

Various Arthroscopic Findings : What is Normal or Not

Tae-Soo Park M.D.

Department of Orthopaedic Surgery, Hanyang University Kuri Hospital

- # A knowledge of anatomy & the possible normal variations is important.
- # They have been well documented, but subtle differences between normal variations & real pathology can make life difficult for the arthroscopist.
- # Considerable variability exists in the pattern of the different ligaments & associated recess of the shoulder.
 - De Palma, Moseley & Overgard, Detrisac & Johnson, Morgan, Snyder & Buford et al -
- # Normal Variations in Anatomy of the Labrum & Glenohumeral Ligaments
 - key factor in normal ligament anatomy : firm attachment of IGHLC up to mid-glenoid notch
- # Labrum
 - a wedge-shaped structure : circumferentially attached to glenoid
 - very thin & firmly attached to glenoid
 - a more meniscus-appearing wedge
 - w/ a free central margin : overlaps articular surface cartilage
- # Labrum
 - attachment directly to glenoid zone via a fibrocartilaginous transition zone & to periosteum of scapular neck
 - considered as part of capsular ligaments of shoulder
- # Labrum : Type

- detached centrally & superiorly (60%):
 - firmly attached anteriorly, inferiorly & posteriorly
- entire labrum : centrally attached

Superior Labrum

- Separation of the superior labrum from the glenoid may be normal.

– Cooper DE et al –
JBJS, 1992

Superior Labrum

- meniscoid labrum :
 - only peripheral attachment
 - free edge on labrum extending onto glenoid surface
- peripheral & central attachment

– Cooper et al –
JBJS, 1992

Long Head of Biceps Brachii

- lies in rotator interval
- pierces capsule to wrap around superior glenoid w/ anterior & posterior extensions to labrum
- attachment site :
 - posterosuperior to anterosuperior labrum
 - firm or loose

Normal Variations in GHJL

- many variations in size & shape of GHJL
- IGHL dominant : 30%
- MGHL dominant : 16%
- equally dominant : 54%

– DePuy et al –
1989, AOSSM

Normal Variations in GHJL

Group I (66%) : classic arrangements w/ well defined SGHL, MGHL & IGHL

- Group II (7%) : confluent MGHL & IGHL w/ no separation between the two
- Group III (19%) : cordlike MGHL w/ a high riding attachment & a foramen below
- Group IV (8%) : no discernible MGHL-IGHL, but no confluent anterior capsular sheath

– Rames et al –
Arthroscopy, 1991

Labrum & GHJ : Classic Pattern

- three ligaments & one recess
- Morgan's series : 66%
- DePalma's series : 30%

Superior Glenohumeral Ligament (SGHL) : Attachment

- top of lesser tuberosity
- superior glenoid tubercle near base of coracoid, running almost parallel to biceps tendon blends w/ anterior capsule behind biceps tendon
- usually cannot be seen

Middle Glenohumeral Ligament (MGHL) : Attachment

- anterior humeral neck, medial to lesser tuberosity
- running obliquely across subscapularis (at 60° angle)
- superior portion of labrum (inferior neck of scapula immediately below upper ½ of glenoid)
- thin or up to 4mm thick

Cord-like MGHL

- three ligaments & 2 recesses
- classic subscapularis recess & extra bursal recess between MGHL & IGHL
- strongly developed cord-like MGHL attaching to anterior-superior labrum just beneath biceps insertion
- Morgan's series : 19%
- DePalma's series : 47%
- Snyder's series : 9%

Sublabral Hole

- a large foramen extending from midglenoid notch almost up to biceps insertion
- in thin area, detached labrum from glenoid margin & through the hole, communication w/ subscapularis

bursa

- thick cordlike MGHL : attached only to superior 1/5th of labrum
- essential classic pattern of other ligament
- Snyders series : 12%

Sublabral Hole

- superior one half of anterior labrum : not firmly attached
- prominent cordlike MGHL : attach to a high riding labrum
- DDX : Bankart lesion

Buford Complex

- cord-like MGHL, continuous w/ anterosuperior labrum : attaching to superior labrum at base of biceps tendon
- presenting no additional anterosuperior labral tissue
- Snyder s series : 1.5%
- DDX : – SLAP lesion
– Bankart lesion

Inferior Glenohumeral Ligament Complex(IGHLC) : Attachment

- low on humeral neck passing beneath humeral head(HH)
- anterior inferior portion of glenoid

Inferior Glenohumeral Ligament Complex (IGHLC)

- anterior band
- axillary pouch
- posterior band

Confluent MGHL & IGH

- blended MGHL & IGH together
- large subcapsularis recess below SGHL
- Morgan s series : 7%
- DePalma s series : 9%

Absent Ligament Pattern

- no distinguishable thickening in anterior capsule
- predispose to anterior shoulder instability
- Morgan s series : 8%
- DePalma s series : 11%

Bursal Recess : Subscapularis Recess

- a very consistent recess
- located between SGHL & MGHL

Arthroscopic Findings Related to Shoulder D/L Humeral Head : Hill Sachs Lesion

- posterolateral HH defect
- chondral or osteochondral
- abutment of anterior glenoid rim against posterior aspect of HH when HH rotates & translates in anterior-inferior direction

Arthroscopic Findings Related to Shoulder D/L Humeral Head : Bare Area

- normal transition zone between insertion of RC & cartilage of HH
- present at reflection of posterior RC onto HH
- devoid of articular cartilage w/ vascular channels

Arthroscopic Findings Related to Shoulder D/L : Perthes Lesion

- failure at scapular neck w/ stripping of periosteum

Arthroscopic Findings Related to Shoulder D/L : Bony Bankart Lesion

- flake avulsion, pulled off anterior- inferior scapular neck by capsulolabral complex

Arthroscopic Findings Related to Shoulder D/L Anterior Labral Ligamentous Periosteal Sleeve Avulsion (ALPSA) : Neviaser

- stripping of labrum & periosteum from scapular neck : absence of normal anterior-inferior capsulolabral buttress
- whole complex drops down inferiorly & medially on scapular neck healed & covered w/ fibrous tissue & synovium

Arthroscopic Findings Related to Shoulder D/L

- intrasubstance tear of labrum
- humeral avulsion of GHL (HAGL)
lesion : Licola
- bony humeral avulsion of GHL
(BHAGL) lesion

Rotator Cuff Suspension Bridge Model

- rotator cable
- rotator crescent

Posterior Internal Impingement of RC

- undersurface RC fraying
- posterosuperior (anterior) labral fraying
- osteochondral lesion to HH
 - near insertion of supraspinatus tendon
 - more superior than a classic Hill-Sachs lesion
 - less than 1cm in diameter
- Bankart, SLAP lesion

Exact understanding & precise recognition of these normal variants are essential when considering arthroscopic evaluation of a normal unstable shoulder. or possibly unstable shoulder.