Case Report *Open Access*

Journal of Innovative Clinical Trials and Case Reports

ISSN: 3068 - 1936

DOI: *doi.org/10.63721/25JCTC0124*

Ipsilateral Acute ACJ Dislocation Following Prior Mid-Shaft Clavicle Plating: A Case Managed with a Minimally Invasive Tight Rope Technique

Riven Ragunandan* and Maradona Mncedisi Mashigo

Division of Orthopaedic Surgery, University of the Witwatersrand, Johannesburg, South Africa

Citation: Riven Ragunandan (2025) Ipsilateral Acute ACJ Dislocation Following Prior Mid-Shaft Clavicle Plating: A Case Managed with a Minimally Invasive Tight Rope Technique. J. of Inn Clin Trail Case Reports 1(3), 1-6. WMJ/JCTC-124

Abstract

Introduction: *Acute acromioclavicular joint (ACJ) dislocation occurring years after a healed, plated mid-shaft clavicle fracture is extremely rare, and limited evidence guides management. Pre-existing hardware introduces unique biomechanical and technical considerations during coracoclavicular (CC) reconstruction.*

Case Presentation: *A 32-year-old male sustained an isolated Rockwood V ACJ dislocation four years after mid-shaft clavicle plating. Because a distal plate hole aligned favourably with the coracoid, a minimally invasive TightRope suture-button construct was passed through the existing plate to restore CC stability.*

Conclusion: *Acute ACJ dislocation following prior clavicle plating can be effectively managed using a TightRope construct through the existing plate, avoiding implant removal and enabling early mobilisation.*

***Corresponding author:** Riven Ragunandan, Department of Orthopaedic Surgery, Charlotte Maxeke Johannesburg Academic Hospital, 7 York Road, Parktown, Johannesburg, 2193, South Africa.

Submitted: 05.12.2025 **Accepted:** 11.12.2025 **Published:** 22.12.2025

Keywords: Acromioclavicular Dislocation, Clavicle Plate, Tight Rope, Minimally Invasive Fixation, Coracoclavicular Reconstruction

List of Abbreviations

ACJ – Acromioclavicular Joint
CC – Coracoclavicular
ORIF – Open Reduction and Internal Fixation
ATLS – Advanced Trauma Life Support
AP – Anteroposterior

Introduction

Acromioclavicular joint (ACJ) injuries account for 9–12% of shoulder girdle injuries and typically occur following direct lateral shoulder trauma, particularly in young, active individuals involved in high-energy activities [1-3]. High-grade ACJ disruptions (Rockwood IV–VI) usually require surgery owing to complete disruption of the AC and CC ligaments and significant vertical instability [4,5].

Simultaneously, modern understanding of mid-shaft clavicle fracture management has evolved considerably. Although once treated non-operatively, studies have shown that displaced mid-shaft fractures managed conservatively carry higher risks of non-union, symptomatic malunion, and poorer functional outcomes [6-8]. As a result, open reduction and internal fixation (ORIF) using anatomical locking plates is now widely accepted, providing excellent union rates and functional recovery [7-9].

Combined ipsilateral mid-shaft clavicle fractures with ACJ dislocations are rare and usually occur as acute, simultaneous high-energy injuries [10,11]. When reported, operative management typically addresses both injuries in a single setting. However, acute ACJ dislocation occurring years after a healed mid-shaft clavicle fracture treated with a plate has not been clearly described.

Operative options for ACJ stabilisation include hook-plate fixation, anatomic ligament reconstruction, and minimally invasive suture-button constructs such as the TightRope. Hook plates can cause subacromial irritation and usually require removal. Suture-button devices, however, offer strong vertical stability with limited soft-tissue dissection and favourable postoperative recovery [12].

A comparable technical concept was described by Fulton et al., who used a TightRope construct passed through a clavicle plate for a delayed ACJ injury recognised during clavicle fracture rehabilitation [13]. However, their scenario differs significantly from the present case: their ACJ injury evolved during fracture recovery, whereas our patient sustained a new acute Rockwood V injury four years after complete fracture union.

This case demonstrates that passing a TightRope through a pre-existing mid-shaft clavicle plate is feasible and effective, representing a management approach not previously documented.

Case Presentation

A 32-year-old right-hand-dominant male with no medical comorbidities presented to the emergency department following a motorbike accident. He reported falling onto the lateral aspect of his right shoulder at moderate speed after losing control of the motorcycle on a wet road surface. He experienced immediate pain, noticeable deformity, and an inability to elevate the arm due to discomfort. There was no history of loss of consciousness, head injury, chest pain, or other systemic symptoms.

The patient had a significant orthopaedic history involving the same limb. Four years earlier, in March 2021, he sustained a displaced right mid-shaft clavicle fracture following a workplace fall. This injury had been managed operatively with open reduction and internal fixation using a pre-contoured mid-shaft clavicle locking plate. His postoperative course was uncomplicated, with timely radiographic union, full restoration of shoulder function, and no implant-related symptoms. He remained fully active thereafter and continued his occupation as a driver.

On presentation for the current injury, the patient was hemodynamically stable, and an ATLS-based assessment excluded additional life- or limb-threatening pathology. No other fractures, head injuries, spinal tenderness, or neurovascular deficits were identified. The injury was confirmed to be isolated to the right shoulder.

Inspection revealed a prominent lateral clavicle with visible superior displacement of the distal end, producing an asymmetric shoulder contour. There was localised swelling over the acromioclavicular region, and the patient reported significant tenderness on palpation. (Figure 1).

Active shoulder movements were markedly reduced, particularly forward elevation and abduction, due to pain. Passive motion was limited but neurovascular examination of the upper limb remained intact. Distal pulses were palpable, and both sensory and motor

functions across median, radial, and ulnar nerve distributions were normal.

Figure 1: Post Injury Clinical Image: Right Shoulder AP and Lateral

Standard radiographic evaluation, including anteroposterior and axillary views of the shoulder, demonstrated a high-grade acromioclavicular joint dislocation consistent with Rockwood type V injury, characterised by marked superior migration of the distal clavicle and widening of the coracoclavicular interval. Importantly, the mid-shaft clavicle plate from his prior surgery was intact, with no evidence of implant loosening, screw back-out, plate deformation, peri-implant fracture, or non-union. This confirmed that the hardware remained stable and the fracture site had fully healed. (Figure 2)

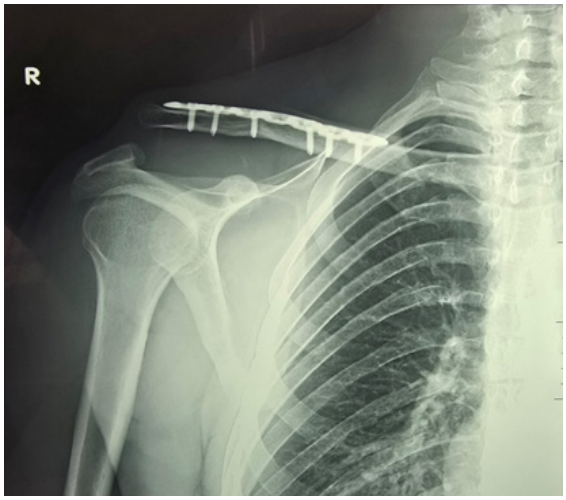

Figure 2: Post Injury Radiograph: Right Shoulder AP

Given the patient's age, functional demands, and the severity of the dislocation, operative management was elected. The surgical plan involved coracoclavicular reconstruction using a minimally invasive suture-button (TightRope) technique. A decision was made to incorporate the existing plate into the fixation strategy rather than remove it, provided that plate-hole alignment allowed a safe and direct trajectory toward the coracoid.

Under general anaesthesia, the patient was positioned in a beach-chair configuration. A small incision was made over the lateral clavicle plate. Fluoroscopic assessment confirmed that one of the distal plate holes aligned optimally with the intended coracoid tunnel. A single distal locking screw was removed to enable passage of the drilling system. Using fluoroscopic guidance, a guidewire was carefully advanced through the plate hole into the coracoid base. After confirming the trajectory and depth, a cannulated drill was used to create the tunnel, and a TightRope suture-button construct was deployed. (Figure 3&4)

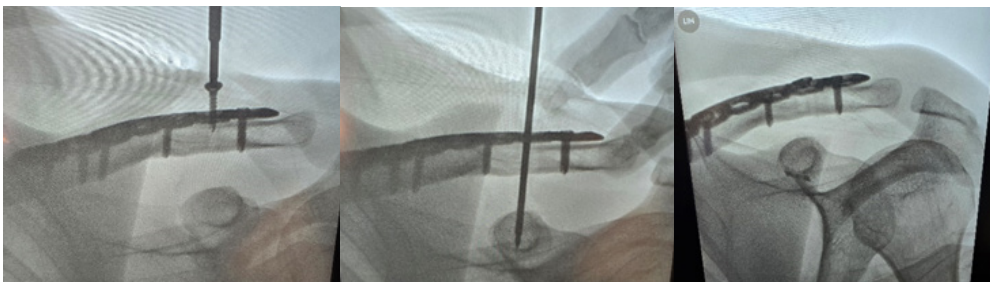

Figure 3: Intra-Operative AP Fluoroscopic Images: Screw Removal, Coracoid Tunnel and Tight Rope Fixation

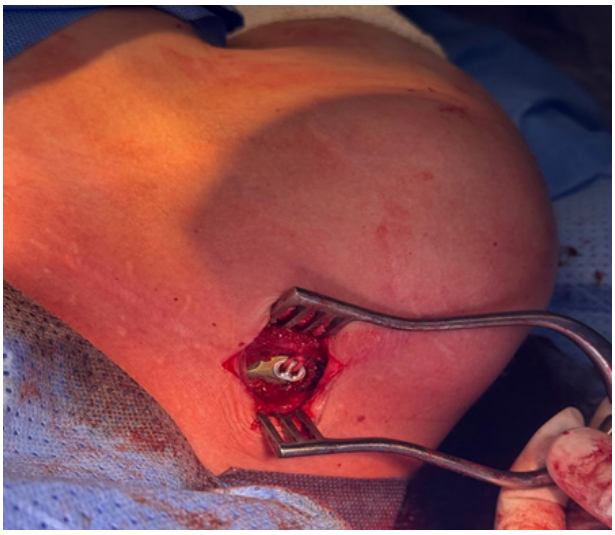

Figure 4: Intra-Operative Clinical Image: Tight Rope Button Seated in Plate Screw Hole

Once the device was secured, controlled tensioning restored anatomic reduction of the AC joint, verified on C-arm imaging in multiple planes. The wound was closed in layers, and a sterile dressing applied.

Postoperatively, the patient's arm was placed in a sling for comfort. He was advised to avoid overhead activities for two weeks but permitted to perform hand, wrist, and elbow mobilisation. Analgesia was provided as needed.

At his two-week follow-up visit, the surgical incision had healed well with no signs of infection, wound dehiscence, or hematoma. Radiographs confirmed maintained reduction of the AC joint and stable positioning of the suture-button construct through the clavicle plate. (Figure 5) The patient commenced gentle, pain-free pendulum exercises and assisted active range-of-motion under physiotherapy supervision.

Figure 5: Six Weeks Post-Surgery Radiograph: Right Shoulder AP

At six weeks postoperatively, the patient demonstrated significant functional improvement. He had regained good forward elevation and abduction without instability or discomfort. Strength was gradually returning, and radiographs showed ongoing stability of the reconstruction with no evidence of hardware complications. The patient expressed high satisfaction with his recovery and had returned to light daily activities.

Discussion

High-grade ACJ dislocations commonly follow direct lateral trauma and are usually isolated injuries [1-4]. Delayed ACJ pathology following previous clavicle plating is exceedingly rare. A thorough literature search revealed no prior cases of acute Rockwood V ACJ dislocation occurring years after a mid-shaft clavicle ORIF.

Suture-button devices such as the TightRope are increasingly used due to their favourable biomechanical profile, low morbidity, and ability to facilitate early mobilisation [12]. However, performing this technique through a long-standing mid-shaft plate is not addressed in current literature.

Fulton et al. described passing a TightRope through a clavicle plate to treat a delayed ACJ injury identified during clavicle fracture rehabilitation [13]. Their report demonstrated that a plate may serve as a reinforced cortical entry point for CC reconstruction. Our case shares this technical premise but differs fundamentally in timing and pathology: the present patient sustained a new acute ACJ dislocation four years after complete fracture healing, rather than delayed instability during fracture recovery. This scenario has not previously been reported. This case confirms that when plate-hole alignment is favourable, a TightRope-through-plate technique is safe, avoids implant removal, and provides excellent early radiological and functional outcomes.

Learning Point

A TightRope suture-button can be safely passed through a pre-existing mid-shaft clavicle plate to treat an acute high-grade ACJ dislocation, providing stable fixation without removing the plate.

Consent

Written informed consent was obtained from the patient.

Competing Interests

Nil.

Authors' Contributions

RR and MMM performed the surgery, collected data, and co-authored the manuscript. Both approved the final version.

Acknowledgements & Funding

Nil.

References

1. Beitzel K, Mazzocca AD, Bak K, Itoi E, Kibler WB, et al. (2014) The ISAKOS subclassification of Rockwood type III AC joint dislocations in a stable type A and an unstable type B is not clinically relevant. Orthop J Sports Med 2: 2325967114560130.
2. Rockwood CA, Williams GR, Young D (1998) In: Rockwood & Matsen. The Shoulder https://cir.nii.ac.jp/crid/1570009750128510208.
3. Shaw MB, McInerney VK, Dias JJ (2015) Acromioclavicular joint sprains: the post-injury recovery interval. Shoulder Elbow 7: 107-113.
4. Mazzocca AD, Arciero RA, Bicos J (2007) Evaluation and treatment of acromioclavicular joint injuries. Am J Sports Med 35: 316-329.
5. Korsten K, Gunning AC, Leenen LP (2014) Operative or conservative treatment in patients with Rockwood type III acromioclavicular dislocation: a systematic review and update of current literature. J Orthop Trauma 28: 97-105.
6. Canadian Orthopaedic Trauma Society (2007) Nonoperative treatment compared with plate fixation of displaced midshaft clavicular fractures. A multicenter, randomized clinical trial. J Bone Joint Surg Am 89: 1-10.
7. Robinson CM, Court-Brown CM, McQueen MM, Wakefield AE (2004) Estimating the risk of nonunion following nonoperative treatment of a clavicular fracture. J Bone Joint Surg Am 86: 1359-1365.
8. Hill JM, McGuire MH, Crosby LA (1997) Closed treatment of displaced middle-third fractures of the clavicle gives poor results. J Bone Joint Surg Am 79: 537-539.
9. van der Meijden OA, Gaskill TR, Millett PJ (2012) Treatment of clavicle fractures: current concepts review. J Shoulder Elbow Surg 21: 423-429.

10. Cosic F, Ernstbrunner L, Hoy GA, Ooi KS, Ek ET, et al. (2022) Case Report: Midshaft clavicle fracture with concomitant high grade (Type V) acromioclavicular joint dislocation. Front Surg 9: 885378.
11. Meignanaguru M, Dhakshinamurthi Y, Srinivasan D, Shetty GR, Agrawal A, et al. (2024) Management of Infected Gap Non-union of Distal Femur with Induced Membrane Technique using Limb Reconstruction System Followed by Augmentation Plating and Bone Grafting: A Case Report. J Orthop Case Rep14: 30-35.
12. Celayir A, Sahin E, Botanlioglu H, Tuncer S, Er MS, et al. (2025) Tight Rope Technique as an Alternative Surgical Approach for Acromioclavicular Joint Dislocation: A Case Report of a Minimally Invasive Fixation and Review of Literature. Cureus 17: e83875.
13. Fulton ZW, Singleton A, Miller RM (2022) Coracoclavicular Ligament Reconstruction Using TightRope for Delayed Grade III Acromioclavicular Joint Injury After Ipsilateral Diaphyseal Clavicle Fracture Fixation: Surgical Technique and Review of Current Literature. Tech Hand Up Extrem Surg 26: 208-211.