

Athletic Shoulder I

-Anterior Instability in Athletes-

김 승 호

성균관대학교 삼성서울병원 정형외과학교실

Aim of Lecture

- To acknowledge different features of athletic instability
- To understand treatment options
- To provide current surgical technique
- To introduce new thoughts on instability management

Instability in Athletes

- Young age
- Active in sports
- High recurrence rate: 94% in patients younger than 20 years old
- Role of conservative treatment

Instability in Athletes

Conservative Treatment

- Immobilization and Rehabilitation
- May reduce the recurrence rate
Yoneda, Aronen and Regan
- Avoidance of provocative activities?

First-time Dislocation

- Young athlete: West Point series
 - Rehabilitation: 80% recurrence
 - A/S Bankart repair: 86% stabilized

Arciero RA, AJSM 1994

First-time Dislocation

- Western Ontario Series
 - : Young Pts < 30 years old
 - Rehabilitation: 47% recurrence
 - Surgery: 15% recurrence

Conservative Treatment

- 3-6 months trial of supervised goal-directed rehabilitation
- Those who remain disabled because of apprehension or recurrent episodes of instability surgical stabilization

Surgical Indication

- Athletes who wish to remain active in sports
- Time: Off season
In season

Goal of Surgery

1. Minimal restriction of external rotation
2. Minimal loss of off-duty
3. Full return to previous sports activities

Classification

Mechanism

- Traumatic → TUBS
- Atraumatic → AMBRII
- Microtraumatic

Traumatic Anterior Instability

Pathology

- Anterior capsulolabral tear (Bankart lesion)
- Hill-Sachs lesion

Anterior Capsulolabral Tear

A. Failure at the glenoid

- Classic Bankart lesion (80%)
- Bony Bankart lesion (3%)
- Perthes (incomplete) lesion (5%)

B. Failure in continuity

Isolated capsular tear (3%)

C. Failure at humerus

HAGL Lesion (RARE): Humeral Avulsion of Glenohumeral Ligaments

Evaluation of Instability

Physical Examination

- Apprehension test: Anterior
- Relocation test
- Translation test
 - Anterior: Under anesthesia
 - Inferior: Sulcus sign
- Superior labral test:
 - Biceps Load Test I & II

Radiographic Examination

- Plane radiographs
 - AP, Axillary, Stryker-Notch
- MR-arthrogram

Arthroscopic Examination

- Size of Bankart lesion
- Extent of Glenoid defect
- Capsular integrity
- Engaging Hill-Sachs lesion

Capsular Redundancy

- Sulcus sign
- Thumb-to-forearm distance

- Elbow hyperextension
- Drive-through sign
- Large inflation pouch
- Deflation phenomenon
- Posterior wall sign

Associated Pathology

- Superior labral lesion: Biceps Load Test I & II
- Rotator cuff tear
 - Often predominant problem in throwing athletes

Treatment

Open Bankart Repair

- Was gold standard for sports athletes
- Hovelius
 - 2% recurrence
 - 75% return to pro baseball
 - Normal ROM: 79%
- Successful in stability
- Recurrence: Less than 10%
- Morbidity
- Anterior dissection, Scarring, Loss of elasticity, LOM esp in throwing athletes
- Bigliani
 - 67% of throwing athletes returned to normal activity after an open capsular shift, despite extensive experience with anterior shoulder reconstruction

Am J Sports Med, 1994

Arthroscopic Bankart Repair

- Replaced the gold standard in experts hands
- Abrams: Suture anchors
 - 4% recurrence

- Bacilla, Field, Savoie:
 - 93% stable shoulder
- Learning curve
- Higher recurrence rate: early technique (?)
- Selection of patients (?)
- Longer immobilization (?)

Comparison

- Open vs Arthroscopic in athletic group:
 - Not available to date
- Open vs Arthroscopic Comparison in non-athletic group
 Gaunche et al., AJSM, 1996

	Open	Arthroscopic
	12	15
Procedure	Bankart	Mitec, Transosseous
Instability	8%	33%
Apprehension	8%	40%
Rowe score	83	60

Problems: Non-random selection
 Small No
 Short FU
 Mixed type of procedures

- *Open vs Arthroscopic Comparison in young active non-athletic group*

SMC Results

Kim S-H, Arthroscopy (In-press)

89 shoulders (88 patients): Open 30, AS: 59

Suture anchors repair

F/U: av. of 39 months (26 to 60 months)

Open

Arthroscopic

10th Annual Congress of K.S.E.S., March 22nd, 2002
제 10차 대한 연·주관절 학회 학술대회, 2002, 03, 22

Rowe score	90.4 (30-100)	92.7 (40-100)	
UCLA score	30.6 (20-35)	33.1 (18-35)	P=0.041
Good to excellent	26 (86.6%)	54 (91.5%)	
Fair	2 (6.7%)	3 (5.1%)	
Poor	2 (6.7%)	2 (3.4%)	
Redislocation	2 (6.7%)	2 (3.4%)	
Apprehension	1 (3.3%)	4 (6.8%)	
Residual instability	3 (10%)	6 (10.2%)	

SMC Preferred Technique for Traumatic Anterior Instability

- Suture anchor: mini-Revo screw
- Bankart repair + Capsular shift / plication
- Crescent suture hook
- SMC Knot

Possible Cause of Failure of Primary Bankart Repair

: Two types of Less-anatomic Repair

Cephalization

Medialization

Knot Tying

- Check the sliding of the suture
- Slip knot is better than nonslip knot
- SMC knot *Internal Locking mechanism*

SMC Results

- 167 shoulders
- Age: 25 years (15-46)
- FU: 44 months (24-75)
- 95% Satisfactory activity return
 - 91% of patients: >90% of preinjury level
- Recurrence: 7 shoulders (4.2%)
 - 1 dislocation

- 2 subluxation
- 4 apprehension

Where on the Glenoid?

- May be a critical issue
- Why some arthroscopic repairs fail?
 - Edge-Slack Phenomenon

Edge-Slack Phenomenon

- External Rotation
 - Concentric anterior labrum
- Internal Rotation
 - Loss of concentric congruency by medialization
 - Loss of labral overhang

Possible Solution

- Over-the-Top Repair and ER Brace
- Reproduction of normal labral attachment
 - 1 - 2 mm Overhang

Summary

Instability in Athletes

High demand

Prone to recur

Early surgical stabilization

Arthroscopic Suture Anchor Repair

Successful

Similar to open repair

Learning curve

Surgeon is method

Be aware of normal anatomy / Pathomechanics