

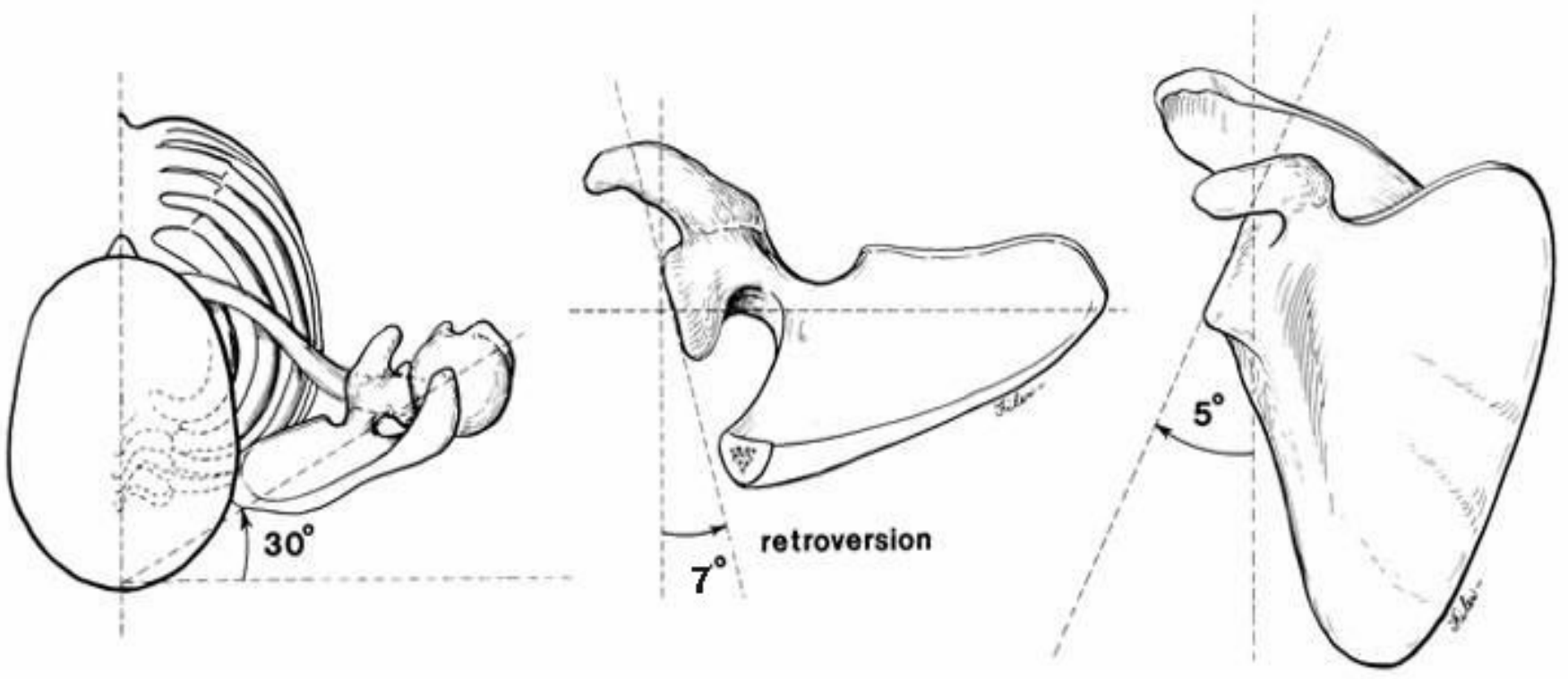
SCAPULAR FRACTURES

Jai Relwani, Shoulder Fellow, Reading
Shoulder Unit, Reading.

Aims

- Anatomy
- Incidence/Importance
- Mechanism
- Classification
- Principles of treatment
- Specific variations
- Conclusion

Anatomy



Anatomy that protects.....

- Thickened edges
- Its great mobility with recoil
- Its position between layers of muscle

Incidence and etiology

- Scapula fractures
 - 0.4% - 1% of all fractures,
 - 3 - 5% of all shoulder girdle injuries.
- Due to high energy trauma.
- Causes:
 - R.T.A. - 60%
 - Fall from height - 20%
 - Others - 20% eg. avulsion



Associated Injuries: 35-98 %

- Clavicle fractures 15 - 40%
- Rib fractures 25 - 50%
- Pulmonary injuries 15 - 55%
- Humeral fractures 12%
- Brachial Plexus 5-10%
- Skull fractures 25%
- Lower Limb fractures 11%
- Major Vascular injury 11%
- Splenic lacerations 8%

Associated Injuries

- The presence of fracture or soft-tissue injury about the thorax should lead one to search for a scapular fracture.
- Harris and Harris
 - study of chest radiographs from 100 patients with scapula fracture
 - in only 57% was a fracture appreciated on the initial chest film.
 - in only 2 of 100 radiographs was a scapula fracture the only skeletal injury seen in the thorax.

Classification

- Anatomical

OR

- Extra articular
- Intra articular

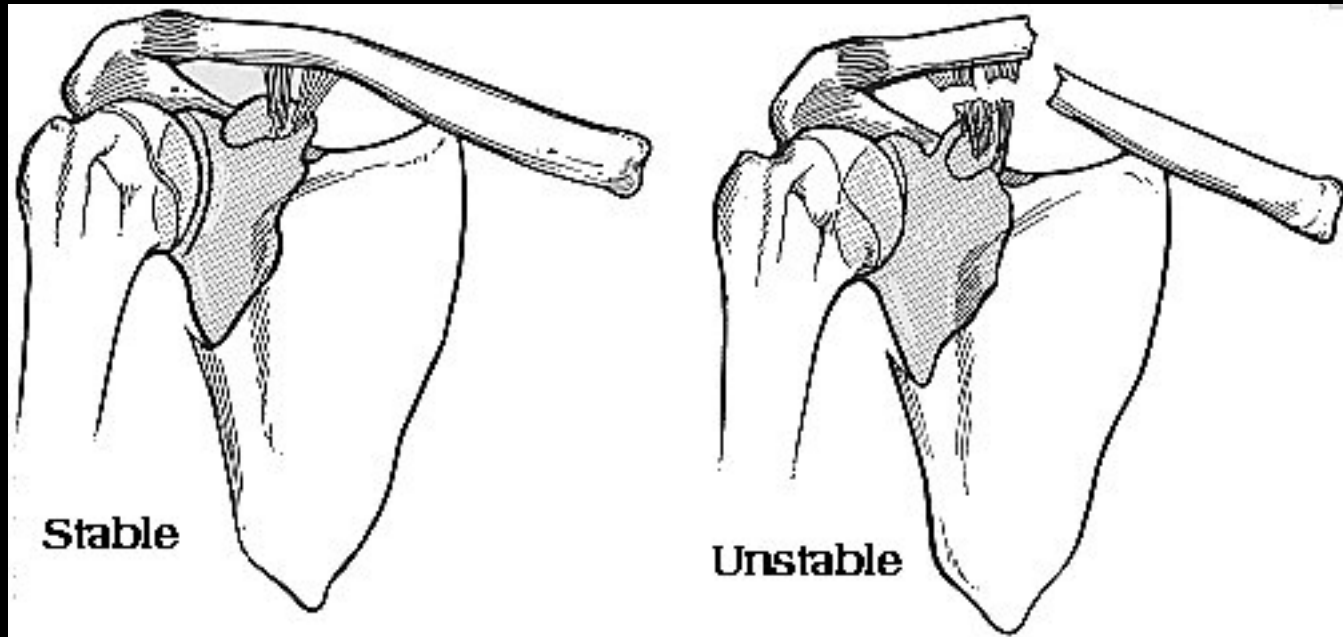
Extra articular fractures

- Most can be managed non-operatively.
- Indications for surgery:
 1. Depressed acromion fractures that encroach on the subacromial space and interfere with rotator cuff function
 2. Scapular neck # with severe angulations $> 40^\circ$ or displaced greater than 1 cm
 3. Extra-articular # of scapular neck plus coracoid, acromion or clavicle #.

Depressed acromion fracture - impingement



Goss concept - SSSC (Superior shoulder suspensory complex)



Scapular neck fractures

- Hardegger et al. (1984) - the amount of displacement and stability depends on the presence of an associated fracture of the clavicle or a coracoclavicular ligament tear. The altered glenohumeral-acromial relationship results in "functional imbalance" of the Superior Suspensory Complex of the shoulder (SSCS). They recommended open reduction and scapular fixation of this fracture.

Neck + Clavicle fracture



Scapular neck fractures

- Ada and Miller (Clin Orth, 1991)
 - 16 patients with displaced and glenoid neck fractures treated closed, 40% had weakness of abduction, 50% had subacromial and night pain, and 20% had decreased range of motion.
 - Eight patients treated surgically with open reduction through a posterior approach had no complications and no rest or night pain and what they described as greater than 85% of glenohumeral motion.
 - They recommended open reduction of the fracture if the glenoid neck fracture is angulated at 40° or displaced greater than 1 cm.

Glenoid fractures

Incidence

- 10% of scapula fractures
- 10% of Glenoid fractures are displaced
- Displaced Glenoid fractures = 1 in 10 000 of all fractures

Ideberg classification - five types based on 300 cases

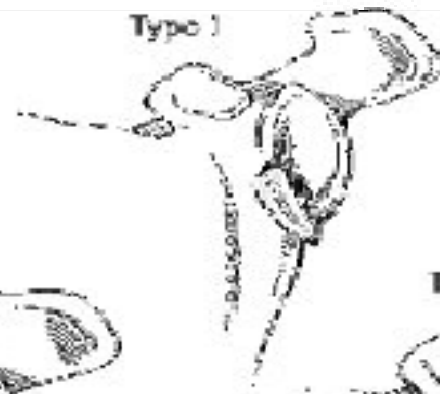
- : Type I - fractures of the glenoid rim
 - Type Ia—anterior
 - Type Ib—posterior
- Type II - transverse fracture through the glenoid fossa, with an inferior triangular fragment displaced with the humeral head
- Type III - oblique fracture through the glenoid exiting at the midsuperior border of the scapula, often associated with acromioclavicular fracture or acromioclavicular dislocation

Ideberg classification - five types based on 300 cases

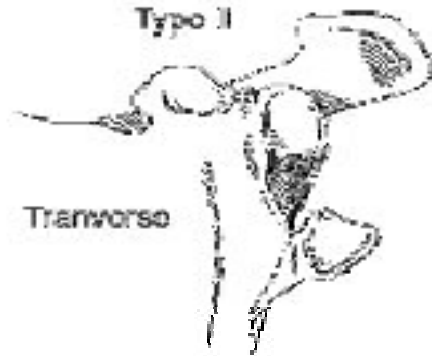
- Type IV—horizontal, exiting through the medial border of the blade
- Type V—which combines type IV with a fracture separating the inferior half of the glenoid.

Ideberg

Type I

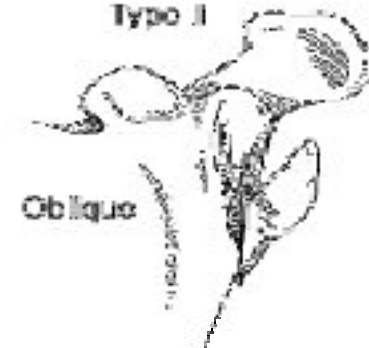


Type II



Transverse

Type II

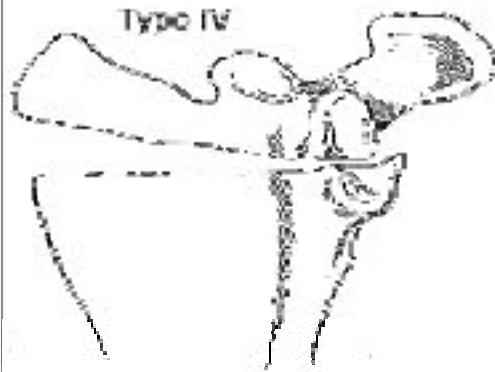


Oblique

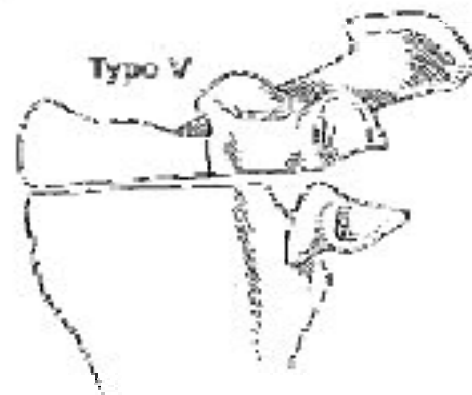
Type II



Type IV



Type V





1a



1b



II



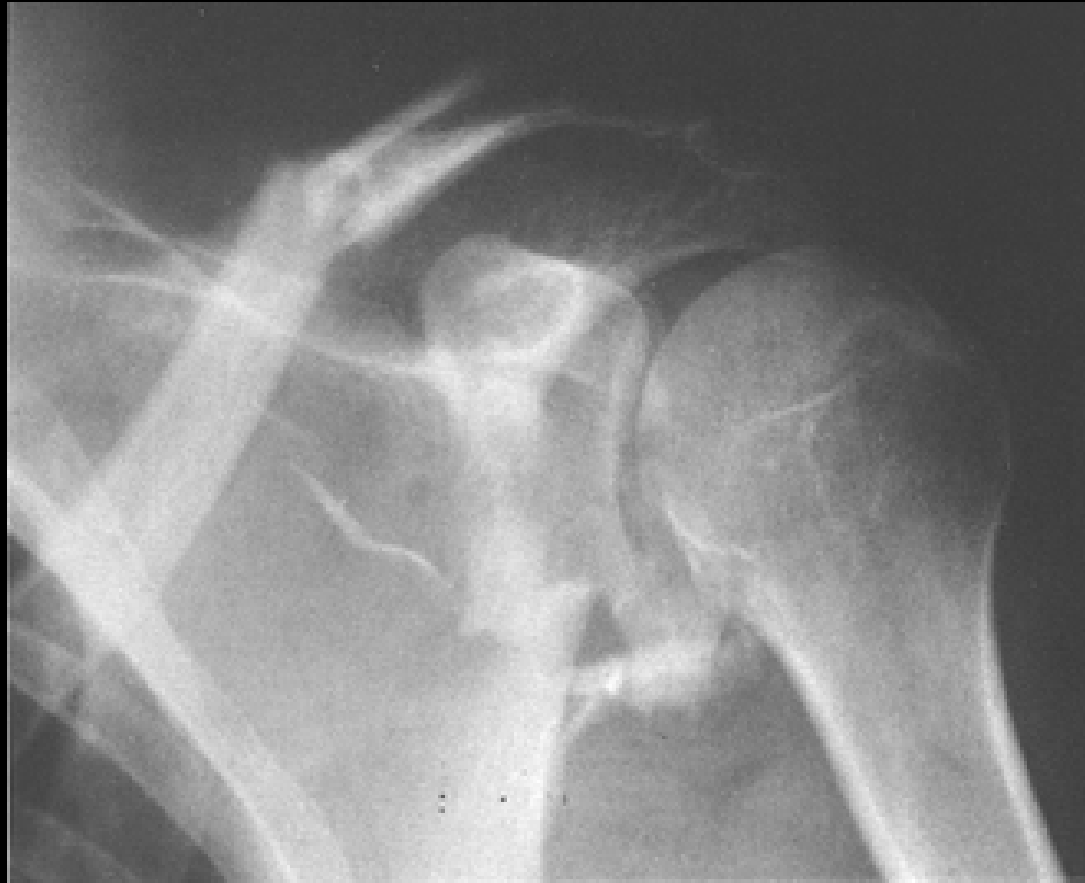
III

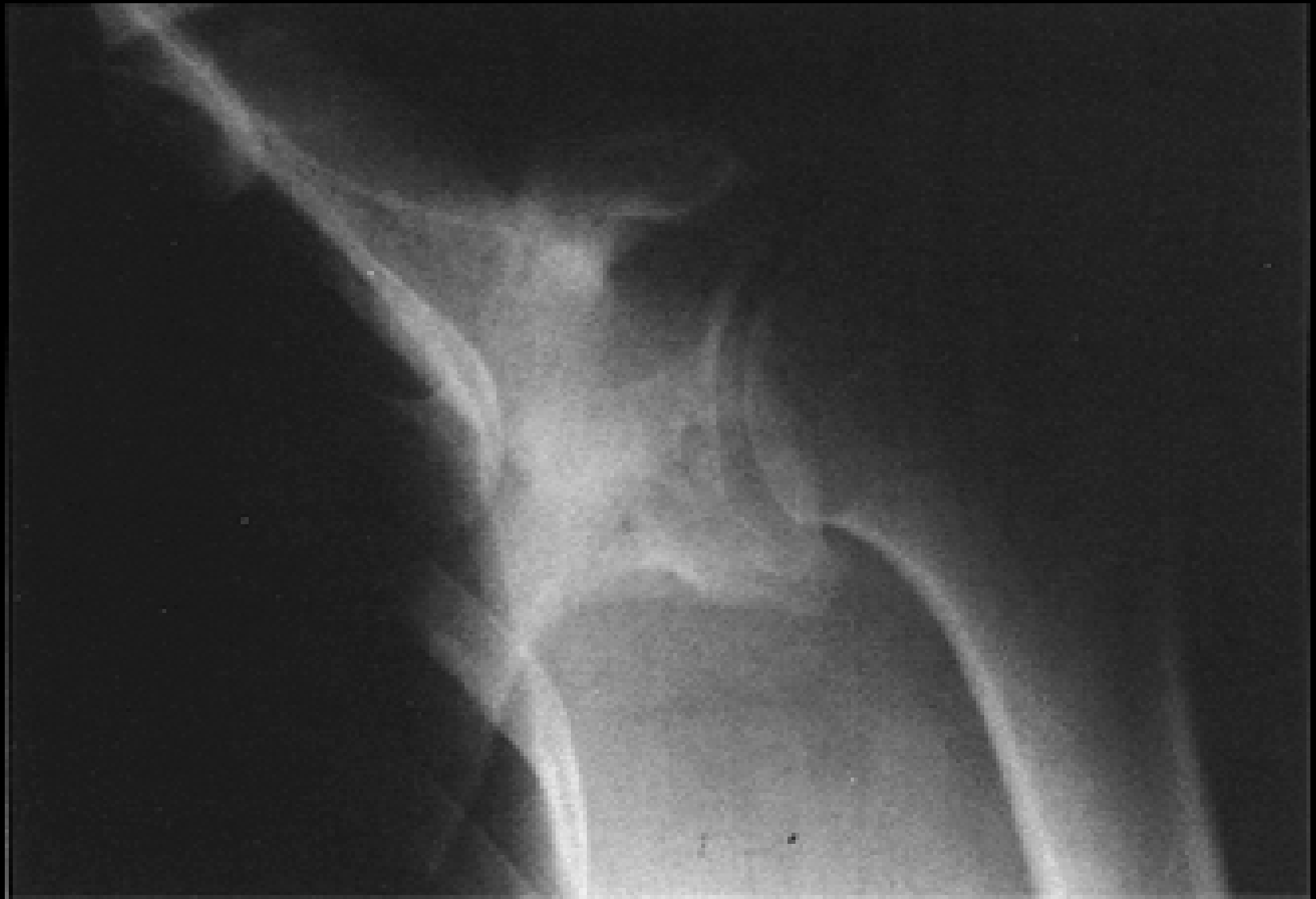


IV



Type VI fracture (Goss) – severe articular comminution





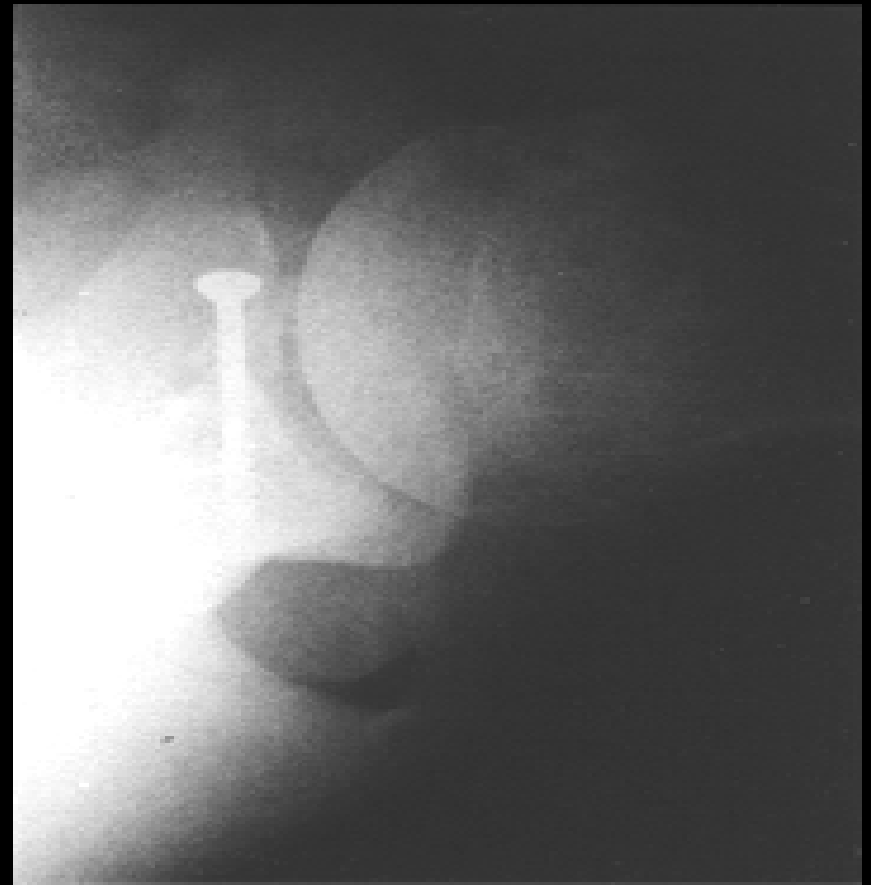
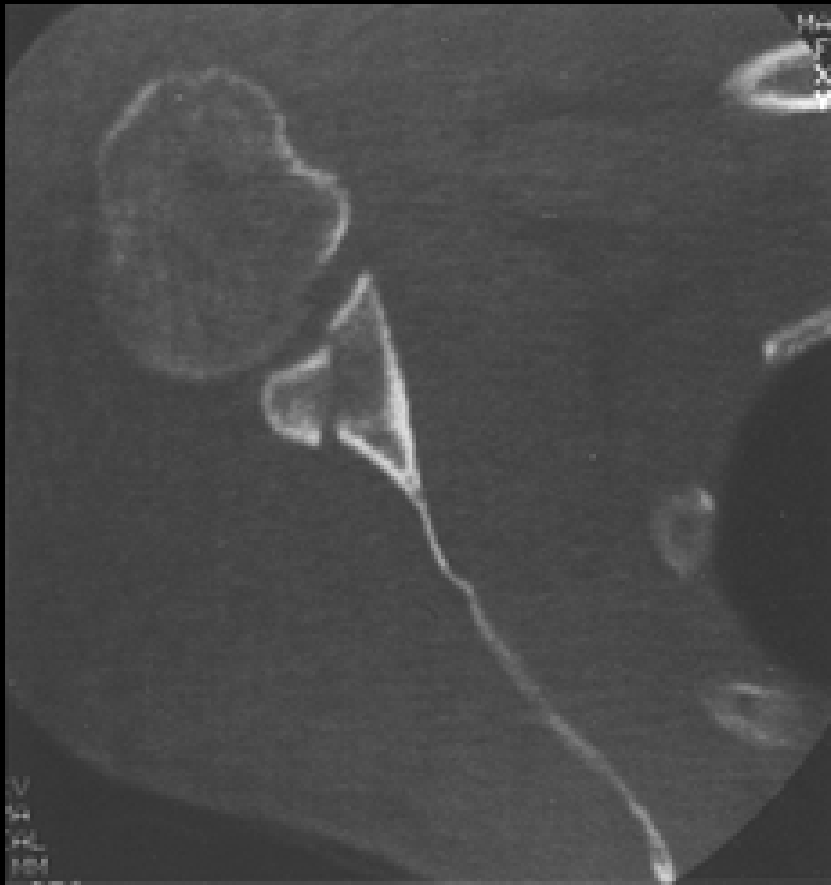
Radiological assessment:

- True Anteroposterior
- True Axillary
- CT Scan

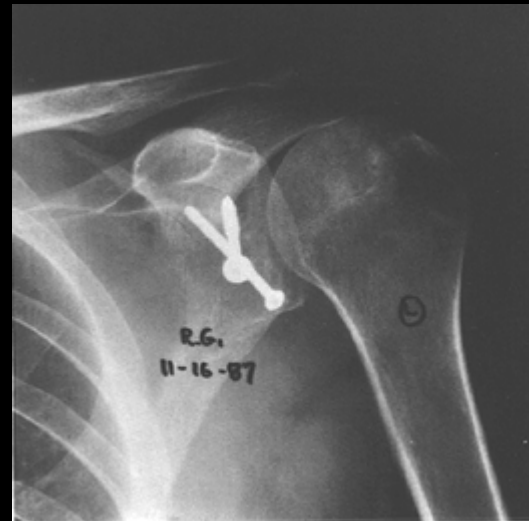
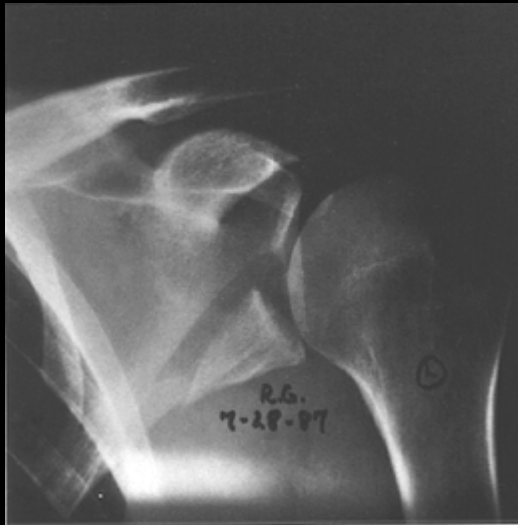
Management

- Non-Operative
- Operative
 1. Displacement $> 10\text{mm}$, esp. if size $> \frac{1}{4}$ of glenoid
 2. Step-off $> 5\text{mm}$
 3. Subluxed humeral head
 4. Disruption of the Superior Suspensory Complex

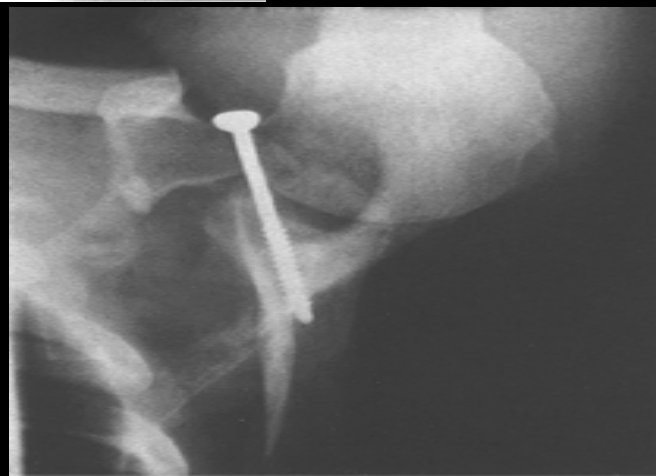
Ideberg type I with subluxation



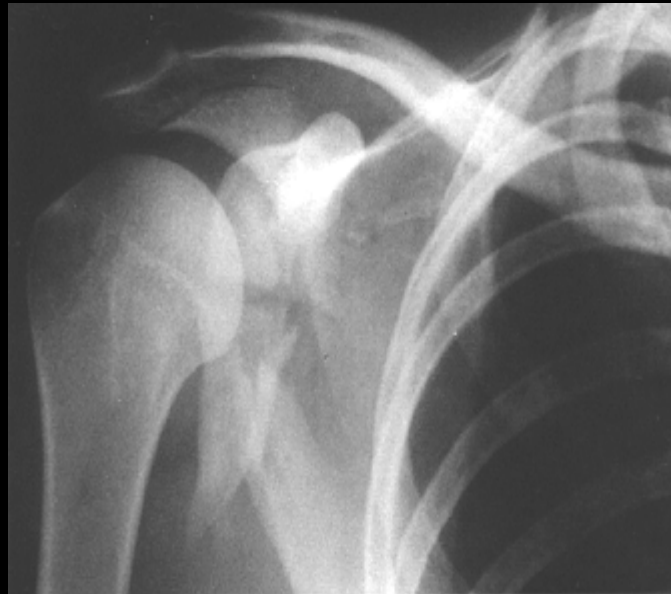
Type II fracture



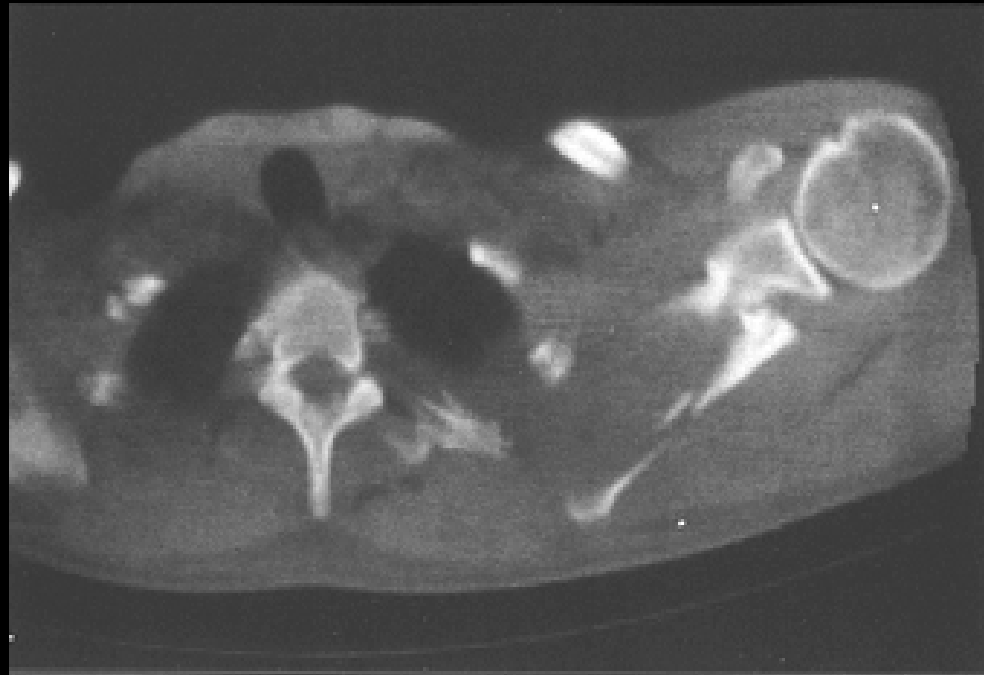
Ideberg III – poorest functional recovery



Ideberg V (II + IV = V)



Scapular body fracture

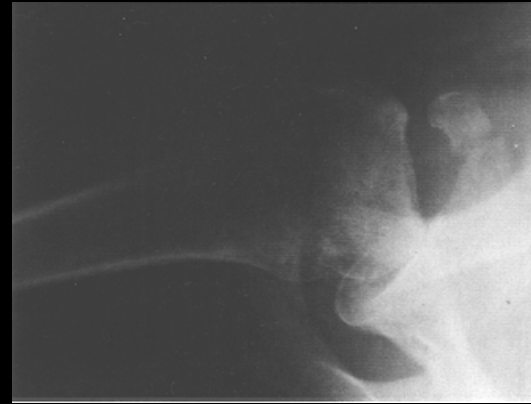


Base of coracoid fracture

Cephalic tilt view – 35 degrees



Avulsion fractures



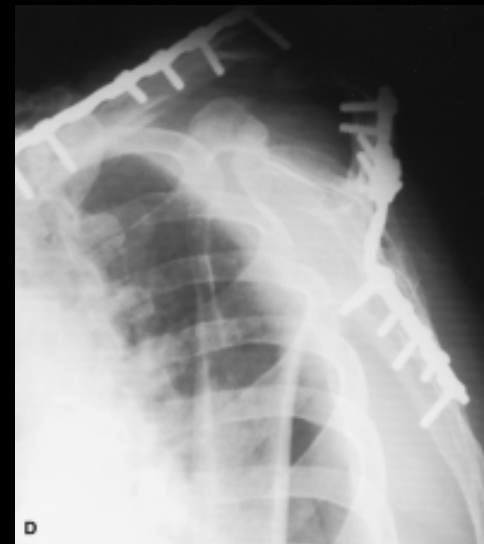
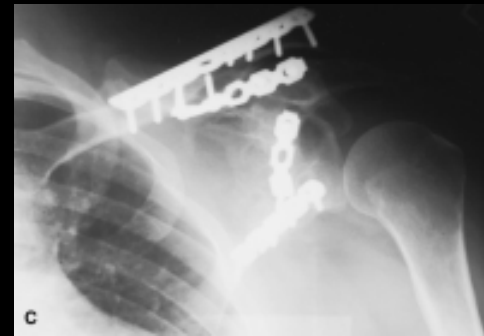
- Coracoid
- Superior scapular border (L. scapulae)
- Deltoid avulsion of acromion
- Lateral border of scapula (T.Major)
- Infraglenoid tubercle (triceps)

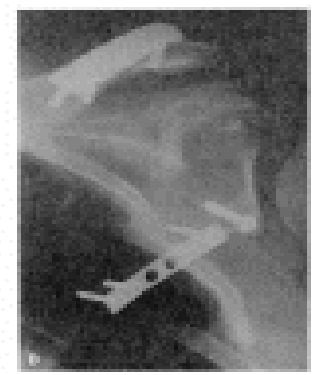
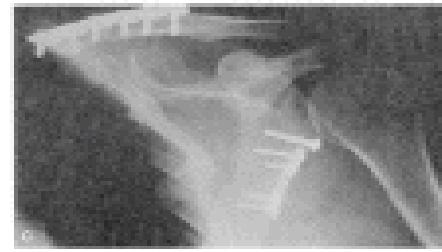
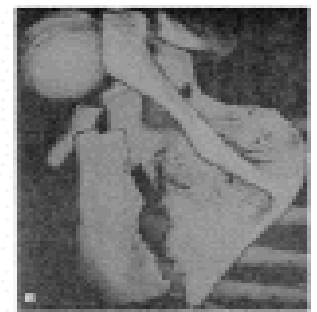
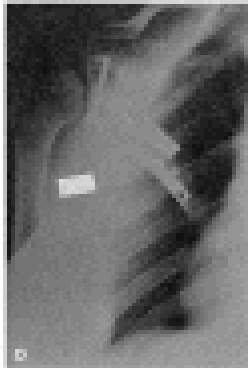
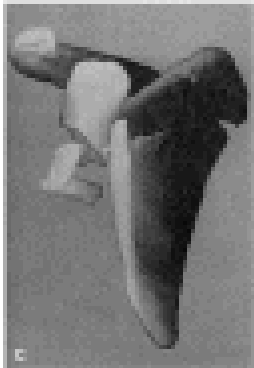
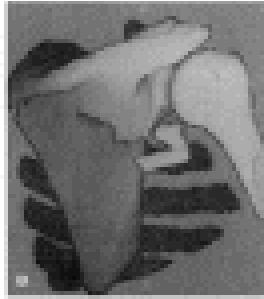
Surgical Approaches

- Anterior - Type Ia
- Posterior - Types Ib, II, Va
- Posterosuperior - Types III, IV, Vb, Vc

Posterior approaches

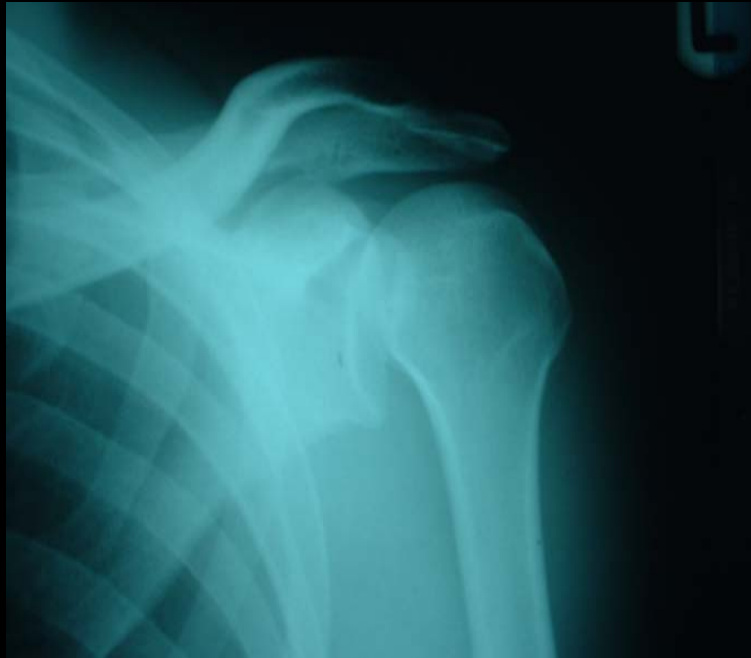






Post - Operative Care

- Splintage for 6 weeks
- Sling
- Abduction splint at 45 degrees
- Gentle active-assisted range-of-motion exercises after 6 weeks





31-Jul-2002
15:08:35.71
603 IMA 20
MPR 2

Spin: 9
Tilt: 0

PR
5
cm

kV 140





Complications

- Osteoarthritis
- Instability
- Impingement
- Other Injuries

Key Points

1. Not an isolated injury
2. 90% of glenoid fractures can be treated non-operatively
3. Displaced glenoid fractures should be fixed
4. The Posterior approach provides access to most glenoid fractures