SARL: Shoulder Acronyms. A Review of the Literature

Michael Khazzam, M.D., Martin I. Jordanov, M.D., Charles L. Cox, M.D.,
Warren R. Dunn, M.D., M.P.H., and John E. Kuhn, M.D.

Abstract: Acronyms are words formed by taking the first initial or other parts of words from a compound term. They are designed to help communicate ideas efficiently. In the literature pertaining to shoulder surgery, a variety of acronyms have been offered for normal anatomic states, physical examination findings, pathologic conditions, surgical techniques, and outcome instruments, with new acronyms offered each year. The purpose of this article is to review and clearly define acronyms used by shoulder specialists.

Acronyms are words formed from the initial letter or letters of the parts of a compound term. They can be useful to help abbreviate long and complicated terms. Some search engines (e.g., http://aconymfinder.com) list more than 750,000 acronyms in current use.

In the world of shoulder surgery, acronyms have become commonplace to describe normal anatomy, physical examination findings, pathologic conditions, surgical techniques, and outcome instruments. As the number of acronyms for the shoulder increase, confusion can result. The purpose of this article is to identify and review the acronyms related to the shoulder that have been described in the literature to date. Table 1 summarizes all of the shoulder acronyms.

From the Vanderbilt Sports Medicine & Shoulder Center, (M.K., C.L.C., W.R.D., J.E.K.), Nashville, Tennessee; and Vanderbilt Medical Center, Department of Radiology, (M.I.J.), Nashville, Tennessee, U.S.A.

The authors report no conflict of interest.

Received June 2, 2010; accepted September 8, 2010.

Address correspondence to John E. Kuhn, M.D., Vanderbilt Sports Medicine & Shoulder Center, 3200 MCE South Tower, 1215 21st Ave S, Nashville, TN 37232, U.S.A. E-mail: j.kuhn@vanderbilt.edu

0749-8063/10330/$36.00

doi:10.1016/j.arthro.2010.09.006

LITERATURE REVIEW METHODS

A computerized search of the electronic database MEDLINE through PubMed was conducted with the following key words: shoulder, arthroscopy, and anatomy. This search generated 2,783 abstracts, which were reviewed for content containing mention of or reference to a shoulder acronym. Once an article was identified to contain a shoulder acronym, the references of that article were also reviewed to capture any additional relevant studies not found during our search. This generated the 63 articles that were used for our review.

ACRONYMS FOR NORMAL ANATOMY

GHLs

The glenohumeral ligaments (GHLs) function as static stabilizers of the glenohumeral joint. These ligaments are actually thickenings of the capsule and have been labeled based on anatomic cephalad-to-caudad orientation (superior, middle, and inferior). The superior glenohumeral ligament (SGHL) functions as a static restraint with the humerus in an adducted position. The middle glenohumeral ligament (MGHL) can often be seen arthroscopically situated between the subscapularis tendon and the labrum in the anterior aspect of the shoulder and functions as a

Table 1. *Complete Summary of All Shoulder Acronyms Reviewed*

Acronym	Definition
GHLs	Glenohumeral ligaments
SGHL	Superior glenohumeral ligament
MGHL	Middle glenohumeral ligament
IGHL	Inferior glenohumeral ligament
aIGHL	Anterior band of IGHL
pIGHL	Posterior band of IGHL
SSSC	Superior shoulder suspensory complex
GIRD	Glenohumeral internal rotation deficit
SICK scapula	Scapular malposition, inferior medial border prominence, coracoid pain and malposition, and dyskinesis of scapular movement
PASTA	Partial articular supraspinatus tendon avulsion
PABAST (bony PASTA)	Partial articular side bony avulsion of supraspinatus tendon
PAINT	Partial articular tears with intratendinous extension
TUBS	Traumatic unidirectional Bankart treated with surgery
AMBRI	Atraumatic multidirectional bilateral treated with rehabilitation or inferior capsular shift with rotator interval repair
ABER	Abduction with external rotation
HAGL	Humeral avulsion of inferior glenohumeral ligament
AHAGL	Anterior humeral avulsion of glenohumeral ligament
ABHAGL	Anterior bony humeral avulsion of glenohumeral ligament
Floating AIGHL	Anterior inferior glenohumeral ligament
PHAGL (reverse HAGL)	Posterior humeral avulsion of glenohumeral ligament
PBHAGL	Posterior bony HAGL
Floating PIGHL	Posterior inferior glenohumeral ligament
ALPSA	Anterior labroligamentous periosteal sleeve avulsion
POLPSA	Posterior labrocapsular periosteal sleeve avulsion
GLAD	Glenolabral articular disruption
SLAP	Superior labrum anterior posterior
GLEN	Ganglion cyst arising from superior labrum with entrapment of inferior branch of suprascapular nerve
GLOM	Glenoid labrum ovoid mass
PAGCL	Postarthroscopic glenohumeral chondrolysis
TOTS	Temporary outside traction suture
PITT	Percutaneous intra-articular transtendon technique
DASH	Disabilities of the Arm, Shoulder and Hand
SPADI	Shoulder Pain and Disability Index
WOSI	Western Ontario Shoulder Instability Index
WOOS	Western Ontario Osteoarthritis of the Shoulder Index
WORC	Western Ontario Rotator Cuff Index
RC-QOL	Rotator Cuff Quality of Life Measure
WUSPI	Wheelchair User's Shoulder Pain Index

static restraint in the midranges of motion, classically described as a limit to external rotation at approximately 45° of abduction of the humerus.

Numerous variants in the anatomy of the MGHL exist, ranging from the aforementioned to a thickened cord inserting on the glenoid with an absent anterosuperior labrum (Buford complex). Most attention is focused on the role of the inferior glenohumeral ligament (IGHL), which has been further subdivided based on its anterior (aIGHL) and posterior (pIGHL) divisions. The anterior portion (aIGHL) functions as the primary static restraint to anterior and anteroinferior translation with the arm in 90° of abduction and limits external rotation in this position. A majority of arthroscopic and open stabilization procedures are directed at restoring tension in this portion of the ligament if anterior instability exists clinically. The posterior division (pIGHL) serves as a restraint to the forward-flexed and internally rotated humeral head limiting posterior translation of the glenohumeral joint.

SSSC

Goss[1] first coined the term "superior shoulder suspensory complex" in 1993 in a case series in which injury and treatment of this structure were presented. The superior shoulder suspensory complex (SSSC) is a bony/soft-tissue ring that is made up of the glenoid, coracoid, coracoclavicular ligaments, distal clavicle, acromioclavicular joint, and acromion.[1-4] This ring also consists of a superior strut, the middle clavicle, and an inferior strut, the lateral scapular body/spine. The importance of the SSSC is that it is responsible for maintaining a stable relation between the upper extremity and the axial skeleton. When 1 of these structures is injured as a result of trauma, there is typically no significant compromise to the overall integrity of the ring. On the other hand, when there is a double disruption (ring or strut failure in 2 or more places) either through bony or soft-tissue structures, this leads to the so-called floating shoulder.

The floating shoulder injury pattern has been classified as follows: type IA, purely bony injury—scapular neck fracture combined with fracture at the base of the coracoid; type IB, scapular neck fracture combined with a clavicle fracture and scapular spine or fracture of the acromion; type II, purely ligamentous injury pattern—scapular neck fracture combined with a coracoclavicular or coracoacromial ligament disruption; type IIIA, combined osseoligamentous injury—scapular neck fracture combined with a clavicular shaft fracture; and type IIIB, coracoacromial and acromioclavicular disruption—scapular neck fracture combined with an acromial or scapular spine fracture with coracoclavicular and acromioclavicular ligament disruption.[2-4]

ACRONYMS THAT DESCRIBE PHYSICAL EXAMINATION FINDINGS

GIRD

Glenohumeral internal rotation deficit (GIRD) has been described as a result of posterior capsular contracture along with contracture of the posterior band of the IGHL.[5,6] GIRD is a pathologic condition characterized by decreased internal rotation and a reduction in the total arc of rotation. This pathology is found in overhead throwing athletes and has been cited as the kinematic dysfunction leading to several shoulder pathologies in this population, including SLAP lesions, internal impingement, and articular-sided partial-thickness rotator cuff tears.[5-7] A majority of these patients respond favorably to physical therapy with an aggressive program of posterior capsular stretching.[5,6]

SICK Scapula

Scapular malposition, inferior medial border prominence, coracoid pain and malposition, and dyskinesis of scapular movement (SICK) is a constellation of signs and symptoms associated with shoulder pain in the dominant arm of the throwing athlete.[8] The SICK scapula is characterized by asymmetric malpositioning of the scapula on physical examination giving the illusion that the dominant shoulder is "dropped" or lower than the contralateral shoulder. This apparent asymmetry is a result of horizontal scapular protraction, resulting in a prominent inferior medial scapular border posteriorly. In addition, the pectoralis minor becomes tight and painful, pulling the coracoid inferior and medial. This kinematic alteration and scapular malpositioning dynamically alter motion at the acromioclavicular and glenohumeral joints, affecting the muscles that insert on the scapula.[8]

A patient who presents with SICK scapula syndrome may present with any number of symptoms including anterior shoulder pain, posterosuperior scapular pain, superior shoulder pain, proximal lateral arm pain, neck pain, or radicular/thoracic outlet type symptoms from the shoulder to the finger tips. Most commonly, these patients present with complaints of anterior shoulder pain around the coracoid.[8]

PATHOLOGIC CONDITIONS

Rotator Cuff

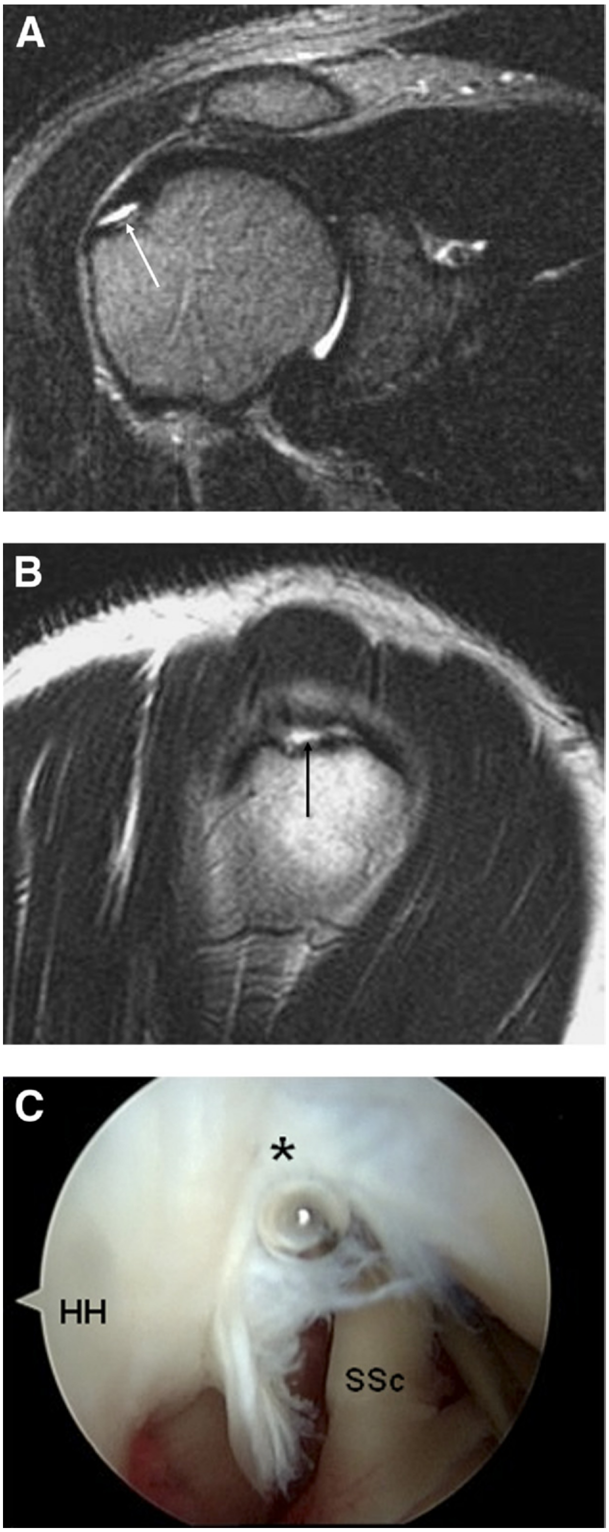
PASTA: The partial articular supraspinatus tendon avulsion (PASTA) lesion was first described by Millstein and Snyder[9] (Fig 1). They stated that the articular surface of the rotator cuff tendons can avulse and/or retract as a result of repetitive microtrauma or an isolated traumatic event.[9,10] The unusual characteristic regarding this rotator cuff tear is that although the articular surface of the supraspinatus tendon is torn and may have a sizable amount of delamination with a flap-type tear, the bursal side of the tendon remains healthy.[11]

Bhatia et al.[12] in 2007 described the "bony" PASTA or PABAST (partial articular-side bony avulsion of the supraspinatus tendon) lesion that consists of a partial avulsion of the medial aspect of the greater tuberosity at the footprint of the supraspinatus tendon insertion. The fibers of the supraspinatus deep to this bony avulsion remain in continuity, as do the fibers inserting into the lateral aspect of the footprint of the uninvolved greater tuberosity.

PAINT: The PAINT lesion (partial articular tears with intratendinous extension)[13] was first described by Conway[14] in 2001. The PAINT lesion typically occurs in the overhead throwing athlete with internal impingement and is located at the junction of the supraspinatus and infraspinatus tendons. Commonly, the tear extends into the middle layer of the infraspinatus tendon[14] (Fig 2).

Instability and/or Labral Tears

TUBS: Traumatic unidirectional Bankart treated with surgery (TUBS) occurs in those patients who have had a traumatic event, such as an anterior shoulder dislocation, that initiates shoulder instability. As the acronym implies, these patients have unidirectional instability, typically with an associated Bankart



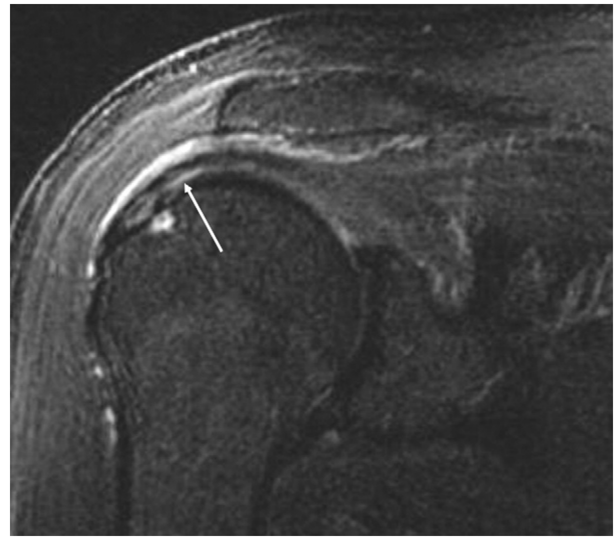


Figure 2. PAINT lesion. A single oblique coronal short T1 inversion recovery (STIR) image shows a partial-thickness articular-surface supraspinatus tendon tear with intratendinous extension toward the myotendinous junction (arrow) resulting in delamination of the supraspinatus tendon.

lesion (labral and capsular detachment from the anteroinferior glenoid) and, as a result, respond well to surgical intervention.

AMBRI: Atraumatic multidirectional bilateral treated with rehabilitation or inferior capsular shift with rotator interval repair (AMBRI) occurs in patients who have bilateral multidirectional instability that typically results from nontraumatic causes. Historically, these patients are involved in repetitive overhead athletics such as swimming and can be successfully managed with physical therapy directed at strengthening the rotator cuff as well as the periscapular musculature.

Thomas and Matsen[15] first coined the acronyms TUBS and AMBRI in 1989 when reporting on their results after surgical treatment of patients with recurrent traumatic unidirectional shoulder instability. Although this article excluded subjects with multidirectional instability, their observations of both the study cohort and the excluded cohort pro-

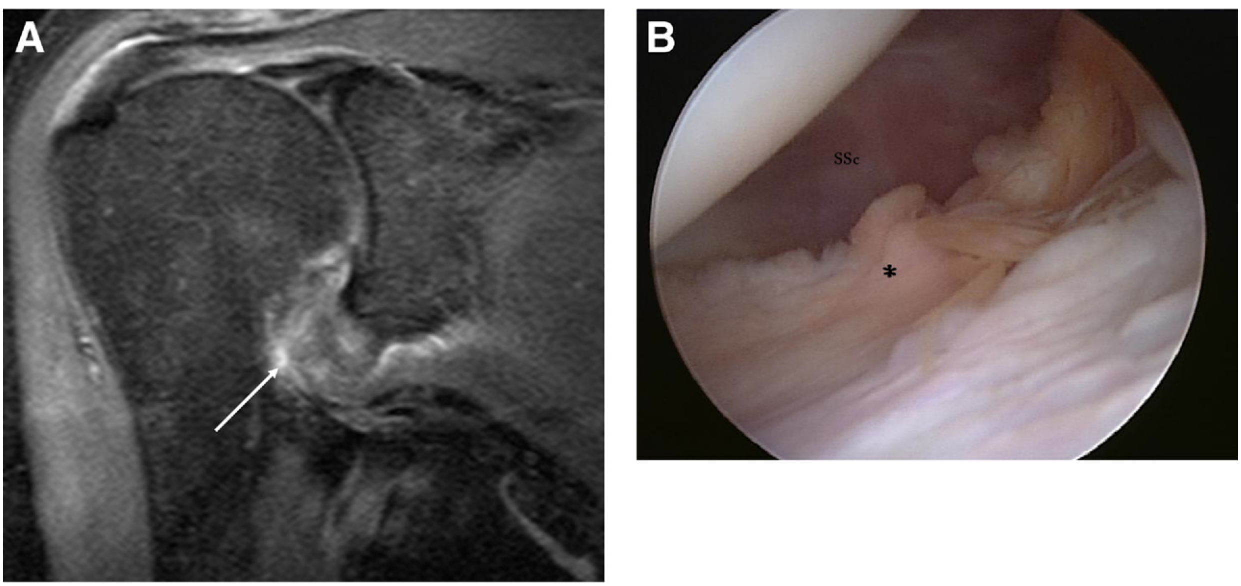
←

Figure 1. PASTA lesion. (A) Oblique coronal and (B) oblique sagittal images show a partial-thickness articular-surface tear of the supraspinatus tendon (arrows). (C) Arthroscopic image of a right shoulder showing an intra-articular partial-thickness rotator cuff tear as seen from the posterior viewing portal (with the patient in the lateral decubitus position) (HH, humeral head; SSc, subscapularis; asterisk, area of PASTA lesion).

vided insight into developing an etiologic characterization of shoulder instability.

Traumatic anterior shoulder dislocation as a result of an anteriorly direct force on an arm in the "at risk" position (abduction with external rotation [ABER]) may produce numerous pathologies including humeral avulsion of the inferior glenohumeral ligament (HAGL), BHAGL, and anterior labroligamentous periosteal sleeve avulsion (ALPSA) lesions depending on where the capsulolabral complex is disrupted. Although a detail treatment strategy is beyond the scope of this article, we will provide insight into the basic concepts and a description of these often confusing pathologies.

HAGL: HAGL (Fig 3) occurs as a result of a traumatic mechanism that involves forced hyperabduction and external rotation of the arm.[16,17] This lesion was first described by Nicola[18] in 1942, who found that when the humerus is abducted greater than 105° and forcefully externally rotated, the anterior band of the IGHL/capsule complex tears from the neck of the humerus, resulting in glenohumeral joint instability and/or dislocation. The HAGL lesion has been reported in up to 9% of patients with recurrent post-traumatic shoulder instability.[17,19-21] It is important to maintain a high index of suspicion in the setting of glenohumeral joint instability because the HAGL lesion frequently occurs in conjunction with the more commonly encountered intra-articular abnormalities (Bankart lesion, Hill-Sacks deformity, or rotator cuff tear).[21,22] Failure to recognize this may result in fail-



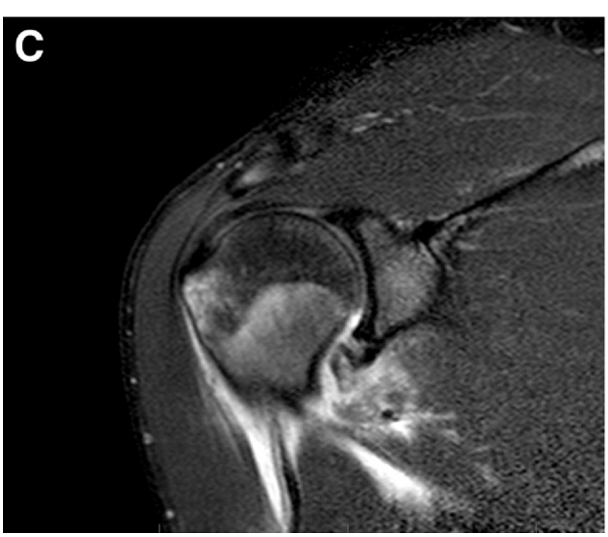


FIGURE 3. HAGL lesion. (A) An oblique coronal short T1 inversion recovery (STIR) image shows a tear at the humeral attachment of the anterior limb of the IGHL (arrow). The ligament is markedly thickened and edematous with a fluid-filled gap at the site of the tear. (B) Arthroscopic image of a left shoulder showing HAGL as seen from the posterior viewing portal. Note the rolled edge of the inferior joint capsule (asterisk) and exposed subscapularis muscle belly (SSc) (with the patient in the lateral decubitus position). (C) Coronal oblique T2 MR scan showing J-shaped axillary pouch.

ure to relieve symptoms or recurrence of symptoms after treatment.

In attempts to simplify the understanding of HAGL pathology, Bui-Mansfield et al.[17] proposed a classification system that divides these lesions into 3 subgroups: (1) anterior humeral avulsion of the glenohumeral ligament (AHAGL), (2) anterior bony humeral avulsion of the glenohumeral ligament (ABHAGL),[23] and (3) anterior inferior glenohumeral ligament (floating AIGHL). It is important to recognize that the floating AIGHL lesion is a concurrent HAGL with a Bankart lesion (detachment of the inferior labral-ligamentous complex from the glenoid). Understanding the configuration of the HAGL lesion may help direct surgical management of this pathology to ensure return of the shoulder to optimal function.

Similarly, with a posterior dislocation, a reverse HAGL or PHAGL (posterior humeral avulsion of the glenohumeral ligament) lesion may result (Fig 4). The reverse humeral avulsion of the glenohumeral ligament is identical in nature to its anterior counterpart, except that it occurs with the arm in an axially loaded, forward flexed, internally rotated position (i.e., the “at risk” position for posterior shoulder dislocation). This results in detachment of the posterior band of the IGHL complex. As with the anterior lesions, Bui-Mansfield et al.[17] subdivided the posterior capsular injuries into 3 subgroups: (1) PHAGL, (2) posterior bony humeral avulsion of the glenohumeral ligament (PBHAGL), and (3) posterior inferior glenohumeral ligament (floating PIGHL).

The HAGL lesion is best visualized by magnetic

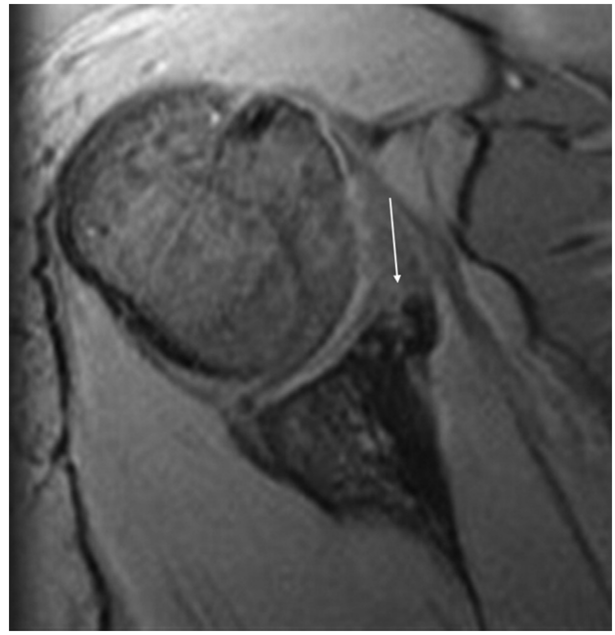


Figure 5. ALPSA lesion. An axial fat suppressed (FS) 3D gradient-recalled echo (GRE) image through the inferior aspect of the glenoid shows a torn, medially displaced, and scarred anteroinferior labrum (arrow).

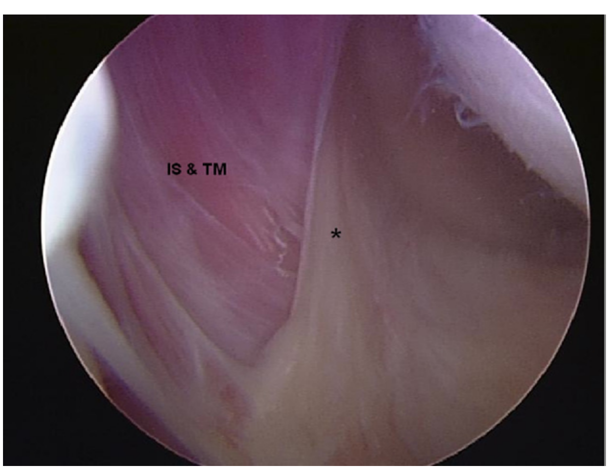


Figure 4. PHAGL lesion. Note the detached edge of the posterior inferior capsule (asterisk) and exposed muscle belly of the infraspinatus (IS) and teres minor (TM) as seen from the posterior viewing portal of a left shoulder (with the patient in the lateral decubitus position).

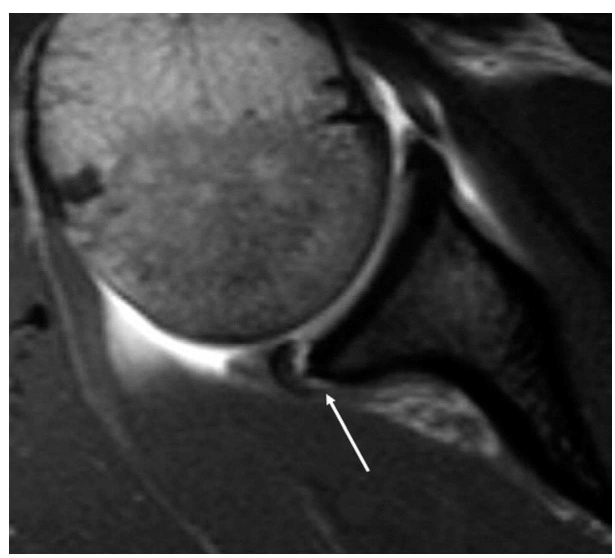
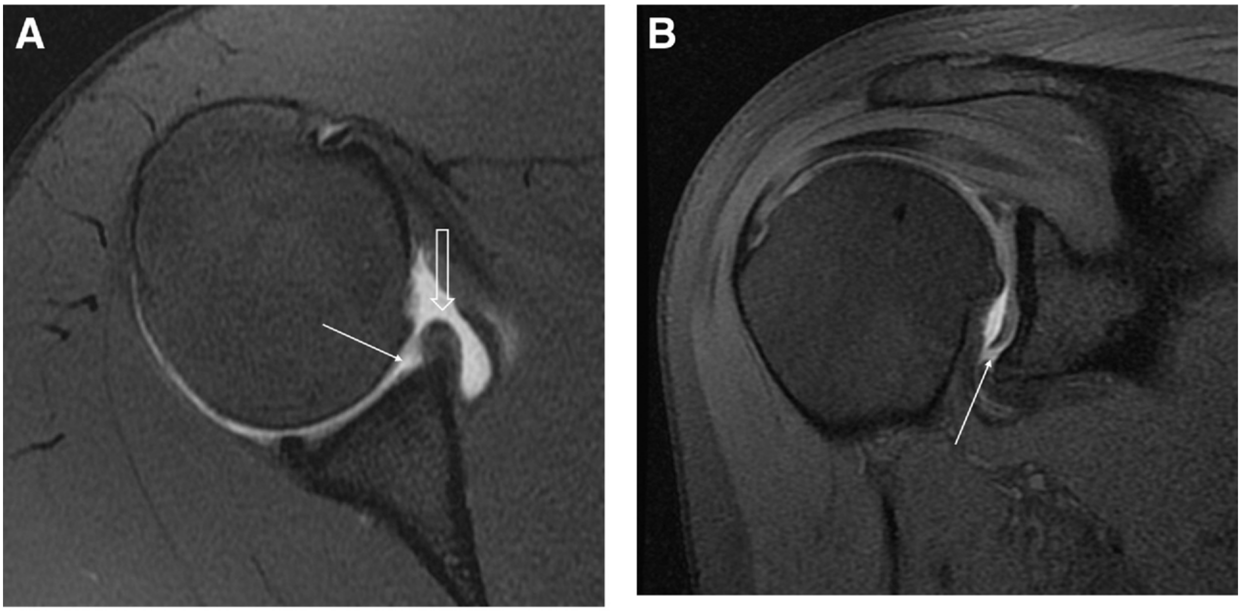


Figure 6. POLPSA lesion. An axial fat suppressed (FS) T1-weighted image after intra-articular gadolinium administration shows a tear in the posterior labrum with stripping but no complete tear of the posterior periosteum (arrow).



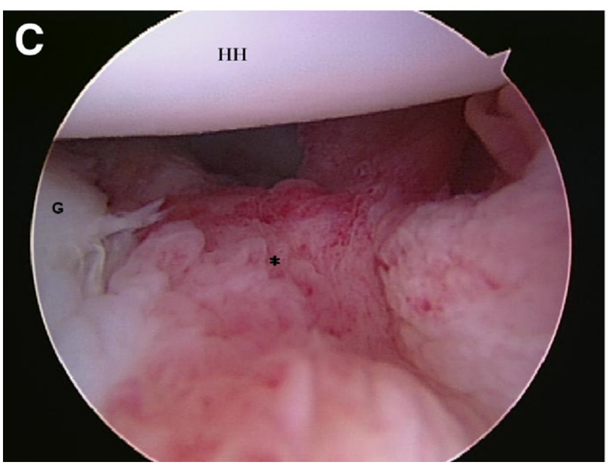
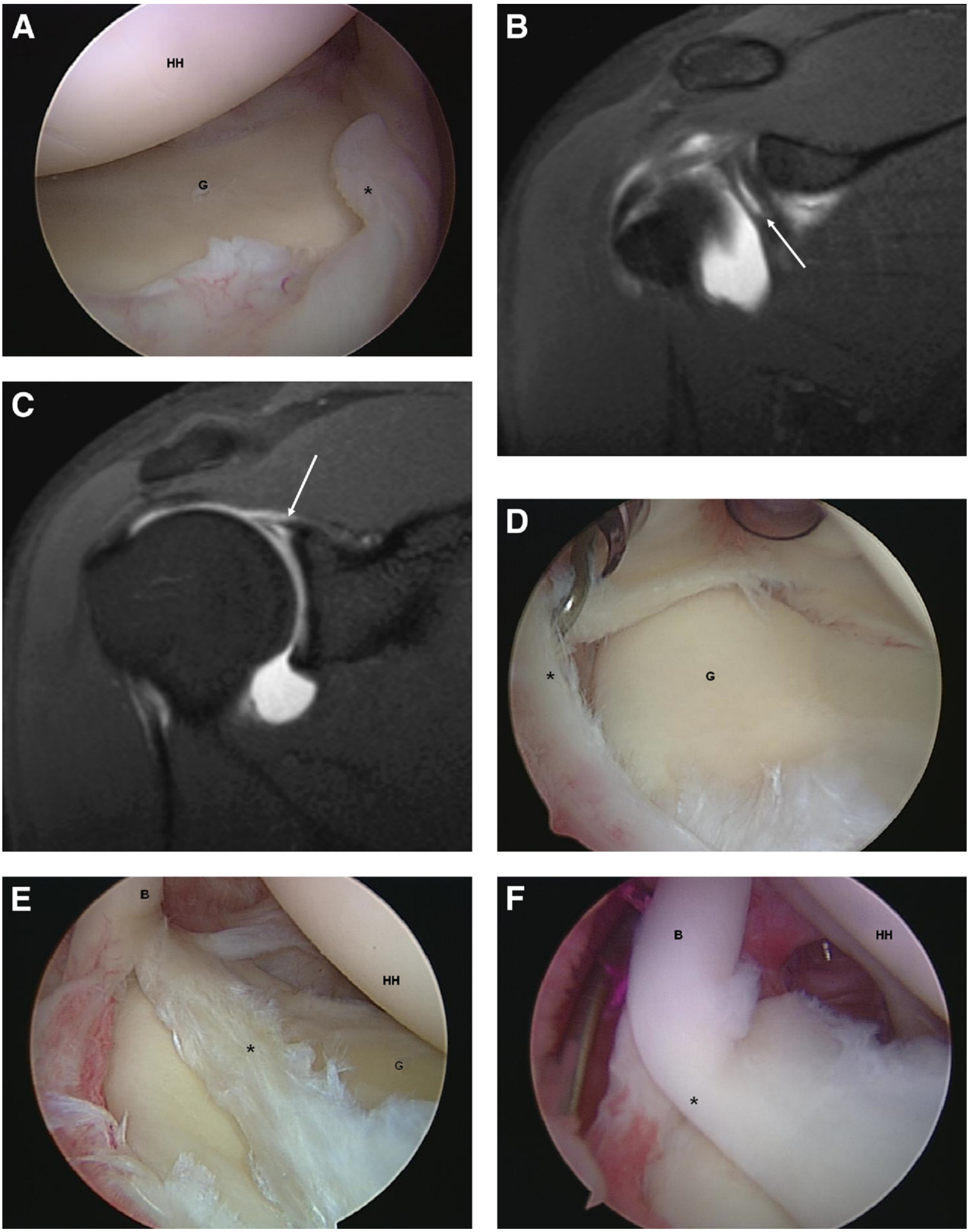


Figure 7. GLAD lesion. (A) Axial and (B) oblique coronal fat suppressed (FS) T1-weighted images of the shoulder with intra-articular gadolinium administration show a tear of the anteroinferior glenoid labrum. In addition, there is a prominent cartilage defect in the anteroinferior glenoid with contrast extending beneath the delaminated cartilage (arrows). (C) Arthroscopic image of the anterior inferior labral detachment as seen through a superolateral viewing portal (with the patient in the lateral decubitus position) (*detached labrum; HH, humeral head; G, area of glenoid with delaminated articular cartilage).

resonance imaging, because this is generally a soft-tissue pathology, although the ABHAGL may be seen radiographically because of the presence of the bony component.[23] Capsular detachment on the humerus can best be seen on both the axial and coronal oblique fat-suppressed T2 weighted images.[22,24] Magnetic resonance (MR) arthrogram enhances the specificity of the imaging studies because contrast extravasation is visualized in the region of the axillary pouch. The normal axillary pouch on the sagittal MR image demonstrates a U shape from contrast distending this space; with HAGL lesions,

Figure 8. SLAP lesion. (A) Arthroscopic image of type I SLAP (left shoulder) (HH, humeral head; G, glenoid; asterisk, frayed labrum). (B) An oblique coronal fat suppressed (FS) T1-weighted image of the shoulder with intra-articular gadolinium administration shows a type II SLAP tear extending into the substance of the anterior labrum (arrows). Note the orientation of the tear within the superior labrum: it extends away from the glenoid. (C) Fluid within a physiologic sublabral sulcus, by contrast, parallels the glenoid articular surface. (D) Arthroscopic image of type II SLAP (right shoulder) (G, glenoid; asterisk, area of superior labrum that has been detached from underlying glenoid as shown by probe). (E) Arthroscopic image of type III SLAP (right shoulder) (HH, humeral head; G, glenoid; B, long head biceps tendon; asterisk, torn superior labrum). (F) Arthroscopic image of type IV SLAP (right shoulder) (B, long head biceps tendon; HH, humeral head; asterisk, torn labrum). (All images are visualized through the posterior viewing portal, and the patient is in the lateral decubitus position.)


A
HH
G
*
B
C
D
*
G
E
B
HH
*
G
F
B
HH
*

this structure becomes J shaped because contrast is now able to outline the humeral side of the IGHL[21,22] (Fig 3C). In the acute setting, joint effusion, when present, can cause the same effect and simulate contrast. Plain radiography may demonstrate a thin curvilinear density, which represents a cortical bony fragment avulsed from the medial aspect of the humeral neck at the capsular insertion.[17,21-24] Scalloping may also be seen on an anteroposterior radiograph at the medial aspect of the humeral neck that represents the site at which this bony fragment originated.[17,21-24]

Arthroscopically, an anterior HAGL lesion can be identified when fibers of the subscapularis muscle are visualized through the avulsed inferior joint capsule (Fig 3B). This defect in the capsular reflection is located along the insertion of the IGHL into the humeral neck as previously described.

ALPSA: Another cause of traumatic shoulder instability is the ALPSA lesion (Fig 5). This pathology occurs when the anterior inferior glenohumeral ligament, labrum, and anterior scapular periosteum are stripped in a sleeve-type fashion (leaving the periosteum intact). These structures roll up and displace medially and inferiorly on the glenoid neck. This causes the labrum-ligament complex to scar down medially on the scapular neck, allowing excessive humeral translation and instability.[25] Neviaser,[26] in his case series of 26 patients, was the first author to provide insight into this important finding and recognize the importance of freeing up the structures that have been scarred down on the medial scapular neck, thereby converting the ALPSA into a Bankart lesion and restoring the incompetent IGHL. In contrast to the ALPSA lesion, with the traditional Bankart lesion, the anterior inferior labroligamentous (IGHL and labrum) structures avulse from the rim of the glenoid. With the Bankart lesion, the periosteum of the anterior scapula is ruptured, and the labral complex displaces anterior to the glenoid, creating a space between these structures and the anterior glenoid rim. Both the Bankart and ALPSA lesions are a result of anterior shoulder subluxation or dislocation that can lead to recurrent glenohumeral instability.[26] Perthes lesion is also a labroligamentous avulsion with intact medially stripped periosteum. A variant of this pathology was reported by Atay et al.[27] in which the anterior labroligamentous complex avulsed from the superior glenoid.

POLPSA: The posterior labrocapsular periosteal sleeve avulsion (POLPSA) lesion (Fig 6) was first described by Simons et al.[28] in a case report of a patient with a traumatic locked posterior shoulder dislocation. Similar to the ALPSA lesion, this injury pattern is characterized by avulsion of the posterior inferior glenohumeral ligament, labrum, and posterior periosteum. Displacement of the capsulolabral complex with intact periosteum creates a space between it and the underlying posterior glenoid with an intact posterior glenohumeral joint capsule.[28,29] This is in contrast to the reverse Bankart lesion, in which there is disruption of the posterior capsule associated with a posterior labral tear.[29]

GLAD: Glenolabral articular disruption (GLAD) (Fig 7) is a result of an adduction force when the arm is in an abducted and externally rotated position. Neviaser[30] first described the GLAD lesion in a case series of 5 patients who presented with anterior shoulder pain and no glenohumeral instability. This lesion involves the superficial anterior inferior labrum typically with an inferiorly based flap tear and no disruption to the deep fibers of the anterior band of the IGHL. In addition, there may be damage to the articular cartilage of the glenoid, which can range from fibrillation to cartilage loosening resulting in free floating fragments of hyaline cartilage and exposed subchondral bone. Essentially, the GLAD lesion represents a superficial labral tear with an articular cartilage attachment and no periosteal stripping.[30,31] The author recommends arthroscopic debridement of the labral and articular cartilage defects associated with these injuries.[30] The GLAD lesion occurs from impaction of the humeral head against the adjacent glenoid articular cartilage. Sanders et al.[32] examined patients with suspected GLAD lesion by MR arthrogram and found this imagining modality to be 100% specific for detection of this pathology. The characteristic MR arthrogram findings consist of contrast material filling a chondral defect or undermining a cartilaginous flap. Similarly, superficial labral tears are visualized with contrast material creating a gap between labrum and the articular surface with intact anterior periosteum allowing the labrum to remain partially attached to the glenoid fossa.[32] This lesion should be suspected in the patient with persistent shoulder pain, who has sustained the typical mechanism of injury, and who has a stable shoulder.

SLAP: SLAP was first described and classified by Snyder et al.[33] as an injury to the superior aspect of the glenoid labrum posteriorly, extending anteriorly, that stops at or above the midglenoid notch. They further stated that this area of the labrum is the insertion site for the long head of the biceps tendon and serves as the biceps “anchor.” The original classification described 4 types of SLAP injury patterns (Fig 8): type I, fraying of the superior labrum with no detachment from the glenoid; type II, labral–biceps anchor stripped off the glenoid and becoming unstable; type III, bucket-handle tear with the central portion displaced into the joint and the peripheral portion of the labrum remaining attached to the glenoid and biceps tendon; and type IV, bucket-handle tear extending into the biceps tendon.[33,34]

Several authors have subsequently expanded the classification of SLAP tears, most of which are variations of the 4 originally described injury configurations.[35-39] Maffet et al.[36] provided the description of an additional 3 types (V, VI, and VII) of SLAP tears, which are combined lesions: type V, a type II SLAP tear that extends anteroinferior and includes a Bankart-type labral tear; type VI, type II SLAP with an unstable labral flap tear; and type VII, type II SLAP that extends through the capsule beneath the MGHL. Powell et al.[39] expanded the classification further with their description of an additional 3 types (VIII, IX, and X): type VIII, type II SLAP that extends into the posterior labrum; type IX, type II SLAP that extends circumferentially around the glenoid resulting in complete labral disruption; and type X, type II SLAP combined with a posteroinferior labral tear.

GLEN: The GLEN lesion is a ganglion cyst arising from the superior labrum with entrapment of the inferior branch of the suprascapular nerve[40] (Fig 9). Entrapment of the inferior branch of the suprascapular nerve at the spinoglenoid notch as a result of a ganglion cyst typically results from a labral tear, most commonly a posterior type II SLAP tear. Nerve compression in this area results in shoulder pain and weakness in external rotation because of the pathology associated with the branch of the suprascapular nerve that innervates the infraspinatus muscle.

GLOM: Glenoid labrum ovoid mass (GLOM) consists of an oval-shaped structure located adjacent to the anterior glenoid. A variety of causes have been used to explain the occurrence of this radiographic finding, which include a torn labral fragment, loose body, prominent MGHL, or dislocated biceps tendon[41] (Fig 10).

Arthritis

PAGCL: Postarthroscopic glenohumeral chondrolysis (PAGCL) is a term used to describe symptomatic degenerative changes and chondrolysis in a young patient after shoulder arthroscopy. There have been several reports in the literature describing incidences of PAGCL that developed after use of arthroscopic radiofrequency thermal devices or an intra-articular pain pump.[42-46] This acronym was first coined by Hansen et al.[45] in a case series involving the use of a high-flow (4.16 mL/h) intra-articular pain pump that infused 0.25% bupivacaine with epinephrine into the glenohumeral joint. These patients presented with pain, decreased range of motion, and crepitation 3 to 5 months after surgery. Before that, Petty et al.[43] reported on 3 cases of PAGCL, 2 of which used radiofrequency energy during arthroscopy, but ultimately were unable to identify a definitive cause. Most recently, Bailie and Ellenbecker[46] reported on 23 cases of PAGCL after the use of an intra-articular pain pump and large doses of intra-articular bupivacaine. Despite these reports, the pathophysiology of PAGCL is poorly understood and is thought to be a multifactorial process related to radiofrequency devices, intra-articular pain pumps, and possibly hardware issues such as prominent anchors. There have been several recent basic science studies that have demonstrated the chondrotoxicity of bupivacaine.[47-51] Further studies need to be performed to prevent this devastating complication especially in young active patients, in whom there are few treatment options besides arthroplasty.

ACRONYMS FOR SURGICAL TECHNIQUES

TOTS

Temporary outside traction suture (TOTS) is an acronym coined by Boileau and Ahrens[52] to describe a surgical technique used for the treatment of shoulder instability. This procedure was designed to simplify proximal and medial capsular shift and anterior suture placement during arthroscopic anterior shoulder stabilization surgery. This technique involves placing a traction suture in the anteroinferior capsule (5-o'clock position) including the IGHL. By placing this stitch, the surgeon can then pull the anteroinferior capsule proximally, thereby allowing sutures to be placed inferior to this location, which is an anatomic location that is difficult to reach arthroscopically. The authors stated that the advantages of using this procedure are that there is no need for additional, specialized instrumentation; the traction suture aids in protecting soft tissues; it facilitates inferior suture placement; and there is improved control over the amount of capsular shift performed.

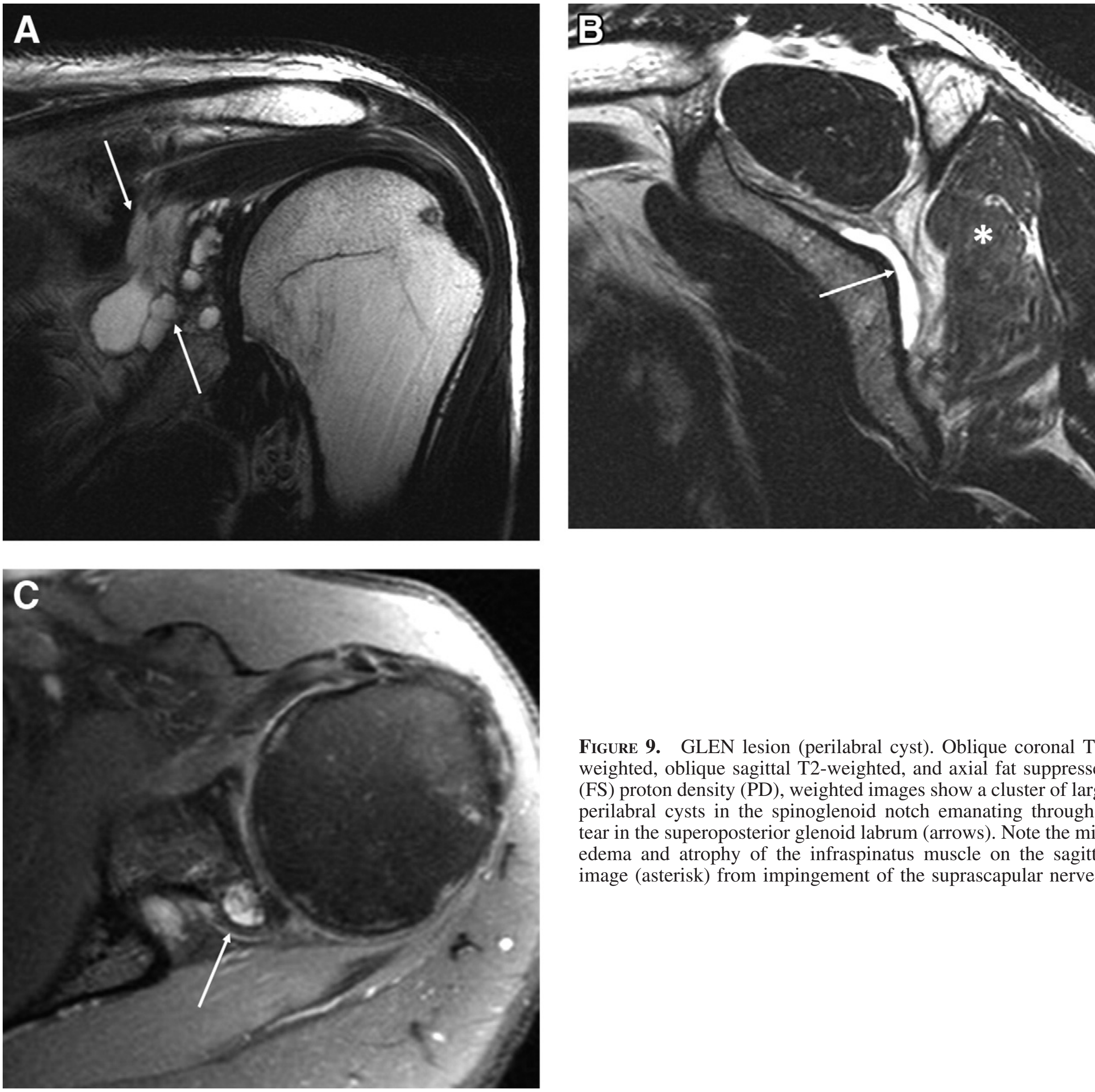


FIGURE 9. GLEN lesion (perilabral cyst). Oblique coronal T2-weighted, oblique sagittal T2-weighted, and axial fat suppressed (FS) proton density (PD), weighted images show a cluster of large perilabral cysts in the spinoglenoid notch emanating through a tear in the superoposterior glenoid labrum (arrows). Note the mild edema and atrophy of the infraspinatus muscle on the sagittal image (asterisk) from impingement of the suprascapular nerve.

PITT

Percutaneous intra-articular transtendon technique (PITT) is an arthroscopic procedure that allows percutaneous biceps tenodesis arthroscopically.[53] A spinal needle is placed percutaneously through the biceps tendon and transverse humeral ligament at the bicipital groove retrieved arthroscopically and then passed again, creating a horizontal mattress suture configuration. The biceps tendon is ultimately secured at the bicipital groove to the transverse humeral ligament.[53,54]

ACRONYMS FOR OUTCOME ASSESSMENT TOOLS

There are several acronyms for outcome instruments used to assess shoulder function. Although a detailed description of each instrument and its validation are beyond the scope of this article, it is important to be able to identify what each tool is.

DASH

The Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire is an outcomes tool for patients

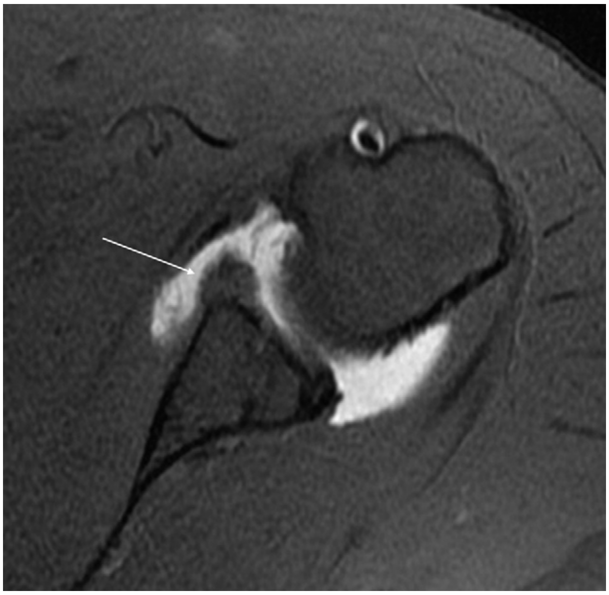


FIGURE 10. GLOM lesion. An axial fat suppressed (FS) T1-weighted image of the shoulder with intra-articular gadolinium administration shows a markedly abnormal appearance of the anteroinferior glenoid labrum (arrow). The labrum is rounded, globular, and mildly hyperintense, resembling an "ovoid mass." The findings represent an old labral tear.

with any conditions involving the upper extremity. The DASH was created by the American Academy of Orthopaedic Surgeons along with the Institute for Work and Health (Toronto, Ontario, Canada)[55-57]; it is a 30-item questionnaire that evaluates upper extremity–related functional status. Items inquire into patients' symptoms, physical function, social function, and psychological function. The DASH is scored on a scale from 0 (no disability) to 100.

SPADI

The Shoulder Pain and Disability Index (SPADI) was "developed to provide a self-administered instrument that would reflect the disability and pain associated with the clinical syndrome of painful shoulder."[57,58] This outcomes tool consists of 13 items divided into 2 subscales for pain (5 items) and disability (8 items). The SPADI is scored out of 100, again with 0 being asymptomatic and 100 being the worst possible score.

WOSI

The Western Ontario Shoulder Instability Index (WOSI)[59] was developed to evaluate the outcome of patients with shoulder instability. The WOSI is a 21-item questionnaire that inquires about a patient's physical symptoms, sports/recreational/work function, lifestyle function, and emotional function.

WOOS

The Western Ontario Osteoarthritis of the Shoulder Index (WOOS)[60] was developed to assess the outcome of patients with symptomatic shoulder arthritis. It consists of 19 items relating to physical symptoms, sports/recreation/work function, lifestyle, and emotional function.

WORC

The Western Ontario Rotator Cuff Index (WORC)[61] was developed to assess outcomes of patients with rotator cuff pathology, consisting of 21 questions related to physical symptoms, sports/recreation, work function, lifestyle, and emotional function.

Each of these outcomes measures (WOSI, WOOS, and WORC) is given a raw score that is then converted to a percentage, with 100% (raw score, 0) indicating no limitation and being the best possible score and 0% indicating extreme dysfunction of the shoulder as well as quality of life.

RC-QOL

The Rotator Cuff Quality-of-Life Measure (RC-QOL)[62] was developed to be used as an outcomes tool to further evaluate rotator cuff disease. The RC-QOL consists of 34 items relating to the following areas: symptoms and physical complaints, sports/recreation, work-related concerns, lifestyle, and social/emotional issues. This instrument is also scored out of 100, with 0 being the worst function and 100 the best.

WUSPI

The Wheelchair User's Shoulder Pain Index (WUSPI)[63] score is a 15-question self-reported outcome measure. This questionnaire assesses shoulder pain during transfers, activities of daily living, and mobility from a wheelchair. Scores range from 0 to 150, with 0 being the best score with no pain.

CONCLUSIONS

The advent of shoulder arthroscopy has allowed the visualization and description of numerous unrecognized pathologies that were missed with open surgical techniques. Naturally, with new terminology comes confusion and attempts at simplifying nomenclature with the use of acronyms. The shoulder, which has its own inherent complexities, seems to be the focus of this alphabet soup, specifically lesions related to glenohumeral instability. These acronyms are often helpful in allowing a more concise way for shoulder surgeons to communicate their findings more effectively. Although the literature has provided a dizzying array of acronyms, there have been no attempts at organizing this terminology. We hope that this article provides a 1-stop resource that helps in sorting out this often-overwhelming topic, especially for the younger shoulder surgeon who may have not recognized all of these pathologic conditions.

REFERENCES

1. Goss T. Double disruption of the superior shoulder suspensory complex. *J Orthop Trauma* 1993;7:99-106.
2. De Franco M, Patterson B. The floating shoulder. *J Am Acad Orthop Surg* 2006;14:499-509.
3. Goss T. Scapular fractures and dislocations: Diagnosis and treatment. *J Am Acad Orthop Surg* 1995;3:22-33.
4. van Noort A, van der Werken C. The floating shoulder. *Injury* 2006;37:218-227.
5. Braun S, Kokmeyer D, Millett P. Shoulder injuries in the throwing athlete. *J Bone Joint Surg Am* 2009;91:966-978.
6. Lintner D, Mayol M, Uzodinma O, Jones R, Labossiere D. Glenohumeral internal rotation deficits in professional pitchers enrolled in an internal rotation stretching program. *Am J Sports Med* 2007;35:617-621.
7. Burkhart S, Morgan C, Kibler W. The disabled throwing shoulder: Spectrum of pathology. Part I: Pathoanatomy and biomechanics. *Arthroscopy* 2003;19:404-420.
8. Burkhart S, Morgan C, Kebler W. The disabled throwing shoulder: Spectrum of pathology. Part III: The SICK scapula, scapular dyskinesis, the kinetic chain, and rehabilitation. *Arthroscopy* 2003;19:641-661.
9. Millstein E, Snyder S. Arthroscopic management of partial, full-thickness, and complex rotator cuff tears: Indications, techniques, and complications. *Arthroscopy* 2003;19:189-199.
10. Castagna A, Delle Rose G, Conti M, Snyder S, Borroni M, Garofalo R. Predictive factors of subtle residual shoulder symptoms after transtendinous arthroscopic cuff repair. *Am J Sports Med* 2009;37:103-108.
11. Snyder S. Arthroscopic repair of partial articular supraspinatus tendon avulsions: PASTA lesions of the rotator cuff tendon. Ed 2. Philadelphia: Lippincott, Williams and Wilkins; 2003.
12. Bhatia D, de Beer J, van Rooyen K. The bony partial articular surface tendon avulsion lesion: An arthroscopic technique for fixation of the partially avulsed greater tuberosity fracture. *Arthroscopy* 2007;23:786.e1-786.e6.
13. Tokish JM, Ponce BA. Management of partial-thickness rotator cuff tears. *Oper Tech Sports Med* 2005;13:206-211.
14. Conway J. Arthroscopic repair of partial thickness rotator cuff tears and SLAP lesions in professional baseball players. *Orthop Clin North Am* 2001;32:443-456.
15. Thomas SC, Matsen FA III. An approach to the repair of avulsion of the glenohumeral ligaments in the management of traumatic anterior glenohumeral instability. *J Bone Joint Surg Am* 1989;71:506-513.
16. Page R, Bhatia D. Arthroscopic repair of humeral avulsion of glenohumeral ligament lesion. *Tech Hand Upper Extremity Surg* 2009;13:98-103.
17. Bui-Mansfield L, Banks K, Taylor D. Humeral avulsion of the glenohumeral ligaments: The HAGL lesion. *Am J Sports Med* 2007;35:1960-1966.
18. Nicola T. Anterior dislocation of the shoulder: The role of the articular capsule. *J Bone Joint Surg* 1942;24:614-616.
19. Tirman P, Steinbach L, Feller J, Stauffer A. Humeral avulsion of the anterior shoulder stabilizing structures after anterior shoulder dislocation: Demonstration by MRI and MR arthrography. *Skeletal Radiol* 1996;25:743-748.
20. Wolf E, Cheng J, Dickson K. Humeral avulsion of glenohumeral ligaments as a cause of anterior shoulder instability. *Arthroscopy* 1995;11:600-607.
21. Parameswaran A, Provencher M, Bach B, Verma N, Romeo A. Humeral avulsion of the glenohumeral ligament: Injury pattern and arthroscopic repair techniques. *Orthopedics* 2008;31:773-779.
22. Bui-Mansfield L, Talyor D, Uhorchak J, Tenuta J. Humeral avulsions of the glenohumeral ligament: Imaging features and a review of the literature. *AJR Am J Roentgenol* 2002;179:649-655.
23. Oberlander MA, Morgan BE, Visotsky JL. The BHAGL lesion: A new variant of anterior shoulder instability. *Arthroscopy* 1996;12:627-633.
24. Melvin J, MacKenzie J, Nacke E, Sennett B, Wells L. MRI of HAGL lesions: Four arthroscopically confirmed cases of false-positive diagnosis. *AJR Am J Roentgenol* 2008;191:730-734.
25. Gartsman G, Roddey T, Hammerman S. Arthroscopic treatment of anterior-inferior glenohumeral instability two to five-year follow-up. *J Bone Joint Surg Am* 2000;82:991-1003.
26. Neviaser TJ. The anterior labroligamentous periosteal sleeve avulsion lesion: A cause of anterior instability of the shoulder. *Arthroscopy* 1993;9:17-21.
27. Atay O, Aydingoz U, Doral M, Leblebicioglu G. Anterior labroligamentous periosteal sleeve avulsion lesion at the superior glenoid labrum. *Knee Surg Sports Traumatol Arthrosc* 2002;10:122-125.
28. Simons P, Joekes E, Nelissen R, Bloem J. Posterior labrocapsular periosteal sleeve avulsion complicating locked posterior shoulder dislocation. *Skeletal Radiol* 1998;27:588-590.
29. Yu J, Ashman C, Jones G. The POLPSA lesion: MR imaging findings with arthroscopic correlation in patients with posterior instability. *Skeletal Radiol* 2002;31:396-399.
30. Neviaser TJ. The GLAD lesion: Another cause of anterior shoulder pain. *Arthroscopy* 1993;9:22-23.
31. Waldt S, Burkart A, Imhoff A, Bruegel M, Rummeny E, Woertler K. Anterior shoulder instability: Accuracy of MR arthrography in the classification of anteroinferior labroligamentous injuries. *Radiology* 2005;237:578-583.
32. Sanders T, Tirman P, Feller F, Richardson R. The glenolabral articular disruption lesion: MR arthrography with arthroscopic correlation. *AJR Am J Roentgenol* 1999;172:171-175.
33. Snyder S, Karzel R, Del Pizzo W, Ferkel R, Friedman M. SLAP lesions of the shoulder. *Arthroscopy* 1990;6:274-279.
34. Nam E, Snyder S. The diagnosis and treatment of superior labrum, anterior and posterior (SLAP) lesions. *Am J Sports Med* 2003;31:798-810.
35. Choi N, Kim S. Avulsion of the superior labrum. *Arthroscopy* 2004;20:872-874.
36. Maffet M, Gartsman G, Moseley B. Superior labrum-biceps tendon complex lesions of the shoulder. *Am J Sports Med* 1995;23:93-98.
37. Bedi A, Allen A. Superior labral lesions anterior to posterior: Evaluation and arthroscopic management. *Clin Sports Med* 2008;27:607-630.
38. Morgan C, Burkhart S, Palmeri M. Type II SLAP lesions: Three subtypes and their relationship to superior instability and rotator cuff tears. *Arthroscopy* 1998;14:553-565.
39. Powell S, Nord K, Ryu R. The diagnosis, classification, and treatment of SLAP lesions. *Oper Tech Sports Med* 2004;12:99-110.

40. Muller M, Murrell G. Clinical diagnosis of a superior glenoid labrum cyst with suprascapular nerve entrapment (GLEN) lesion. *Tech Shoulder Elbow Surg* 2005;6:150-154.
41. Rowan KR, Keogh C, Andrews G, Cheong Y, Forster BB. Essentials of shoulder MR arthrography: A practical guide for the general radiologist. *Clin Radiol* 2004;59:327-334.
42. McNickle A, L'Heureux D, Provencher M, Romeo A, Cole B. Postsurgical glenohumeral arthritis in young adults. *Am J Sports Med* 2009;37:1784-1791.
43. Petty D, Jazrawi L, Estrada L, Andrews J. Glenohumeral chondrolysis after shoulder arthroscopy. *Am J Sports Med* 2004;32:509-515.
44. Busfield B, Romero D. Pain pump use after shoulder arthroscopy as a cause of glenohumeral chondrolysis. *Arthroscopy* 2009;25:647-652.
45. Hansen B, Beck C, Townsley R. Postarthroscopic glenohumeral chondrolysis. *Am J Sports Med* 2007;35:1628-1634.
46. Bailie D, Ellenbecker T. Severe chondrolysis after shoulder arthroscopy: A case series. *J Shoulder Elbow Surg* 2009;18: 742-747.
47. Gomoll A, Yanke A, Kang R, et al. Long-term effects of bupivacaine on cartilage in a rabbit shoulder model. *Am J Sports Med* 2009;37:72-77.
48. Gomoll A, Kang R, Williams J, Bach B, Cole B. Chondrolysis after continuous intra-articular bupivacaine infusion: An experimental model investigating chondrotoxicity in the rabbit shoulder. *Arthroscopy* 2006;22:813-819.
49. Chu C, Izzo N, Papas N, Fu F. In vitro exposure to 0.5% bupivacaine is cytotoxic to bovine articular chondrocytes. *Arthroscopy* 2006;22:693-699.
50. Piper S, Kim H. Comparison of ropivacaine and bupivacaine toxicity in human articular chondrocytes. *J Bone Joint Surg Am* 2008;90:986-991.
51. Dragoo J, Korotkova T, Kanwar R, Wood B. Effect of local anesthetics delivered via peri-operative pain pumps on chondrocyte viability. *Am J Sports Med* 2008;36:1484-1488.
52. Boileau P, Ahrens P. The TOTS (temporary outside traction suture): A new technique to allow easy suture placement and improve capsular shift in arthroscopic Bankart repair. *Arthroscopy* 2003;19:672-677.
53. Elkousy H, Fluhme D, Rodosky M. A new technique for arthroscopic biceps tenodesis: The percutaneous intra-articular trans tendon (P.I.T.T.) technique. *Arthroscopy* 2003;19 (Suppl 1):17.
54. Sekiya J, Elkousy H, Rodosky M. Arthroscopic biceps tenodesis using the percutaneous intra-articular transtendon technique. *Arthroscopy* 2003;19:1137-1141.
55. Hudak P, Amadio P, Bombardier C. Development of an upper extremity outcome measure: The DASH (Disabilities of the Arm, Shoulder, and Hand) [corrected]. The Upper Extremity Collaborative Group (UECG). *Am J Ind Med* 1996;29:602-608.
56. Gummesson C, Atroshi I, Ekdahl C. The disabilities of the arm, shoulder and hand (DASH) outcome questionnaire: Longitudinal construct validity and measuring self-rated health change after surgery. *BMC Musculoskelet Disord* 2003:4-11.
57. Kirkley A, Griffin S, Dainty K. Scoring Systems for the Functional Assessment of the Shoulder. *Arthroscopy* 2003;19:1109-1120.
58. Roach K, Budiman-Mak E, Songsridej N, Lertratanakui Y. Development of a shoulder pain and disability index. *Arthritis Care Res* 1991;4:143-149.
59. Kirkley A, Griffin S, McLintock H, Ng L. The development and evaluation of a disease-specific quality of life measurement tool for shoulder instability: The Western Ontario Shoulder Instability Index (WOSI). *Am J Sports Med* 1998;26:764-772.
60. Lo I, Griffin S, Kirkley A. The development and evaluation of a disease-specific quality of life measurement tool for osteoarthritis of the shoulder: The Western Ontario Osteoarthritis of the Shoulder Index (WOOS). *Arthritis Cartilage* 2001;9:771-778.
61. Kirkley A, Griffin S, Alvarez C. The development and evaluation of a disease-specific quality of life measurement tool for rotator cuff disease: The Western Ontario Rotator Cuff Index (WORC). *Clin J Sport Med* 2003;13:84-92.
62. Hollinshead R, Mohtadi N, Vande Guchte R, Wadely V. Two 6-year follow-up studies of large and massive rotator cuff tears: Comparison of outcome measures. *J Shoulder Elbow Surg* 2000;9:373-381.
63. Curtis K, Roach K, Applegate E, et al. Development of the Wheelchair User's Shoulder Pain Index (WUSPI). *Paraplegia* 1995;33:290-293.