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# Posterior Monteggia Fracture–Dislocation in a 70-Year-Old Woman After a Low-Energy Bicycle Fall: Successful Management in a Resource-Limited Setting: A Rare Case Report

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## ABSTRACT

A Monteggia fracture occurs when the proximal ulna fractures and the proximal radioulnar joint (PRUJ) is disrupted. This type of fracture is uncommon in adults, making up approximately 1% to 5% of all elbow fractures. This fracture's aetiology follows a bimodal pattern: low-energy trauma, such as falls on the ground, is typically the cause in older women, whereas high-energy trauma, like falls from heights and sports injuries, is usually the cause in young men.

A 70-year-old woman came to the hospital emergency room complaining of pain in her left elbow. The patient experienced pain 30 minutes after falling off their bicycle. The patient fell sideways, and their left elbow bore the weight during the fall. The patient is unable to move their elbow. The fingers can still be moved. On physical examination, the following findings were



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observed: deformity, PRUJ dislocation, tenderness to palpation, crepitus, and limited range of motion due to pain. After that, an X-ray of the elbow was taken in the AP-lateral view, which revealed a comminuted Monteggia fracture Bado type II on the left side. The PRUJ joint was openly repositioned during the surgery. Following that, the comminuted Monteggia fracture was internally fixed. Since a locking plate was not available, we used a modified (bent plate) small bone plate type D with 12 holes instead of the plate and screw that we used for ORIF. After that, the plate was attached using seven cortical screws. During the elbow joint ROM test, unfortunately the PRUJ dislocation was not stable. Furthermore, it was decided to perform pinning with a K-wire from the capitellum toward the head of the radius. After that, one cortical screw was inserted on the medial side to stabilize the fracture fragments, and a hydroxyapatite bone graft was added to the comminuted fracture area. Two days after the operation, the patient is allowed to go home.

Our patient is a elderly woman who experienced a Monteggia fracture, Bado classification type II occurs due to low energy. In the elderly, this mechanisms are a common cause. In this case, it is recommended to use a locking compression plate (LCP), but due to limited resources, we used a modified (bending plate) small bone plate type D. This can provide an alternative and also a practical solution in the management of Monteggia-Bado classification type 2 fractures at the healthcare level with limited resources for modern plates.

**Keywords:** posterior Monteggia fracture, elderly, low energy, limited resource.



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## INTRODUCTION

A Monteggia fracture is characterised by a proximal ulna fracture and dislocation of the proximal radioulnar joint (PRUJ).[1–3] This type of fracture is uncommon in adults, making up approximately 1% to 5% of all elbow fractures.[4] The aetiology of this fracture has a bimodal pattern: in young men, it is generally due to high-energy trauma such as falls from heights and sports injuries, while in older women, it is usually due to low-energy trauma such as falls on the ground.[5] The injury mechanism in this case typically involves a combination of axial forces, bending, and rotation of the forearm, leading to a fracture of the proximal ulna and dislocation of the radial head and radiocapitellar joint.[6] Monteggia fractures are often missed, leading to poor functional outcomes. If not appropriately treated, Monteggia fractures can cause significant disability in the forearm. If handled correctly, good medium and long-term results can be achieved.[7]

According to Bado (1967), Monteggia fractures can be classified into four types: Type 1: Fracture of the proximal or middle third of the ulna with anterior dislocation of the radial head. (the position of the radial head shifts forward), with an incidence of 59% of cases and 70% occurring in children; Type 2: Fracture of the proximal or middle third of the ulna with posterior or posterolateral dislocation of the radial head (the position of the radial head shifts backwards) with an incidence of 5% of Monteggia fracture cases and 80% occurring in adults; Type 3: Fracture of the proximal or middle third of the ulna with lateral or anterolateral dislocation of the radial head. (the position of the radial head shifts sideways) with an occurrence percentage of approximately 59% of cases; and Type 4: Fracture of the proximal third of the ulna and radius with anterior dislocation of the radial head (fracture of both bones parallel to the radius with the radial head shifting forward) with an occurrence percentage of 1 to 10%.[5]

We report an interesting case of a type II Monteggia fracture caused by low-energy trauma after a fall from a bicycle in an elderly female patient with a comminuted fracture that was technically difficult to manage. Additionally, the limited availability of modern implants such as



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locking plates necessitates using an alternative, a modified small bone plate type D (bending plate), along with additional bone grafting and pinning to stabilise the PRUJ joint.

## CASE PRESENTATION

The patient (S.S.), a 70-year-old female, arrived at the Emergency Department of Soeroto Regional General Hospital in Ngawi, Indonesia, on September 4, 2025, complaining of pain in her left elbow (Figure 1). The patient experienced pain after falling off their bicycle. The patient fell sideways, and their left elbow bore the weight of the fall. The pain was felt 30 minutes before arriving at the emergency room. The patient was unable to move their elbow. The fingers can still be moved. There are no head injuries. On physical examination of the left antebrachial-elbow joint region, deformity, PRUJ dislocation, tenderness to palpation, crepitus, and limited range of motion due to pain were found. There are no wounds, open injuries, or bleeding. Distal pulses are palpable and normal. After that, an elbow X-ray was taken in the AP-lateral view, which revealed a comminuted Monteggia fracture, classified as Bado type II, on the left side (Figure 2). The patient is scheduled for an urgent open reposition and open reduction and internal fixation (ORIF) surgery.

During the procedure, the PRUJ joint underwent open reposition. After that, the comminuted Monteggia fracture was fixed internally (Figure 3). We employed a plate and screw for ORIF, but since a locking plate was not available, we used a little bone plate type D 12-hole that was modified (bent plate) (Figure 4). Seven cortical screws were then used to fix the plate (Figure 5). The PRUJ joint was unstable during the elbow joint range of motion test, so pinning with a K-wire from the capitellum toward the head of the radius was chosen. After that, one cortical screw was inserted on the medial side to stabilise the fracture fragments, and a hydroxyapatite bone graft was added to the comminuted fracture area. An AP-lateral radiograph of the left elbow is obtained following the procedure (Figure 6). The patient is permitted to return home two days following the procedure.



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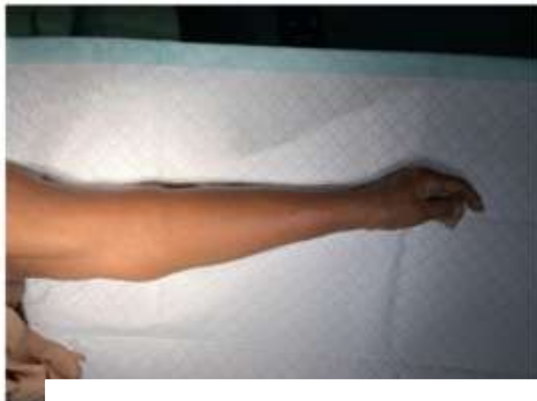

**Figure 1: The patient's injured hand**

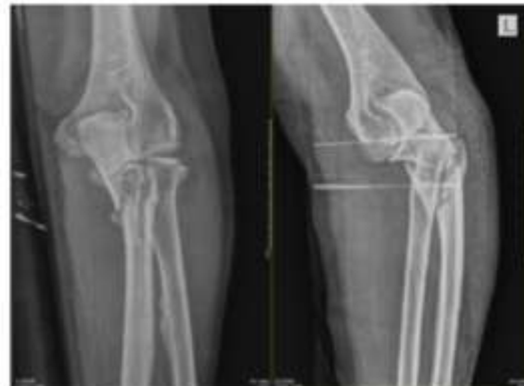


**Figure 2: AP-Lateral Elbow X-ray**

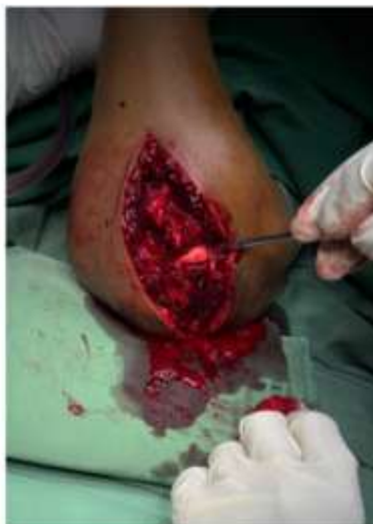

**Figure 3: Patient's hand during the procedure**

**Figure 4: Modified Small Bone Plate type D (bending plate)**

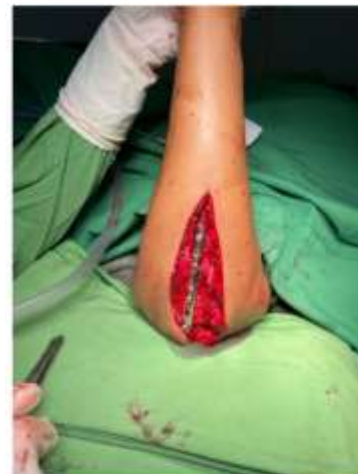

**Figure 5: Fracture fixation**



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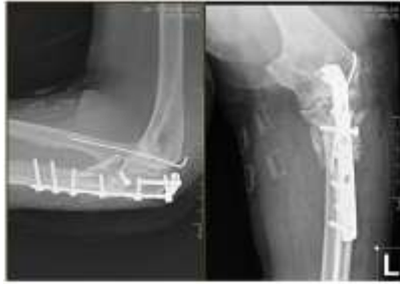

**Figure 6: Elbow AP-lateral X-ray post ORIF**

## DISCUSSION

Monteggia fracture, first described by Giovanni Battista Monteggia in 1814, refers to a fracture of the proximal third of the ulna with anterior dislocation of the radial head from the PRUJ and radiocapitellar joint.[8] In modern terms, the definition encompasses all ulna fractures associated with radiocapitellar dislocation, including transolecranon fractures with intact PRUJ.[9]

Type II Monteggia fracture is rare, accounting for only 5–10% of cases.[10] Jupiter further subdivided this type into subgroups A–D.[11] In our patient, the mechanism involved low-energy trauma from a bicycle fall. The most common biomechanical mechanism is a direct blow to the forearm with the elbow hyperextended and the forearm hyperpronated.[5] Reddy et al. reported that type II Monteggia fractures in elderly patients represent only around 2% of cases.[12] In this patient, the fracture was caused by low-energy trauma compounded by age-related degenerative changes.

Locking plates (LCP) are generally recommended for Monteggia fractures as they provide stable fixation and better adaptation to the proximal ulna contour, especially in comminuted fractures.[13] The main goal is to restore the length and continuity of the ulna, allowing for accurate reduction of the radial head. Ulna reduction is performed as accurately as possible, followed by stabilisation with a plate and screws.[13] LCP is often employed in cases of proximal ulna fractures with a wide comminution zone because it can provide strong stability in areas with high



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physiological loads.[14] However, in conditions with limited facilities or implant availability, the use of dynamic compression plates (DCPs) such as small bone plate type D can still be considered.[13] Small bone plate type D works on the principle of dynamic compression through the placement of eccentric screws that pull the bone fragments together, causing the fracture line to be compressed. This plate is straight and can follow the contour of the ulna, helping to maintain bone length and allowing for good reduction of the radial head.[13] Biomechanically, the LCP is superior to the DCP, especially in osteoporotic bone or fractures with multiple fragments, potentially accelerating healing and reducing the risk of delayed union or nonunion.[15]

In this case, the choice of a type D small bone plate was based on tool availability, where, despite its relatively lower stability than an LCP, it can still provide sufficient fixation if installed with the proper technique. In a study by Manjur et al. (2023), it was reported that using a 3.5 mm DCP for ulna fixation resulted in satisfactory radiological and functional outcomes, with 87.5% of patients achieving good to excellent final results. This study supports the assumption that DCP remains a viable option in facilities with limited LCP availability.[16] The use of hydroxyapatite bone graft can be considered as an adjuvant to support osteoconduction and increase biological stability in comminuted fracture areas, thereby improving bone healing in limited facility conditions [17]

This approach highlights the challenges and practical solutions in managing complex fractures in healthcare facilities with limited resources, thus making a significant contribution to the literature on management strategies for similar cases.

## CONCLUSION

Monteggia fractures are rare in adults, accounting for only 1-5% of all fractures in the elbow area. Our patient is a 70-year-old elderly woman. The patient sustained a Monteggia fracture, classified as type II, which accounts for only 5-10% of all Monteggia fractures and occurs due to low energy. In the elderly, low-energy mechanisms are a common cause. In this case, it is



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recommended to use an LCP, but due to limited resources, we are using a modified small bone plate type D (bending plate). This case report can provide an alternative and a practical solution in managing Monteggia-Bado classification type 2 fractures at the level of healthcare services with limited resources for modern plates.

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