Citation Classics

Anterior Shoulder Instability

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Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

BACKGROUND

- High prevalence of glenoid rim lesions in patients with anterior instability
- At the time:
  - Recognized that loss of glenoid bone yields poor outcomes after arthroscopic stabilization without graft
  - No quantitative method to describe these lesions
  - Described prevalence of glenoid lesions ranged from <10% to >70%

PURPOSE: introduce a simple and practical method to evaluate the antero-inferior morphology of the glenoid rim

Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

METHODS

- Consecutive series of 100 shoulders with recurrent anterior glenohumeral instability (mean age of 24.3 years, 66% male)
- All patients underwent preoperative humeral head subtraction CT scan
  - Patients without an obvious bony fragment on affected shoulder underwent a CT scan on the contralateral shoulder for comparison
  - Additional comparison group of ten “healthy” volunteers with no history of glenohumeral instability
- Exclusion criteria: bilateral pathology

Glenoid rim morphology in recurrent anterior glenohumeral instability

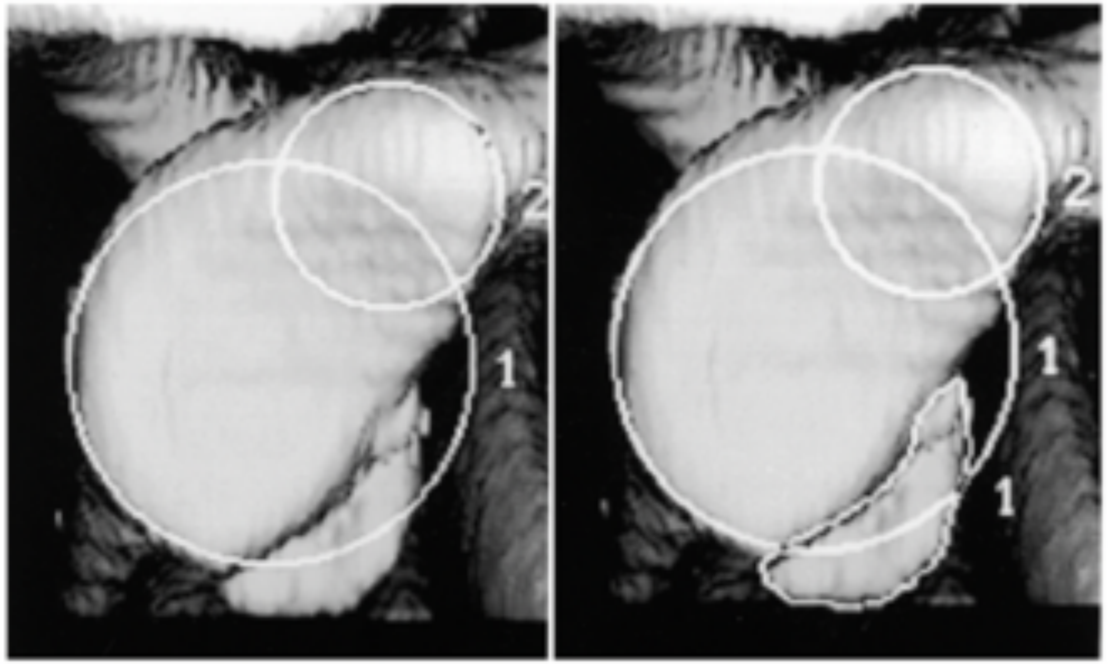
A Case-Control Study, JBJS, 2003, Sugaya et al.

METHODS

- Defect graded as large (>20%), medium (5 – 20%) or small (<5%) based on a ratio of the bone fragment to a circle drawn from the inferior glenoid contour

Fig. 2

The size of the defect is calculated as the percentage of the glenoid fossa on the en face view, with the equation: $b/A \times 100\%$, where A = the area of the outer fitting circle (1) based on the inferior part of the glenoid contour from 3 o'clock to 9 o'clock and b = the area of the displayed osseous fragment. The radiologist creates an outer fitting circle on the basis of the remaining glenoid contour and traces the osseous fragment manually. Then the calculation is done automatically by software attached to the computed tomography scan system.

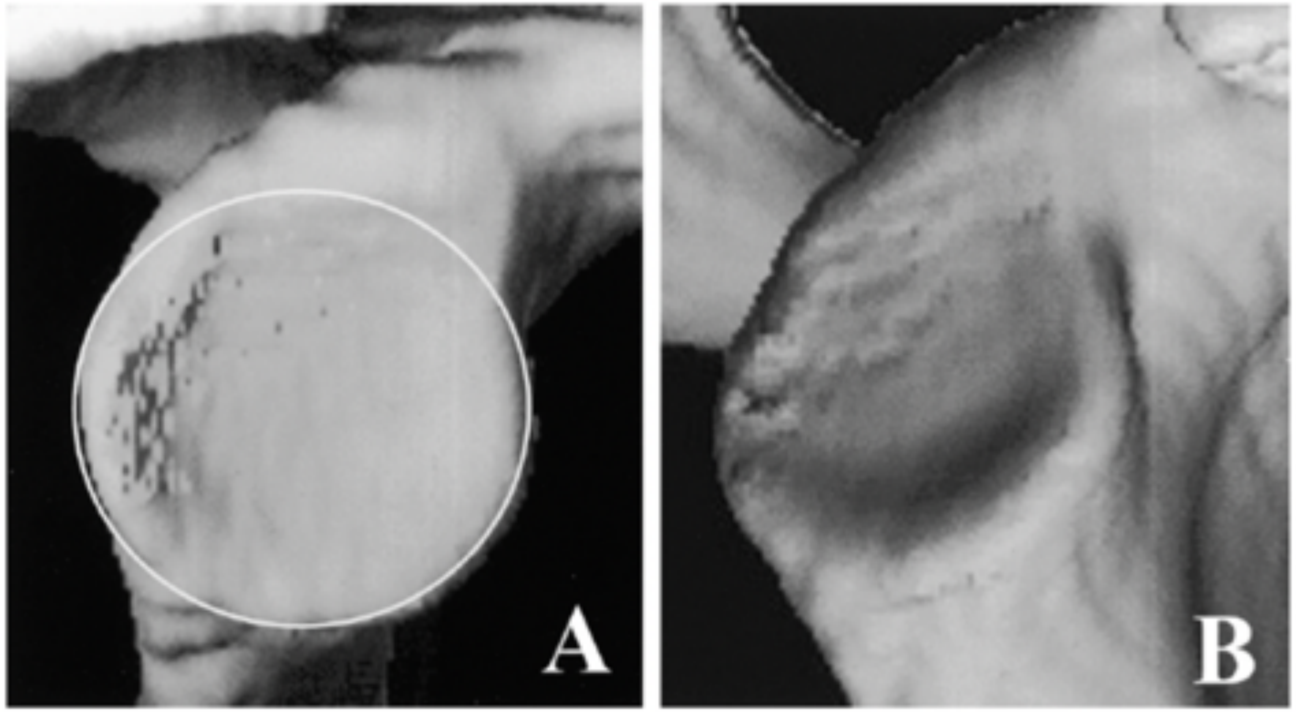


Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

RESULTS

- Healthy patients: no appreciable difference in glenoid morphology between sides



Glenoid rim morphology in recurrent anterior glenohumeral instability

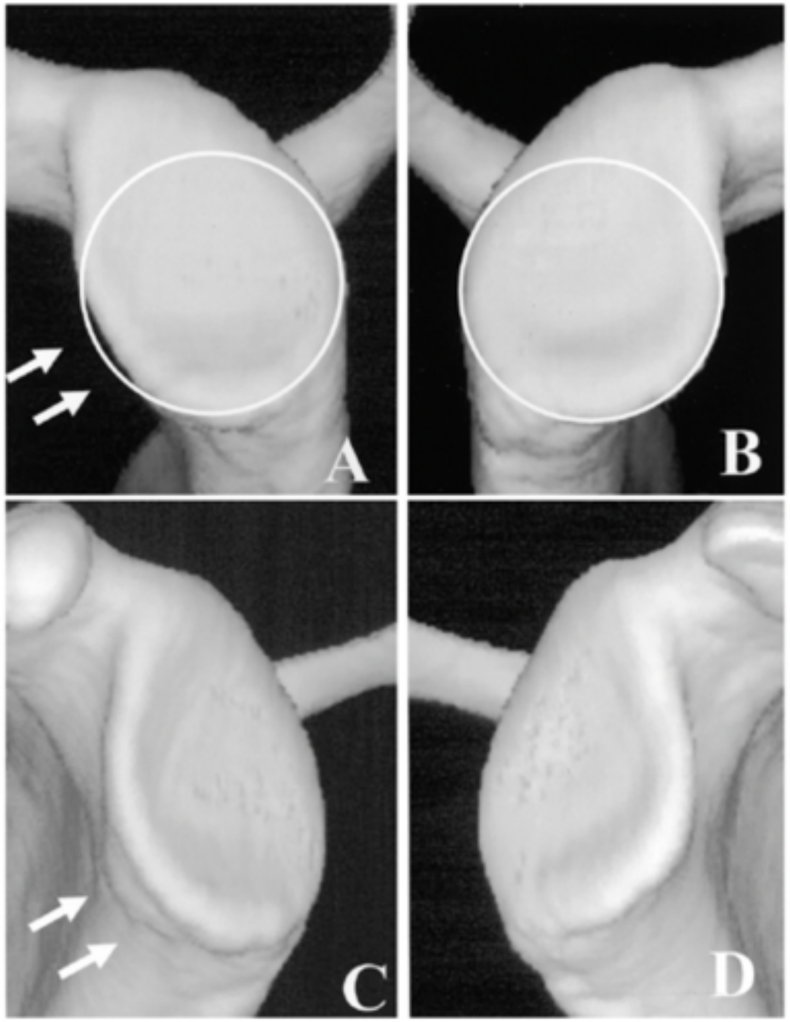
A Case-Control Study, JBJS, 2003, Sugaya et al.

RESULTS

- Only 10% of affected patients had a normal glenoid
- On average, 7.7% of fossa affected
  - Large: 26.9%
  - Medium: 10.6%
  - Small: 2.9%

TABLE I Morphology of the Glenoid Rim in One Hundred Shoulders with Recurrent Anterior Glenohumeral Instability

Morphology of Glenoid Rim	Prevalence
Bone fragment	50%
Large fragment (>20%)	1%
Medium fragment (5%-20%)	27%
Small fragment (<5%)	22%
Erosion or compression fracture	40%
Normal	10%



Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

RESULTS

- Bankart lesion found in 97/100 shoulders
- Osseous fragment found in 45/50 shoulders that were classified as having a fragment by CT scan
- The 5 fragments which could not be found were classified as small

Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

CONCLUSIONS

- Glenoid rim lesions are incredibly common following anterior glenohumeral instability
  - Bony Bankart in 50%
  - Glenoid compression in 40%
- Quantitative calculation of defect size is a reproducible method by which to classify glenoid osseous defects and/or fragments
- Standardizing glenoid morphology can guide surgical decision-making

Glenoid rim morphology in recurrent anterior glenohumeral instability

A Case-Control Study, JBJS, 2003, Sugaya et al.

WHAT MAKES THIS SPECIAL

- One of the earliest papers to quantify the prevalence and degree of glenoid osseous injury following anterior glenohumeral instability
- Further understanding of these morphological changes will drive treatment for the next 20 years through to the present

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

BACKGROUND

- Concerningly high rate of failure after arthroscopic stabilization procedures when compared to open procedures
  - Early results by Boileau et al. demonstrated a 49% recurrence rate following arthroscopic stabilization with transglenoid sutures
  - Later results by Wolf et al. demonstrated improved failure rates following arthroscopic stabilization with suture anchors
- Indications for arthroscopic versus open remained poorly defined

PURPOSE: report outcomes following arthroscopic anterior stabilization using suture anchors and identify risk factors for recurrence

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

METHODS

- Consecutive series of 100 patients with 91% follow-up
- Mean age = 21.5, 78% male, average number of instability events = 7
- 87% involved in sports, 44% in contact and/or throwing sports

Inclusion	Exclusion
• Presence of traumatic, recurrent anterior instability • Labral repair performed with suture anchors • Surgery performed by PB or under his supervision • Minimum two years clinical follow-up	• Stabilization for first-time dislocation • Revision stabilization procedures • Patient preference for open procedure • Other types of instability

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

METHODS

- **Clinical exam**: determined shoulder laxity (anterior n = 9, inferior n = 26)
- **Imaging**: preoperative radiographs and either CT or MRI to assess bone loss
- **Arthroscopic exam**:
  - **Glenoid**: 49% of patients had osseous lesions on diagnostic arthroscopy, did not quantify size
  - “Glenoid bone defect” if >25% of anterior rim was absent
  - Bankart lesion in 90% of patients, BCD most common
  - **Humeral**: Hill-Sachs lesions in 84% of patients

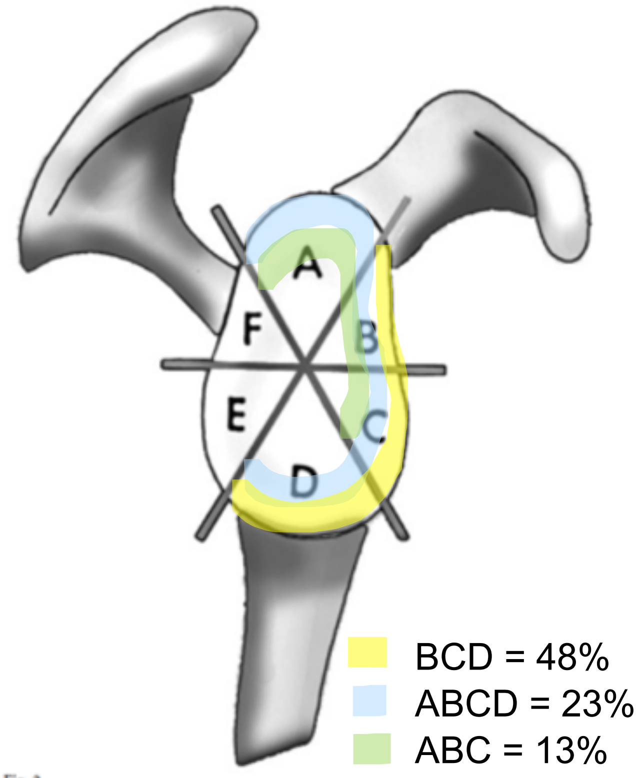


Fig. 2
Labral detachment from the glenoid rim was divided into six zones (A, B, C, D, E, and F).

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

METHODS

- 3 – 4 holes drilled at five, four, three, and two or one o'clock
- Emphasis on placing anchors at articular margin to recreate glenoid concavity

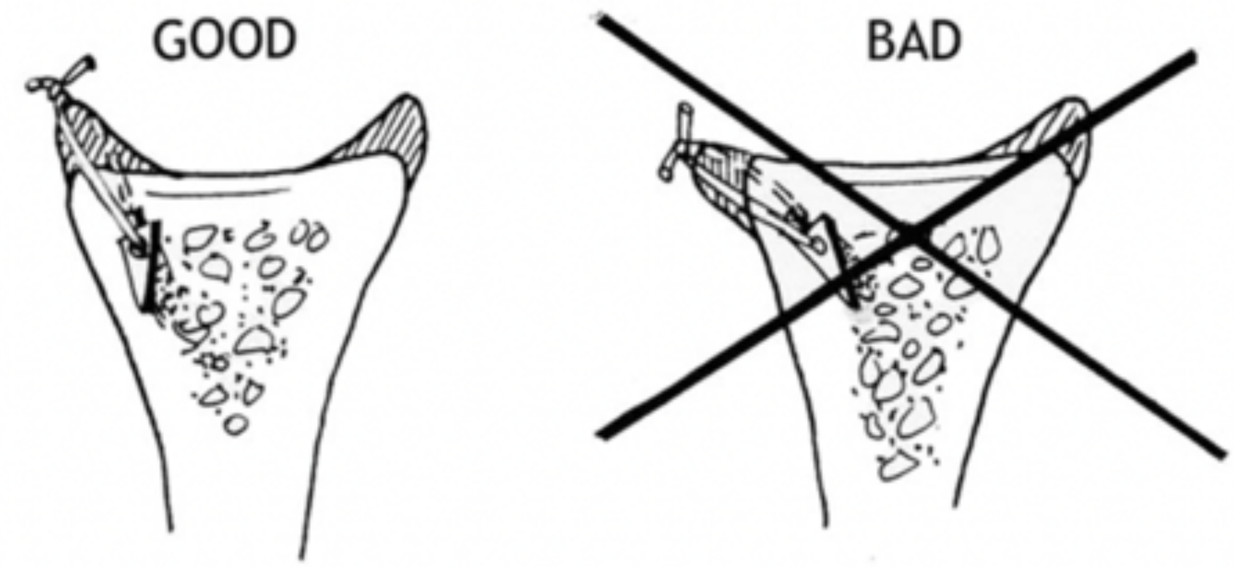


Fig. 4-B

Drawings demonstrating the optimal placement of anchors on the glenoid rim to recreate normal articular concavity.

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

RESULTS

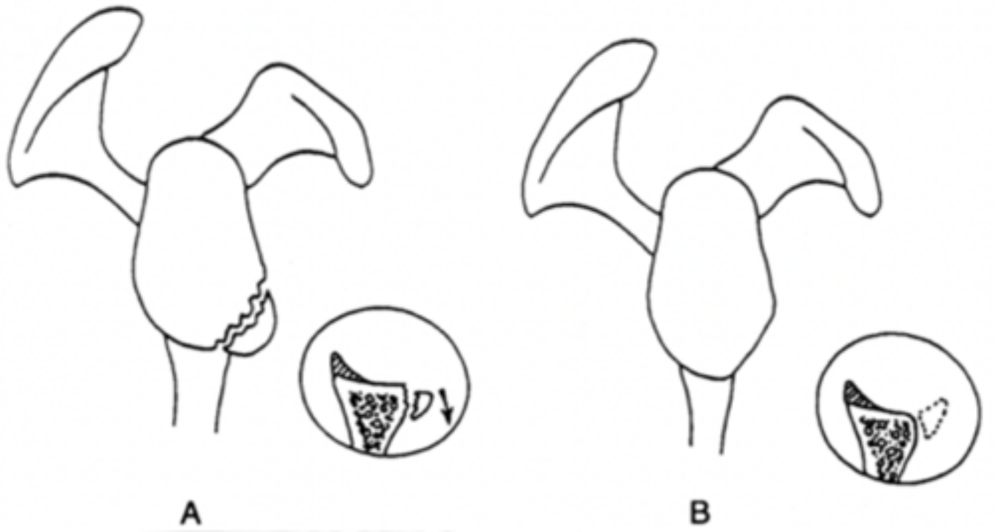
- **Stability**
  - True recurrence in 15% (n = 14/91) of patients at an average of 17.6 months from date-of-surgery
    - 7 reported new traumatic event
    - 9 underwent successful Latarjet, 5 refused further surgery
  - 9.8% of patients had persistent apprehension in throwing position
- **Function**: 75% return to sport at previous level, 17% at lower level, 8% stopped sports
- **Satisfaction**: 58% very satisfied, 19% satisfied, 12% disappointed and 11% dissatisfied

Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

RESULTS

- **Risk factors** for recurrence
  - Glenoid bone loss > 25% of surface
    - Not glenoid rim avulsion fractures (A)
  - Large Hill-Sachs lesion
  - Attenuated inferior glenohumeral ligament
  - Anterior hyperlaxity
  - Three anchors or fewer
- **Multivariate**: attenuated IGHL, anterior hyperlaxity or a glenoid compression fracture involving >25% (B) of the glenoid fossa → 75% recurrence rate

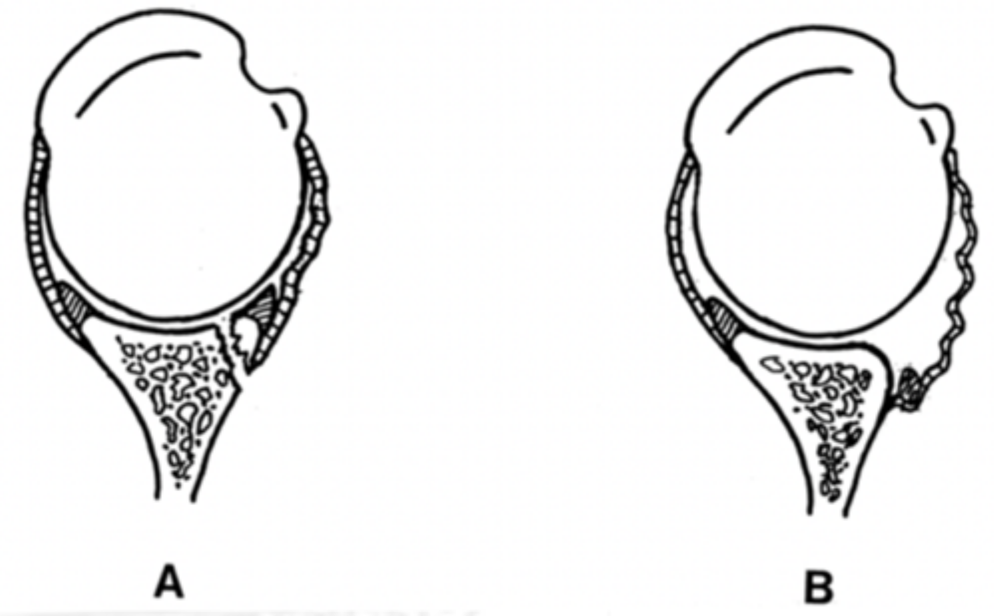


Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

CONCLUSIONS

- Patients with glenoid or humeral bone defects are at a high risk for failure
- Hyperlaxity + glenoid bone loss (B) = especially bad news for arthroscopic stabilization
- Use at least four suture anchors
- The Latarjet is an excellent revision stabilization procedure



Risk factors for recurrence of shoulder instability after arthroscopic Bankart repair

A Therapeutic Case Series, JBJS, 2006, Boileau et al.

WHAT MAKES THIS SPECIAL

- A seminal article on why arthroscopic stabilization procedures failed
  - Anterior glenoid bone loss
  - A large Hill-Sachs (more soon)
  - Soft tissue laxity
  - Under four anchors
- Encouraged authors to continue arthroscopic treatment of anterior instability with improved methods for identifying appropriate candidates

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

BACKGROUND

- Boileau et al. identified risk factors for failure following arthroscopic stabilization procedures
- Even with improvements in anchor technology and technique, recurrence rate varied between 5% and 20% (15% for author)
- Multiple other risk factors identified (age, certain sports, presence of bony defect, bilateral defect) but exact thresholds not necessarily specified

PURPOSE: synthesize pre-operative risk factors into an instability severity score to grade the risk of recurrence and guide the surgeon in formulating the ideal surgical approach (open or arthroscopic)

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

METHODS

- Case-control comparing patients with successful versus failed arthroscopic stabilization

Inclusion	Exclusion
• Recurrent anterior instability with or without hyperlaxity • Arthroscopic Bankart repair • Minimum of 24 months follow-up	• Rotator cuff lesion • Stabilization for first-time dislocation • Revision stabilization procedures • Multidirectional instability or instability without dislocation/subluxation • Patient preference for open procedure

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

METHODS

Table I. Pre-operative patient demographics

Population description	Number (%)
Gender	
Male	103 (*78.6*)
Female	28 (*21.4*)
Affected side	
Right	73 (*55.7*)
Left	58 (*44.3*)
Dominance	
Dominant	82 (*62.6*)
Non-dominant	49 (*37.4*)
Mean age in years (range)	27.3 (14 to 62)
Type of instability	
Dislocation	34 (*26.0*)
Subluxation	48 (*36.6*)
Both	49 (*37.4*)
Mean number of episodes (range)	
Total	*17.9* (*2* to *200*)
Dislocation	*2.6* (*0* to *40*)
Subluxation	*15.2* (*0* to *20*)
Traumatic first event	
Traumatic	110 (*84.0*)
Atraumatic (minor trauma)	21 (*16.0*)
Bilateral instability	
Unilateral	110 (*84.0*)
Bilateral	21 (*16.0*)
Level of sport practised	
Competitive	30 (*22.9*)
Recreation	86 (*65.6*)
None	15 (*11.5*)
Type of sport	
None	15 (*11.5*)
No risk	16 (*12.2*)
Contact	32 (*24.4*)
Overhead	20 (*15.3*)
Forced overhead	48 (*36.6*)
Shoulder hyperlaxity	
None	41 (*31.3*)
Anterior	20 (*15.3*)
Inferior	55 (*41.9*)
Both	15 (*11.5*)
Hill-Sachs on AP* radiograph	
None	21 (*16.0*)
In internal rotation	110 (*84.0*)
In neutral rotation	67 (*51.1*)
In external rotation	32 (*24.4*)
Glenoid lesion on AP radiograph	
None	86 (*65.6*)
Loss of inferior contour	19 (*14.5*)
Fracture	26 (*19.9*)
Osteoarthritis on AP radiograph[30]	
None	120 (*91.6*)
Samilson 1	9 (*6.9*)
Samilson 2	2 (*1.5*)
Samilson 3	0 (*0*)

* AP, anteroposterior

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

METHODS

Table II. Intra-operative findings

Findings*	Number (%)
Anterior translation (with air)	
25% to 50%	1 (*0.8*)
50% to 75%	16 (*12.2*)
75% to 100%	81 (*61.8*)
More than 100%	33 (*25.9*)
Inferior translation (with air)	
25% to 50%	45 (*34.4*)
50% to 75%	47 (*35.9*)
75% to 100%	34 (*25.9*)
More than 100%	5 (*3.8*)
Hill-Sachs fracture	
None	21 (*16.0*)
Small	50 (*38.2*)
Medium	14 (*10.7*)
Large	46 (*35.1*)
Glenoid fracture	
None	84 (*64.1*)
Small	42 (*32.1*)
Medium	2 (*1.5*)
Large	3 (*2.3*)
Appearance of IGHL	
Normal	36 (*27.5*)
Stretched	71 (*54.2*)
Torn	24 (*18.3*)
Quality of anteroinferior capsule	
Detrisac 1	9 (*6.9*)
Detrisac 2	68 (*51.9*)
Detrisac 3	44 (*33.6*)
Detrisac 4	10 (*7.6*)
SLAP lesion	
None	85 (*64.8*)
Type 1	0 (*0*)
Type 2	41 (*31.3*)
Type 3	4 (*3.1*)
Type 4	1 (*0.8*)
Mean number of anchors (range)	4.37 (*2* to *8*)

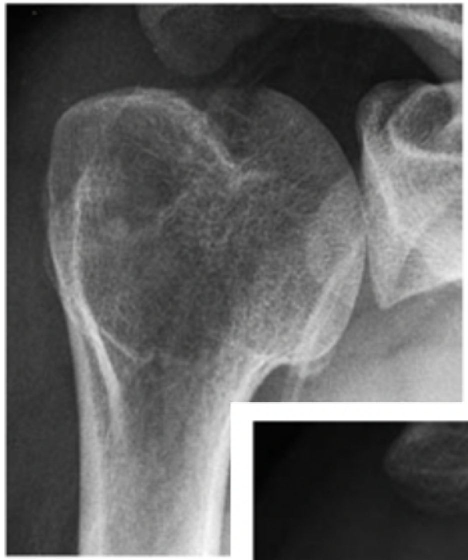
* IGHL, interior glenohumeral ligament; SLAP, superior labrum anterior to posterior

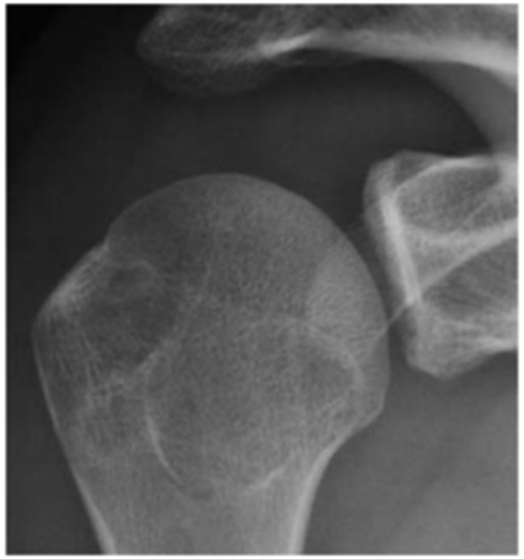
The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

RESULTS

- 131 patients (mean follow-up 31.2 months)
- Overall recurrence rate was 14.5% (mean 16.7 months)
- Six patient-centric risk factors identified:
    1) Patient age less than 20 at time of surgery
    2) Contact or forced overhead sport participation
    3) Competitive level of play
    4) Shoulder hyperlaxity
    5) Superior Hill-Sachs lesion visualized in external rotation
    6) Loss of inferior glenoid contour on AP radiograph





The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

RESULTS

- These six risk factors were incorporated into instability severity index score (ISIS) and this score was applied retrospectively to the same population
- Score > 6 had a 70% risk of recurrence → better suited with Bristow or Latarjet procedure
    - Score < 3: 5% chance of recurrence
    - Score < 6: 10% chance of recurrence

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

CONCLUSIONS

- Appropriate patient selection is the next most important factor to sound surgical technique for successful arthroscopic stabilization
- Formulation of a scoring system that is easy to calculate and based entirely on preoperative imaging and patient questionnaires
  - The only other risk score at this time was based off of the transglenoid suture technique rather than suture anchors
  - Existing risk score also relied on post-operative factors, limiting pre-operative utility

The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilisation.

A Case-Control Study, JBJ Br, 2007, Balg and Boileau

WHAT MAKES THIS SPECIAL

- Results provided the framework for the ISIS, which greatly influenced surgical decision-making moving forward
- This was the first risk index for recurrent instability which could be calculated solely off of preoperative variables

Table IV. Instability severity index score is based on a pre-operative questionnaire, clinical examination, and radiographs

Prognostic factors	Points
Age at surgery (yrs)	
≤ 20	2
> 20	0
Degree of sport participation (pre-operative)	
Competitive	2
Recreational or none	0
Type of sport (pre-operative)	
Contact or forced overhead	1
Other	0
Shoulder hyperlaxity	
Shoulder hyperlaxity (anterior or inferior)	1
Normal laxity	0
Hill-Sachs on AP* radiograph	
Visible in external rotation	2
Not visible in external rotation	0
Glenoid loss of contour on AP radiograph	
Loss of contour	2
No lesion	0
Total (points)	10

* AP, anteroposterior

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

BACKGROUND

- Despite advances in surgical technique, risk of recurrence following arthroscopic stabilization procedures never reached 0%
- Three main principles behind the Latarjet (1954):
    1) Increased glenoid diameter → bony block to dislocation
    2) Conjoint tendon sling → limits anterior translation in position of apprehension
    3) Repair of capsule to stump of coracoacromial ligament
- Only performed open at time of publication

PURPOSE: report technique and outcomes for an arthroscopic method of performing the Latarjet

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
  1) **Exposure**
  2) Coracoid preparation
  3) Coracoid drilling and osteotomy
  4) Coracoid transfer
  5) Fixation of graft

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
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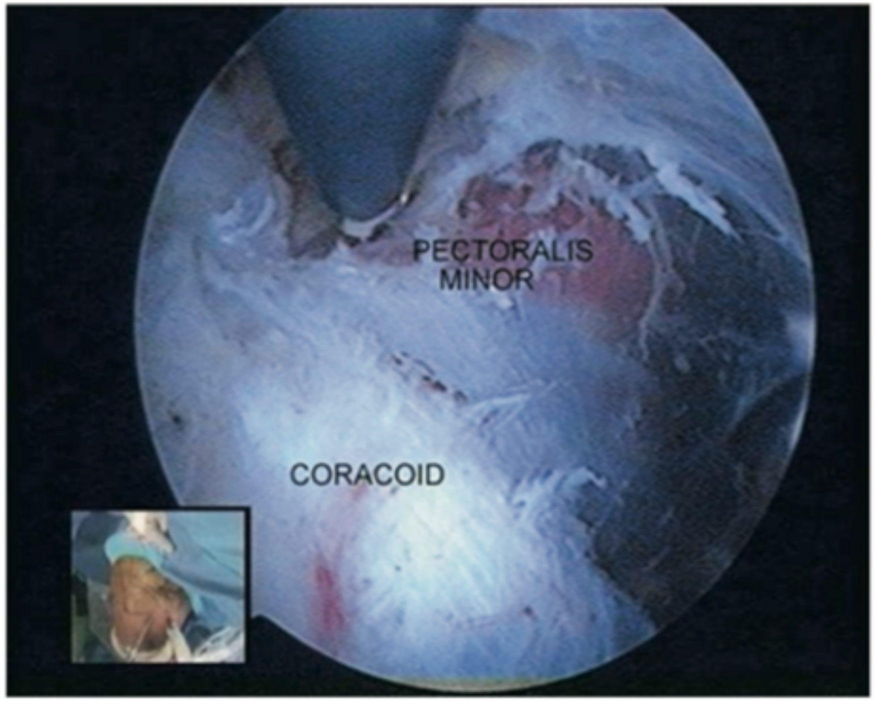

FIGURE 1. Section of tendon of pectoralis minor from coracoid process, after exposure of brachial plexus above and underneath tendon (lateral view, C portal). The inset shows the exterior view of the portals and instruments during dissection about the coracoid process.

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
  1) Exposure
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  3) **Coracoid drilling and osteotomy**
  4) Coracoid transfer
  5) Fixation of graft

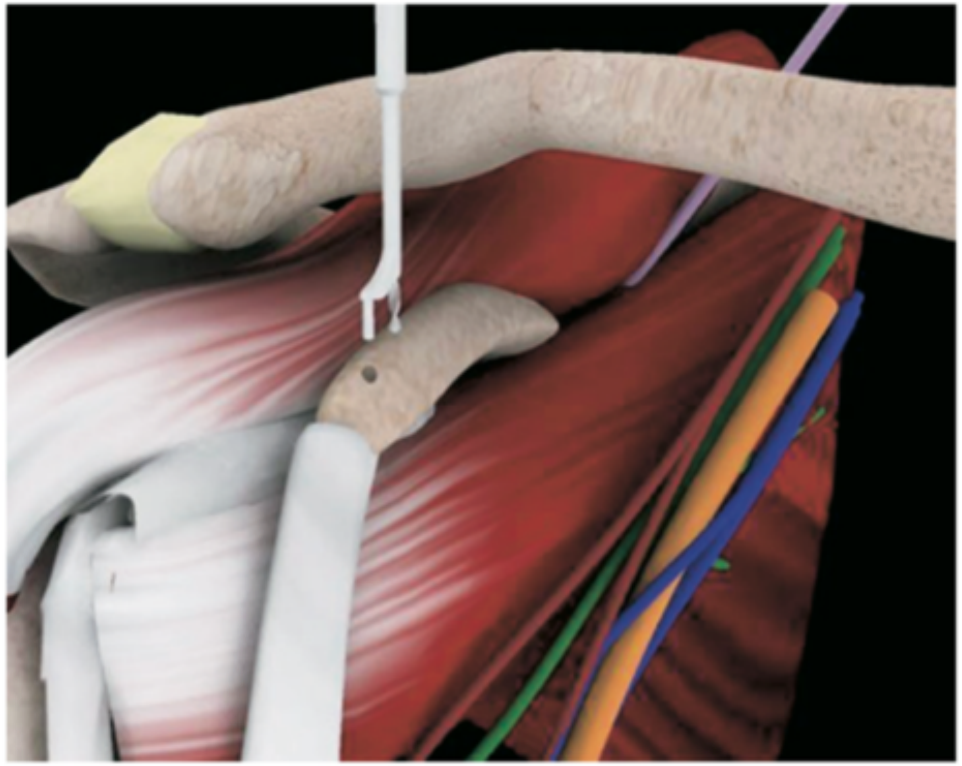


FIGURE 2. Coracoid drilling via a special guide lock to ensure adequate separation of drill holes.

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
    1) Exposure
    2) Coracoid preparation
    3) **Coracoid drilling and osteotomy**
    4) Coracoid transfer
    5) Fixation of graft

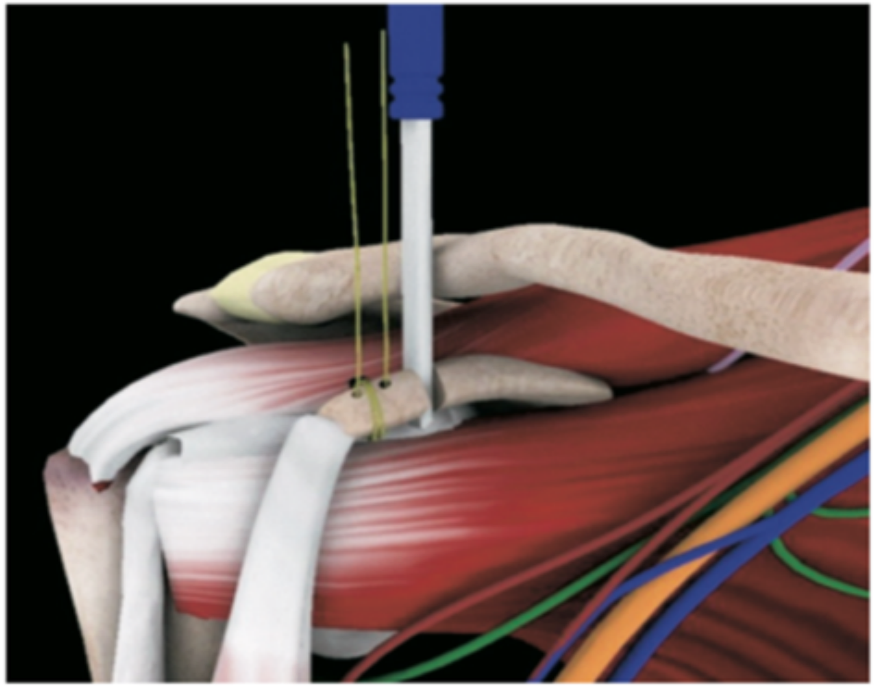


FIGURE 3. The osteotome has divided the coracoid process. Two sutures act as a "cable car" to allow manipulation and transposition of the glenoid graft.

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
    1) Exposure
    2) Coracoid preparation
    3) Coracoid drilling and osteotomy
    4) **Coracoid transfer**
    5) Fixation of graft

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

METHODS

- Five major steps
    1) Exposure
    2) Coracoid preparation
    3) Coracoid drilling and osteotomy
    4) Coracoid transfer
    5) **Fixation of graft**

FIGURE 4. Final radiograph showing screw placement after arthroscopic Latarjet procedure.

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

RESULTS

- 44 cases over two years
  - No neurovascular injuries
  - No infections
  - “Preliminary reports indicate excellent clinical results”
- Operative time decreased from 4 hours → 75 minutes

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

CONCLUSION

- Benefits of arthroscopic shoulder reconstruction (less scarring, better exposure, fewer infections, faster rehabilitation) for patients undergoing Latarjet
- Can manipulate the scope through various portals to achieve excellent visualization, especially for coracoid positioning
- While the 3x higher operative time at initial procedure suggests there is a learning curve, the significant decrease in operative time and excellent clinical results also suggest reproducibility

The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability

A Technical Note, Arthroscopy, 2007, Lafosse et al

WHAT MAKES THIS SPECIAL

- The first published report on an all-arthroscopic technique for the Latarjet procedure
- Demonstrated to surgeons that procedures which once required an open approach could potentially be done arthroscopically

Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from “engaging/non-engaging” lesion to “on-track/off-track” lesion

An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

BACKGROUND

- Glenoid bone loss >25% must be addressed with some form of glenoid bone grafting
- No clear guidelines exist on how to manage patients with bipolar bone loss (specifically, large Hill-Sachs lesions)

PURPOSE: provide expert opinion on how to appropriately conceptualize and manage bipolar bone loss in recurrent glenohumeral instability

Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from "engaging/non-engaging" lesion to "on-track/off-track" lesion

An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

BIOMECHANICS

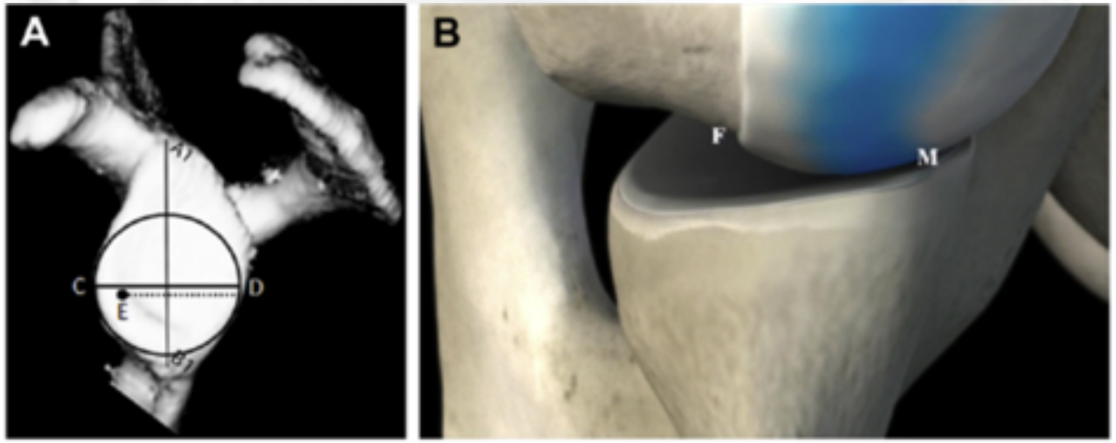
- Bone loss increases contact pressure
- Without restoration of this bone, the soft-tissue repair must resist this overload at the bone/soft-tissue interface
- Burkhart and De Beer championed "significant bone loss"
  - Defined by inverted pear shaped glenoid
  - High risk of recurrence with Hill-Sachs lesions that engage on anterior glenoid in a position of athletic function
  - Traumatic bone defects caused failure vs insufficient soft-tissue fixation
- These structural abnormalities were at a high risk of failure following Bankart repair alone

Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from "engaging/non-engaging" lesion to "on-track/off-track" lesion

An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

THE GLENOID TRACK

- Itoi et al.: as the arm is raised, glenoid contact area shifts from inferomedial to the superolateral portion of the posterior articular surface of the humeral head
- Intact track → bony stability
- Distance from medial margin of contact area to the medial margin of rotator cuff attachment on the humerus was 84% of the glenoid width



Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from “engaging/non-engaging” lesion to “on-track/off-track” lesion

An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

ENGAGING/NON-ENGAGING VERSUS ON-TRACK/OFF-TRACK

- Completely consistent with one another
- Issue arose with how to determine which Hill-Sachs engage
  - Could all Hill-Sachs engage?
  - Do all Hill-Sachs engage?

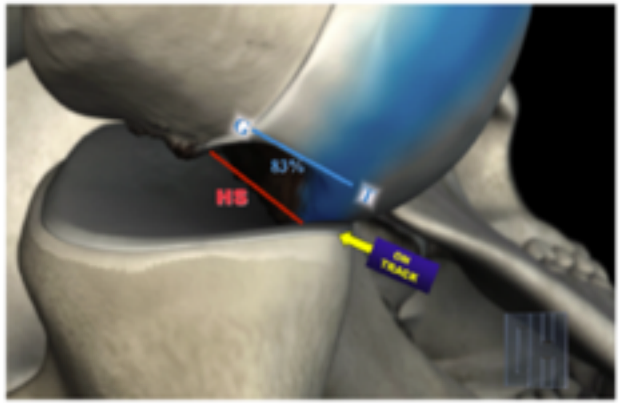


Fig 3. Glenohumeral joint in abduction and external rotation. If the Hill-Sachs lesion (HS) is within the medial margin of the glenoid track (G-T), there is still glenoid track support for bone stability (on-track Hill-Sachs lesion). This implies that intrinsic stability can be shared between the Bankart repair and bone support.

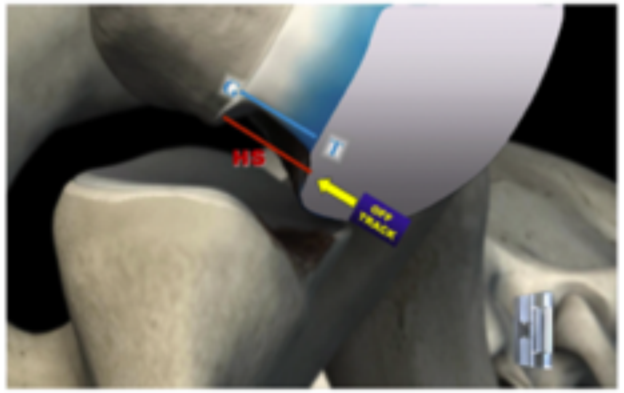


Fig 4. Glenohumeral joint in abduction and external rotation in shoulder with glenoid defect and Hill-Sachs lesion (HS) (bipolar bone loss). The Hill-Sachs lesion extends medial to the medial margin of the glenoid track (G-T), with loss of bone support at the anterior glenoid rim (off-track Hill-Sachs lesion).

Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from "engaging/non-engaging" lesion to "on-track/off-track" lesion

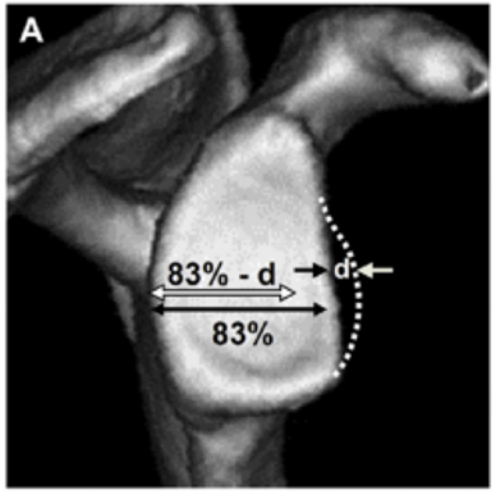
An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

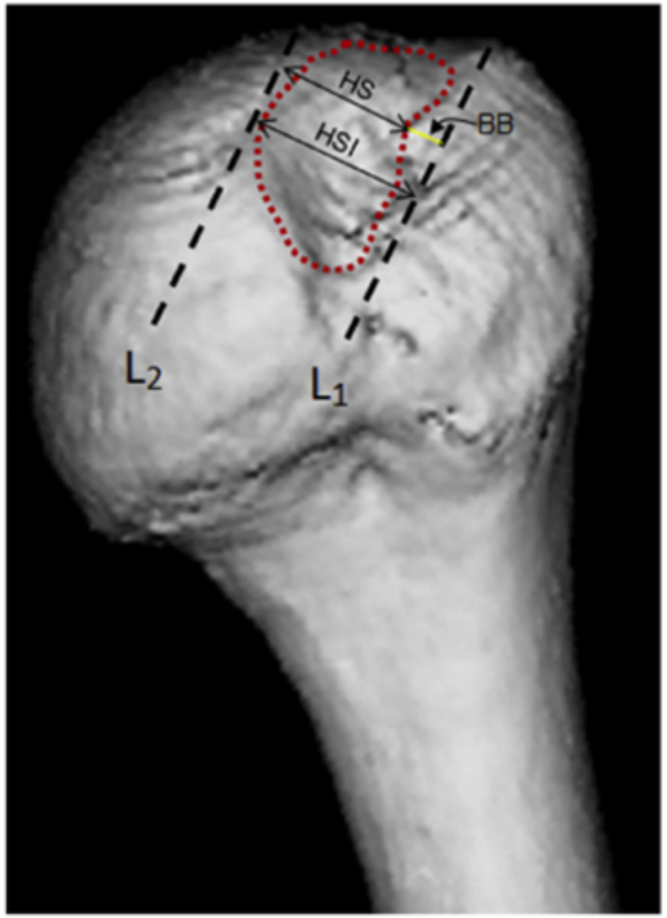
CONCLUSION

- Width of glenoid track decreases with bone loss
- If medial margin of Hill-Sachs is within the glenoid track, there is bony support adjacent to the lesion, and it is "on track"

Table 1. How to Determine Whether Hill-Sachs Lesion Is "On Track" or "Off Track"

1. Measure the diameter (D) of the inferior glenoid, either by arthroscopy or from 3D CT scan.
2. Determine the width of the anterior glenoid bone loss (d).
3. Calculate the width of the glenoid track (GT) by the following formula: GT = 0.83 D − d.
4. Calculate the width of the HSI, which is the width of the Hill-Sachs lesion (HS) plus the width of the bone bridge (BB) between the rotator cuff attachments and the lateral aspect of the Hill-Sachs lesion: HSI = HS + BB.
5. If HSI > GT, the HS is off track, or engaging. If HSI < GT, the HS is on track, or non-engaging.





Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from “engaging/non-engaging” lesion to “on-track/off-track” lesion

An Expert Opinion, Arthroscopy, 2014, Di Giacomo et al

WHAT MAKES THIS SPECIAL

- Glenoid bone loss >25% must be addressed
- Paradigm shift in treatment based on anterior instability categories
- If still off track, must address humeral sided defect
  - Rare, as Latarjet usually renders lesion “on track”

Table 2. Anterior Instability Categories

Group	Glenoid Defect	Hill-Sachs Lesion
1	<25%	On track
2	<25%	Off track
3	≥25%	On track
4	≥25%	Off track

Table 3. Treatment Paradigm

Group	Recommended Treatment
1	Arthroscopic Bankart repair
2	Arthroscopic Bankart repair plus remplissage
3	Latarjet procedure
4	Latarjet procedure with or without humeral-sided procedure (humeral bone graft or remplissage), depending on engagement of Hill-Sachs lesion after Latarjet procedure