

Case Series

Rational shoulder dislocation reduction technique: a case series

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ABSTRACT

Shoulder dislocations are among the most frequent major joint dislocations encountered in emergency orthopedic practice, necessitating prompt intervention to alleviate pain, restore function, and prevent complications. Conventional reduction techniques often require multiple operators or procedural sedation and may involve high-force leverage maneuvers, which can increase the risk of iatrogenic injury. The “rational shoulder dislocation reduction technique” is a novel single-operator approach designed to address these challenges. This case series reports 12 patients with anterior, posterior, or inferior shoulder dislocations resulting from sports injuries, falls, and traffic accidents. Patients were treated using the Rational Technique, involving supine positioning, semi-physiological arm placement (30° abduction, 20° forward flexion, 90° elbow flexion), and gradual axial traction. General anesthesia was preferred when feasible; intra articular local anesthesia was used when general anesthesia was unavailable. The mean reduction time was 95 seconds, and all reductions were successful without complications. Post-reduction, a dedicated shoulder immobilizer was applied. This single-operator method is safe, reproducible, and practical for use in various clinical settings, including emergency departments, sports facilities, and resource-limited environments. Its simplicity and low-force approach make it a viable alternative to conventional techniques, reducing the need for multiple assistants and sedation while minimizing the risk of iatrogenic injury. **Keywords:** Shoulder dislocation, reduction technique, single-operator, axial traction, muscle relaxation, glenohumeral joint.

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INTRODUCTION

Glenohumeral dislocations represent the most frequent major joint dislocation in adults, often presenting as orthopedic emergencies. Statistics indicate that anterior dislocations account for approximately 95% of cases, while posterior dislocations comprise 2-4%, and inferior dislocations less than 1%. These injuries typically result from high-impact events such as falls, sports-related trauma, or motor vehicle accidents.¹ If not managed promptly and safely, complications can arise, including neurovascular injury, rotator cuff tears, labral lesions, and chronic post-traumatic arthritis. Traditional reduction methods, such as the Kocher's or Hippocratic techniques, frequently necessitate multiple assistants and procedural sedation. Furthermore, they may involve significant force,

which carries an inherent risk of iatrogenic injuries like humeral neck fractures. Muscle spasms often exacerbate these challenges, making the ideal reduction technique one that is safe, reproducible by a single operator, and effective across various dislocation types. The rational shoulder dislocation reduction technique was specifically developed to meet these requirements by emphasizing muscle relaxation through semi-physiological positioning.

CASE SERIES

This series involved twelve patients, aged 28 to 52 years, who presented with various types of shoulder dislocations. The demographic and clinical profile of the cohort reflected a diverse range of injury mechanisms, primarily sports injuries and accidental falls. In the first case, a 34-

year-old male sustained an anterior dislocation during basketball. Under general anesthesia, the arm was placed in the required semi-physiological alignment, and spontaneous reduction was achieved at 80 seconds. The second case involved a 47-year-old female with a posterior dislocation from a traffic accident, where reduction was successfully completed in 110 seconds. A third patient, a 52-year-old male, was treated using intra-articular local anesthesia due to the unavailability of general anesthesia; his reduction was achieved in 95 seconds with immediate stability. The remaining nine cases (Cases 4-12) involved patients aged 28-50 years with anterior dislocations. In these instances, six patients received local anesthesia and three received general anesthesia. All reductions were successful within a time range of 80 to 110 seconds, with no recorded iatrogenic injuries or complications during the 3-6 month follow-up period.

Description of the rational shoulder dislocation reduction technique

The rational technique begins with the patient lying in a supine position. The affected arm is then placed in a semi-physiological position consisting of 30° abduction, 20° forward flexion, and 90° elbow flexion. This specific orientation is designed to relax the deltoid and rotator cuff muscles, which significantly facilitates the reduction process. To maintain stability, the arm is supported by a soft sling suspended around the patient’s neck. During the reduction phase, the operator grasps the patient’s forearm and applies gradual, sustained axial traction along the humerus. Because of the relaxation achieved through positioning, reduction often occurs spontaneously during this traction. If the reduction remains incomplete, the operator applies gentle manual pressure to guide the humeral head into the glenoid fossa. While general anesthesia is preferred to maximize muscle relaxation, intraarticular local anesthesia remains a viable alternative. Following the procedure, a dedicated shoulder immobilizer is applied, and patients are provided with instructions on activity restriction.



Figure 1: Initial position of the patient before the reduction maneuver.



Figure 2: Axial traction applied in the semi-physiological position.



Figure 3: Humeral head guidance; gentle pressure is applied if reduction is incomplete.

DISCUSSION

This case series highlights the efficacy of the rational technique as a safe, single-operator method. Unlike traditional leverage-based maneuvers, this approach utilizes semi-physiological positioning to reduce the force required for reduction, thereby minimizing the risk of iatrogenic injury.¹⁻³ The importance of muscle relaxation is evidenced by the fact that many reductions occurred spontaneously during the initial traction phase.⁴

When compared to classical methods like the Kocher or Hippocratic techniques, the rational technique demonstrates a significant advantage in terms of efficiency and resource management. The mean reduction time of 95 seconds is competitive with existing single-operator methods described in the literature.⁵⁻⁷ Furthermore, its

effectiveness across anterior, posterior, and inferior dislocations suggests a high degree of versatility.⁸⁻¹⁰ While this study is limited by its small sample size and retrospective nature, the lack of recurrent dislocations in follow-up suggests promising long-term stability. Future prospective studies are recommended to compare these outcomes directly with conventional multi-operator techniques.^{11,12}

CONCLUSION

The rational shoulder dislocation reduction technique is a rapid and effective method suitable for single-operator use in various clinical settings. By prioritizing muscle relaxation through positioning and controlled axial traction, the technique offers a safer alternative to high-force traditional methods.

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