



MANAGEMENT OF NEGLECTED PEDIATRIC MONTEGGIA FRACTURES: A CASE SERIES OF THREE PATIENTS

Orthopaedics

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ABSTRACT

Introduction: Neglected Monteggia fractures in children are uncommon but represent a diagnostic and therapeutic challenge due to chronic radial head dislocation, soft-tissue contracture, and bony remodeling. **Case Series:** We present three pediatric patients aged 7–9 years with neglected Monteggia fractures presenting after 2 weeks–6 months of injury. All underwent surgical intervention involving angular ulnar osteotomy with or without annular ligament reconstruction and open reduction of the radial head. Post-operatively, stable reduction and functional range of motion were achieved. At mean follow-up of 6 months, all patients demonstrated improved pain, mobility, and radiographic outcomes. **Conclusion:** Even in delayed presentations, tailored surgical approaches such as corrective angular ulnar osteotomy can restore function and stability. Early diagnosis remains key to preventing chronic disability.

KEYWORDS

Pediatric Orthopaedics, Neglected Monteggia Fracture, Elbow Instability, Ulnar Osteotomy, Angular Osteotomy, Case Series

INTRODUCTION

Monteggia fracture involves a fracture of the proximal ulna shaft combined with dislocation of the radial head, usually classified by Bado into four types based on the direction of radial head displacement [5]. In pediatric populations, these injuries are especially prone to misdiagnosis—single ulnar fractures may be treated in isolation, leading to overlooked radial head dislocation and subsequently, neglected Monteggia fractures [4,6].

Neglected cases, defined as presentation more than four weeks post-injury, pose significant surgical challenges due to soft-tissue contractures, bony remodeling, and potential nerve involvement [7–9]. Literature offers a range of interventions—ulnar osteotomy (often corrective angulation/lengthening), open reduction of the radial head, annular ligament reconstruction, and, in select cases, distraction-fixation techniques using external frames [2,10–12].

Among these, angular ulnar osteotomy has emerged as a reliable technique, providing angulation (and sometimes lengthening) to restore the proximal ulna's normal curvature, thereby enabling stable reduction of the radial head [2,16].

Case Study

Case 1

9-year-old male presented 6 months after injury with limited elbow ROM. X-ray revealed neglected Monteggia fracture dislocation. Treated via posterolateral (Boyd) approach, proximal ulna angular osteotomy, and annular ligament repair. Immobilized 4 weeks, then mobilized. At 6 months, full ROM and union achieved.

Case 2

7-year-old male, initially treated with cast for undisplaced ulna fracture. Re-injury occurred; presented 25 days later with stiffness and malunited ulna + radial head dislocation (Bado type-3). Operated via posterior approach, fibrous union excised, osteotomy with plating, radial head relocated. Achieved union and ROM. Implant later removed due to impingement.

Case 3

8-year-old male, 2 weeks after fall, presented with dislocated radial head and torn annular ligament. Treated via lateral approach, angular ulnar osteotomy with plating, radial head fixed with K-wire, ligament repair. Immobilized 4–5 weeks. K-wire removed at 1.5 months, full ROM achieved.

DISCUSSION

Our series reinforces that even in delayed presentations, surgical reconstruction using ulnar osteotomy (\pm annular ligament

reconstruction) and radial head reduction yields favorable outcomes [2,16,17].

Angular Ulnar Osteotomy

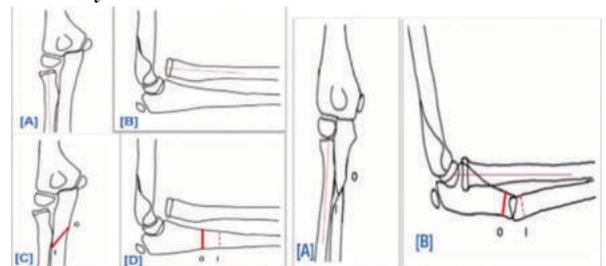
The angular osteotomy technique restores ulnar alignment and angulation to enable radial head reduction.

Operative Note Style (Angular Ulnar Osteotomy)

- Anaesthesia and Positioning:** General anaesthesia, supine/lateral position, arm table, tourniquet.
- Approach:** Standard posterior/lateral approach to proximal ulna.
- Exposure:** Subperiosteal dissection, preserving soft tissues.
- Osteotomy:** Transverse/oblique osteotomy just distal to coronoid. Angular correction based on pre-op plan.
- Reduction:** Temporary fixation, assess radial head under fluoroscopy.
- Fixation:** 3.5 mm DCP or reconstruction plate.
- Radial Head Reduction:** Open reduction via lateral incision if needed.
- Annular Ligament Reconstruction (if required):** Fascial flap/Bell-Tawse.
- Closure:** Layered, drain if required.
- Immobilization:** Above-elbow splint 3–4 weeks, then mobilization.



Figure 1: Pre-op X-rays Showing Radial Head Dislocation + Ulnar Deformity



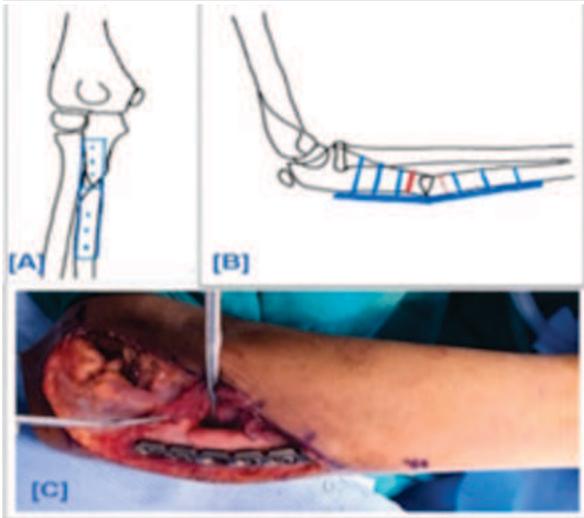


Figure 2: Diagrammatic Osteotomy Steps.

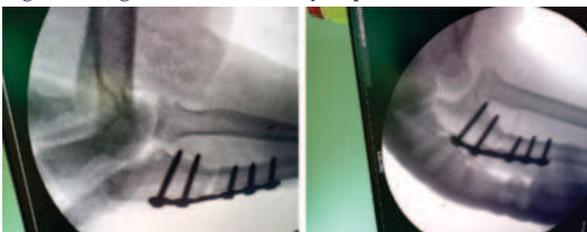


Figure 3: Intra-op Photo Showing Angular Osteotomy Marking and Reduced Radial Head Intra-op.



Figure 4: Post-op X-rays Showing Corrected Alignment.



Figure 5: 6 Month Post-op X-rays Showing Corrected Alignment



Figure 6: Post-op Photo of Full Range of Motion

Table 1. Comparison of Literature on Neglected Pediatric Monteggia Fractures

Author (Year)	No. of Cases	Mean Age (yrs)	Delay (months)	Intervention	Outcome
Bell-Tawse (1965) [9]	7	6.5	6-24	Ulnar osteotomy + annular ligament repair	Good function in majority
Inoue & Shionoya (1998) [10]	12	7.2	3-18	Angular osteotomy	Satisfactory reduction, motion improved
Rodgers et al. (1996) [11]	9	8.1	4-30	Ulnar osteotomy + fixation	7/9 excellent outcomes
Peshin et al. (2020) [2]	15	8.5	4-20	Angular osteotomy ± ligament reconstruction	Excellent recovery
Our series (2025)	3	8	2 weeks-6 months	Angular osteotomy ± ligament reconstruction	Stable reduction, improved ROM

CONCLUSION

Neglected pediatric Monteggia fractures, though challenging, can be effectively managed with angular ulnar osteotomy and reconstruction. Early diagnosis prevents late complications. Limitation of this study was small study sample, for better evaluation larger sample size required.

Clinical Message

Prompt recognition of Monteggia fractures in children is essential. Neglected cases, though complex, can still achieve excellent outcomes with angular osteotomy and surgical reconstruction.

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