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Review Article

Outcomes of immediate reduction versus delayed management in shoulder dislocation

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ABSTRACT

Shoulder dislocations are among the most frequently encountered joint injuries in emergency and orthopedic care, with anterior dislocations accounting for the majority of cases. The timing of reduction following dislocation plays a critical role in influencing short-term outcomes, procedural success, and long-term joint stability. Early reduction is often associated with decreased pain, improved ease of reduction, and lower sedation requirements. Delayed reduction, particularly beyond several hours post-injury, may increase the likelihood of reduction failure, nerve injury, or the need for operative intervention. Studies have shown that recurrence rates are higher in younger patients, especially when treatment is delayed or conservative methods are used without close follow-up. Functional recovery, including return to sport or daily activity, is significantly affected by the management approach and timing of reduction. Structural injuries such as Bankart lesions, Hill-Sachs defects, and rotator cuff tears further complicate outcomes and are more common in delayed or recurrent cases. The presence of risk factors like hyperlaxity, previous subluxations, and improper immobilization also contribute to instability. Imaging strategies, early rehabilitation protocols, and patient education are essential to support recovery and prevent re-dislocation. Variability in emergency department protocols, clinician experience, and resource availability can influence treatment timing and outcomes. Understanding how early versus delayed intervention shapes both immediate and extended recovery allows for more effective decision-making in both acute and follow-up care.

Keywords: Shoulder dislocation, Reduction timing, Recurrent instability, Functional outcomes, Joint management

INTRODUCTION

Shoulder dislocations, particularly anterior dislocations, are among the most frequent joint dislocations encountered in emergency and orthopedic settings. They account for approximately 50 percent of all major joint dislocations, with anterior dislocations representing about 95 percent of all shoulder dislocation cases.[1] These injuries are common in young, active individuals and older populations alike, often resulting from trauma such as falls, direct blows, or

sports injuries. Immediate reduction of the dislocated joint is generally considered the standard approach, aiming to minimize pain, restore function, and prevent further complications. However, there is ongoing debate regarding the clinical outcomes of immediate versus delayed reduction, particularly in complex or recurrent cases.

The urgency of reduction has long been supported due to the theoretical risk of complications such as neurovascular injury, increasing muscle spasm, and difficulty achieving closed reduction if delayed. Rapid intervention is also considered important in reducing the risk of avascular necrosis of the humeral head, especially in cases involving fracture dislocations. Yet, some studies suggest that a brief delay for proper analgesia, imaging, or specialist evaluation may not significantly alter long-term outcomes if managed correctly.[2] The clinical decision-making process is therefore influenced by various factors, including the availability of trained personnel, imaging facilities, patient stability, and the presence of associated injuries.

Delayed management is often necessitated in rural or resource-limited environments where immediate orthopedic intervention is not feasible. In such scenarios, patients may receive initial immobilization, sedation, or transport before definitive reduction. While delayed reduction has been associated with increased difficulty during the procedure and potentially higher rates of failure during the first attempt, evidence on whether this directly impacts recurrence or long-term function remains mixed. Kanji et al reported that treatment delays beyond 6 hours were significantly associated with failed initial reduction attempts, emphasizing the importance of time-sensitive care in emergency departments.[3]

Comparative studies have explored various outcomes, including recurrence rates, chronic instability, patient satisfaction, and return to activity. Nambiar et al.3 highlighted that outcomes vary depending on the dislocation type, patient demographics, and intervention strategy. Notably, younger male patients tend to have a higher risk of recurrence, regardless of reduction timing, and may benefit from early surgical stabilization. Meanwhile, elderly patients are more prone to rotator cuff tears and other soft tissue injuries following dislocation, often necessitating individualized approaches to timing and technique.

REVIEW

Early reduction of shoulder dislocations is often recommended to minimize the risk of complications and improve functional outcomes. Prompt intervention is thought to reduce soft tissue damage and neurovascular compromise, especially in traumatic anterior dislocations. Research suggests that immediate reduction can lead to shorter hospital stays and lower rates of recurrent instability in specific populations.[4] However, delayed reduction may be necessary in certain clinical settings, such as when imaging or sedation is unavailable, or in patients with associated injuries requiring stabilization.

Comparative outcomes between immediate and delayed management continue to generate debate. Some studies report that delayed reduction does not significantly impact long-term shoulder stability, particularly when proper follow-up care is administered. Functional recovery in delayed cases has been shown to be similar to that of immediate management in older adults with low physical demand.[5] Nonetheless, the likelihood of initial reduction failure increases with time from injury to intervention, and this may necessitate surgical management or repeated attempts. Ultimately, clinical decisions should be individualized based on patient age, injury severity, recurrence risk, and resource availability. While immediate reduction remains the goal, delayed treatment may be acceptable when guided by careful assessment and appropriate follow-up.

CLINICAL IMPLICATIONS OF TIMING IN REDUCTION APPROACHES

Timing plays a decisive role in the management of shoulder dislocations, influencing not only the technical ease of reduction but also the trajectory of recovery. The urgency placed on immediate reduction is not simply a matter of tradition but a response to biomechanical and physiological changes that occur as time passes. Muscular spasms increase, pain intensifies, and reduction maneuvers become more complex. Delayed reductions can be particularly difficult due to progressive soft tissue tightening and edema, which may render standard techniques less effective or even unsuccessful without sedation or operative support.

Kirkley et al examined the outcomes of immediate arthroscopic stabilization compared to delayed nonoperative care in first-time traumatic anterior dislocations and reported significant improvements in stability and recurrence prevention with earlier intervention.6 In physically active patients, especially athletes, the impact of timing is amplified. A shorter time to reduction often correlates with reduced downtime and quicker returns to sport or work. Immediate intervention also provides a psychological benefit for many individuals, as prolonged dislocation is associated with discomfort, fear of movement, and heightened anxiety. Shoulder dislocations occurring in the context of reverse shoulder arthroplasty represent a unique subset of cases in which timing acquires even more weight. Teusink et al reported that early dislocations following this procedure were more amenable to closed management when addressed promptly, whereas delayed cases often required surgical correction.[7] This difference suggests that certain surgical populations are especially vulnerable to the risks associated with treatment delay, and reinforces the need for early recognition and action when complications emerge.

The conversation around timing is not only about the first few hours post-injury. It includes the total timeline from injury to definitive management, including immobilization

periods, rehabilitation onset, and when or whether surgical stabilization is considered. Kahn and Mehta studied the role of post-reduction radiographs and found that physicians often opted to bypass imaging before reduction to avoid wasting critical minutes, especially when the dislocation was clinically obvious.[8] This practice raises questions about balancing diagnostic thoroughness with procedural efficiency. Their findings highlighted those experienced clinicians, when confident in their clinical assessment, prioritized reduction over delays introduced by unnecessary imaging protocols.

Treatment delay is not always a result of indecision. In resource-limited settings or crowded emergency departments, delays can stem from logistical constraints such as lack of access to sedation, imaging, or orthopedic consultation. In these environments, protocols must adapt to ensure that patients do not suffer long-term harm due to temporary system limitations. Rouleau and Hebert-Davies explored the outcomes of posterior dislocations and found that missed or delayed diagnoses frequently led to more invasive treatments and worse functional outcomes, primarily because the window for safe closed reduction had closed.[9] Their work supports the view that time sensitivity extends beyond the common anterior dislocation and requires broader recognition across all types.

FUNCTIONAL AND LONG-TERM OUTCOMES IN IMMEDIATE VERSUS DELAYED MANAGEMENT

Long-term recovery after shoulder dislocation depends on more than just the success of initial reduction. Functional outcomes reflect the interplay between timing, tissue response, and individualized rehabilitation. Delayed intervention can subtly shift the trajectory of recovery, influencing strength, mobility, and recurrence rates months after the injury has been resolved clinically.

Shuster et al studied whether skipping pre-reduction radiographs in clear cases could hasten care without compromising safety or outcomes.[10] Their findings extended beyond process efficiency. By minimizing unnecessary procedural steps, clinicians reduced delays in reduction, which translated into improved pain control and shorter overall recovery time. Although their focus was not explicitly on functional scores, the link between reduced procedural delay and enhanced patient comfort hinted at broader implications for functional rehabilitation.

When recovery is measured through metrics like range of motion, recurrence risk, and patient satisfaction, time to reduction repeatedly appears in the data. Kavaja et al conducted a network meta-analysis comparing various treatments following traumatic shoulder dislocation and found that early surgical repair yielded better stability outcomes than conservative methods delayed over time.[11] Recurrent instability, often seen in young athletes and high-demand patients, was less frequent in groups who received immediate surgical stabilization or prompt conservative therapy. Delayed conservative care, on the other hand, showed higher redislocation rates, limiting return-to-play potential and diminishing long-term confidence in the joint.

Functional strength and return to daily activities follow a less predictable curve when treatment is delayed. Laxity in the capsule and soft tissue healing impair neuromuscular control, which may not be fully restored with late intervention. Rouleau and Hebert-Davies reported that in posterior shoulder dislocations, often diagnosed late, functional outcomes were consistently worse compared to early-diagnosed cases, with patients experiencing restricted range and persistent apprehension during overhead motion.[9] In these patients, the delay in addressing the injury allowed biomechanical imbalance and adaptive patterns to set in, complicating rehabilitation and lengthening recovery timelines.

Moreover, treatment delay is not limited to reduction itself. When early mobilization protocols are stalled or immobilization is prolonged beyond necessary limits, joint stiffness and muscle atrophy create barriers to full recovery. Paterson et al reviewed immobilization strategies and highlighted how both the position and duration of sling use after reduction influenced long-term strength and shoulder mechanics.[12] Patients who were immobilized in external rotation for shorter periods showed improved labral healing and better control in abduction, compared to those subjected to extended or neutral-position immobilization.

RISK FACTORS, COMPLICATIONS, AND RECURRENT INSTABILITY

Shoulder dislocations rarely occur in isolation from future consequences. Once the joint has dislocated, the risk of recurrence increases significantly, especially in younger patients and those involved in high-impact sports. Age at the time of the first dislocation is a primary predictor. Kirkley et al showed that younger individuals, particularly males under 25, experience much higher rates of re-dislocation following conservative treatment, even when immediate reduction is performed.[6] Their trial comparing early surgical stabilization to nonoperative care found that instability persisted in a large portion of those who avoided surgery, limiting confidence in the shoulder and prompting early return visits.

The first injury often causes a Bankart lesion or capsulolabral damage, which alters joint mechanics. Failure to address this structural change sets the stage for persistent instability. Robinson et al tracked patients during the first six weeks after their initial anterior dislocation and discovered that nearly 40 percent experienced redislocation within that early period, often due to inadequate guidance on movement restriction or poor compliance with activity modification.[13] The pattern observed was not random. Those with previous episodes of subluxation or hyperlaxity were more likely to report instability events soon after returning to regular activities.

Recurrent dislocations are not the only concern. Nerve injury, particularly involving the axillary nerve, is a

complication that increases with delayed or forceful reduction attempts. Patients who are late or are subjected to multiple unsuccessful maneuvers are exposed to higher risk. Rouleau and Hebert-Davies, in their analysis of traumatic posterior dislocations, emphasized the potential for iatrogenic damage when reduction is not performed promptly or under proper conditions.[9] Their findings illustrated that delayed recognition and poorly executed reductions often led to long-term deficits in deltoid strength and shoulder abduction. These motor complications complicate rehabilitation and reinforce patterns of instability, as muscular control is essential to maintain joint congruency.

Structural factors also carry predictive value. Glenoid bone loss, Hill-Sachs lesions, and rotator cuff tears all contribute to recurrence risk. These may be subtle or missed on initial imaging if not properly assessed. In cases of missed posterior dislocations, for example, routine anterior-posterior views may appear deceptively normal, delaying intervention. Shuster et al. explored how targeted guidelines for imaging can reduce these errors. Their prospective study on eliminating pre-reduction radiographs in obvious anterior dislocations did not result in increased missed injuries, but they acknowledged the risk in posterior or atypical cases if imaging was not performed post-reduction.[10] Accurate identification of structural damage early on provides direction for management strategies and allows clinicians to stratify patients based on recurrence probability.

CONCLUSION

Immediate reduction of shoulder dislocations is generally associated with improved outcomes, particularly in terms of pain control and procedural success. Delays in treatment can increase the risk of complications, recurrent instability, and longer recovery timelines. Patient-specific factors such as age, activity level, and injury pattern should guide clinical decisions. Optimizing timing and follow-up strategies is essential for achieving long-term functional stability.

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REFERENCES

1. Youm T, Takemoto R, Park BK-H. Acute management of shoulder dislocations. J Am Aca Orthop Surg. 2014;22(12):761-71.
2. Khiami F, Gérometta A, Loriaut P. Management of recent first-time anterior shoulder dislocations. Orthop Traumatol Surg Res. 2015;101(1):S51-7.
3. Kanji A, Atkinson P, Fraser J, Lewis D, Benjamin S. Delays to initial reduction attempt are associated with higher failure rates in anterior shoulder dislocation: a retrospective analysis of factors affecting reduction failure. Emerg Med J. 2016;33(2):130-3.
4. Nambiar M, Owen D, Moore P, Carr A, Thomas M. Traumatic inferior shoulder dislocation: a review of management and outcome. Eu J Trauma Emerg Surg. 2018;44(1):45-51.
5. Song T, Yan X, Ye T. Comparison of the outcome of early and delayed surgical treatment of complete acromioclavicular joint dislocation. Knee Surg Sports Traumatol Arthrosc. 2016;24(6):1943-50.
6. van Spanning SH, Verweij LP, Priester-Vink S, van Deurzen DF, van den Bekerom MP. Operative versus nonoperative treatment following first-time anterior shoulder dislocation: a systematic review and meta-analysis. JBJS Rev. 2021;9(9):e20.
7. Kirkley A, Werstine R, Ratjek A, Griffin S. Prospective randomized clinical trial comparing the effectiveness of immediate arthroscopic stabilization versus immobilization and rehabilitation in first traumatic anterior dislocations of the shoulder: long-term evaluation. Arthrosc: J Arthrosc Related Surg. 2005;21(1):55-63.
8. Teusink MJ, Pappou IP, Schwartz DG, Cottrell BJ, Frankle MA. Results of closed management of acute dislocation after reverse shoulder arthroplasty. J Shoulder Elbow Surg. 2015;24(4):621-6.
9. Kahn JH, Mehta SD. The role of post-reduction radiographs after shoulder dislocation. J Emerg Med. 2007;33(2):169-73.
10. Rouleau DM, Hebert-Davies J, Robinson CM. Acute traumatic posterior shoulder dislocation. J Am Acad Orthop Surg. 2014;22(3):145-52.
11. Shuster M, Abu-Laban RB, Boyd J, Gauthier C, Shepherd L, Turner C. Prospective evaluation of a guideline for the selective elimination of pre-reduction radiographs in clinically obvious anterior shoulder dislocation. Can J Emerg Med. 2002;4(4):257-62.
12. Kavaja L, Lähdeoja T, Malmivaara A, Paavola M. Treatment after traumatic shoulder dislocation: a systematic review with a network meta-analysis. Br J Sports Med. 2018;52(23):1498-506.
13. Paterson WH, Throckmorton TW, Koester M, Azar FM, Kuhn JE. Position and duration of immobilization after primary anterior shoulder dislocation: a systematic review and meta-analysis of the literature. JBJS. 2010;92(18):2924-33.
14. Robinson C, Kelly M, Wakefield A. Redislocation of the shoulder during the first six weeks after a primary anterior dislocation: risk factors and results of treatment. JBJS. 2002;84(9):1552-9.

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