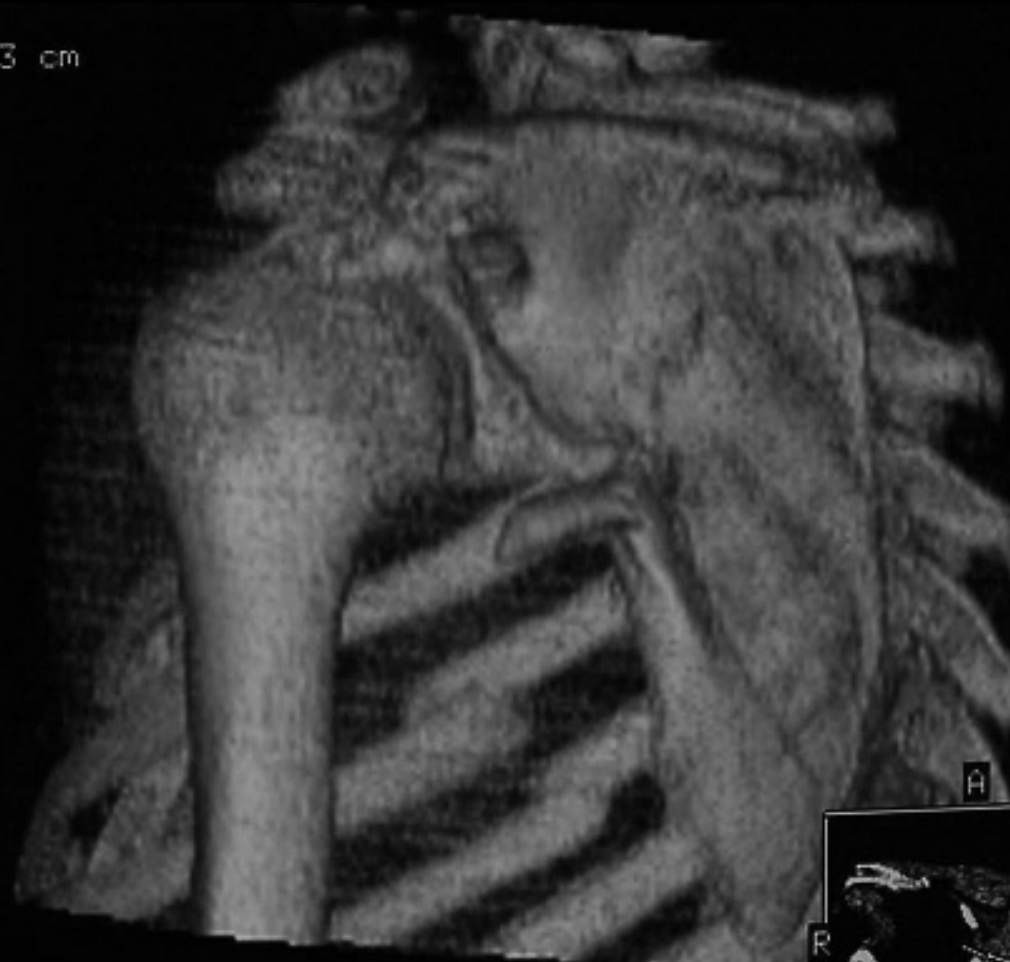
Case 2 – Scapula Body







3 cm









Case 3 – Glenoid # Arthroscopically assisted

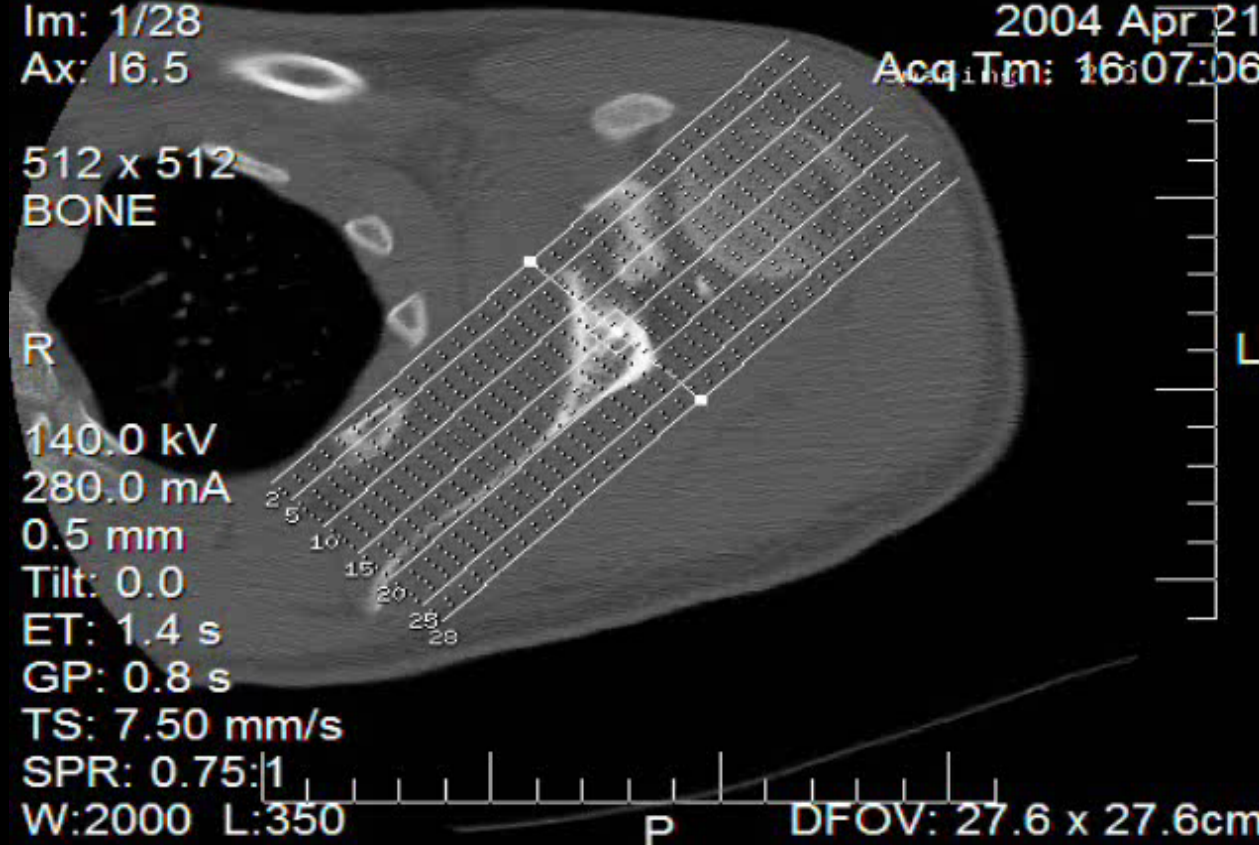
LightSpeed Plus
Ex: 10912
Reformatted
Se: 402/3
Im: 1/28
Ax: 16.5

A Hope Hospital Body CT
WATT ROBERT
020Y M B1552/04
Acc:
2004 Apr 21
Acq Tm: 16:07:06

512 x 512
BONE

R

140.0 kV
280.0 mA
0.5 mm
Tilt: 0.0
ET: 1.4 s
GP: 0.8 s
TS: 7.50 mm/s
SPR: 0.75:1
W:2000 L:350



WATT
ROBERT
953311
LF
LEFT SHOULDER

HOPE HOSPITAL
29.04.2004
12:35:37

WATT
ROBERT
953311
LF
LEFT SHOULDER

HOPE HOSPITAL
29.04.2004
13:23:00

77 kVp
1,80 mA
4

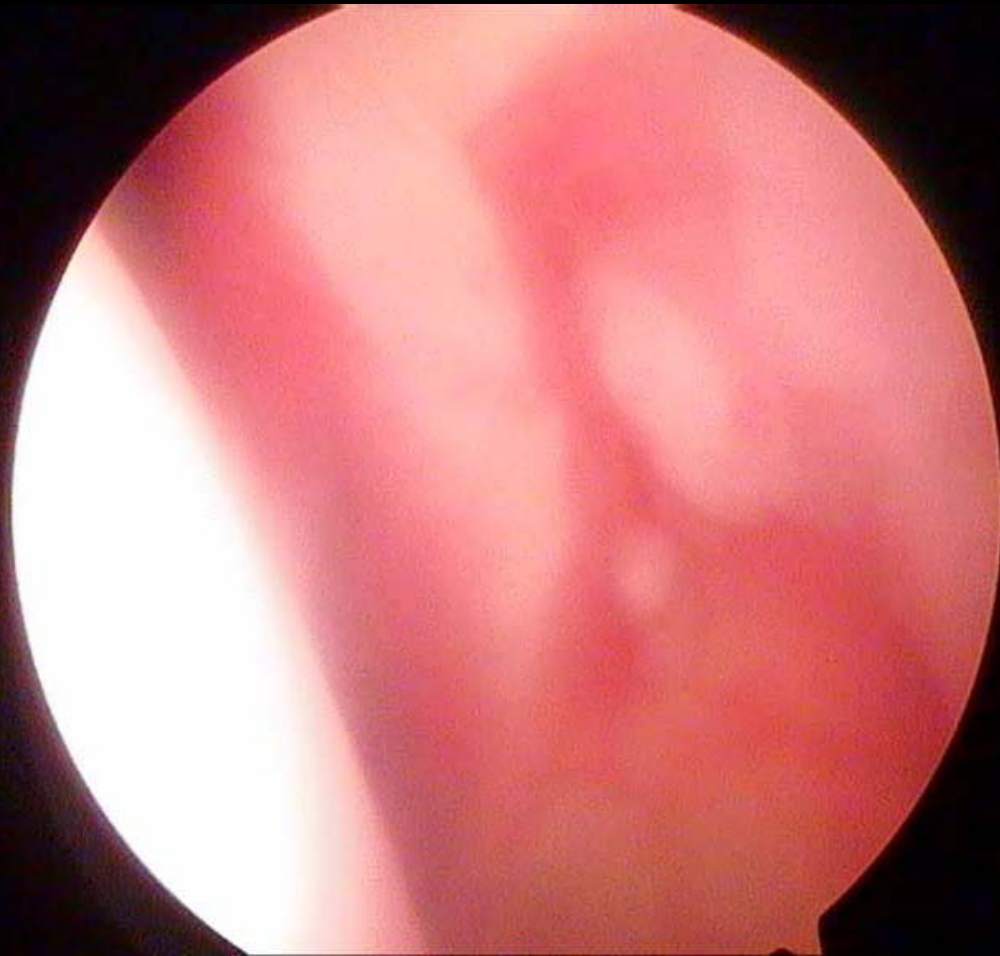
33 ☀
30 ☾
OEC



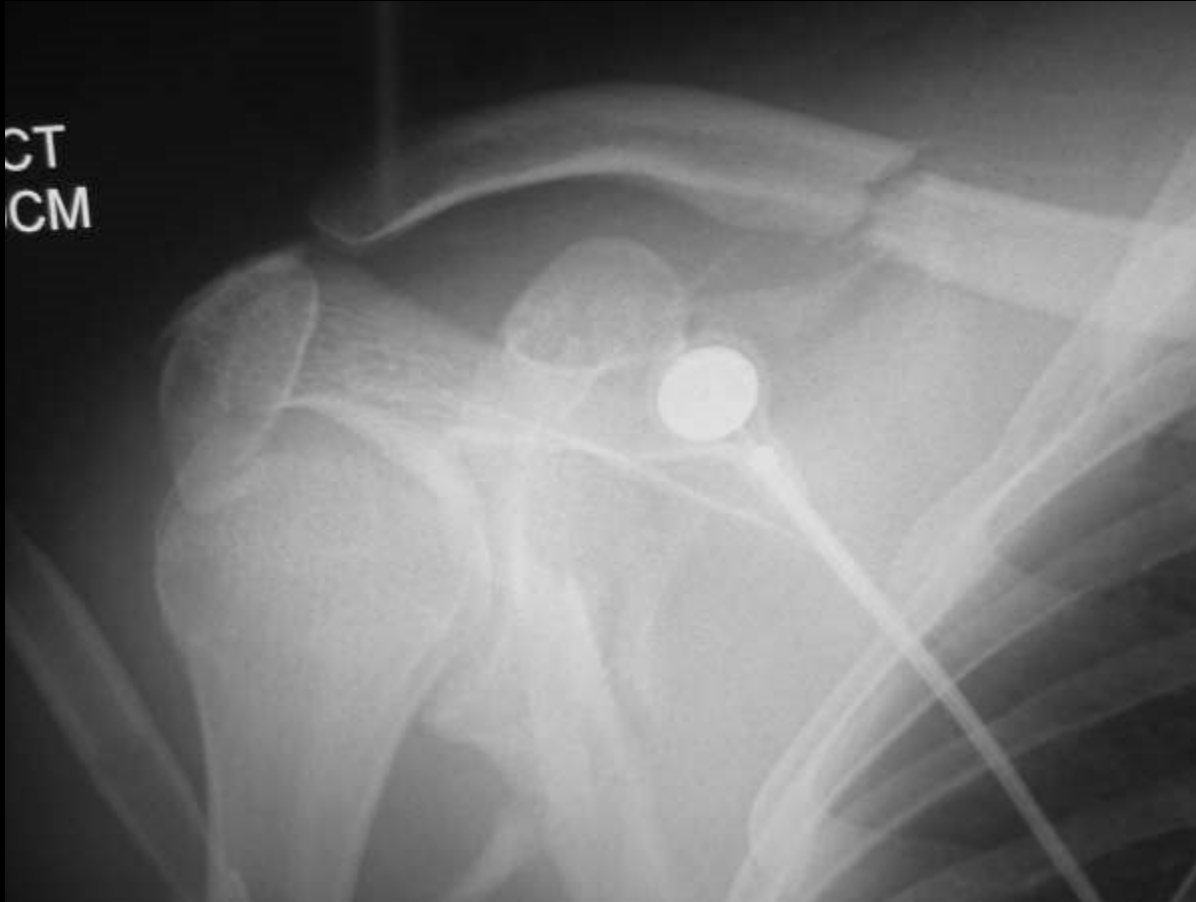
83 kVp
2,16 mA
6

27 ☀
42 ☾
OEC

Post-reduction



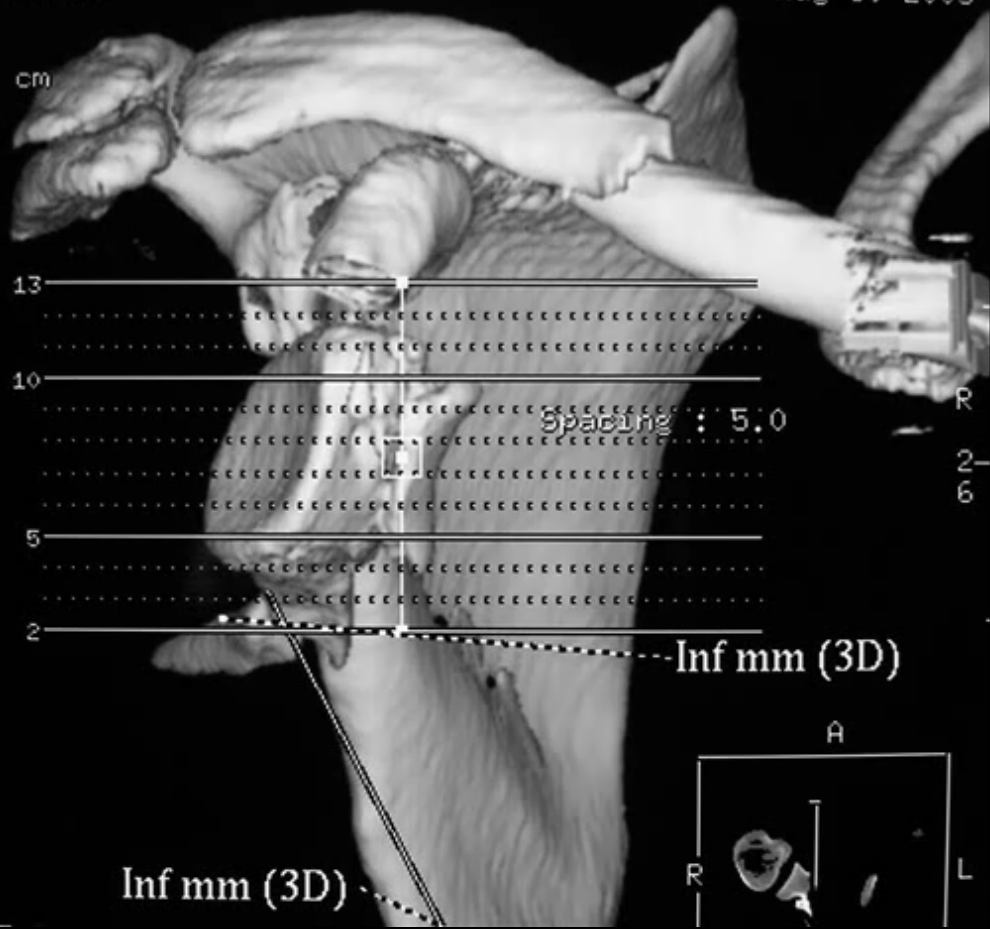
Case 4 - Floating Shoulder



Face No cut

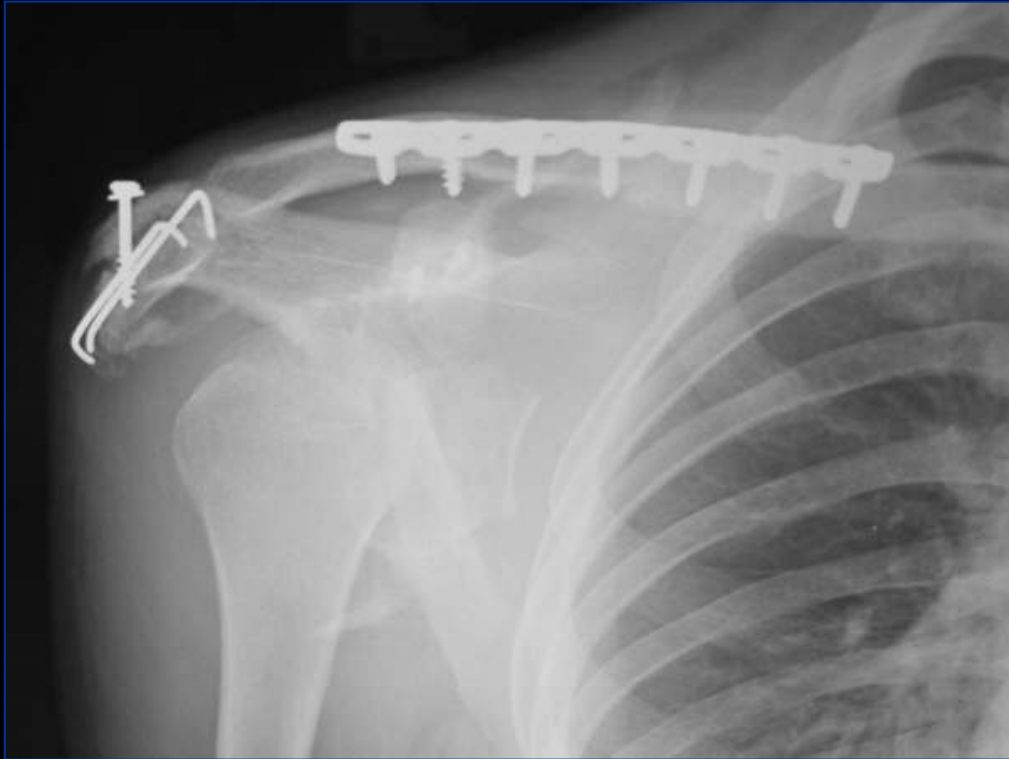
Aug 30 2005

19.3 cm



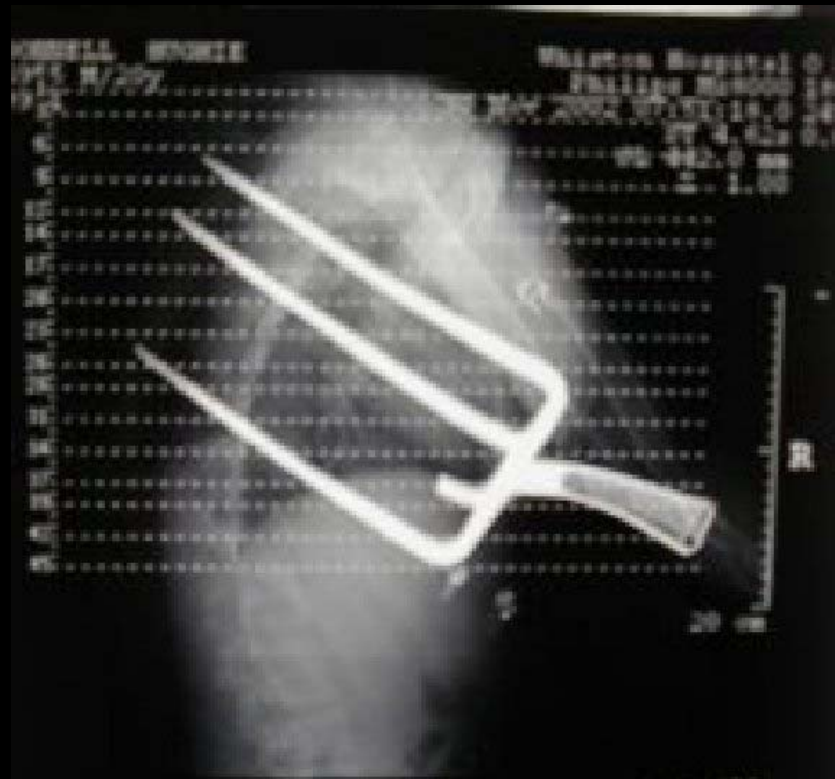
FOI
.40
.80

Inf mm (3D)



Summary

1. Scapula is essential to normal shoulder function
2. Rare
3. Major Trauma
4. 90% undisplaced = non-op
5. Displaced #'s = Poor Outcome = Surgery
6. Surgery by experienced surgeon



Thank You