SHOULDER INSTABILITY

Dr. KN Subramanian M.Ch Orth., FRCS (Tr & Orth), CCT Orth(UK)
Consultant Orthopaedic Surgeon,
Special interest: Orthopaedic Sports Injury, Shoulder and Knee Surgery,
SPARSH Hospital for Advanced Surgeries, Infantry Road, Bangalore

BONE SCHOOL POST GRADUATE TEACHING 04/03/2012
- STABILITY CONCEPT
- INSTABILITY
- PATHOLOGY
- CLINICAL DIAGNOSIS
- TREATMENT
SHOULDER JOINT

- MOST mobile joint...
  - ...most frequently dislocated

- Unlike HIP, cup is shallow
- Unlike WRIST, socket can rotate
- Unlike KNEE, ligaments are loose & capsule is redundant
Terminologies

- **Stability**
  - the ability to keep the humeral head centered within the glenoid arc (and coracoacromial arch)

- **Laxity**
  - SIGN not a symptom
  - Appreciated by the examiner, not necessarily the patient
  - May be a RISK FACTOR for the development of instability

- **Instability**
  - SYMPTOM versus sign
  - Appreciated by the patient, possibly elicited by the examiner
FACTORS FOR STABILITY

STATIC STABILITY
- Labrum and cartilage
- Capsule
- Ligaments
  - IGHL
    - Sling mechanism
    - Most important in abduction
  - MGHL – Adduction
  - SGHL – Adduction
  - Coracohumeral

DYNAMIC STABILITY
- Rotator Cuff
- Long head Biceps
- Deltoid
- Periscapular muscles

Concavity Compression
Adhesion Cohesion
- Molecular attraction of wet surfaces
Negative pressure
- Sealed system with limited joint volume
INSTABILITY directions

- ANTERIOR INSTABILITY
- POSTERIOR INSTABILITY
- MULTIDIRECTIONAL INSTABILITY (MDI)
Diagnosis

- Young age, Sporting or Other injury
  - Anterior Dislocation (90%)
- Presence of Laxity/Seizures/ No Trauma –
  - Posterior Dislocation/Multidirectional (10%)
- Special tests
MATSEN CONCEPT

- TUBS
  - TRAUMA
  - UNILATERAL
  - BANKART
  - SURGERY

- AMBRI
  - ATRAUMATIC
  - MULTIDIRECTIONAL
  - BILATERAL
  - REHABILITATE
  - INFERIOR SHIFT
Tests for anterior instability

- **Anterior apprehension**
  - Abduction 90 degree
  - Extension and External rotation
  - Pain/Apprehension

- **Relocation test**
  - Push Humeral head relieves apprehension

- **Surprise test (>95% Specific)**
  - After pushing humeral head slowly
    release the pressure it reproduces pain
Tests for posterior instability

- **Posterior Load & Shift**: 
  - Pt supine, neutral rotation, 40-60° abduction, minimal forward flexion, load humeral head and posterior force.

- **Jerk Test**: 
  - Post directed force with arm in line with sagittal plane of body (elbow at 90 flexion, shoulder IR to 90°) clunk is positive for posterior subluxation.
SULCUS TEST - Axial traction increases acromiohumeral distance

Beighton score 5/9 - Laxity
ANTERIOR INSTABILITY

90%, Trauma, Recurrence >80%

Features: Young age, Anterior apprehension, Relocation, Surprise test positive

POSTERIOR INSTABILITY

Seizures, Psychosomatic disorders,

Features: Posterior load and shift test, Jerk test

MDI

Connective tissue disorders, Ehlers danlos, Habitual, Hyperlaxity

Features: Sulcus sign positive, Beighton score >5/9
SPECTRUM OF ANTERIOR INSTABILITY – Bankart, Bony Bankart, ALPSA, HAGL

BANKART LESION - AVULSION OF GLENOID LABRUM

BONY BANKART - AVULSION OF INFERIOR GLENOID BONE

ANTERIOR LABRAL PERIOSTEAL AVULSION

HAGL

HUMERAL AVULSION OF GLENOHUMERAL LIGAMENT
HILL SACHS LESION

Figure 14-2

Bone School @ Bangalore
Imaging

- X ray – AP, Axillary (Posterior dislocation)
- CT Scan – To assess Glenoid bone defect and also to assess Hill Sach
- MRArthrogram – To assess capsulolabral complex and HAGL
TREATMENT – ANTERIOR INSTABILITY

- Non Op – Strengthening Core muscles, Scapular stabilisers
- 80% Recurrence rate
- The lesion will not heal

ANATOMICAL RECONSTRUCTION
- BANKART REPAIR

NON ANATOMICAL
- PUTTI PLATT
- MAGNUSON STACK
- LATARJET
ANTERIOR INSTABILITY – Surgical stabilisation – Bankart repair

Open - Recurrence rate 5%
Arthroscopic – Recurrence rate 7%

Open Stabilisation
• Deltopectoral approach
• Fix the capsulolabrum with Anchors
• Do Inferior Capsular Shift
Arthroscopic stabilisation

- Two or three portals -
  - Posterior portal - Camera
  - Anterosuperior portal – Working Portal
  - Anteroinferior portal – Suture management portal
ARTHROSCOPIC STABILISATION

- Humerus head
- Anterior capsule
- Detached labrum with probe
- Glenoid
- Humeral head
- Anterior capsule
- Labrum stitched with Anchors with Fibrewire & PDS
- Glenoid
Open anatomical repair

Bankart Lesion

Normal  Bankart lesion

Anatomic repair  Suboptimal repair

Figure 14-102  Figure 14-35  Figure 14-3
Bony Bankart - Treatment

- <10% Bony defect – Still soft tissue procedure can be done
- 10-25% - Equivocal
- >25% - Bony procedure to be done

(Latarjet procedure)
LATARJET PROCEDURE

Bony defect fixed by transferring coracoid process

coracoid
Non anatomical repairs

- **Aims to restrict external rotation and hence reducing dislocation**

  - **Putti-Platt procedure**:
    - Divide Subscapularis tendon 2.5 cm from its insertion.
    - The lateral stump of the tendon is attached to the "most convenient soft-tissue structure along the anterior rim of the glenoid cavity."
    - The medial muscle stump is lapped over the lateral stump, producing a substantial shortening of the capsule and subscapularis muscle

- **Magnuson Stack Procedure**:
  - Transfer of the subscapularis tendon from the lesser tuberosity across the bicipital groove to the greater tuberosity
Complications

- Infection
- Recurrence of Instability
- Hardware related complications

- Nerve injury –
  - Musculocutaneous nerve, axillary nerve
- Limited ROM
- Secondary arthritis
- Posterior dislocation
- Biceps tendinopathy

Non anatomical/Open procedures
Treatment of MDI

- **Atraumatic Instability**
  - 80% respond to physio
  - Surgical stabilization - CAPSULORRHAPHY if non-operative fails.

- **Voluntary or Habitual**
  - Retrain muscles
  - No surgery

- Lateral capsular shift (humeral side) - 91% success
- Medial capsular shift (glenoid side) for associated BanKart
Recurrent Traumatic Posterior Instability

- First line = Non-operative (strengthening)
- Failure of surgical stabilization = 12 - 50%
THANK YOU
TUBS
- Traumatic
- Unidirectional
- Bankart
- Surgery

AMBRI
- Atraumatic
- Multidirectional
- Bilateral
- Rehabilitation
- Inferior shift
Shoulder Instability

Involuntary

Traumatic

Anterior

Acute

Subluxation

Posterior

Chronic

Dislocation

Voluntary

Emotionally normal

Emotionally abnormal

Atraumatic

Hyperlaxity

Overuse

Multidirectional

Recurrent

HAWKINS ET AL CORR 1993
LATARJET RECONSTRUCTION

Anterior capsule

Coracoid graft
Traumatic Anterior Dislocation

Labral Detachment

Posterolateral Head Defect

Bankart Lesion

Figure 14-102