

Original Research Article

SUSPENSORY DEVICE FIXATION FOR ACUTE ACROMIOCLAVICULAR JOINT DISLOCATION: A CASE SERIES OF FUNCTIONAL AND RADIOLOGICAL OUTCOMES IN YOUNG INDIAN ADULTS

T. Natanasabapathy¹, Aakash Elangovan²

¹Senior consultant, Department of Orthopaedics, Valli Super Speciality Hospital, India.

²Associate consultant, Department of Orthopaedics, Valli Super Speciality Hospital, India.

Received : 15/02/2026
Received in revised form : 24/03/2026
Accepted : 12/04/2026

Corresponding Author:

Dr. Aakash Elangovan,
Associate consultant, Department of
Orthopaedics, Valli Super Speciality
Hospital, India.
Email: draakashelangovan@gmail.com

DOI: 10.70034/ijmedph.2026.2.465

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (2); 2819-2822

ABSTRACT

Background: Acromioclavicular (AC) joint dislocations frequently occur following road traffic accidents and sports injuries, predominantly affecting young, active adults. Optimal surgical strategies for acute type-III and IV injuries remain debated

Materials and Methods: In this retrospective case series, 10 patients (9 male, 1 female; mean age, 27 years) with acute Rockwood type-III or IV AC joint dislocations underwent open reduction and fixation with a suspensory device. Functional recovery was assessed using Disabilities of the Arm, Shoulder and Hand (DASH) and Oxford Shoulder Score (OSS) at 3, 6, and 12 months. Radiographic coracoclavicular distance (CCD), return to activity, and complications were documented

Results: Eight patients sustained injuries from road traffic accidents, while two were sports related. At 12 months, mean DASH decreased to 5.6 (range 0–9), OSS improved to 45.6 (range 36–49), and mean residual CCD was 1.7 mm. Seven patients (70%) resumed sports or recreational activities. One patient developed an upper-limb venous thrombosis, managed conservatively. No infections, device failures, or recurrent instability were observed.

Conclusion: Suspensory device fixation for acute AC joint dislocations yields progressive functional improvement, reliable radiographic stability, and high rates of return to activity across 12 months, with low complication rates in young, active patients.

Keywords: Acromioclavicular Joint Dislocation, Suspensory Device Fixation, Functional Outcomes, Rockwood Classification

INTRODUCTION

Acromioclavicular (AC) joint dislocations are a common injury among young adults, most often resulting from high-energy trauma such as road traffic accidents and sports injuries. The incidence of acute Rockwood type-III and IV dislocations is rising in India due to increased motorization and sports participation. Management strategies for these injuries remain controversial, particularly for type-III lesions, where the decision between operative and conservative approaches is debated in current literature.^[1]

Recent advances Favor surgical intervention for young, active patients seeking early return to work

and sports. Suspensory device fixation has gained popularity for providing stable anatomical reduction, facilitating rehabilitation, and minimizing the risks associated with bulkier implants or hardware-related complications. However, outcome data for this technique in Indian populations are limited.^[2]

This retrospective case series addresses this gap by evaluating the clinical and radiological outcomes, return to activity, and complication rates following open reduction and suspensory device fixation in ten patients with acute AC joint dislocations treated at a tertiary care centre in South India. The study aims to inform regional practice and contribute to the body of evidence guiding surgical management of these injuries.

MATERIALS AND METHODS

Study Design: This is a retrospective case series conducted at a tertiary care centre in South India.

Population and patient selection: Ten consecutive patients (9 male, 1 female; age range 19–34 years, mean 27.1) who presented with acute acromioclavicular (AC) joint dislocation (Rockwood type-III or IV) between January 2019 and December 2022 were included.

Inclusion Criteria

- Age 16–40 years
- Acute Rockwood type-III or IV AC joint dislocation
- Surgery performed within 2 weeks of injury
- Minimum 12-month follow-up

Exclusion Criteria

- Chronic dislocations (>2 weeks)
- Associated fractures
- Polytrauma
- Incomplete follow-up

Preoperative Assessment: Clinical evaluation and radiographs were used to confirm diagnosis and classify AC joint injury. Coracoclavicular distance (CCD) was measured on shoulder radiographs to assess displacement.

Surgical Technique: All patients underwent open reduction and suspensory device fixation under general anaesthesia using a deltopectoral approach. Drilling was performed in the clavicle and coracoid, with device placement to achieve anatomical reduction. Capsular repair was performed when feasible.

Post-operative rehabilitation: For three weeks, sling immobilisation was performed. Further passive range of motion exercises started from the second week, and active range of motion after six weeks. Strengthening began at 10 weeks and return of sports were allowed after six months if the patients were free from pain.

Outcome Measures: Functional outcomes were measured by Disabilities of the Arm, Shoulder and Hand (DASH) (3) and Oxford Shoulder Score (OSS) (4) at 3, 6, and 12 months postoperatively. Radiological assessment included CCD maintenance. Data on return to sport/activity and complications were collected.

Statistical Analysis: Descriptive statistics were used to report patient characteristics, functional scores, radiological measures, and complication rates. Results are presented as means, ranges, and proportions.

Ethical Considerations: The study protocol was conducted in accordance with institutional guidelines for retrospective chart review. Patient confidentiality was maintained.

RESULTS

Demographics and injury mechanism: Ten patients (nine male, one female; mean age 27.1 years, range 19–34) with acute acromioclavicular joint dislocations were included. Six presented with Rockwood type-III and four with type-IV injuries. Most cases (eight patients) were due to road traffic accidents, while two resulted from sports-related trauma.

Functional Outcomes: Patients demonstrated progressive improvement in arm, shoulder, and hand function across follow-up intervals. At three months, the mean DASH score was 24.8, and OSS was 28.4 and at six months mean DASH improved to 12.1, and OSS to 38.1. By 12 months, mean DASH further decreased to 5.6 (range 0–9), and OSS increased to 45.6 (range 36–49).[Table 1] [Figure 1]

Radiological Outcomes: Radiographic coracoclavicular distance (CCD) at final follow-up measured a mean of 1.7 mm (range 1–3 mm), indicating reliable anatomical reduction. No implant migration or device failure was observed.

Return to Sport/Activity: Seven patients (70%) resumed sports or recreational activity within 12 months post-surgery, reflecting restoration of function in the majority.

Complications: One patient (10%) developed a postoperative upper-limb venous thrombosis, which was managed successfully with conservative therapy. No infections, recurrent instability, or device failures were reported in any patient.

Individual Patient Data: A detailed table of individual outcomes—including DASH, OSS, CCD, and return to sport status—was compiled (Table 2). The results demonstrate consistent improvement for most patients and minimal complications associated with suspensory device fixation.

Table 1: Post-operative Disabilities of the Arm, Shoulder and Hand (DASH) and Oxford Shoulder Score (OSS) observed across 10 patients followed up at three, six and 12 months after open reduction and suspensory device fixation

Time Point	Mean DASH	Mean OSS
3 months	24.8	28.4
6 months	12.1	38.1
12 months	5.6	45.6

Table 2: Individual Patient Data

ID	Age	Sex	Type	Mechanism	DASH 3m	DASH 6m	DASH 12m	OS 3m	OS 6m	OS 12m	CCD 12m (mm)	Return to Sport	Complications
P1	19	M	III	RTA	30	14	0	22	36	36	1	Yes	—
P2	22	M	III	RTA	26	13	2	28	37	42	1	Yes	—

P3	24	M	IV	Sports	25	12	3	27	39	45	1	Yes	—
P4	26	M	III	RTA	24	10	5	29	40	46	2	Yes	—
P5	27	M	IV	RTA	28	15	6	30	38	46	2	Yes	—
P6	28	M	III	RTA	22	12	6	26	39	47	2	No	—
P7	29	M	IV	RTA	32	16	8	33	40	48	1	No	—
P8	30	M	III	Sports	20	9	9	25	37	48	3	Yes	Thrombosis
P9	32	M	III	RTA	18	8	9	22	41	49	2	Yes	—
P10	34	F	IV	RTA	21	11	8	24	38	49	2	No	—

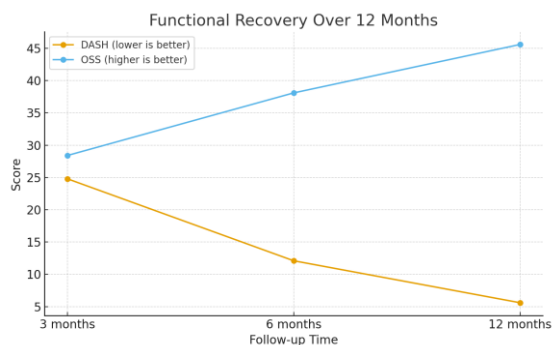
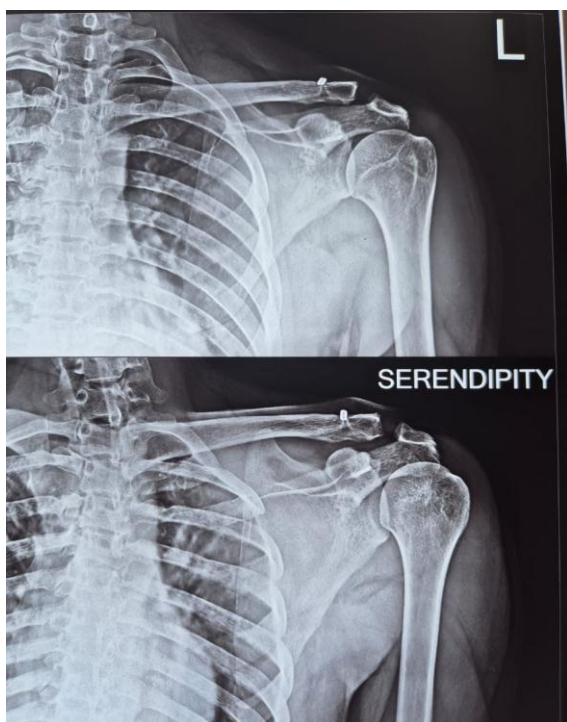


Figure 1: Functional recovery (DASH and OSS) over 12 months



DISCUSSION

This case series demonstrates that open reduction and suspensory device fixation for acute acromioclavicular (AC) joint dislocation yields progressive functional improvement and reliable anatomical reduction in young, active patients—consistent with published outcomes for this procedure. Patients showed marked gains in Disabilities of the Arm, Shoulder and Hand (DASH) and Oxford Shoulder Score (OSS) across the 12-month follow-up, comparable to existing series reporting high satisfaction and shoulder function.^[1,5,6,7,8]

Most injuries in our case series resulted from road traffic accidents, reflecting trends in rising AC joint trauma incidence in India and mirroring global patterns in young adult populations engaged in contact sports or physically demanding occupations. Restoration of function was robust, with 70% resuming sports or recreational activities within the study period—aligning with systematic reviews showing rates of return to sport exceeding 80–90% after surgical stabilization of Rockwood type-III/IV injuries.^[1,6,8]

Radiographic coracoclavicular distance was stably maintained, demonstrating effective vertical control without evidence of implant migration or gross reduction loss. Suspensory device hardware is preferred for its low profile, avoidance of a second removal procedure, and strong biomechanical properties. Meta-analyses and direct comparisons shown better or equivalent function versus traditional metallic implants such as Bosworth screw or hook plate.^[5,7,9]

Limitations of our study include its small sample size and retrospective design. Although radiographic reduction is often viewed as a measure of success, recent studies suggest that long-term functional recovery may persist despite minor displacement. Finally, regional healthcare and rehabilitation access may influence outcomes and generalizability.^[7,9]

CONCLUSION

In conclusion, suspensory device fixation is a reliable and effective method for acute AC joint dislocations in young, active patients, facilitating early return to activity, satisfactory shoulder scores, and a low complication profile. Our results support a growing consensus for using minimally invasive, low-profile techniques in this population, although continued reporting of long-term outcomes and multicentre studies are warranted for definitive treatment guidance.

REFERENCES

1. Boufadel P, Fares MY, Daher M, Lopez R, Khan AZ, Abboud JA. Epidemiology of acromioclavicular joint separations presenting to emergency departments in the United States between 2004 and 2023. *Shoulder Elbow*. 2025 Feb 16:17585732251320015. doi: 10.1177/17585732251320015. Epub ahead of print. PMID: 39967764; PMCID: PMC11831612.
2. Nolte PC, Lacheta L, Dekker TJ, Elrick BP, Millett PJ. Optimal management of acromioclavicular dislocation: current perspectives. *Orthop Res Rev*. 2020;12:27-44.
3. Hudak PL, Amadio PC, Bombardier C. Development of an upper extremity outcome measure: The DASH (Disabilities of

- the Arm, Shoulder and Hand) [Internet]. *Am J Ind Med.* 1996;29(6):602-8. doi:10.1002/(SICI)1097-0274(199606)29:6<602::AID-AJIM4>3.0.CO;2-L
4. Dawson J, Fitzpatrick R, Carr A. Questionnaire on the perception of shoulder problems: the Oxford Shoulder Score. *Arch Orthop Trauma Surg.* 2009 Jan;129(1):119-23. doi:10.1007/s00402-007-0549-7
 5. Arirachakaran A, Piyapittayanun P, Chaijenkij K, et al. Post-operative outcomes and complications of suspensory loop fixation device versus hook plate in acute unstable acromioclavicular joint dislocation: a systematic review and meta-analysis. *Int Orthop.* 2017 Feb;41(2):249-261. doi:10.1007/s00264-016-3301-9.
 6. Paul RW, Cameron KL, Owens BD, et al. Clinical and patient-reported outcomes for acute acromioclavicular joint injury after surgical fixation with and without allograft augmentation. *J Shoulder Elbow Surg.* 2022 Jul;31(7):1436-1442. doi:10.1016/j.jse.2022.02.002.
 7. Shin SJ, Kim NK, Do NH. Complications after arthroscopic coracoclavicular ligament reconstruction using a suspensory device for acute acromioclavicular joint dislocation. *Arthroscopy.* 2015 May;31(5):771-778. doi:10.1016/j.arthro.2014.11.019
 8. Nordin JS, Rahme H, Jacobsson A, et al. Acromioclavicular joint dislocations: incidence, injury mechanisms, and demographic features. *J Orthop Surg Res.* 2020 Apr;15:139. doi:10.1186/s13018-020-01655-5.
 9. Woodmass JM, Esposito JG, Ono Y, et al. Complications following arthroscopic fixation of acromioclavicular joint separations: a systematic review. *J Orthop Trauma.* 2015 Apr;29(4):e149-53. doi:10.1097/BOT.0000000000000277.