

SLAP Lesions And Internal Impingement Syndrome

조선대 병원 정형외과

문영래

orthoped@chosun.ac.kr

www.cyworld.nate.com/osmoon

SLAP Lesions

I. 정의

- Glenoid labrum 상부에서 biceps tendon insertion 주변에 발생한 병변
 - ✓ 상부 관절와 순의 후방부에서 시작하여 관절와 순에서 기시하는 상완 이두 장두건을 포함하여 전방 관절화 절흔은 바로 전부위 까지 파열되는 병변.

II. 역학

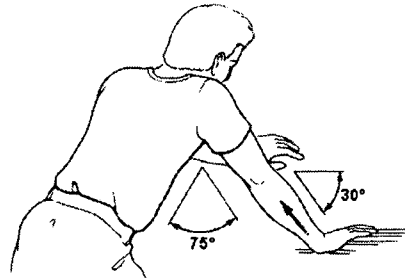
- Most common in young males
- Often associated with rotator cuff tear

SLAP Lesion 의 기전

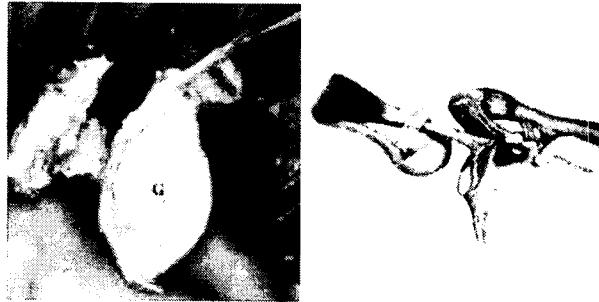
- Acquired tight posterior capsule
- Increased posterior-superior peel-back forces
- Circle concept
- Pathologic cascade

II. 원인 Injury mechanisms

1. Humeral head가 Biceps-labral complex에 direct compression force
 - ✓ 건관절 외전 전방 굴곡 상태에서 outstretched hand로 넘어질 때 발생



2. Biceps long head의 견인(traction)



- ✓ 떨어질 때 물건을 팔로 잡거나 수상 스키 시 관절와에서 관절와순이 잡아 당겨져 발생
 - ✓ Extension injury
3. 비정상적인 peel-back mechanism
- ✓ Repetitive microtrauma
 - ✓ Overhead motion, esp. Throwing, hammering

III. 임상 소견

A. 증상

- 동통(후방 견관절 통)
- 외전, 외회전시(overhead activities)에서 통증을 동반하는 엄발음(catching), popping, clicking
- Posterior Tightness
- Post-Sup Soreness
- Usually sudden event in late cocking
- Pain . Loss of velocity


B. 징후

- Speed's test



- Biceps tension test
 - ✓ Resisted shoulder flexion with elbow extended and forearm supinated
 - ✓ Positive if painful
- THE SLAP TEST



- ✓ Unstable type II & IV에서 양성
 - ✓ Crepitation, buckling, and pain
 - Kibler test
- 
- ✓ Push upward and forward on the elbow
 - ✓ Pain, crepitation
 - ✓ Anterosuperior labral tear, middle glenohumeral lig. avulsion
 - O'Brien test I



- ✓ Pain, buckling
- ✓ Biceps long head를 꼬이게 한다.

● O'Brien test II



● Compression-rotation test



- ✓ Shoulder McMurray's test
- ✓ Patient supine with shoulder abducted 90° and elbow flexed 90°
- ✓ Positive if pain and click
 - 12시 방향에서 양성
 - > SLAP lesion
 - 1시 방향에서 양성
 - > Superior GH lig. lesion
 - 3시 방향에서 양성
 - > Middle GH lig. lesion
- Jobe Relocation Test
- 익상 견갑 Acquired Scapular Winging



II. 검사

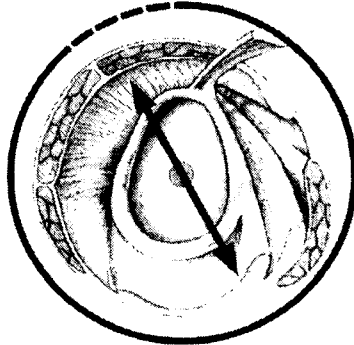
A. Imaging

- MRI
 - ✓ Often missed or misdiagnosed



B. 관절경 검사

- 진단을 가장 확실하게 할 수 있다.
- 관절경 소견
 - ✓ Drive - Through 소견^{1, 9)}
 - Anteroinferior Pseudolaxity

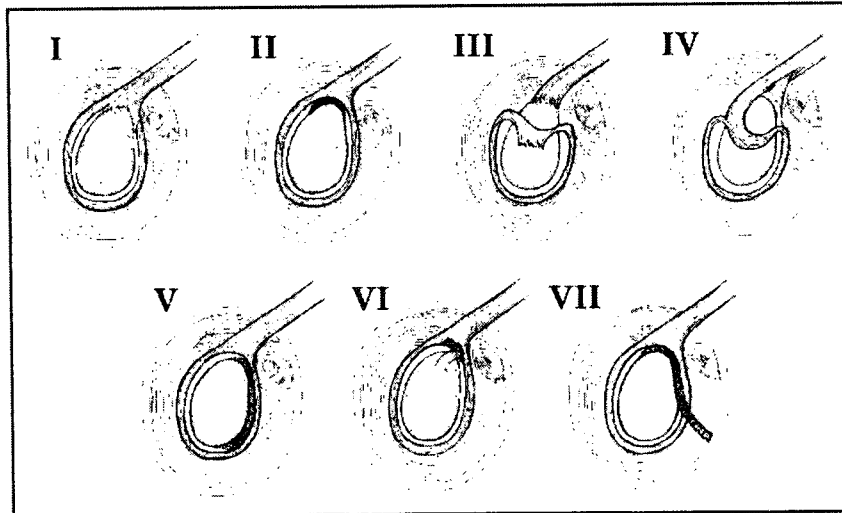


- ✓ Positive Peel-Back^{2, 7)}
- ✓ Displaceable Vertex of Biceps
- ✓ Associated Rotator Cuff Tear³⁾



분류 (by Snyder and Maffet)

- Type I : Frayed and degenerated superior labrum
- Type II : Detachment of superior labrum and biceps tendon from glenoid rim
- Type III : Bucket-handle tearing of superior labrum
- Type IV : Extension of displaced bucket-handle tear into biceps tendon
- Type V : Extension of anterior-inferior Bankart lesion superiorly
- Type VI : Lesion includes a biceps separation with an unstable labral flap tear
- Type VII : A superior labrum-biceps tendon separation that extends anteriorly beneath the middle glenohumeral ligament.

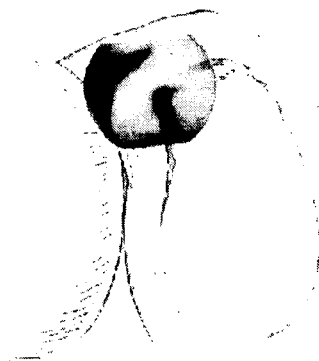


Type 1



- Fraying and degeneration of superior labrum
- No detachment of labrum or biceps tendon

Type 2



- Superior labrum and attached biceps tendon stripped off glenoid

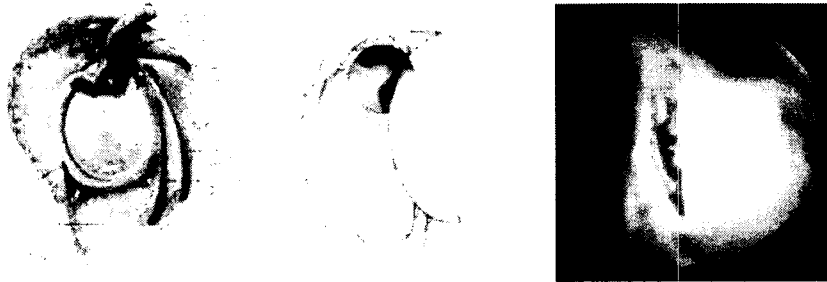
- Identification of the unstable SLAP II lesion
 - ✓ Clunk with peel back mechanism in abduction and external rotation
 - ✓ Irregular and abnormal direction of dye infiltration in MR arthrogram
 - ✓ Irregular margin of inner side of the attached area in arthroscopic finding
 - ✓ Granulation tissue of the inner side of the attached area in arthroscopic finding

Type 3



- Bucket handle tear of superior labrum
- Displacement of central rim of labrum into joint
- Peripheral labrum and biceps tendon attached to glenoid

Type 4



- Bucket handle tear of superior labrum
- Extension into biceps tendon which remains attached but with partial tear

Type 5



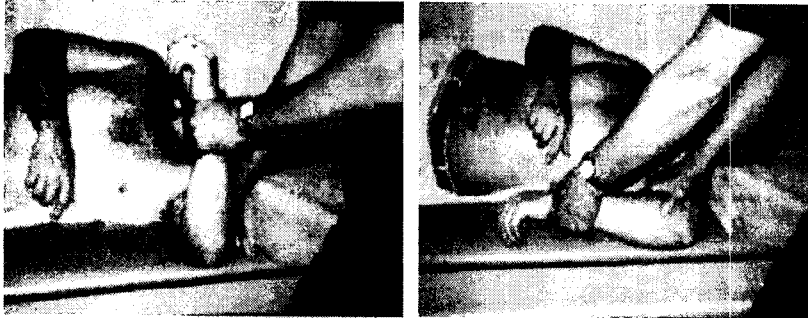
- Extension of anterior-inferior Bankart lesion superiorly
- Includes separation of biceps tendon

IV. 치료

A. 비수술적 치료

- Stretching Exercise



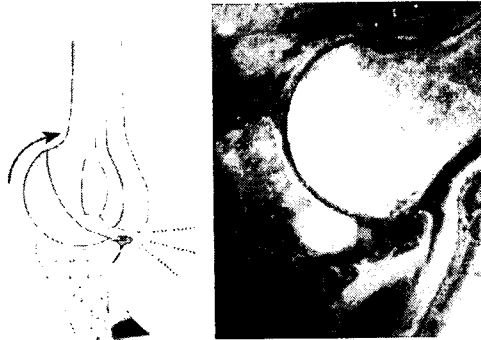


- ✓ Kibler : 38% decrease in shoulder problem in High Level Tennis Players
- ✓ Cooper : 22 professional baseball pitchers
 - No innings Lost , no Surgery

B. 수술적 치료

- Type I
 - ✓ Debride, excise flap tears
 - ✓ 운동선수의 45%에서 원래 직장에 복귀
- Type II
 - ✓ Repair biceps-labrum to glenoid
- Type III
 - ✓ Excise or repair the bucket handle
- Type IV
 - ✓ Excise or repair, tenodesis biceps
 - ✓ SLAP and Bankart : repair all
- 관절경적 봉합술
 - ✓ Suture Anchor must be placed POSTERIOR to the Biceps at the corner of Glenoid to Resist torsional Peel-back
 - ✓ 90% excellent, 10% good
 - ✓ 고정 방법과 portal 에 대한 연구가 더욱 필요

INTERNAL IMPINGEMENT IN OVERHEAD ATHLETES



I. 정의

- ✓ Posterior shoulder abnormalities found in overhead athletes including baseball players, volleyball players and waterpolo players⁴⁾
- ✓ Posterior-Superior Glenohumeral Impingement
 - Walch : occurs normally in abd-ER¹⁰⁻¹²⁾
 - Jobe : Abnormal in throwers⁶⁾
- ✓ No clear definition
 - Rotator cuff vs superior labrum
 - Instability vs no instability
 - Bony version
 - Static positioning studies

II. 병태 생리

1. Articular-sided RTC normally contacts the posterosuperior glenoid with the shoulder in the abducted, externally rotated(ABER) position⁸⁾.
 - Contact between the RTC and posterior glenoid rim contact was found in 85% of individuals with diagnoses other than internal impingement.
 - Contact is considered normal between these structures



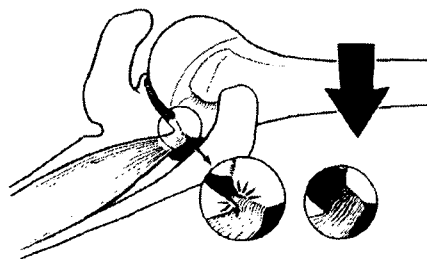
2. Pathological condition

- ABER shoulder causes pain
- Late cocking phase of throwing
- PosterosuperiorGlenohumeral pain
- Relocation with posteriorly directed force relieves the discomfort (Jobe)

3. Jobe' s 3 Stages of Internal Impingement

- (1) Stiffness - RTC irritation with prolonged warm-up
- (2) Posterior shoulder pain with relocation test. Subluxation of the humeral head
- (3) Persistent symptoms despite rehabilitation

III. 병적 해부학 (Pathoanatomy)⁵⁾



- Changes include labral tears, paralabral cyst formation
- At a certain point symptomatology begins and Internal Impingement occurs
- Changes occur in throwing vs nonthrowing shoulders in throwing athletes
- “Peel back” of biceps on glenoid- biceps instability
- Undersurface rotator cuff injury
- Anterior inferior glenohumeral instability

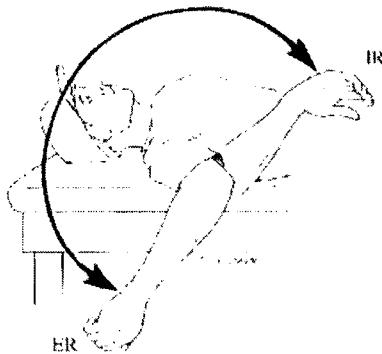
IV. 임상 소견

A. 병력

- Gradual, acute onset
- Pain in throwing- usually cocking, occasionally ball release
- Pop, click, grind
- Pain - posterior, lateral to acromion

B. 진찰 검사

- Hip/trunk weakness/inflexibility- 47%
- Scapular dyskinesia with loss of protraction control- 94%
- Increased external rotation and reduced internal rotation



1. Posterior labral tests

◇ Relocation Test (Jobe)

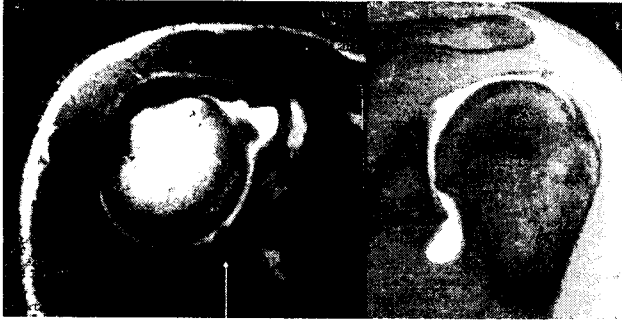


2. Rotator cuff tests

- Weak external rotation
- Weak empty can

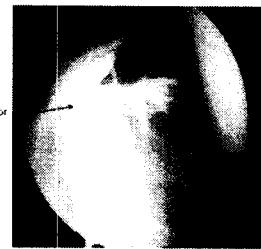
C. 검사

◇ MRI

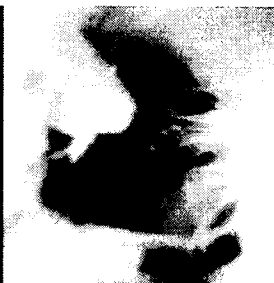


- Abnormal posterior labrum - usually
- Abnormal anterior labrum - sometimes
- Biceps tendinopathy
- Rotator cuff change

D. 관절경 소견



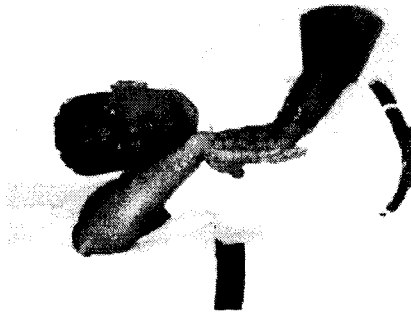
- Abnormal posterosuperior labrum
- “Kissing lesion” of the rotator cuff unsurface and posterosuperior labrum.
- “Kissing lesion” of the articular cartilage
- Labral fraying or tear
- Articular-sided partial thickness rotator cuff tears



V. 치료

A. 재활

1. Scapular stabilization exercise
2. Preoperative improvement in flexibility, strength, scapular stability



C. 수술

1. Labrum
 - a. Anterior, posterior
 - b. Goal- negative “peel back”
2. Rotator cuff
 - a. Debridement
 - b. Repair
3. Anterior capsule
 - a. Heat
 - b. Anchors
 - c. Capsular plication

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