

Posterior Capsulolabral Reconstruction in Posterior Shoulder Instability : Deltoid Saving

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Recurrent posterior subluxation of the shoulder is very rare : 2-4% in the shoulder instability

Classification

. Muscular:

voluntarily subluxate the shoulder posteriorly in various positions, especially with the neutral position

. Positional :

subluxate the shoulder posteriorly by mid-elevation at the (+) scapular plane and internal rotation, and relocate it with moving the arm to (-) scapular plane

Recent Biomechanical Studies

. Lax posteroinferior capsular ligaments :

the posterior band of the inferior glenohumeral ligament complex for providing stability in flexion, internal rotation, and adduction (*Blasier & Soslowsky, JBJS, 1997*)

. Lesions of the posterior part of the labrum :

the labrum contributes approximately 20% of the concavity-compression stabilization of the glenohumeral joint in the inferior and the posteroinferior direction
(*Lippitt et al., JSES, 1993*)

. Excessive retroversion of the glenoid fossa :

may need an osteotomy of the posterior aspect of the glenoid
(*Fuchs et al., JBJS, 2000*)

There has been no consensus on a single approach because there has been little agreement on the etiology of the posterior shoulder instability.

- . Conservative/Operative
- . Various Open Stabilization : Reattachment of torn posterior labrum
 - Posterior bone block
 - Opening-wedge osteotomy
 - Posterior capsulorrhaphy
- . Open/Arthroscopic

Conservative/Operative

Better with rehabilitative exercises than patients with primary anterior instability

(Rockwood et al., Orthop Trans, 1986)

Higher percentage of success rates in the operatively treated group :
91%(10/11) versus 63%((10/16) *(Fronck and Warren, JBJS, 1989)*

Capsular redundancy/Labral detachment

Posterior labral detachment occurred in only 10% *(Pollock and Barron, 1997)*

100% redundant posterior capsular pouch, 83% inferior capsular redundancy,
37% labral lesions : 11% complete labral detachment, 6% partial detachment,
20% only labral wear *(Bigliani et al., JBJS, 1995)*

Posteroinferior instability is associated not only with capsular laxity but also
with well defined lesions of the glenolabral concavity : 83%

labral detachment 12%, chondral or labral erosion 17%, capsular/synovial
stripping 22%, labral split or tear 32% *(Antoniou and Harryman, JBJS, 2000)*

Glenoplasty/Capsulorrhaphy

53%(10/19) stable at follow-up with opening wedge osteotomy : yield good
results in traumatic, unidirectional PI, but contraindicated for congenitally or
habitually lax

shoulder *(Norwood and Terry, Am J Sports Med, 1984)*

A complication rate of 29%(5/17) and a recurrence rate of 41%(7/17)
with glenoplasty *(Hawkins et al., JBJS, 1984)*

Scapular bone graft : hypoplasia of the glenoid

excessive retroversion of the glenoid

Open/Arthroscopic

96% (23/24) success in primary open posteroinferior capsular shift surgery

(Bigliani et al., JBJS, 1995)

16% (3/19) recurrence in dominant hand involving with open posteriorinferior capsular shift surgery *(Fuchs and Gerber, 2000)*

85% improved stability in arthroscopic augmentation for posteroinferior instability

(Antoniou and Harryman, JBJS, 2000)

In athletes with posterior subluxation, the pathologic findings are typically dissimilar from those athletes with anterior instability (Tibone & Bradley, Clin Orthop, 1993)

- . Absence of a true reverse Bankart lesion
- . Labrum intact and not torn away from the glenoid
- . The labrum may be shallow and poorly developed
- . Commonly, the posterior capsule is redundant

Operative Technique – Posterior Axillary Approach with Saving Deltoid

- . Positioned in lateral decubitus with the arm free
- . Posterior approach beginning at the 2 inches inferior and 1 inch medial to the postero- lateral aspect of the acromion and extending distally for 3 inches through the posterior axillary fold line
- . Identify the yellow fat line below the deltoid and dissect it
- . Retract the deltoid superiorly to allow for wide exposure
- . Identify the interval between the infraspinatus and the teres minor, and split these muscles by the blunt dissector to separate from the underlying capsule, medially past the rim of the glenoid and laterally to its insertion on the greater tuberosity
- . Expose the underlying superoposterior and inferoposterior capsule completely
Easy! : The capsule can be easily freed from the external rotators with arm positioned in the internal rotation and 30 degrees of abduction and flexion from the coronal plane
- . Incise the posterior capsule horizontally at the mid-humeral head level and vertically about 5mm medial to its attachment on the posterior glenoid labrum (T incision)

Notice! : The external rotation and extension for the dissection of the capsule off the posterior labrum as far inferiorly and superiorly as is

necessary to allow reduction of the inferior pouch and the rotator interval, and to protect the axillary nerve

- . Develop superior and inferior capsular flaps tagged with sutures
- . Advance the inferior flap superiorly and medially and secure it to the glenoid labrum with nonabsorbable sutures

Notice! : The arm is positioned in 30 degrees of the abduction and the internal rotation to keep away from overtightening

- . Fasten the superior flap over the inferior flap by advancing it inferiorly and medially
- . Approximate the subcutaneous tissue in routine fashion
- . Place the shoulder in slight extension and external rotation using with the abduction pillow

Postoperative Rehabilitation

- . Abduction pillow in slight extension and external rotation for three weeks
- . Permit passive assisted range of motion exercises at the 2nd day postoperatively *Elevate the arm in the scapular plane and not attempt to rotate the arm internally*
- . Initiate isometric exercise immediately after the surgery
- . Permit forward flexion three weeks after cessation of the pillow
- . Start active range of motion at six weeks
- . Allow return to sport at six months

In My series

From Sept. 1995 to Aug. 2001, PCLR was done in 33 cases (32 Pts).

Excluded PCLR for PI after surgical neck fx.(1), main component of posterior laxity in MDI(2)

30 cases to be enrolled(av. FU: 25mns)

- . Dominant 22/29 (76%), bilateral 1/29
- . Trauma related instability 4/30 (13.3%)
- . Generalized ligamentous laxity 7/30 (23.3%)
- . Muscular type 3/30 (10%)

Pathology

- . Posterior capsular redundancy 100%
with labral tear 5/30 (16.7%), paper thinning 6/30 (20%) and ganglion 1/30 (3.3%)

Results

- . **Overall final outcome : 25/30 (83.3%)**
 - Excellent 24 (80%), good 1 (3.3%), fair 2 (6.7%), poor 3 (10%)**
 - 92.6% above good results in positional PI**
- . **Dominancy and generalized ligamentous laxity are not influence on the final results**
- . **Failure rate : 5/30 (16.7%) :**
 - Recurrence 4 (13.3%), painful click on adduction 1 (3.3%)**
 - Recurrence rate : positional type 1/27, muscular type 3/3**
- . **5 failure cases : 3 muscular type, 1 deltoid splitting, 1 remaining redundancy**

SUMMARY

- . **Open posterior capsulolabral reconstruction(PCLR) in posterior subluxation yields very excellent clinical results if it is positional.**
- . **The main pathologic lesion is an excessive redundancy of the posteroinferior capsule.**
- . **The muscular type of posterior instability is contraindicated in PCLR.**