A Rare Case of Monteggia Bado Type II Fracture-Dislocation with Finger Drop

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ABSTRACT

Monteggia fractures, defined as ulnar fractures accompanied by radial head dislocation, are rare injuries in adults and are often complicated by neurovascular deficits. Among the Bado classifications, type II lesions—posterior dislocation of the radial head with proximal ulna fracture—are most frequently encountered in adults, yet associated posterior interosseous nerve (PIN) palsy is uncommon. We report the case of a 34-year-old female presenting with acute pain, swelling, and restricted motion of the left elbow following a self-fall. Clinical examination revealed deformity, tenderness, restricted range of motion, and finger drop consistent with PIN palsy, while wrist extension remained intact. Radiographs confirmed a Monteggia fracture-dislocation, Bado type II. The patient underwent open reduction and internal fixation with plating, followed by application of a cock-up splint for finger drop. Postoperative imaging demonstrated satisfactory reduction.

This case underscores the diagnostic challenge posed by Monteggia lesions, which may present subtly yet carry significant functional implications if associated with nerve injury. PIN palsy typically arises from traction or compression of the nerve following radial head displacement, manifesting as an inability to extend fingers at the metacarpophalangeal joints. Literature suggests that early recognition, anatomic reduction of the ulna, and restoration of radial head alignment are critical for spontaneous resolution of neuropraxia. Surgical fixation with modern low-profile locking plates offers biomechanical advantages, particularly in complex fracture patterns, and has been associated with favorable outcomes and reduced hardware complications.

Our case highlights the importance of vigilant neurovascular assessment in Monteggia fractures, given the limited epidemiological data and scarce guidelines on optimal management of associated nerve injuries. Although prognosis is generally favorable with timely intervention, missed diagnosis or delayed treatment may result in persistent deficits and poor functional recovery. Early physiotherapy following stabilization is vital for neurological improvement. This report adds to the limited literature documenting PIN involvement in Bado type II Monteggia fractures and emphasizes the need for individualized surgical and rehabilitative strategies.

Keywords: *ulnar fracture, radial head dislocation, posterior interosseous nerve, orthopedic trauma, nerve injury*

INTRODUCTION

Introduction

A Monteggia fracture refers to a fracture of the proximal ulna accompanied by dislocation of the radial head. It is a relatively rare injury in both pediatric and adult populations, and epidemiological data remain limited. Diagnosis is often challenging due to the subtle presentation involving plastic deformation of the ulna and inconspicuous radial head dislocation.

The anterior interosseous nerve (AIN) and posterior interosseous nerve (PIN), branches of the median and radial nerves respectively, traverse the interosseous membrane between the radius and ulna. These nerves are vulnerable to injury following elbow trauma. Damage to the AIN affects flexion of the distal phalanx of the thumb and index finger, while PIN injury presents as the inability to extend the thumb and fingers at the metacarpophalangeal joints, with preserved wrist extension.

PIN palsy is the most commonly reported nerve injury in Monteggia fractures, usually due to traction or compression associated with dislocation of the radial head. Achieving anatomical reduction of the ulna and realignment of the radial head is essential for optimal outcomes.

Although non-surgical treatment may be effective in pediatric Monteggia fractures, adult cases often require open reduction and internal fixation (ORIF). The literature remains sparse regarding the long-term outcomes and best management strategies for associated neurological injuries. This case report aims to highlight such a presentation and management of a rare Monteggia Bado Type II fracture-dislocation with PIN injury.

FIGURES AND IMAGES

Case History

A 34-year-old female presented to the emergency department with pain, swelling, and restricted movement of the left elbow following a fall at home approximately 4–5 hours prior. She also reported inability to extend her fingers on the same side. The pain was sudden, continuous, and throbbing, without any alleviating factors. There were no other injuries reported.

Her medical history was unremarkable, with no known comorbidities or prior surgeries. She had two children delivered vaginally and normal menstrual cycles. No history of loss of consciousness, seizures, vomiting, or ENT bleeding was noted.

On examination, she was alert, oriented, and afebrile with stable vital signs. Examination of the right elbow was normal. The left elbow showed swelling, tenderness, and external deformity with limited and painful range of motion. Crepitus was absent. She exhibited finger drop but preserved wrist extension, suggesting posterior interosseous nerve involvement. The radial pulse was normal.

Initial radiographs revealed a Monteggia fracture-dislocation, classified as Bado Type II. Neurosurgical consultation was sought due to the finger drop (suspected PIN injury). Routine blood investigations were within normal limits.

The patient underwent open reduction and internal fixation (ORIF) with plating under general anesthesia and ultrasound-guided brachial plexus block on 12.08.2024. Postoperative radiographs showed satisfactory reduction. A cock-up splint was applied to manage finger drop.

FIG 1: Monteggia Bado Type II Fracture-Dislocation with Finger Drop

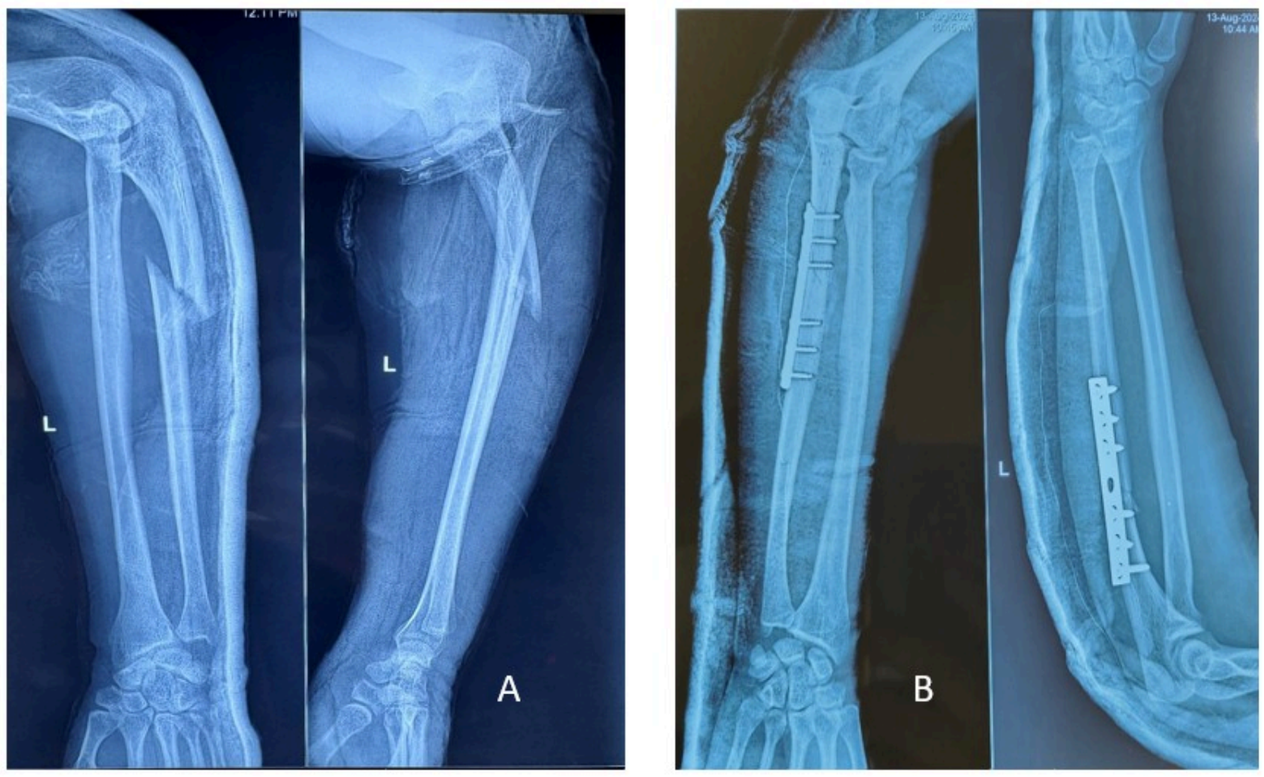

Fig 2: Pre-Operative and Post-operative X-ray

DISCUSSION

Monteggia fracture-dislocations are rare in adults and may involve variable fracture complexity. Factors like coronoid process fractures, radial head comminution, and ulnohumeral instability contribute to prognosis. Bado Type II is the most common Monteggia fracture in adults, whereas PIN injuries are more often associated with Bado Type III injuries. Our case uniquely highlights PIN involvement with a Type II fracture.

Yoshida et al. and Krishna et al. have described similar neurological complications. Timely anatomical reduction of the radial head is critical, as spontaneous resolution of neuropraxic PIN palsy can occur. Identifying predictors of poor outcome is essential to minimize complications and improve management.

Modern techniques, including fixed-angle locking plates, have shown promise in managing complex fractures. These systems enhance biomechanical stability, reduce the need for hardware removal, and improve clinical outcomes by preserving the radial head's non-articulating safe zone.

CONCLUSION

Adult Monteggia fractures are rare, and the presence of PIN injury adds complexity to their management. Early recognition and appropriate surgical intervention, combined with timely physiotherapy, can significantly improve neurological outcomes.

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