

The art & Science of Treating Shoulder Instability

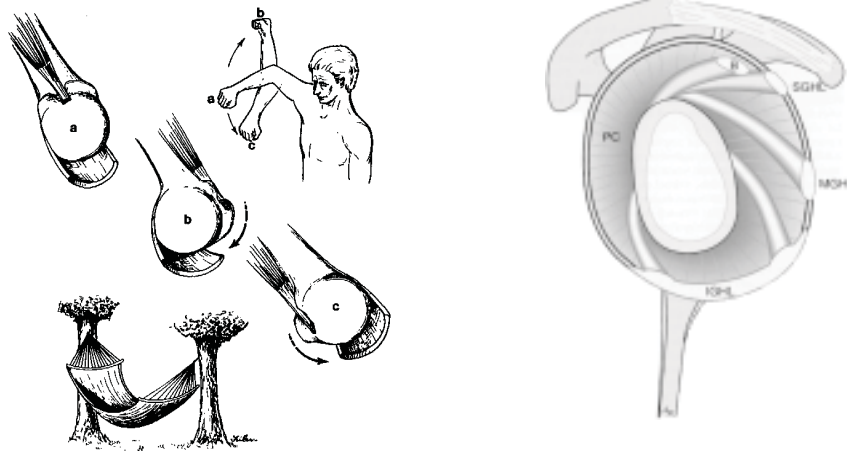
Over centuries now, the treatment of shoulder dislocation, has undergone a paradigm shift. It is only in recent years that common consensus seems to have been achieved over the "essential lesion" and the surgery to repair it. Within Orthopaedic literature, it was widely assumed, that if a particular problem had ten to twelve different surgeries to address on common problem, then the jury was out on the "correct" treatment. Thus we passed through a phase where it was common for one patient to be recommended for Bristow repair, Hybinette procedure, Putti-Platt surgery, Nicola procedure, Weber osteotomy etc etc. Most of these procedures were successful but the aim of surgery was to eliminate dislocation which was achieved with a fair amount of certainty. Finally the exact pathology in the form of Broca-Perthes-Banlart lesion was described. The success of treating athletes for shoulder dislocation along with restoration of movement, strength and stability was a huge landmark. This success was then applied to the common patient and the goalposts shifted. On a different wavelength, episodes of recurrent subluxation have also been recognized to be as damaging as formal dislocations. Hence the modern term of "Anterior Instability" rather than dislocation. Henceforth in this article the term "Instability" would be used to address the problem of dislocation.

Clinical Anatomy & Factors related to stability

The labrum enhances the depth of the shallow glenoid by close to 50% (Howell, Clin. Orthop 1989) and provides a secure site for insertion for the Gleno-humeral ligaments. Studies have also shown free nerve endings within the labrum that provide proprioceptive support for shoulder joint. The superior, middle and

inferior glenohumeral ligament offer static restraint in typical positions of abduction. By far the most important and “essential” structure for maintaining stability is the Inferior Gleno-humeral Ligament complex which along with the inferior labrum provides anterior restraint in the common Abduction external rotation position. Dynamic support for stability is provided by the rotator cuff tendons, especially the subscapularis reflex contraction when the humerus commences its glide over the anterior glenoid margin in the abducted externally rotated position. Innate reflexes, ligament laxity are other comorbidity factors affecting the stability of the Gleno-humeral joint. The position of the scapula vis-à-vis the humeral head influences the stability by influencing the glenoid version.

Similarly any glenoid defect especially at the anterior margin will simply encourage the humeral head to trespass anteriorly in the subcoracoid position. Lazarus (JBJS 78A 1996) assessed that a chondral defect in the glenoid can reduce its depth by 80% and adversely affect the stability ration by 65%. Fortunately reconstruction of the anatomy has shown to restore these values to normal.



O'Brien (J Sho Elbow Surg 1995) has demonstrated in his biomechanical study, by serial isolated and combined sections of the Inferior glenohumeral ligament complex, its contribution to stability in abduction.

Pathology

In the event of a anterior dislocation of the shoulder, not only is the anterior labrum damaged, but a variety of adjacent structures are also at risk. It is well known now that the anterior capsule undergoes plastic deformation to a variable

extent and also needs to be addressed at the time of surgery in the form of a capsular shrinkage or plication. The Hill-Sachs lesion may be the only sign of recurrent subluxation episodes whereas some times the very first dislocation may result in an impressive Hill-Sachs lesion postero-laterally. Anterior or inferior margin of the glenoid may be fractured and negligence to address this is the most common reason for failure in arthroscopic Bankart repair. Patients of anterior instability above the age of 40 have a very low risk of recurrence. However they have at least a 40% prevalence of rotator cuff tears due to the inherent degeneration of the rotator cuff (Arahi et al). This increases to a whopping 65% in those above 60 years of age and suffered a dislocation. Collateral damage in the form of nerve compression is quite common and unrecognized mild neuropraxia of the axillary nerve is quite common. Rarely one single episode of dislocation may lead to monoparesis or even monoplegia, especially in patients with ligament laxity. SLAP (Superior Labrum anterior to posterior) tears and posterior labral tears are also known to be associated with instability and would need to be addressed at the same time.

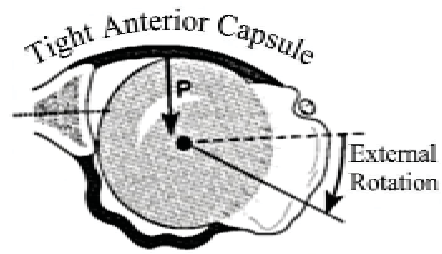
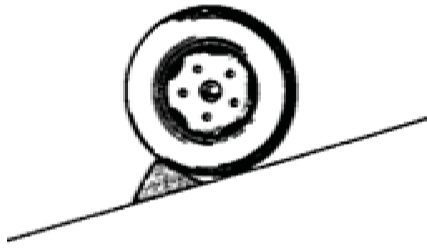
Clinical Features

History taking is vital in instability patients and the examiner would endeavour to find out the exact cause and velocity of trauma causing the index dislocation. The frequency of dislocation and the ease with which it dislocates is helpful. Whether a patient required general anaesthesia for reduction would indicate the extent of damage and perhaps the presence of a large Hill-Sachs lesion. Occasionally patients of Multidirectional instability may dislocate due to trivial trauma and may often self relocate their gleno-humeral joint.

The very presence of anterior dislocation confirms the diagnosis. Examination merely establishes the degree of trauma, presence of any collateral damage and to look for any pre-existing neural damage. The examiner must look for presence of generalized ligament laxity. Examination for direction of instability in the awake patient is very important. This is again repeated under anaesthesia to eliminate the muscle spasm due to pain. One must bear in mind that a lax shoulder under anaesthesia does not mean an unstable shoulder unless confirmed clinically when the patient is awake.

Radiographs are mandatory in two perpendicular planes. Ideally a "True" AP radiograph in internal rotation and an axial radiograph is adequate. The size and extent of Hill-Sachs lesion, the presence of glenoid defect and of course degenerative changes from repeated dislocations are few obvious findings. Glenoid lesions were also noted amongst recurrent subluxators (Edwards et al) who never experienced a dislocation.

Logic of Bankart repair



Obligate Posterior Translation