Shoulder Instability

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Shoulder in Sports
No Two-edge Sword!

LESS STABILITY

GREAT MOBILITY
Shoulder stability

Static Restraints

- Capsule
- Labrum
- Ligaments
Shoulder Stability
Dynamic Restraint

• **Long head of Biceps**

1. Contribute for Anterosuperior Stability
2. Increasing resistance to Torsional Forces in Abducted & ER position
3. In competency :
   Increase the strain in IGHL
Shoulder Stability
Dynamic Restraint

- **Rotator Cuff**
- **Muscle Tension**
Shoulder Dislocation
More than **95%** Traumatic shoulder dislocation

ANTERIOR

Up to **2%** of general population will suffer from traumatic anterior shoulder dislocations in their life time
Conservative treatment

- Immobilized in Internal rotation for 3 weeks
- Progressive mobilization and strengthening exercise

**Modified Hippocrates Method**

**SHOULDER IMMOBILIZER AND VELPEAU DRESSING**
- Resists abduction and external rotation.
- Lightweight, breathable TIELTEX material aids air circulation.
Non operative treatment of Anterior shoulder dislocation in young athletes


all over 80% recurrence rate
After conservative treatment
Pathoanatomy of Anterior Instability of Shoulder

- Hill-Sachs lesion
- Capsular tear
- Bankart lesion
- Anteroinferior glenoid fracture
- Posterior labral tear

SLAP Lesion
YOT, M/19

- Student
- Good Past health
- 1st right shoulder anterior dislocation during soccer game 08.01.2006
- 2nd dislocation occurred spontaneously during swimming
- Developed persistent symptomatic shoulder instability since then
- Totally dislocated 8 times
YOT, M/19

Injury during soccer game in 2006
Shoulder Instability: Classification

- **Degree**
  - Dislocation
  - Subluxation
  - Subtle

- **Direction**
  - Unidirectional
    - Anterior
    - Posterior
    - Inferior
  - Bidirectional
    - Anteroinferior
    - Posteroinferior
  - Multidirectional

- **Etiology**
  - Traumatic (macrotrauma)
  - Atraumatic
    - Voluntary (muscular)
    - Involuntary (positional)
    - Acquired (microtrauma)
    - Congenital
    - Neuromuscular (Erb’s palsy, cerebral palsy, seizures)

- **Frequency**
  - Acute (primary)
  - Chronic
    - Recurrent
    - Fixed
Physical Examination

Confirm the diagnosis and define the Pathology
Physical Examination

- Look
- Feel
- Move
  - Active
  - Passive

- Test for Generalised Laxity

- Translation Test
  - Load and shift
  - Sulcus sign

- Provocative Test
  - Apprehension
  - Relocation
  - Posterior Jerk test
  - (Kim test)
  - Impingement test

- SLAP Test
  - Speed’s
  - O’Brien

- Rotator Cuff Strength

- Others
  - Neurology / Cervical
**Laxity vs Instability**

**Laxity**
- Asymptomatic
- No pain
- Passive translation of the humeral head on the glenoid as determined by P/E
- Needed for normal GH motion
- Affected by
  - Age
  - Gender
  - Congenital factors
  - Position of the arm (Static restraints tighten at extreme ROM)

**Instability**
- Symptomatic and pathologic condition
- Pain or discomfort in association with excessive translation of the humeral head on the glenoid fossa during active shoulder motion
- A wide range of normal in the GH joint
- A spectrum of instability exists
Atraumatic dislocation
Generalize ligamentous laxity
Apprehension (Anterior)
Relocation Test
Jerk Test (Posterior)
Kim test

- Sitting
- Abduct 90
- Further elevate 45
- Axial load
- Posteroinferior load
- Pain and clunk
- +ve
Significance of Sulcus Sign (Capsular Pathology)

- Sulcus sign
  - Neutral
  - ER
- SGHL and rotator interval
  - Lax in neutral rotation and tighten with ER
Biceps Lesion (SLAP)

A SLAP tear occurs where the biceps tendon anchors to the labrum.

- Humerus
- Glenoid
- Labrum
O'Brien Test For SLAP Lesion

A

Maximum int. rot.
10° adduction
90° flexion

B

Maximum Ext. rot.
10° adduction
90° flexion
O Brien Test For SLAP Lesion
O'Brien Test For ACJ Abnormalities
Rotator Cuff Strength

• Supraspinatus
• Infraspinatus
• Subscapularis
Clinical Assessment

- No generalize ligamentous laxity
- Pain free full shoulder ROM
- Apprehension test +ve
- Jobe relocation test +ve
- Kim’s test –ve
- Posterior jerk test –ve
- Sulcus sign –ve
- Normal rotator cuff power
- Nil impingement sign nor any biceps signs
IMAGING STUDIES
X-rays
Signs for Anterior Instability on Plain Film

- After the First Anterior Dislocation:
  - 1/2 of the patients: Impaction Fracture or ‘Hill-Sachs Notch’
  - 1/6 of patients: Glenoid Defects visible
  - 1/6 of patients: Persistent Subluxation
Stryker Notch View

“Hill-Sachs Lesion”
West Point View:

Glenoid Defect
CT – Hill Sach Lesion
CT – Bony Bankart
MR Arthrogram
Pathologies Identified

- Soft Tissue Bankart lesion
- No Bony Bankart lesion
- No Significant Hill-Sach lesion
- Biceps and rotator cuff intact
Treatment option

- Non-operative
  - Immobilization
  - Rotator cuff strengthening

- Operative
  - Many shoulder stabilization procedures advocated
  - Bankart, Putti-platt, Bristow…

- Depend on
  - Patient factors
  - Pathological condition identified
Non-op Management of Anterior Shoulder Instability

- **Immobilisation**
  - Pain Mx
  - Time of immobilisation
    - Not as critical as before
    - 3-4 weeks
- **In-season athlete**
  - Regain muscle control
  - Brace to limit abd. & ER
- **Strengthening**
  - Periscapular
  - Cuff
  - Power Movers (Pec., Deltoid, LD)

- **Proprioceptive training**
  - Taping
  - PNF (proprioceptive neuromuscular facilitation)
- **Functional Progression**
  - Sports specific drilling
  - Throwing
  - Criteria for return-to-play
    - Pain free
    - Full ROM
    - Normal strength
Open Procedures for shoulder instability

• **Anatomical Repair**:
  - Open Bankart Repair and Inferior Capsular shift

• **Repair and Reconstruct Labrum & Capsule**
Traumatic Anterior Shoulder Instability
• Pain
• Reduce function
• Reduce quality of life

Arthroscopic Bankart Repair

One of most successful shoulder operations in the past decades

Reported recurrence rate could be <10%
Arthroscopic Stabilization: Success Rate Equal to Open

- Associated Soft tissue Pathology addressed
- Proper patient selection:
  - Non collision Athlete
  - No significant Bony Deficiency
<table>
<thead>
<tr>
<th>Arthroscopic</th>
<th>Open</th>
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<tbody>
<tr>
<td>• Comparable recurrence</td>
<td>• 5-10% recurrence</td>
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<tr>
<td>• Out-patient or short stay</td>
<td>• In-patient longer stay</td>
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<tr>
<td>• Accelerated rehab</td>
<td>• 6 months rehab</td>
</tr>
<tr>
<td>• Subscap intact</td>
<td>• Subscapularis taken down or split</td>
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<td>• Better ROM</td>
<td>• Higher risk of ER loss</td>
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Going Back to our case

• Main pathology
  – Bankart lesion
  – Minimal Hill Sach lesion

• Arthroscopic Bankart repair was performed in this patient
Surgical Techniques

Lateral position with STaR Traction

Standard 3-ports techniques
  • Posterior
  • Antero-superior
  • Antero-inferior
Beach Chair Position

- Easier orientation
- Convert open possible
Bankart lesion
Hill Sach
No “peel-off”, No SLAP
Bioknotless (Depuy, Mitek) Anchors

1, 3, 5 o’clock position
Standard Knot Tying Anchors

Biofastak Anchors (Arthrex, Inc)

1, 3, 5 o’clock position

SMC Sliding Knot plus

3 alternating half hitches
Comparison of Clinical Outcome of Arthroscopic Bankart Repair using Bioknotless versus Standard Knot-tying Suture Anchors in Traumatic Anterior Shoulder Instability

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Initial Examination
Portal Placement
Mobilization of Bankart lesion
Drilling in glenoid
Bring Home Message

- Shoulder is a mobile joint yet prone to instability
- Shoulder instability is a wide spectrum of disorder
- Traumatic anterior instability is commonest in our clinical setting
- Arthroscopic stabilization procedure have satisfactory results
Sports Medicine Course for Nurse

Thank You!

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