



ISSN: 2350-0328

**International Journal of Advanced Research in Science,  
Engineering and Technology**

**Vol. 8, Issue 7 , July 2021**

# **Reverse Monteggia fracture (case report)**

**AL-Otaibi Mohammed, AL-Sahafi Yasser**

Orthopedic senior resident, MD, Prince Mansour military hospital, orthopedic department, Taif, Saudi Arabia  
Orthopedic senior registrar, MD, king Abdul-Aziz hospital, orthopedic department, Jeddah, Saudi Arabia

**ABSTRACT:** An exceptional case of reverse Monteggia fracture associated with dislocation of the elbow, and fracture of the proximal radial shaft, is reported. Diagnosis was initiated by history, clinical manifestations and physical examination. Then established with anteroposterior and lateral radiographs of the forearm, elbow and wrist. Treatment consisted of open reduction for proximal radius was done using Thompson approach and internal fixation with LDCP. Elbow joint stability was re-established and confirmed through application of hinged elbow external fixator.

**KEY WORDS:** Reverse Monteggia fracture

## **I. BACKGROUND**

Monteggia fracture-dislocation was firstly defined by Giovanni Batista Monteggia in 1814, as an ulnar fracture, usually in the proximal edge accompanying to a dissociation of the proximal radioulnar joint, with consequential dislocation of the radiocapitellar joint (dislocation of the head) (Monteggia., 1814; Soni et al., 2019; Koutserimpas et al., 2017; Domingo et al., 2008).

Bado has proposed a classification that helps on a better understanding of the injury and its correct management, describing the mechanisms of the fracture, its displacement and angulation presented on an ulnar fracture and the direction of the dislocations deviation of the radial head and the direction of the radial head dislocation (Bado., 1967; Musa et al., 2006).

Monteggia fracture-dislocation is a rare injury that usually seen between 4yrs to 10yrs, uncommonly incident, conforming to less than 1% of all pediatric fractures. Despite its rarity, its greatest importance lies in the fact that the diagnosis is not correctly carried out, being missed in up to 50% of cases, particularly in cases of radial head dislocation associate with a plastic deformation or a greenstick fracture of the ulna (Goyal et al., 2015; Barquet., 1084).

Another situation that increases the number of cases of complicated Monteggia is the loss of the initial reduction that may occur in 20% of patients. Due to inaccurate diagnosis of the initial trauma, neglected Monteggia fracture-dislocation may proceed with pain, mobility limitation loss of motion (especially flexion and supination), and elbow stiffness deformity, loss of strength, late neuropathy and osteoarthritis (Ramski et al., 2015).

Several surgical techniques have been described to approach a correct Monteggia fracture dislocation, such as: open reduction and reconstruction of the annular ligament, open reduction and ulnar osteotomy, ulnar osteotomy and progressive correction with external fixator, radial osteotomy and radial head excision. Usually, the described series are composed by small samples with no consensus or standardization on the most appropriate treatment (Soni et al., 2019; Musa et al., 2006; Tanner et al., 2017).

Our goal is to demonstrate the clinical and radiographic results of patient with reverse Monteggia fracture-dislocation (elbow dislocation and proximal radius fracture).

**II. CASE PRESENTATION**

Our case is 27 years old medically free presented to our emergency department after he fell down in his left hand with elbow in full extension, complaining of left elbow pain and deformity, there was no history of losing consciousness, seizure or vomiting.

The patient was fully conscious, oriented and vitally stable. Local examination revealed tenderness, swelling, deformity around elbow, restricted range of motion and distal neurovascular examination was intact. Radiological examination showed elbow dislocation and proximal radius fracture. X ray before casting (figure 1a-c).

Then, closed reduction and above elbow back slab was applied and the patient was counselled for surgery.



Patient underwent of open reduction of proximal radius using Thompson approach and internal fixation with LDCP. Then, elbow stability was checked. It was unstable. Then, hinged elbow external fixator was applied (figure 2c). X ray images intraoperative time (Figure 2a-b).

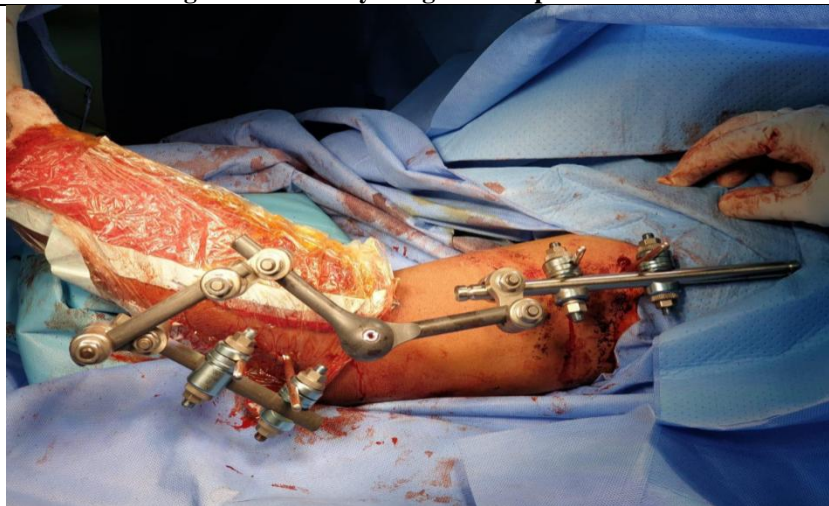


**Figure 2a**



**Figure 2b**

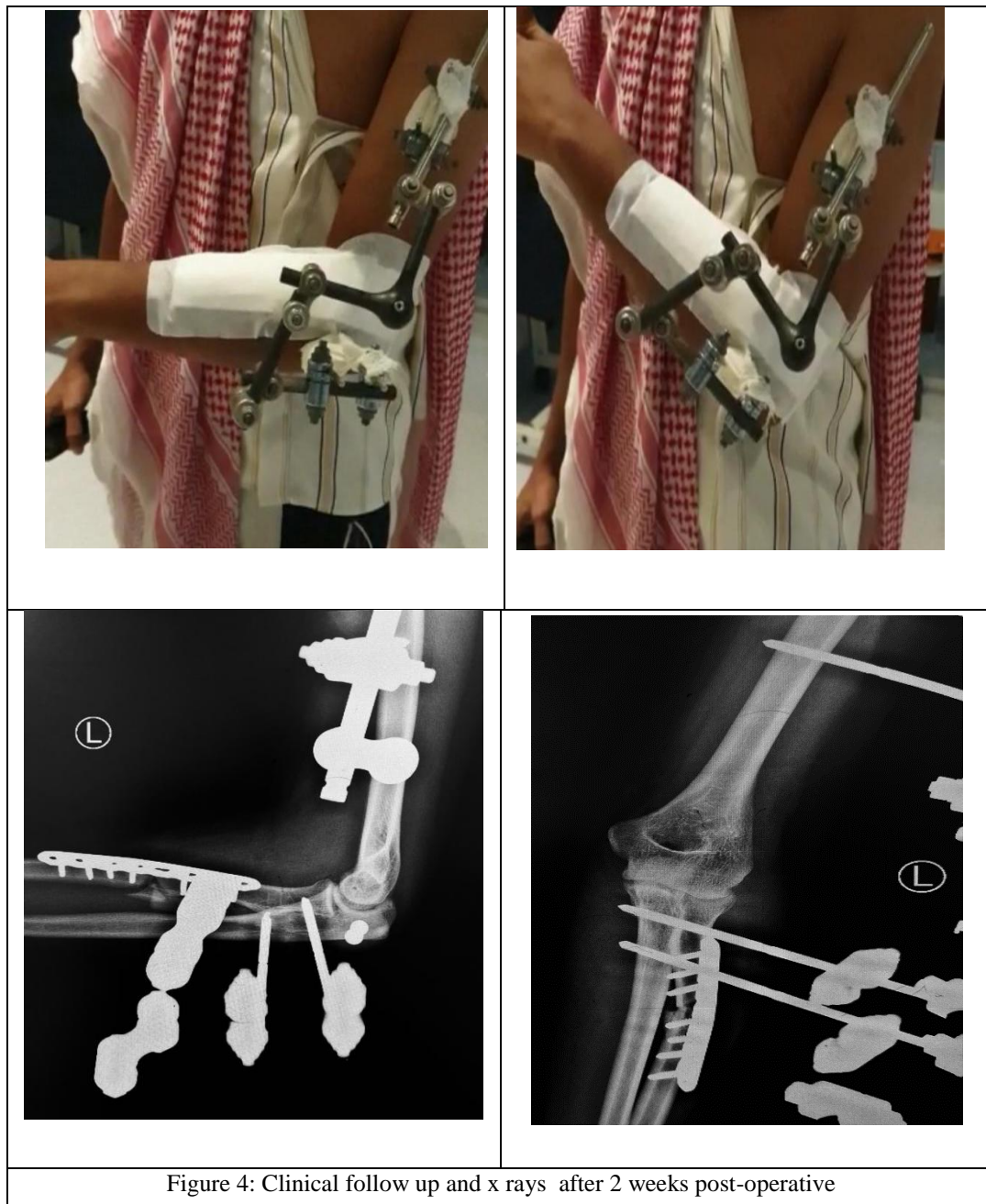
**Figure 2a-b: X ray images intraoperative time**



**Figure 2c**

**Figure 2a-c: intraoperative image**

Post-operative period was uneventful. The patient was started ROM in hinged external fixator after 2 weeks (figure 4).



After six weeks, external fixator was removed and the patient started physiotherapy. After two months of surgery, the fracture was clinically and radiologically united and the elbow movement was comparable to the opposite site

(Figure 5a-f) : patient's x-rays and images without fixator (supination, pronation)



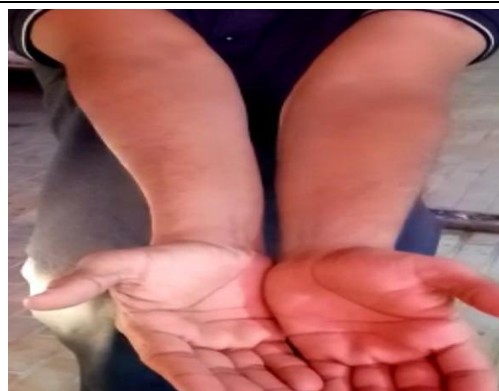
**Figure 5a**



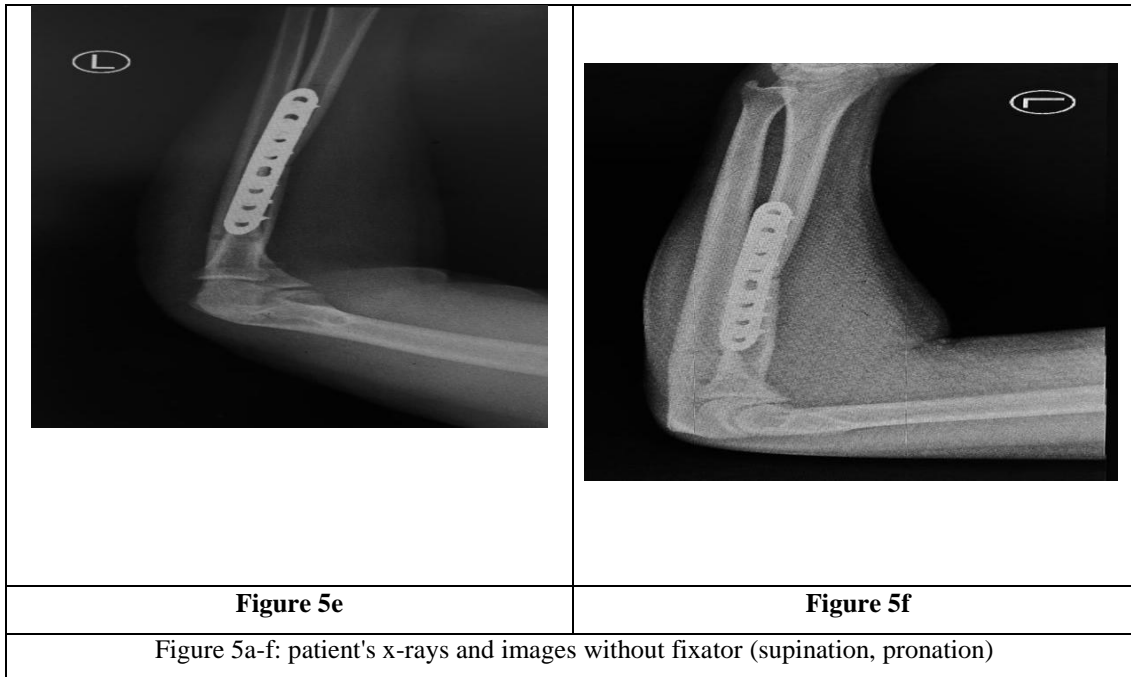
**Figure 5b**



**Figure 5c**



**Figure 5d**



### III. DISCUSSION

This case report describes a rare injury combination in the upper limb trauma, reverse dislocations of elbow and superior radio-ulnar joints along with fracture at the proximal end the radius. The mechanism of injury was falling down in is left and wit elbow in full extension and a direct impact on the forearm. The unique part of our case that he need for using hinged elbow external fixator to confirm joint stability after applying of Thompson approach and internal fixation with LDCP.

This way of management was consistent with Peter, 2002 who reported that excellent stable reduction was achieved by conservative means. It is important to restore normal length and achieve an anatomical alignment of the forearm bones, as otherwise the radial head will not reduce back into place. If good reduction cannot be obtained closed, the threshold for open reduction must be very low.

A little similar case described by Vidyadhara& Rao., 2006 and managed through an open reduction of the radial head dislocation through Kocher’s approach after failing of closed manual reduction and reduction using of square nail of appropriate size and length into the radius from just lateral to Lister’s tubercle.

Furthermore, Soon et al 1996 represented a young patient who had a traumatic elbow dislocation with an ipsilateral proximal radial shaft fracture, which, after reduction of the elbow and internal fixation of the radial shaft fracture elsewhere, showed a persistent radial head subluxation on follow-up<sup>3</sup>. This was found to be a result of non-anatomical fixation of the radial shaft, which when they re-reduced and fixed, resulted in the radial head being concentrically reduced. Hence anatomical reduction of the radial shaft fracture is the corner stone in these high-energy injuries. The radio-ulnar relationship is usually preserved in anterior but disrupted in posterior fracture dislocations<sup>4</sup>. Therefore the radio-ulnar relation throughout the range of motion of the elbow has to be watched for carefully after reduction.

Reina et al., 2012 report an unusual case of Monteggia equivalent lesion associating a fracture of the proximal third of ulna shaft and a growth plate fracture Salter I of the proximal–radial physis. Surgical care consisted of intramedullary pinning of the radial head and fixation by a plate for ulna with a very good.



#### IV. CONCLUSION

In conclusion, the reported case here is the result of continued high-energy force on the elbow and forearm. Open reduction of proximal radial shaft using Thompson approach and internal fixation with LDCP was done. Then, hinged elbow external fixator was applied to ensure and maximize elbow stability. Prognosis was good and satisfactory.

#### REFERENCES

- [1]. Bado JL. (1967). The Monteggia lesion. *Clin Orthop Relat Res* ;(50):71–86.
- [2]. Barquet, A. (1984). Posterior dislocation of the ulna at the elbow with associated fracture of the radial shaft. *Injury*, 15(6), 390-392.
- [3]. Domingo, A., Fernández-Valencia, J. A., Saz, L., Prat, S., & Arandes, J. M. (2008). Elbow dislocations associated with ipsilateral radial shaft fractures: a case report and review of the literature. *Journal of Trauma and Acute Care Surgery*, 64(1), 221-224.
- [4]. Goyal T, Arora SS, Banerjee S, Kandwal P. (2015). Neglected Monteggia fracture dislocations in children: a systematic review. *J Pediatr Orthop Part B* ;24 (3):191–9.
- [5]. Jessing, P. (1975). Monteggia lesions and their complicating nerve damage. *Acta Orthopaedica Scandinavica*, 46(4), 601-609.
- [6]. Koutserimpas, C., Tsironis, G., Salasidis, A., Swatoch, P., & Tsironis, K. (2017). Combined open bipolar Monteggia and Galeazzi fracture: a case report with a 1-year follow-up. *Strategies in Trauma and Limb Reconstruction*, 12(2), 121-125.
- [7]. Liao, S., Wang, T., Huang, Q., Liu, Y., Lu, R., Zhao, J., ... & Ding, X. (2020). Influence of Ulnar Bow Sign on Surgical Treatment of Missed Bado Type I Monteggia Fracture in Children.
- [8]. Monteggia GB, editor. (1814). *Instituzioni Chirurgiche*, 2nd, Vol 5. Milan, Italy: Maspero.
- [9]. Musa, A. A. (2006). Monteggia fracture-dislocation: a case report, its' initial management and review of Bado's classification. *African health sciences*, 6(4).
- [10]. Peter, V. K. (2002). Rare presentation of a type I Monteggia fracture. *Emergency medicine journal*, 19(1), 88-89.
- [11]. Ramski DE, Hennrikus WP, Bae DS, Baldwin KD, Patel NM, Waters PM, et al. (2015). Pediatric monteggia fractures: a multicenter examination of treatment strategy and early clinical and radiographic results. *J Pediatr Orthop* ;35(2):115–20.
- [12]. Reina, N., Laffosse, J. M., Abbo, O., Accadbled, F., Bensafi, H., & Chiron, P. (2012). Monteggia equivalent fracture associated with Salter I fracture of the radial head. *Journal of Pediatric Orthopaedics B*, 21(6), 532-535.
- [13]. Soni, J. F., Valenza, W. R., Matsunaga, C. U., Costa, A. C. P., & Faria, F. F. (2019). Chronic monteggia fracture-dislocation in children surgical strategy and results. *Acta ortopedica brasileira*, 27, 244-247.
- [14]. Soon JCC, Kumar VP, Satkunanarham K. (1996). Elbow dislocation with ipsilateral radial shaft fracture – An unusual outcome. *Clin Orthop* 1996; 329: 212-215.
- [15]. Tanner, C., Johnson, T., Kolahi, K., Husak, L., & Hoekzema, N. (2017). Irreducible Monteggia fracture: interposed radial nerve and capsule. *JSES open access*, 1(2), 85-89.
- [16]. Vidyadhara, S., & Rao, S. (2006). Ipsilateral posterior dislocations of the elbow and superior radio-ulnar joint associated with a comminuted radial shaft fracture: A case report. *Indian J Orthop*, 40(1), 50-1.