

Editorial Commentary: Dynamic Anterior Stabilization via Biceps Tenodesis to the Glenoid Is an Option for Anterior Shoulder Instability With Subcritical Glenoid Bone Loss



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Abstract: A nuanced approach to treatment of anterior shoulder instability is encouraged, particularly in patients with subcritical glenoid bone loss. In patients with bone loss, recurrent instability after isolated arthroscopic Bankart repair has dampened enthusiasm for this procedure. Adjunctive treatment with remplissage or dynamic anterior stabilization via biceps tenodesis to the glenoid is an alternative to bone transfer procedures, which are effective but have higher complication rates. Dynamic anterior stabilization or tenodesis of the long head of the biceps to the 3-o'clock position on the glenoid through a subscapularis split is biomechanically superior to isolated Bankart repair for reducing anterior translation, even in the setting of minor glenoid bone loss due to a sling effect similar to that produced by the Latarjet procedure. A disadvantage is placement of a large implant into the small space of the anterior glenoid and creation of a soft-tissue defect in the capsule.

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Another arrow for the quiver of soft-tissue techniques for anterior shoulder instability treatment. Anterior shoulder instability remains a challenging clinical situation and is influenced by patient factors—age, possibly sex, activity level, types of activities, and chronicity of condition—and pathoanatomic factors—quality of soft tissues, soft-tissue laxity, magnitude of glenoid attritional bone loss, and nature of concomitant Hill-Sachs lesion. Attempts at characterizing these aspects are equally challenging because putting numbers to these values can be affected by differences in measurement techniques and establishing absolute cutoffs for “critical” remains a moving target. Fortunately, shoulder instability is the subject of intense scrutiny, and even in the past 5 years, techniques have shifted in response to high-quality research

studies. Our field continues to quest for better solutions, particularly in methods to augment our current strategies.

Open Bankart repair and capsular shift have subsided in their use to the wave of arthroscopy, favored for its less invasive nature and improving instrumentation. However, these procedures still hold an indication for many surgeons, particularly in younger and contact athletic populations. The recurrence rate, including dislocation and subluxation, has been reproducibly under 10% with acceptable rates of return to sport and work.^{1,2} This can be at the expense of external rotation motion loss because the anteroinferior capsule can be powerfully imbricated. However, with arthroscopic techniques gaining most of the exposure during training, our younger cohort of surgeons might not be comfortable with this established technique.

Arthroscopic Bankart repair had immense popularity that has now been tempered by widely variable recurrence rates, optimistically 15% or lower.³ The current recommendation is to be very selective in performing this in isolation, with careful assessment for glenoid bone loss greater than 15% or “off-track” shoulders.⁴ Remplissage to imbricate the infraspinatus into the

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Hill-Sachs lesion has gained traction as a way to transfer an engaging lesion into the extra-articular space, perhaps overcoming an off-track shoulder. Contemporary techniques make this a relatively easy adjunct procedure for arthroscopic Bankart repair that can lead to improved rates of stability.⁵ Intermittently, this has been found to lead to external rotation loss.⁶

A relatively recent technique described by Collin and Lädermann⁷ in 2018 brings attention to an alternative augmentation procedure to the classic arthroscopic Bankart repair. In this issue, Collin, Nabergoj, Denard, Wang, Bothorel, and Lädermann⁸ report their subsequent outcomes in “Arthroscopic Biceps Transfer to the Glenoid With Bankart Repair Grants Satisfactory 2-Year Results for Recurrent Anteroinferior Glenohumeral Instability in Subcritical Bone Loss.”

Collin et al.⁸ describe tenodesis of the long head of the biceps to approximately the 3-o'clock position on the glenoid through a subscapularis split.⁷ Using this technique referred to as “dynamic anterior stabilization” (DAS), the same group of authors have biomechanically shown its superiority in reducing anterior translation compared with isolated Bankart repair, even in the setting of minor glenoid bone loss.⁹ This is presumed to be due to the sling effect, that is similarly produced with the Latarjet procedure. Their technique uses arthroscopic methods that are likely a translational skill set and provides an exciting adjunct that minimizes the need to escalate to bone transfer techniques. It does, however, place a large implant into the already scarce terrain of the anterior glenoid and creates a soft-tissue defect in the capsule.

The 2-year outcomes in 22 patients undergoing DAS showed an acceptable recurrent instability rate of 13.6% without any range-of-motion limitations,⁸ particularly acknowledging that the early learning curve may have contributed to early failure. Two patients required revision to the Latarjet procedure, of which the ease of revision is not commented on. Hypothetically, the anchor could make a bone block difficult to stabilize, and prior dissection through the subscapularis may make the open exposure more challenging. We think higher volumes of studied patients treated by multiple surgeons will bear out whether this technique is one for the masses. This will also allow for more exact surgical indications and possibly a more precise threshold for glenoid bone loss that is “too much.” When we reach the “too much”

threshold, bony augmentation awaits. Although reliable with low recurrent instability rates with Latarjet or bone block augmentation, the complication rate and profile leave improvements to be desired.

Our field is still in a battle with anterior shoulder instability. Early enthusiasm for arthroscopic stabilization has been dampened by long-term follow-up, and “subcritical” glenoid bone loss makes the recommendation for bone block procedures less attractive. Remplissage and DAS, or more arrows in the quiver, offer adjunctive arthroscopic techniques that might be “enough.”

References

1. AlSomali K, Kholinne E, Van Nguyen T, et al. Outcomes and return to sport and work after open Bankart repair for recurrent shoulder instability: A systematic review. *Orthop J Sports Med* 2021;9:23259671211026907.
2. Hatch MD, Hennrikus WL. The open Bankart repair for traumatic anterior shoulder instability in teenage athletes. *J Pediatr Orthop* 2018;38:27-31.
3. Panzram B, Kentar Y, Maier M, Bruckner T, Hetto P, Zeifang F. Mid-term to long-term results of primary arthroscopic Bankart repair for traumatic anterior shoulder instability: A retrospective study. *BMC Musculoskelet Disord* 2020;21:191.
4. Levy BJ, Grimm NL, Arciero RA. When to abandon the arthroscopic Bankart repair: A systematic review. *Sports Health* 2020;12:425-430.
5. MacDonald P, McRae S, Old J, et al. Arthroscopic Bankart repair with and without arthroscopic infraspinatus remplissage in anterior shoulder instability with a Hill-Sachs defect: A randomized controlled trial. *J Shoulder Elbow Surg* 2021;30:1288-1298.
6. Frantz TL, Everhart JS, Cvetanovich GL, et al. What are the effects of remplissage on 6-month strength and range of motion after arthroscopic Bankart repair? A multicenter cohort study. *Orthop J Sports Med* 2020;8:2325967120903283.
7. Collin P, Lädermann A. Dynamic anterior stabilization using the long head of the biceps for anteroinferior glenohumeral instability. *Arthrosc Tech* 2018;7:e39-e44.
8. Collin P, Nabergoj M, Denard PJ, Wang S, Bothorel H, Lädermann A. Arthroscopic biceps transfer to the glenoid with Bankart repair grants satisfactory 2-year results for recurrent anteroinferior glenohumeral instability in subcritical bone loss. *Arthroscopy* 2022;38:1766-1771.
9. Mehl J, Otto A, Imhoff FB, et al. Dynamic anterior shoulder stabilization with the long head of the biceps tendon: A biomechanical study. *Am J Sports Med* 2019;47:1441-1450.