

Functional Outcomes of Neglected Posterior Elbow Dislocations Treated with Open Reduction, Arthrolysis, and Hinged External Fixation

Ameya Sawarkar¹, Shriniket Sawarkar²

¹Consultant Arthroscopy Surgeon, Arthron Speciality Clinic, Nagpur, Maharashtra, India, ²Assistant Professor, Department of General Surgery, N.K.P Salve Institute of Medical Sciences & Research Centre and Lata Mangeshkar Hospital, Hingna, Nagpur, Maharashtra, India.

Abstract

Background: Neglected posterior elbow dislocations are challenging due to stiffness, soft tissue contracture, and associated fractures. Optimal management remains controversial, especially in chronic cases (Gavrilă et al., 2025; Tong et al., 2025). **Material and Methods:** This retrospective study included 18 patients with neglected posterior elbow dislocations treated with open reduction and arthrolysis with or without triceps lengthening between January 2024 and May 2025. All patients underwent stabilization using a hinged external fixator. Functional outcomes were assessed using the Mayo Elbow Performance Score (MEPS). Mean follow-up was 6 months. **Results:** The mean age was 34 years, with a mean dislocation duration of 54 days. Postoperatively, flexion ranged from 100° to 130°. The mean MEPS was 85.58, with 8 excellent, 6 good, and 4 fair outcomes. Most patients achieved satisfactory functional range of motion with minimal pain. No instability was observed. **Conclusion:** Open reduction with arthrolysis and hinged external fixation provides reliable functional outcomes in neglected posterior elbow dislocations. Early mobilization is key to restoring motion and function (Coulilaly et al., 2012; Pranata et al., 2025; Tong et al., 2025).

Keywords: Dislocation; Elbow; Neglected; Chronic; Open Reduction; Hinged external fixator; Ligament reconstruction.

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INTRODUCTION

Neglected elbow dislocations are common in developing countries. The main reason for the delayed diagnosis is that patients initially seek treatment from a local bonesetter, who immobilizes the elbow in deformity. This leads to retraction of the triceps muscles and collateral ligaments. The resulting nonfunctional elbow contracture makes surgical procedures quite challenging. (Coulilaly et al., 2012). Such presentations are much more common in the developing countries. Possible reasons may be low education level, low socioeconomic status, low awareness of the gravity of injury, delay in seeking treatment, unethical practices by practitioners, and lack of easily accessible specialist services. (Mehta et al., 2007). Chronic elbow dislocation is defined as a dislocation that has remained unreduced for >2 weeks. The soft-tissue and skeletal changes that develop during this time usually prevent successful closed reduction. These changes include the development of extensive intra-articular fibrotic tissue, as well as contracture of the triceps, collateral ligaments, and elbow capsule. Ulnar nerve involvement and associated fractures may also be present. Because treatment of chronic elbow dislocation is challenging, a stepwise approach is used in the evaluation and management of this condition. No large series of data is available to guide treatment. Most patients are treated on the basis of the surgeon's anecdotal experience. Treatment typically involves open reduction, often with the use of hinged external fixators. The role of triceps lengthening or primary collateral ligament reconstruction remains a topic of debate. (Donohue &

Mehlhoff, 2016).^[1-3]

Neglected posterior elbow dislocations are relatively less common but pose significant therapeutic challenges. Delayed treatment leads to fibrosis, capsular contracture, heterotopic ossification, and joint incongruity, resulting in severe restriction and functional disability (Surepally et al., 2021; Wang et al., 2012).^[4,5]

Many surgical techniques have been described, including open reduction, arthrolysis, triceps lengthening, and external fixation (AbouSeif et al., 2023; Gavrilă et al., 2025). The optimal management strategy remains controversial, particularly in chronic cases and associated with fractures (Pranata et al., 2025; Tong et al., 2025).^[6-8]

Hinged external fixation has been increasingly utilized as it follows an early mobilization protocol while maintaining joint stability. Our study aims to evaluate the functional outcomes of neglected posterior elbow dislocations treated with this combined approach.

Address for correspondence: Dr. Shriniket Sawarkar, Assistant Professor, Department of General Surgery, N.K.P Salve Institute of Medical Sciences & Research Centre and Lata Mangeshkar Hospital, Hingna, Nagpur, Maharashtra, India.

E-mail: shriniketsawarkar366@gmail.com

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MATERIALS AND METHODS

This retrospective study was conducted at a tertiary care hospital after obtaining ethical clearance. A total of 18 patients with neglected posterior elbow dislocations treated between January 2025 and January 2026 were included. Patients with Monteggia fracture-dislocation were excluded (Leschinger et al., 2020). The study included 10 males and 8 females, with a mean age of 34 years (range: 10–60 years). The dominant limb was involved in 10 patients. The duration of dislocation ranged from 22 to 390 days (mean: 54 days). Ulnar neuropathy was present in 4 patients.^[9]

Injury Characteristics

- Pure posterior dislocation: 11 cases
- Posterolateral: 6 cases
- Posteromedial: 1 case

Associated injuries included radial head fractures (7 cases), heterotopic ossification (2 cases), olecranon fractures (2 cases), coronoid fracture (1 case), and no fracture in 6 cases. Surgical Technique - All patients underwent surgery under general anaesthesia using a posterior midline approach. The ulnar nerve was identified and protected. Arthrolysis was performed with excision of fibrotic tissue, osteophytes, and heterotopic ossification (Coulbaly et al., 2012; Mehta et al., 2007). Reduction was achieved using gentle traction to avoid cartilage damage. Triceps lengthening was performed in 3 cases. Associated fractures were managed appropriately. A hinged external fixator was applied under fluoroscopic guidance to align with the elbow's centre of rotation (Gavrila et al., 2025; Tong et al., 2025).^[10-12]

Postoperative Protocol - Early mobilization was initiated on postoperative day 1. The hinged external fixator was removed at 6 weeks, followed by continued physiotherapy, consistent with established protocols (Tong et al., 2025; Tunen et al., 2022).

Outcome Measures included functional outcomes were assessed using the Mayo Elbow Performance Score (MEPS), a validated scoring system widely used in elbow surgery (Surepally et al., 2021).

Ethical approval was obtained from the Institutional Ethics Committee (reg. no. ECR/880/Inst/MH/2013/RR-24), NKPSIMS&RC and LMH/IEC/7/2025, at the meeting held on 27/11/2025. All authors contributed equally to this study, and no funding was received from any primary or third-party source. The authors declare that limited artificial intelligence tools were used in the preparation of this manuscript.

The authors declare that there are no financial, professional, personal, institutional, or other conflicts of interest that could have influenced the conduct, analysis, interpretation, or reporting of this study. All authors have completed and approved the conflict-of-interest disclosure requirements of the journal.

RESULTS

The mean follow-up duration was 6 months (range: 2–18 months). Range of Motion All patients showed significant improvement in flexion (100°–130°). Fixed flexion deformities were observed in varying degrees. The mean pronation–supination arc was 140°. No correlation was found

between duration of dislocation and final range of motion, similar to previous observations (Tong et al., 2025). Functional Outcomes (MEPS) Excellent: 8 patients; Good: 6 patients; Fair: 4 patients. Mean MEPS score: 85.58, comparable to recent studies using hinged external fixation (Coulbaly et al., 2012; Tong et al., 2025). Pain and Function - Most patients reported minimal to no pain, and 12 patients resumed normal daily activities. No instability was noted, consistent with literature supporting hinged fixation (4,6). Subgroup Findings Patients undergoing fracture fixation showed comparable outcomes. Pronation was more restricted than supination, a finding also reported in prior studies (Leschinger et al., 2020).

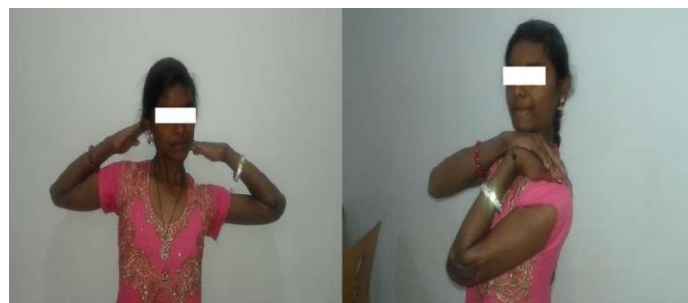
Radiological Findings Variable joint space narrowing was observed. However, functional outcomes remained satisfactory despite radiological changes.



Figure 1: Dislocated Elbow Joint AP and Lateral View



Figure 2: Xray Post Arthrolysis AP and lateral View



Figures 3.1–3.3: Post-arthrolysis patients' pictures showing no deformity



Figure 3.3: Post-arthrolysis patient's picture showing no deformity

14-year-old female with 22-day-old posterolateral dislocation of left elbow associated with lateral and medial epicondyle fractures with restricted range of motion [Figure 1-3].

Postoperative radiograph of elbow dislocation fixed with K-wire and lateral condyle with Herbert screw, immobilized in a splint. (c-e) Follow-up after 2 months showing the elbow's range of motion.

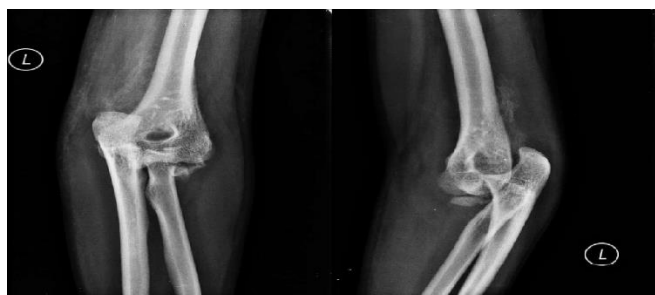


Figure 4.1/4.2: X ray of 35-year-old patient's posteromedial dislocation of left elbow



Figure 5.1/5.2 : Post operative x ray of reduction of elbow with medial collateral ligament repair



Figure 6.1/6.2: Range of motion after 7 months follow up.

Second patient a 35 years old male with 2 months old posteromedial dislocation of left elbow (Figure 4.1/4.2). Whose Post operative x ray of reduction of elbow with medial collateral ligament repair (Figure 5.1/5.2) Range of motion after 7 months follow up [Figure 6.1/6.2].



Figure 7.1/7.2: Range of motion after 13 months follow up

Later a 15 years old boy with 2 months old injury with heterotrophic mass of left elbow. CT scan showing HO mass and elbow dislocation. Post op of olecranon fracture with tbw. [Figure 7.1/7.2] Range of motion after 13 months follow up.

DISCUSSION

Management of neglected elbow dislocations is complex due to soft tissue contracture and articular changes (Surepally et al., 2021; Wang et al., 2012). Open reduction with arthrolysis restores joint congruity and improves motion.

Hinged external fixation provides stability while permitting early mobilization, which is critical in preventing recurrent stiffness (Gavrilă et al., 2025; Tong et al., 2025). Several recent studies have demonstrated favourable outcomes with this technique (Coulibaly et al., 2012; Pranata et al., 2025; Tong et al., 2025). The mean MEPS score of 85.58 in this study is consistent with previously published results (Coulibaly et al., 2012; Tong et al., 2025). The absence of instability in our cohort further supports the reliability of hinged fixation. Limitations include small sample size, retrospective design, and short follow-up duration.

CONCLUSION

Open reduction with arthrolysis and hinged external fixation is an effective treatment for neglected posterior elbow dislocations. It provides good functional outcomes, pain relief, and stability even in delayed cases. Early mobilization remains essential for optimal recovery (Coulibaly et al., 2012; Gavrilă et al., 2025; Tong et al., 2025).

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Conflicts of interest

There are no conflicts of interest.

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