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Case Report

Acromioclavicular Joint Dislocation in a 16-Year-Old High-Level Basketball Player – Case Report of a Rare Injury in Children

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Abstract

Acromioclavicular joint (ACJ) injuries are uncommon in adolescents because their ligaments are particularly strong at this age. Therefore, in an immature skeleton, injuries to the lateral clavicle more likely result in physeal fractures rather than coracoclavicular ligaments disruption. This report presents the case of a 16-year-old male patient, high-level basketball player, who sustained a high-grade ACJ dislocation following sports-related trauma. Clinical examination and imaging confirmed a Rockwood Type V ACJ dislocation. There is no consensus in the literature regarding the optimal treatment for these injuries, however given his young age, activity level, and functional demands, an arthroscopy-assisted coracoclavicular (CC) fixation was performed. Postoperatively, the patient followed a structured rehabilitation program, initially involving immobilization followed by progressive physiotherapy.

Keywords: *Acromioclavicular joint dislocation; Arthroscopy; Sports medicine.*

Introduction

Acromioclavicular joint dislocation accounts for approximately 9% of shoulder girdle injuries.[1] True acromioclavicular joint (ACJ) injuries are rare in children and adolescents due to the strength of ligaments in this age group.[2] In skeletally immature patients, lateral clavicle injuries are more likely to present as physeal fractures rather than true AC joint separations because of the relative weakness of the growth plate.[1,2]

These injuries typically result from direct trauma to the shoulder, such as falls onto the lateral aspect of the acromion, leading to disruption of the acromioclavicular and coracoclavicular ligaments. The severity of these injuries is classified using Rockwood classification system, ranging from mild sprains to complete dislocations with significant clavicular separation.

There is no clear consensus in the literature regarding the optimal management of high-grade ACJ dislocations, particularly in adolescents.[1,2] Treatment options vary from conservative approaches, including immobilization and physiotherapy, to surgical interventions aimed at restoring joint stability and function. Surgery is indicated in medically fit patients with type IV - VI injuries. A wide variety of operative procedures has been described, but none has been shown to be notably superior to the others.[3]

Arthroscopy-assisted coracoclavicular (CC) fixation has emerged as a minimally invasive surgical technique offering potential advantages over open procedures, including reduced soft tissue damage, faster recovery, and improved cosmetic outcomes. However, evidence supporting its use in pediatric and adolescent populations remains limited.

Case Presentation

A 16-year-old male, high-level basketball player, with no relevant medical history or regular medication, was admitted to emergency department. He mentioned direct trauma to his left shoulder during sports activity. He presented severe pain and functional impairment. On physical examination, he exhibited painful shoulder motion and a visible deformity at the acromioclavicular joint, with no skin suffering or neurovascular deficits. X-ray confirmed a left acromioclavicular joint dislocation – Rockwood type V. [Figure 1]

Given the severity of the injury and the fact that the patient is a high-level athlete with high functional demands, surgical treatment was indicated to ensure optimal recovery, joint stability, and return to competitive sports. It has been proposed an arthroscopy-assisted procedure that involved coracoclavicular (CC) fixation using the TwinBridge button system (Smith & Nephew®), along with acromioclavicular (AC) capsular repair [Figure 2 - Balke et al., 2022] with suture tape in a figure-of-eight configuration to reinforce the joint and restore vertical and horizontal stability, respectively.

Fig 1. *Rockwood type V AC joint dislocation.*

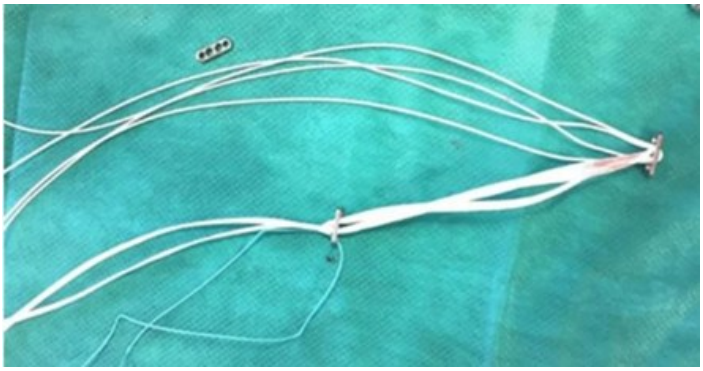

Fig 2. *Modified TwinBridge implant with UltraTape and polyester sutures (Smith & Nephew®).*

Surgery was undertaken 17 days after the injury. The patient was under general anesthesia and a regional brachial plexus block, in the beach-chair position, and the C-arm positioned from the opposite side. Three portals were established: standard posterior, anterolateral, and anterior portals. The procedure began with a diagnostic arthroscopy to assess any associated injuries. Shaver and radiofrequency were then used to expose the inferior and lateral part of the coracoid. Finally, the scope was repositioned on the anterolateral portal, ensuring a clear and unobstructed view of the coracoid base. A horizontal skin incision over the acromioclavicular joint towards the clavicle was performed. The aiming device was inserted through the anterior portal towards the undersurface of the coracoid process. A guide pin was inserted at the superior side of the clavicle, about 3 cm medial to its lateral border, and advanced through the clavicle and coracoid using the power toll. The position of the pin was confirmed under fluoroscopy. Then a cannulated drill was advanced over the pin through the clavicle and the coracoid. [Figure 3].

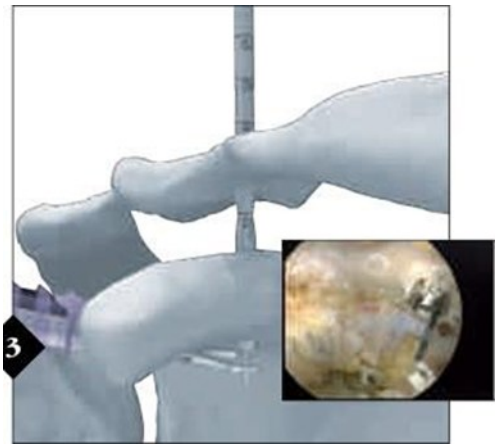

Fig 3. *Cannulated drill is advanced over the pin (Arthrex.com, 2025).*

Cannulated drilling beyond the coracoid must be done under direct arthroscopic visualization. The pin was removed. A nitinol wire was then passed through the cannulated drill, and the tip was grasped through the anterior portal, leaving the loop proximally. Then the drill was removed and traction sutures from the oblong button of the TwinBridge (Smith and Nephew®) were passed through the nitinol wire loop. The oblong button was carefully guided through the clavicle and the coracoid under direct visualization until it emerges at the base of the coracoid with the assistance of a grasper. [Figure 4] The button should be flipped until it sits perfectly under the inferior surface of the coracoid.

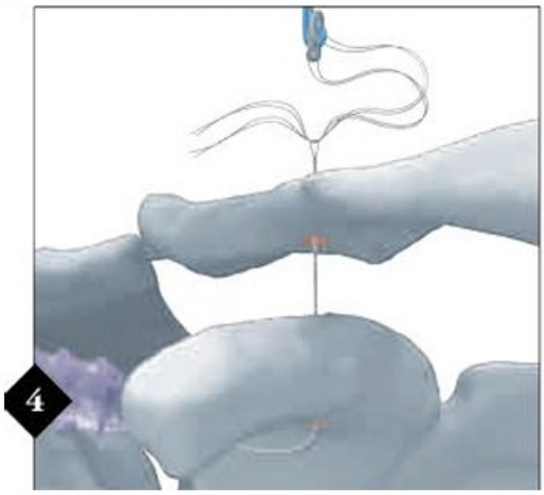

Fig 4. *Passing the TwinBridge button system through both the clavicle and the (Arthrex.com, 2025)*

After verifying the stability of the oblong button, the clavicle was fixed with tying-knots over the top of the upper button of the TwinBridge (Smith and Nephew®) under fluoroscopic control. Two drill holes using a 2.5mm drill bit were performed in the anteroposterior direction, the first one 15 mm medial to the AC joint in the clavicle and the other 15mm lateral to the AC joint in the acromion. A suture tape was passed in a figure-of-8 configuration through the holes, with PDS suture aid for the passage, and then tied.

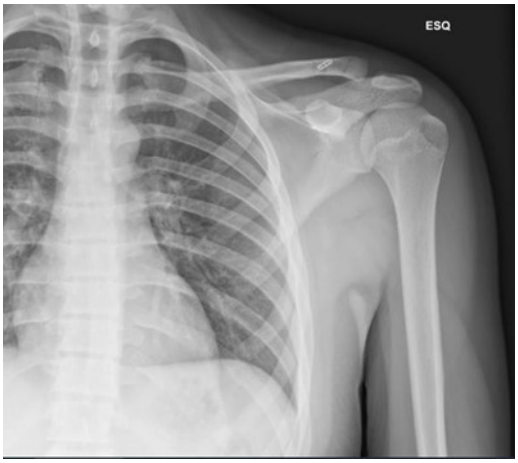

Fig 5. *Post-operative x-ray.*

During the first six weeks after surgery, a structured recovery protocol to optimize healing and to restore shoulder function should follow. The patient should wear an arm sling continuously to protect the surgical site. Ice packs were applied regularly to the shoulder to reduce swelling and alleviate pain. Adequate analgesia was provided as needed to ensure patient comfort. Shoulder active motion should start after removing the arm sling at 6 weeks post-op.

Discussion

As the incidence of acromioclavicular joint (ACJ) separation in young population is unknown, literature on this topic is scarce. Kraus et al. [5]reported that only 50 ACJ dislocations in the pediatric population are treated on an inpatient basis in Germany every year. Most injuries occur in athletes participating in contact and overhead throwing sports and male athletes are at higher risk for suffering such injuries. The treatment of ACJ dislocation in adults remains a topic of debate, so it is unsurprising that no standardized guidelines exist for the much rarer cases in children and adolescents. Although concrete management guidelines are lacking, most of the studies indicate operative management in cases of soft tissue impingement, buttonholing of the clavicle in the trapezius, excessive displacement of the clavicle and presence of concomitant injuries like coracoid fractures and clavicle fractures. Naman Wahal et al. [2]. Eidmann et al. [6] recommend surgical treatment like in adults for children above thirteen years-old, since they suffer from adult-like unstable ACJ dislocations, while a conservative treatment should produce good results in younger children.

There are various surgical techniques available for treating ACJ dislocation, each with its own advantages and limitations. Among these options, the arthroscopy-assisted procedure with coracoclavicular (CC) ligaments fixation using a suspensory system offers significant benefits. According to a study by Natera et al. [7], who have compared this with open repair, the arthroscopic technique using this system has lower risk of stiffness, infection, soft tissue morbidity, and hardware irritation; it requires no surgery for hardware removal and enables simultaneous diagnosis and management of intra-articular pathology. These advantages make this technique a valuable option, as it promotes a less invasive approach with fewer postoperative complications and facilitates a more comprehensive assessment of associated injuries.

A longitudinal cohort study by Pallis et al. [8] was performed to determine the incidence and characteristics of AC joint injury at the United States Military Academy between 2005 and 2009. Although the difference was not statistically significant, the study found that high-grade AC joint injuries were associated with a notably longer recovery time compared to low-grade injuries. On average, athletes with low-grade sprains missed 10.4 days, while those with high-grade injuries were out for approximately 63.7 days. Despite the lack of statistical significance ($P = .18$), likely due to the small number of high-grade cases, the clinical relevance remains clear: athletes with severe injuries missed around 2.5 months of sports participation, compared to just two weeks for milder cases. For young and athletic patients, the time to return to work and sports is longer with surgical management and the potential for postoperative complications should be taken into consideration according to Saade et al. [9].

Either conservative or surgical treatment can lead to several complications. Gowd et al. [11] reported that the most common complications were infection (6.3%), followed by coracoid or distal clavicle fractures (5.7%), and hardware or button failure (4.2%). No significant differences were found between arthroscopic and open techniques in terms of loss of reduction, overall complication rates, or revision rates. According to the study, elastic-button techniques for AC joint reconstruction had an overall failure rate of 18.3%.

In this case, surgical treatment was chosen to treat a high-grade ACJ dislocation in a young athlete through an arthroscopy-assisted procedure that involved coracoclavicular (CC) fixation using a button system, along with acromioclavicular capsular repair, to let him to return to sports as soon as possible while trying to minimize symptoms recurrence.

Conclusion

Acromioclavicular dislocations are rare in young patients, and due to this low incidence, there is no established consensus on the optimal treatment approach. A 16-year-old high-level basketball athlete was treated using an arthroscopy-assisted technique for coracoclavicular fixation and acromioclavicular capsular repair, providing a minimally invasive solution, and reducing associated risks of open surgery. More studies reporting such injuries and their treatment approaches are needed to establish a protocol and to improve the functional outcome in this special population.

Conflicts of Interest

The authors declare no conflicts of interest.

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