

SHOULDER INSTABILITY

Stability

A. The stability of the shoulder is improved by depth of the glenoid. This is determined by:

1. Osseous glenoid,
2. Articular cartilage of the glenoid, which is thicker at the periphery
3. The labrum, which further deepens the glenoid

B. Rotator muscles:

Subscapularis is the anterior compressor

Infraspinatus and teres minor are the posterior compressor

Supraspinatus is the superior compressor.

The important characteristic of the rotator cuff is that they can function as head compressors in almost any position of the shoulder joint

C. The principle of concavity-compression applies to the ball-and-socket joint between the proximal humeral convexity and the concavity of glenoid and coraco-humeral arch.

D. Capsule and ligaments

Ligaments prevent the rotator cuff muscles from becoming overstretched.

Superior, Middle and Inferior glenohumeral ligament and the coracohumeral ligament

E. Adhesion-Cohesion and the Suction

Adhesion-cohesion is a process in which the wettable surfaces of the humeral and glenoid cartilage adhere to each other because of the adhesive and cohesive properties of water molecules.

The suction-cup mechanism is enhanced by the slightly negative intra-articular pressure within the joint.

Classification

1.Direction: Anterior: Subcoracoid, Subglenoid, Subclavicular, Intrathoracic

Posterior

2. Degree of stability: Subluxation [Dead arm syndrome]

Dislocation

3. Chronology: congenital, Acute, Unreduced dislocation, recurrent dislocation

4. Mechanism Traumatic or Atraumatic

5. Voluntary dislocator and involuntary

2 important groups

TUBS

Traumatic Dislocation

Unidirectional

Unilateral

Bankart's lesion

Surgery for recurrent dislocation

AMBRI

Atraumatic

Multidirectional

Bilateral

No Bankart's

Rehabilitation

Inferior capsule shift

Clinical Findings

1. Mechanism of trauma

Initial treatment: self reduced or in Emergency room

2. History in recurrent dislocation

3. Arm going dead [transient]- ? Subluxation

4. Disability: Sense of instability when throwing [Anterior instability]

Hurts on carrying a heavy bag [Inferior stability]

Hurts on pushing [Posterior instability]

5. Family history of instability or Joint laxity

6. Age [90% recurrent dislocation at 20 years]

Handedness

Occupation

7. Prior treatment

Signs

1. Look for Rotator cuff and deltoid wasting

2. Active and passive range of movements

3. Apprehension/relocation tests

4. Sulcus sign [Joint laxity]

5. O'Brien's sign for slap lesion

6. Drawer test: under GA

7. Look for generalised ligamentous laxity

Pathology

1. The Bankart lesion

It is almost invariably present in patients with traumatic instability

90% in recurrent dislocation

Avulsion of antero-inferior labrum from the glenoid rim

Sometimes may have glenoid rim

2. Plastic deformation : Stretching of Capsule and IGHL. This is the rationale for tightening of the capsule during surgery for recurrent shoulder dislocation.

3. Bony Bankart lesion

4. The Hill-Sachs lesion

Compression fracture of postero-lateral aspect of the head of the humerus against anterior glenoid

Present in 50%

Usually it is less than 30% of the head of the humerus

Does not affect outcome in majority of the cases

5. **HAGL**: [Humeral avulsion of the glenohumeral ligaments]

6. **SLAP**: superior labral anterior and posterior detachment

Radiology

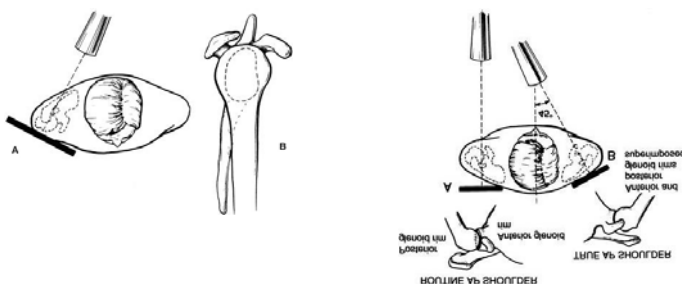
AP, Axillary views

Stryker: to demonstrate Hillsach's sign

West Point view: To demonstrate anteroinferior glenoid

Translateral View

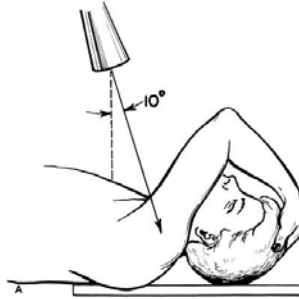
True and apparent AP View



Axillary View



Stryker View



CT

To assess extent of glenoid fracture

Extent of Hill Sach's lesion

Any loose body blocking concentric reduction

MRI

Gives information on status of rotator cuff

Bankart's lesion

SLAP lesions

MRI arthrogram with gad

Is important in detecting intra-articular pathology

Is investigation of choice

Arthroscopy of Shoulder

Treatment for Recurrent dislocation

1. Putti Platt operation

Subscapularis tendon and capsule are plicated [Double breast]

It restricts external rotation.

It can lead to early degenerative changes in the joint (Capsuloraphy arthropathy)

2. Magnuson-Stack operation

Advancement of the subscapularis and the capsule near its attachment to the humerus.

Tendon and capsule is advanced lateral and distal on the humerus.

Disadvantage: Limits external rotation

3. Bristow-Latarjet musculotendinous sling

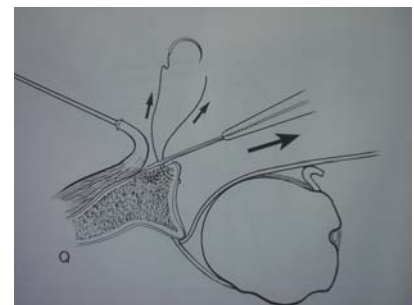
Coracoid process is osteotomized and attached through the subscapularis onto the anterior scapular neck, thus acting as a bone block in the throwing position

Indications: In Glenoid erosions and in case of failed Bankart's operation

4. Bankart's procedure: Commonly performed operation

1. Beach chair under general anesthesia and Interscalanie block
2. Skin: From coracoid to the lower part of this skin crease
3. Deltopectoral groove
4. Cephalic vein retracted laterally
5. Dissection kept lateral to coracoid process
6. Identify and cauterise branch of thoraco-acromial artery in the claviopectoral fascia
7. Separate Subscapularis from capsule and hold medial portion with a stay suture.
8. Capsule is divided halfway
9. Now identify and assess labrum between 6-9^o, which might have rolled and medially displaced
10. 3 holes on the rim and 3 anchoring suture
11. Repair the labrum
12. If capsule is lax, capsule is double breasted.
13. No active external rotation for 6 weeks

Outcome: 5% failure



5. AMBRI [Matsen]

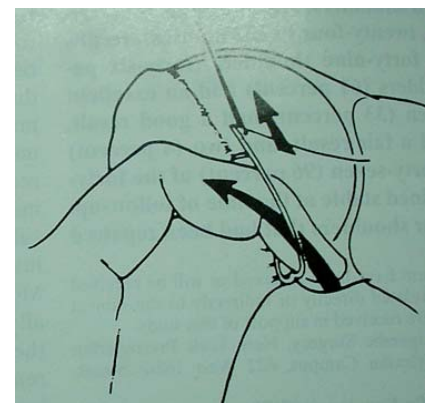
Goal: Reduction of the Postero-inferior recess

Double breasting of the capsule

By antero-superior advancement of the capsule

Closure of the rotator interval

Ideal capsular repair: Allows only 30° abduction and 45° of external rotation and -ve sulcus test.



6. Arthroscopic repair

Arthroscopic repair is regaining popularity in young population with 2-

Redislocation rate is improved from 40% to 10%.

