

# Editorial Commentary: Evidence to Support Surgical Intervention for First-Time Shoulder Instability: Stabilize Them Early!



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**Abstract:** Historically, a primary anterior instability event has been treated nonoperatively. In the literature, a multitude of outcome scores and definitions for recurrence of instability complicates the interpretation and synthesis of evidence-based recommendations. However, there is an emerging body of high-quality evidence that early surgical stabilization yields better overall outcomes. A wait-and-see approach would be acceptable if it was without detrimental effects, but there is a cost to recurrence of instability events, such as more extensive soft-tissue, cartilage, and bony lesions. Young age, male sex, and contact sport participation have been identified as risk factors for recurrence of anterior shoulder instability, and today, these patients are routinely recommended surgical treatment. It is also paramount to identify concomitant injury following the primary anterior instability event. The sensitivity, specificity, and reliability of radiographs is sub-optimal, and the threshold to obtain advanced imaging such as computed tomography or magnetic resonance imaging with 3-dimensional reconstructions should be low. Taking into account the low non-recurrence complication rate following arthroscopic stabilization, early surgical intervention should be considered following the first instability event.

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Treatment strategies following a first-time anterior shoulder dislocation continue to be debated, although there is an emerging body of high-quality evidence that early surgical stabilization yields better overall

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outcomes. This concept is further enhanced by patients who are in a high risk (of recurrence) category, such as young age (<25 years old), male sex, and certain sports participation.<sup>1,2</sup> The authors Hurley, Manjunath, Bloom, Pauzenberger, Mullett, Alaia, and Strauss of the article “Arthroscopic Bankart Repair Versus Conservative Management for First-Time Traumatic Shoulder Instability—A Systematic Review and Meta-Analysis”<sup>3</sup> should be congratulated for performing a high-level outcomes analysis in patients who were treated either with or without surgery for a first-time anterior instability event. In their article, Hurley et al. have determined that overall recurrence risk was 9.7% following arthroscopic Bankart repair versus 67.4% following nonoperative treatment. Importantly, the authors included studies (all Level II or greater) that would allow for a meaningful meta-analysis and an “apples to apples” comparison so that we, as surgeons, can draw meaningful conclusions. This underscores the evidence that we have known since 2005 and published in *Arthroscopy*. The landmark paper from Kirkley et al.<sup>2</sup> demonstrated significantly improved outcomes in a randomized trial for those surgically stabilized early after a first-time shoulder dislocation. The reality is that in patients who

have greater, or even partially increased risk of recurrence, the time to stabilize is early after dislocation.<sup>4-8</sup>

What is increasingly demonstrated in the literature is that there is a cost to recurrence of instability of the glenohumeral joint. There is no question that with more recurrent instability events (meaning here—more than 2), there are (1) more anterior labroligamentous periosteal sleeve avulsion (ALPSA) tears, which carry with them an increased risk of failure after surgical stabilization<sup>9,10</sup>; (2) more injuries to the glenohumeral joint capsule<sup>10</sup>; (3) more cartilage injuries (glenoid labral articular disruptions)<sup>11</sup>; (4) More Hill—Sachs injuries that become larger, wider, and deeper<sup>12,13</sup>; and, most importantly (5) more glenoid bone loss (GBL).<sup>4,9,12-14</sup> The significance of bone loss cannot be overstated. Although bone loss is common following first-time shoulder instability events and plain radiographs have limited sensitivity in detecting bone lesions, computed tomography (CT) with 3-dimensional reconstruction is not routinely recommended. Fracture of the anteroinferior glenoid rim (Bankart fracture) is present in up to one-third of patients following an anterior shoulder dislocation.<sup>13</sup> Failure to appropriately manage Bankart fractures can lead to recurrence and inferior clinical results, and early treatment is paramount to avoid attrition of the fragment.<sup>14</sup> Repeated instability events increase the amount of GBL, thus increasing the risk of recurrence and inferior results. Dickens et al.<sup>4</sup> reported a mean GBL of 7% following the first instability event and that every instability event resulted in significant increase in GBL. Historically, bone block procedure to restore glenoid width has been considered when GBL was 20% to 25%. However, the amount of critical GBL seems to be shrinking. Shaha et al.<sup>15</sup> demonstrated that worse outcomes and greater recurrence rates were associated with GBL >13.5% following arthroscopic Bankart repair. It is unclear how much GBL can be tolerated to justify nonoperative treatment following the first instability event, but repeated instability events will increase the amount of GBL.

A Hill—Sachs lesion (HSL) is observed in up to 93% of patients following a first-time instability event.<sup>16</sup> The HSL has not been given great significance following the first instability event. However, one has to be mindful that repeated instability events increase the size and importance of the HSL. Also, it is noteworthy to evaluate the location of the HSL. In a recently published paper, Yamamoto et al.<sup>17</sup> demonstrated that medially positioned HSLs resulted in impaired quality of life following Bankart repair. We suspect that the majority of patients are not routinely examined with CT to evaluate bone lesions following a first-time shoulder instability event. Concerns related to radiation exposure and perceived limited clinical value could explain this.

Compared with CT scans, magnetic resonance imaging (MRI) findings are more frequently reported in the literature following a primary shoulder instability event,

especially in patients older than 40 years, as they have a high risk of concomitant rotator cuff injuries. However, MRI is not routinely recommended in younger patients following their first instability event. The capsule and labrum are the most frequently injured structures following an anterior shoulder dislocation.<sup>18,19</sup> However, we must keep in mind that not all labral lesions are equal. The ALPSA was first described by Neviaser<sup>20</sup> in 1993. The ALPSA lesion differs from the classic Bankart lesion in that it displaces medially and rotates inferiorly on the scapular neck, thus increasing the risk of future instability events. In a review of MRI findings following primary shoulder dislocation, Antonio et al.<sup>18</sup> found an ALPSA lesion in 29% and Kim et al.<sup>21</sup> found 24.2% Bankart lesions and 30.3% ALPSA lesions. It is important to be cognizant that ALPSA lesions are not uncommon. Patients with an ALPSA lesion have up to a 4 times significantly greater risk of recurrence compared with patients with a Bankart lesion.<sup>22</sup> Repeated instability events may cause degenerative changes to the labrum and reduced restoration of labral height following repair, thus resulting in inferior clinical results.<sup>23</sup> Other concomitant lesions that could be significant for choice of treatment strategy are humeral avulsions of the glenohumeral ligament.

These findings emphasize the importance of identifying injury to the stabilizing structures of the glenohumeral joint, and it is our opinion that the threshold for obtaining advanced imaging following a first-time anterior shoulder dislocation should be lowered. In the systematic review by Hurley et al.,<sup>3</sup> almost 50% of the patients treated nonoperatively subsequently underwent surgical stabilization. A wait-and-see approach could be acceptable if delay of surgical stabilization was without detrimental consequences, but this is unlikely to be the case. However, it may be difficult to justify early surgery in certain patient populations. In another systematic review, Kennedy et al.<sup>24</sup> found an overall recurrence rate of 17.4% following arthroscopic Bankart repair, which suggests that postoperative results following repeated instability events are inferior compared with early stabilization. The lower non-recurrence complication rate of 1.6% reported by Hurley et al. adds to the argument that young, active patients should be recommended surgical stabilization following a primary anterior shoulder dislocation. What about older patients with a first-time anterior shoulder dislocation? The literature is not clear on the best treatment strategy for patients older than the age of 30 years. It has been shown that recurrence rate following a first-time dislocation decreases with age,<sup>25,26</sup> but if this correlates with functional results, pain, and quality of life is not clearly delineated. Fewer redislocations in the older population might suggest that results following nonoperative treatment is better than in the younger population. However, various definitions of recurrence and paucity of comparable outcome measures complicate the synthesis of the available knowledge.

In addition to recurrence rate, Hurley et al.<sup>3</sup> investigated the need for additional surgery and return to sport and found a statistically significant differences in favor of arthroscopic Bankart repair. These outcomes are indeed important; however, one could argue that patient-reported outcome measures would be even more significant when comparing treatment strategies. Outcome scores were reported in 8 of 10 included articles, and the most frequently used were the Western Ontario Shoulder Instability (4 studies) Score, the Rowe Score (3 studies), and Disability of the Shoulder, Arm, and Hand Score (4 studies). The variability in outcome measures used in the articles make direct comparisons challenging.

This is similar to other studies that have, but what is recurrence? Five of the 10 studies reported redislocation rates, and the remaining 5 studies defined recurrence as dislocation and subluxation. Thus, the recurrence rate was probably underestimated in the studies that only reported dislocation. Repeated instability events are important to consider because they perpetuate the degeneration of the stabilizing structures of the glenohumeral joint. We have found that the definition of “recurrence” after either surgery or nonoperative management to be highly varied in the literature<sup>23</sup> and likely underestimates the true incidence of recurrence if studies only report a true “dislocation” as the end point. In this regard, we, as surgeons should follow our outcomes with a keen sense of recurrence, as either recurrent dislocation or recurrent subluxation and provide both to allow the reader important outcomes information.<sup>24</sup>

More prospective studies with robust study design and sufficient power are needed to investigate whether the indication for surgical stabilization following the first instability event should be expanded to other patient groups. We need to standardize how recurrence of instability is reported, and we propose that recurrence include dislocation, subluxation, feeling of apprehension, and painful, unstable shoulders. When planning a randomized controlled trial, we need to make sure that the studies are sufficiently powered and focus on clinically significant differences, not statistical significance.

Historically, a primary anterior shoulder instability event was treated nonoperatively in most cases. Today, knowledge from biomechanical, imaging, and clinical studies has increased our understanding of anterior shoulder instability. Advanced imaging modalities have improved over the past decades, and we now know that bone lesions and other soft-tissue lesions other than the classic Bankart fracture are common following a first-time anterior shoulder instability event. Identification of these lesions and appropriate surgical treatment can reduce the rate of recurrence and improve outcomes. In 2019, the Neer Circle of the American Shoulder and Elbow Surgeons reached a consensus for surgical recommendation for athletes younger than 30 years with apprehension and

bone loss. Hurley et al.<sup>3</sup> have done an outstanding review to help clarify the need for early intervention after an instability event, but we still have several unanswered questions that beg for additional well-designed prospective studies to help us improve upon the treatment algorithm for anterior shoulder instability.

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