

INSTABILITY

Shoulder Instability

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- 1. Shoulder symptoms in a patient with hyperlaxity are not always due to instability; other pathological conditions may coexist, with rotator cuff impingement being the most common.
- 2. Between 4% and 13% of the general population have joint hypermobility that is not associated with systemic disease.
- 3. Hyperlaxity may diminish in severity after skeletal maturity and with advancing age, and it is more prevalent in young females³⁻⁵ and in Asian, African, and Middle Eastern individuals
- 4. In patients with acquired shoulder joint laxity, repeated minor injuries (so-called microtrauma), or repetitive use during training and competition, stretch the normal capsuloligamentous restraints.
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- 4. Male and female athletes are equally affected whereas, in the nonathletic population, female adolescents are most commonly affected.

Ambri Vs Traumatic Dislocation

	AMBRI	TUBBS
	Atraumatic; Instability	Traumatic: Dislocation
	Multidirection	Unilateral
Joint laxity	++++ [Look for cuff]	++
Assosciated Bankart's/ Hillsach's	+	+++

Congenital Joint Hyperlaxity

- Most patients with hyperlaxity are born with it. 4% and 13% of the general population
- Hyperlaxity may diminish in severity after skeletal maturity and with advancing age, and it is
- more prevalent in young females³, in Asian, African, and Middle Eastern individuals
- The inheritance patterns :
- Ehlers-Danlos syndrome, Marfan syndrome, osteogenesis imperfecta, and benign joint
- hypermobility syndrome

- Acquired Joint Hyperlaxity In patients with acquired shoulder joint laxity, repeated minor
- injuries (so-called microtrauma), or repetitive use during training and competition, stretch the normal capsuloligamentous restraints. Symptoms are commonly unilateral in the
- dominant shoulder, and other joints are often normal.

- Swimmers, weight-lifters, rowers, gymnasts, and those playing racquet, overhead, or throwing sports are commonly affected, as are those whose jobs require prolonged use of the arm overhead, such as window cleaners, housepainters, and transmission-line engineers.

Pathoanatomy

- in Patients with Hyperlaxity Shoulder instability develops when the normal stabilizing mechanisms are disrupted.
- **Patients with traumatic shoulder instability** experience recurrent dislocations or subluxations due to a structural weakness produced by the injury to the capsulolabral complex. They also develop secondary osseous lesions of the glenoid and the humeral head, which further compromise stability.
- In contrast, patients with hyperlaxity tend to experience subluxations rather than dislocations, and **the structural lesions of traumatic instability are absent.**
- Instead, the increased length of the capsule and the glenohumeral ligaments allows increased humeral head translation and predisposes to instability.
- **As patients with hyperlaxity are often athletically gifted, they may injure the shoulder in their chosen sport and have elements of both traumatic and atraumatic instability.**

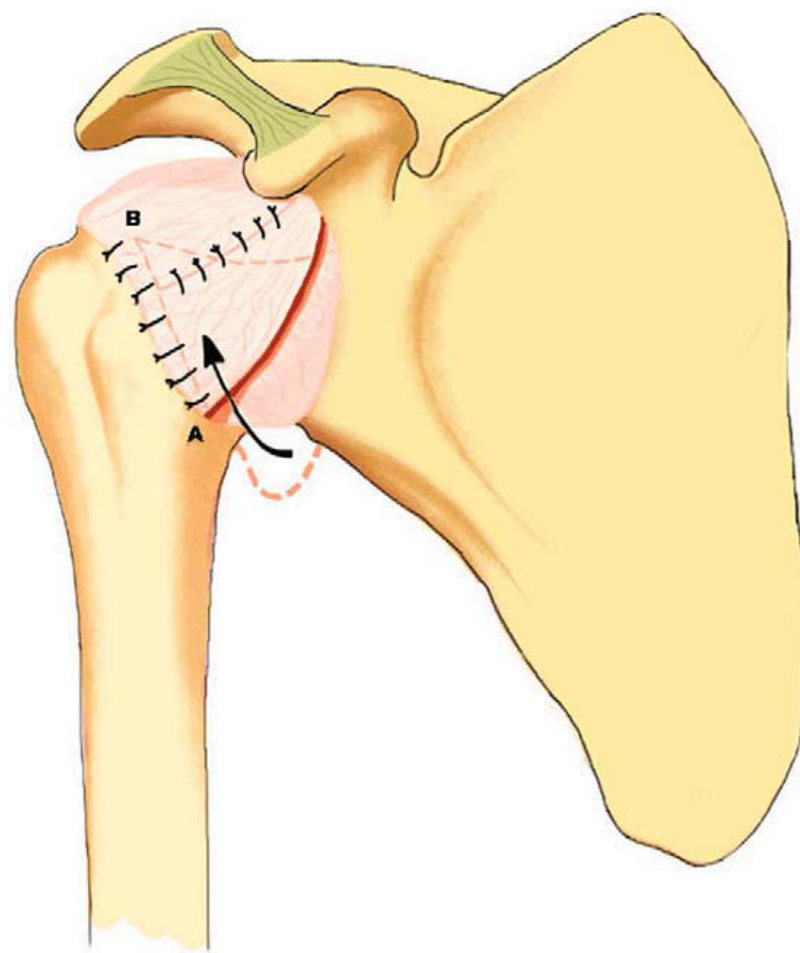
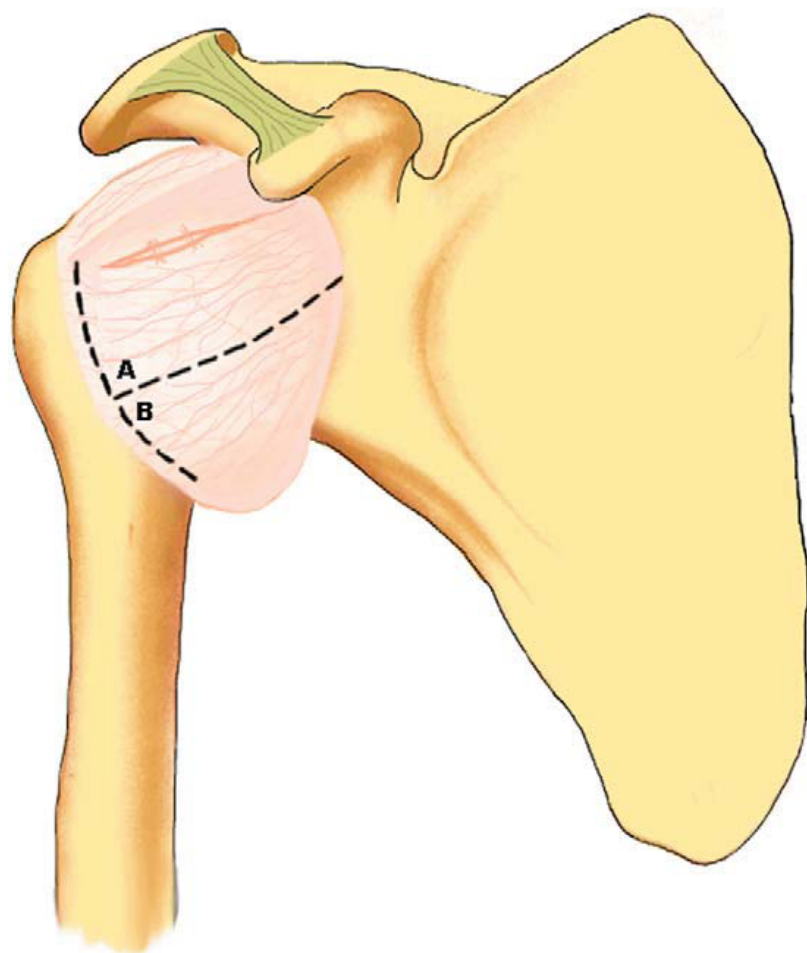
- Deficiency of the rotator interval and laxity of the inferior capsuloligamentous complex are particularly associated with instability in patients with hyperlaxity. This gives rise to two of the cardinal clinical features of this condition: inferior laxity (the sulcus sign) and a patulous redundant inferior capsular pouch
- (seen on magnetic resonance arthrography or at the time of operative treatment).
- The reduction in symptoms after muscle strengthening suggests that these dynamic stabilizers may compensate for deficiencies of the static stabilizers.
- Patients with hyperlaxity also commonly develop rotator cuff impingement as a result of the increased joint translation.
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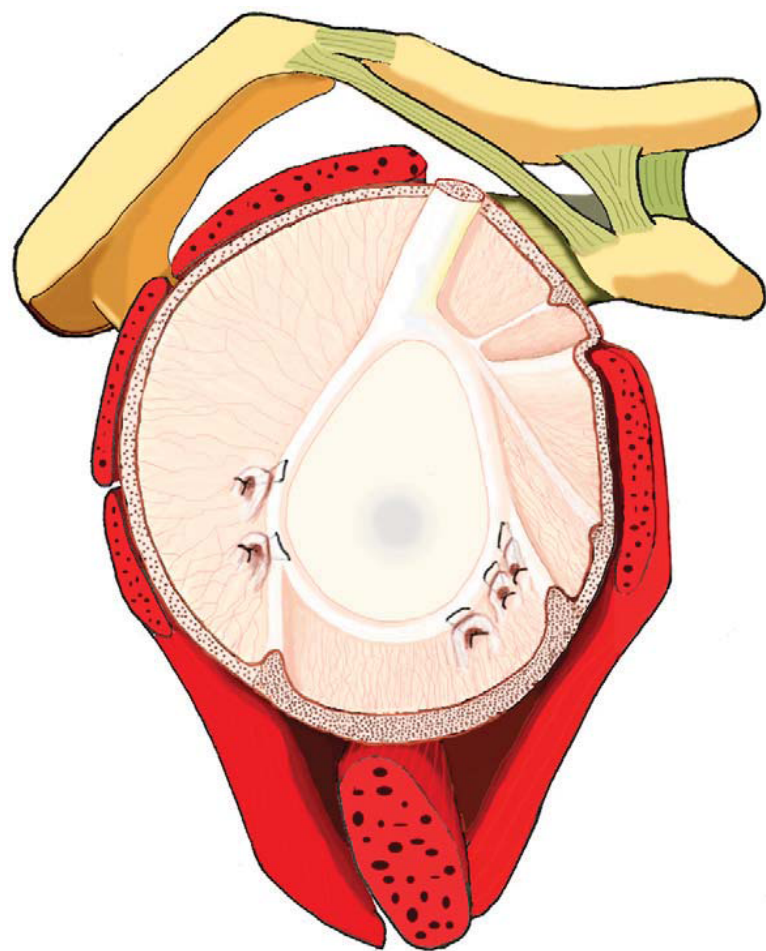
TUBS & AMBRI

- It is now recognized that this distinction is simplistic: individuals with congenital hyperlaxity may develop instability following injury, and these patients as well as those with acquired
- hyperlaxity commonly have unilateral symptoms.
- Many patients with hyperlaxity but without a discrete history of shoulder trauma nevertheless have predominantly unidirectional or bidirectional instability. Several authors have since attempted to classify this spectrum of instability more accurately, on the basis of the directions and degree of instability and the presence of hyperlaxity
- Multidirectional instability may result from separate discrete injuries to different parts of the shoulder joint capsule.
- We believe that the term is most correctly applied to patients who have clinical evidence of both hyperlaxity and anteroposteroinferior (“global”) shoulder instability.
- The term “bidirectional instability” should be used for patients who have either AP
- or posteroinferior instability.

Atraumatic dislocation

- 1. Generalized ligamentous hyperlaxity and glenohumeral joint instability are common conditions that exhibit a spectrum of diverse clinical forms and may coexist in the same patient.
- 2. No single diagnostic test can confirm the presence of these disorders, and a careful clinical assessment is important.
- 3. Unlike patients with traumatic shoulder instability, patients with hyperlaxity and instability are more likely to experience episodes of recurrent subluxation than they are to have recurrent dislocation.
- 4. They are more likely to have instability in more than one anatomic plane, and they usually do not have the soft-tissue and osseous lesions associated with traumatic instability.
- 5. Shoulder symptoms in a patient with hyperlaxity are not always due to instability; other pathological conditions may coexist, with rotator cuff impingement being the most common.
- 6. Most patients with hyperlaxity have a reduction in instability symptoms after nonoperative treatment, including physical therapy, activity modification, and additional psychological support when necessary.
- 7. Operative treatment provides reproducibly good results for patients with hyperlaxity who do not respond to a prolonged program of nonoperative measures. Open inferior capsular shift remains the gold standard of operative treatment, although arthroscopic capsular shift and plication procedures are now producing comparable results. Thermal capsulorrhaphy is associated with unacceptably high failure rates and postoperative complications and cannot be recommended as a treatment.





Hill Sach's lesion

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Important Factors for Management of Hill-Sachs Lesions

Size	<20%-25% humeral head: consider nonoperative if nonengaging >40% humeral head: consider anatomic reconstruction or arthroplasty
Location	Engaging Nonengaging
Patient age	Consider anatomic reconstruction in younger patients Consider arthroplasty in older patients
Bipolar lesions (concomitant glenoid and humeral head defects)	Determine relative contribution of each lesion Address most problematic lesion first Consider reconstruction of both glenoid and humeral head lesions
Previous shoulder stabilization surgery/revision	Understand cause of recurrent instability Treat all pathological lesions

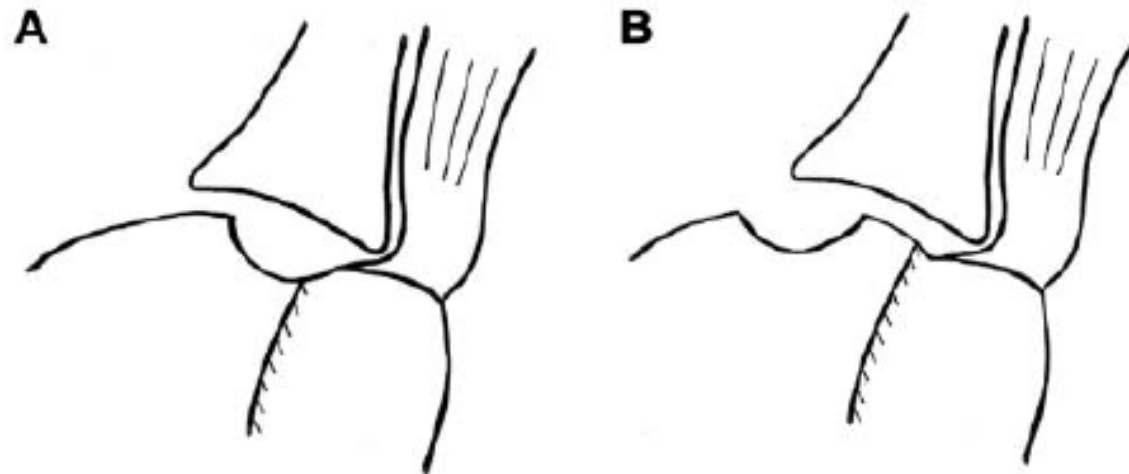


Figure 3. Elevation of the arm creates a zone of contact between the glenoid and humeral head, termed the glenoid track. (A) If the Hill-Sachs lesion remains within the tract, there is a low chance of engagement. (B) If the Hill-Sachs lesion extends medially outside of the glenoid track, the risk of humeral head engagement increases. From Yamamoto et al.⁶⁶ Reprinted with permission.

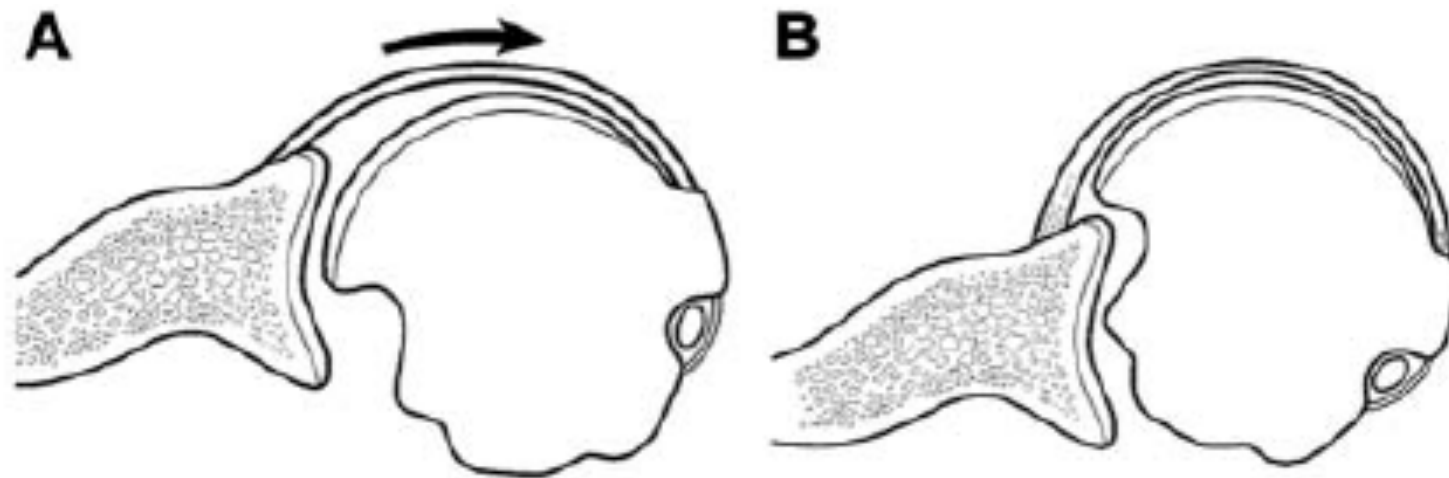


Figure 1. (A) A large Hill-Sachs defect causes an articular arc mismatch. (B) With progressive external rotation, the humeral head defect engages on the anterior glenoid rim. Reprinted from Burkhart and Danaceau⁶ with permission.

Summary of Nonanatomic Techniques^a

Procedure	Pros	Cons
Putti-Platt and Magnusson-Stack	Limits ER and prevents engagement	Does not address primary injury, decreased ROM, development of OA
Bristow-Latarjet	Restores articular arc length; sling effect of coracobrachialis	Development of OA, nonunion, hardware failure; does not directly address injury
Remplissage (infraspinatus transfer)	Augments in borderline cases; no significant loss of ROM	No reported complications
Rotational humeral osteotomy	Limits ER and prevents engagement	Nonunion/delayed union, malrotation, larger surgical dissection, loss of motion

Procedure	Pros	Cons
Humeroplasty	Restores humeral head concavity/articular arc length	Risk of avascular necrosis, injury articular surface and axillary nerve, elevating arthritic joint surface
Arthroscopic allograft mosaicplasty	Less invasive	Inability to resurface large humeral head defects
Osteoconductive graft plugs	Precise placement of graft tangential to articular surface	Graft resorption, cyst formation, graft failure
Femoral head allograft	Restores humeral head concavity/articular arc length	Graft collapse, graft loosening, no articular cartilage
Humeral head allograft	Restores humeral head concavity/articular arc length, anatomic	Graft collapse, hardware removal, subscapularis takedown (but can be performed through a limited posterior approach)

Conclusions

- Traumatic anterior dislocations are frequently associated with humeral head defects
- Hill-Sachs lesions can alter normal glenohumeral biomechanics leading to instability.

Multiple surgical techniques are available.

- In patients with small, nonengaging lesions, soft tissue repair alone may be indicated. For moderate-sized lesions, rotational humeral osteotomy and “remplissage” can be used.
- Some defects may be managed through percutaneous humeroplasty to elevate the lesion and restore normal humeral head convexity in acute cases, but there is concern for elevated, chronically damaged, eburnated bone.
- For patients without osteopenic bone and moderate- to large-sized lesions, osteoarticular allografts can restore normal anatomy and the articular arc length.

Humeral head resurfacing also remains a viable option for focal defects in younger patients. For older patients with instability and glenohumeral osteoarthritis or osteopenia, shoulder hemiarthroplasty or total shoulder arthroplasty should be considered.