

Simultaneous Bilateral Traumatic Transolecranon Fracture-Dislocation

Mutasim Alhasani, Elham Alghamdi*, Islam Gomaa, Walid H Asawami and Bandar Sahli

Orthopedic Surgery, King Saud Medical City, Riyadh, Saudi Arabia

*Corresponding author

Elham Ali Alghamdi, Orthopedic Surgery, King Saud Medical City, Riyadh, Saudi Arabia.

Received: August 11, 2025; Accepted: August 20, 2025; Published: August 25, 2025

ABSTRACT

Trans-olecranon fracture dislocations cause instability in the ulnohumeral joint due to intra-articular fractures, while the proximal radioulnar joint remains unaffected. These types of fractures represent around 10% of adult traumatic elbow fractures, with bilateral occurrences being infrequent. Olecranon fractures generally result from direct or indirect trauma to the elbow, occurring at various angles of elbow flexion, leading to complex injuries. The literature outlines different fracture types and their corresponding treatments. Most cases of bilateral olecranon fractures are reported as pathological fractures in patients with conditions like rheumatoid arthritis, Osteogenesis Imperfecta, or sarcoidosis. Instances of bilateral traumatic fractures without related systemic illnesses are scarce. This article presents a case of bilateral trans-olecranon fracture dislocation, discussing the management of this complex injury and reviewing relevant literature.

Keywords: Bilateral Trans Olecranon, Elbow Joint, Olecranon Fracture, Tension Band Wiring, Trauma

List of Abbreviations

(ATLS) : Advanced Trauma Life Support
(CT) : Computed Tomography
(ROM) : Range of Motion

Introduction

Trans-olecranon fracture dislocations are described in the literature as loss of stability of the ulnohumeral joint after intra-articular fracture, at the same time, sparing the proximal radioulnar joint [1]. Olecranon fractures accounted for 10% of adult upper limb traumatic fractures around the elbow, and the likelihood of bilateral fracture presentation is uncommon [2]. Veillette and Steinmann (2008) discussed the usual injury mechanism causing olecranon fracture as a direct and indirect trauma to the elbow with various degrees of elbow flexion, which may lead to further complex injuries [3]. Various fracture morphologies with different management methods have been described in the literature [4-8]. Several studies have shown that injury to the elbow reduces the joint's range of motion after the injury. Bilateral Olecranon fractures at the same time have been

presented in patients with rheumatoid arthritis or sarcoidosis as pathological fractures [9,10]. Since this condition is incredibly rare, few cases with bilateral traumatic causes that are not associated with systemic illness have been reported. In this case, we present a bilateral trans olecranon fracture dislocation case in a young, medically free patient. This article describes and discusses the management of such a complex injury and reviews the literature in this area.

Case Presentation

A 28-year-old male presented to the emergency department by ambulance with a history of a fall from a height of 6 meters. The primary survey under Advanced Trauma Life Support (ATLS) protocols was unremarkable. He complains of bilateral elbow pain and lower backache. On examination, he is fully oriented and vitally stable. For the elbow exam, he has a puncture wound at the posterior margin of the right elbow and an abrasion over the back. Both upper limbs had soft and compressible compartments, with maximum tenderness over the olecranon. He also had a restricted range of motion due to pain, but his neurovascular status was intact. X-rays and Computed Tomography (CT) scans revealed fractures of the bilateral trans olecranon with right radial head non-displaced fracture [Figure 1,2, 3], the right transverse process of the first lumbar spine, left sacral

Citation: Mutasim Alhasani, Elham Alghamdi, Islam Gomaa, Walid H Asawami, Bandar Sahli. Neonatal Physiotherapy: A Pivotal Component of Early Developmental Care. J Ortho Physio. 2025. 3(3): 1-4. DOI: doi.org/10.61440/JOP.2025.v3.35

alar, and bilateral acetabular fractures involving the anterior and posterior walls. Antibiotics and tetanus prophylaxis were started immediately upon arrival at the emergency room due to the open fracture in the right elbow. He was taken to the operating room in the morning, about 18 hours post-injury. A posterior approach for the elbow was utilized in the operating room after draping and preparing under sterile conditions. We started with the right side, performing irrigation and debridement with 3 liters of normal saline, followed by reducing the olecranon fracture. Both olecranon were fixed using 2 K-wires size 20 under fluoroscopy, then a canal was created, and a double wire size 16 was inserted in a figure-eight pattern to achieve the tension band technique [Figure 4]. Anatomical reduction was achieved under vision, closure dressing, and a back slap was applied.

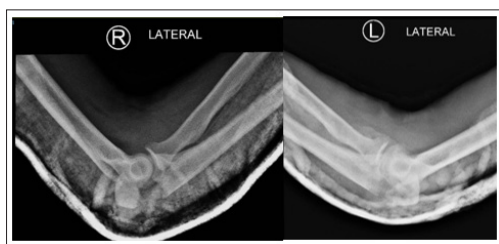


Figure 1: X-ray of Bilateral Elbow Showing Trans Olecranon Fracture, R: Right Elbow, L: Left elbow.

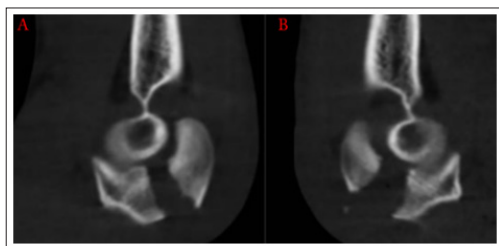


Figure 2: A: Computed Tomography (CT) Scans with Sagittal cut for the Left Elbow, B: Computed Tomography (CT) Scans with Sagittal cut for the Right Elbow, both Showing Trans olecranon Fracture.



Figure 3: Computed Tomography (CT) Scans with Right Radial Head non-Displaced Fracture.

Within two days of admission, other fractures and injuries were managed. After five days post-op, the back slap was removed, and active assisted Range Of Motion (ROM) started for the bilateral elbow.

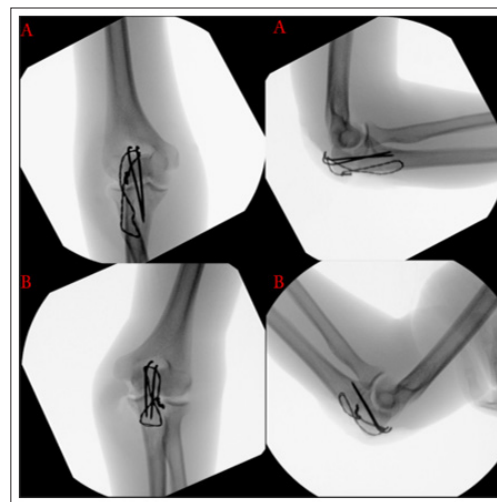


Figure 4: Operative Fixation Figure-Eight Pattern with Tension Band Technique. A: Right Side, Anterior-Posterior, and Lateral View; B: Left Side, Anterior-Posterior, and Lateral View.

Discussion

An olecranon fracture involving both sides is extremely rare. Among the many classifications of olecranon fractures, the Mayo classification is widely used, considering the case's stability and the displacement seen on plain radiographs [11]. Other commonly used classifications include the AO/OTA classification and the Schatzker-Schmeling classification system [4]. According to studies, falls from heights and high-speed motor vehicle accidents are among the most common mechanisms that cause this condition. It is attributed to disrupt the ulnohumeral joint due to an intra-articular fracture of the olecranon, with preservation of the radioulnar joint proximal to it [1]. However, some cases have presented radial head fractures [12]. Most cases of bilateral olecranon fractures are reported as pathological fractures in patients with conditions like rheumatoid arthritis, Osteogenesis Imperfecta, and sarcoidosis [9,10,13]. Few cases with bilateral traumatic causes not associated with systemic illness have been reported.

Highlighting the importance of the CT in any intra-articular fracture to rule out missed injuries, as seen in our case, after proceeding with the CT, we found that the patient had a non-displaced fracture of the right radial head, which will help to take into consideration for surgical planning and fixation. Our option was a conservative approach due to a non-displaced fracture. In this case, maintaining ulnohumeral stability and good elbow function was crucial.

Associated Radial head fractures were reported only in one paper [12]. Surgical treatment is recommended for open or displaced fractures and fractures with a disrupted extensor mechanism [4]. AO trauma classifications commonly recommend K-wires and metal TBWs for simple displaced olecranon fractures and osteotomies. Other fixation methods were reported in the literature, including Plating, fiber wire, bioabsorbable tension band construct, intramedullary suture anchor, intramedullary nailing, transosseous high-strength suture, and excision [14]. The choice for fixation depends on the fracture pattern and the quality of bone. A notable case involved an 88-year-old woman who sustained bilateral Mayo Type II A olecranon fractures after

a fall. This case highlights the vulnerability of elderly individuals to such injuries due to reduced bone density and increased risk of falls [15].

In this patient, the indication for surgery was due to the displaced fractures, open fracture on the right side, and bilateral presentation; the patient reached a functional range of motion after one year of the procedure, with continuous physical therapy for the range of motion. Early mobilization and adherence to a structured rehabilitation program are critical for optimizing functional recovery.

Conclusion

Simultaneous bilateral traumatic trans olecranon fracture-dislocation is an infrequent and challenging injury. The limited literature underscores the need for individualized treatment approaches prioritizing anatomical reduction, joint stability, and early mobilization. While these injuries are complex, timely and appropriate surgical management, followed by dedicated rehabilitation, can lead to satisfactory functional outcomes. However, patients should be counseled about the potential for residual stiffness and the lengthy recovery process. Future research should focus on developing standardized treatment protocols and evaluating the long-term outcomes of various fixation methods. Given the rarity of this condition, multicenter studies and case registries may provide valuable insights into its management and prognosis.

Declarations

Ethics Approval and Consent to Participate

Informed consent was required for enrollment in the study, as data was collected retrospectively from patient medical records. The participant was represented in the database using a unique identifier (ID) to ensure anonymity. The confidentiality of the collected data was maintained during all phases of the study.

Consent for Publication

Written informed consent was obtained from the patient to publish their images and clinical data.

Availability of Data and Materials

Data concerning the patient's record is available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

Funding

This study did not receive any specific grant from public, commercial, or not-for-profit funding agencies.

Authors' Contributions

EA: Initial and final draft of the article, literature search.

MA: Research materials organized the data.

IG: analyzed and interpreted data, initial and final draft of the article, and provided logistic support.

WH: Study Design, manuscript preparation, and editing.

BS: Study Design, manuscript preparation, and editing.

All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

Disclosure of interest

The authors declare no conflicts of interest concerning this article.

Acknowledgements

Not applicable

References

1. Cho CH, Kim DH, Na SS, Choi BC, Kim BS. Trans-Olecranon Fracture-Dislocations of the Elbow: A Systematic Review. *Diagnostics*. 2020. 10: 1058.
2. Wiegand L, Bernstein J, Ahm A. Fractures in Brief: Olecranon Fractures. *Clin Orthop Relat Res*. 2012. 470: 3637-3641.
3. Veillette CJ, Steinmann SP. Olecranon fractures. *Orthop Clin N Am*. 2008. 39: 229-236.
4. Donegan RP, Bell JE. Olecranon Fractures. *Operative Techniques in Orthopaedics*. 2010. 20: 17-23.
5. Zuelzer WA. Fixation of small but important bone fragments with a hook plate. *J Bone Joint Surg Am*. 1951. 33A: 430-436.
6. Gartsman GM, Sculco TP, Otis JC. Operative treatment of olecranon fractures. Excision or open reduction with internal fixation. *J Bone Joint Surg Am*. 1981. 63: 718-721.
7. Wolfgang G, Burke F, Bush D, et al: Surgical treatment of displaced olecranon fractures by tension band wiring technique. *Clin Orthop Relat Res* 224:192-204, 1987
8. Gehr J, Friedl W. Intramedullary locking compression nail for the treatment of an olecranon fracture. *Oper Orthop Traumatol*. 2006. 18: 199-213.
9. O'Daly BJ, Harty JA, O'Malley N, Killeen R, McDonnell TJ, et al. Bilateral olecranon fracture as first presentation of sarcoidosis: Case report and review of the literature. *Journal of Shoulder and Elbow Surgery*. 2008. 17: e1-e5.
10. Kirmani S, Draviraj K, Madegowda B, Shahane S. Spontaneous bilateral olecranon fractures in a rheumatoid patient. *Ann R Coll Surg Engl*. 2008. 90: 4-6.
11. Sullivan CW, Desai K. Classifications in Brief. *Clinical Orthopaedics and Related Research*. 2019. 477: 908-910.
12. Raviraj A, Abhishek Sugumar K, Vidyasagar Maalepati, Vivek Kumar N Savsani, Viresh B Murgodi. et al. Bilateral Transolecranon Fracture-Dislocation Elbow With Bilateral Coronoid and Radial Head Fractures – A Rare Complex Elbow Injury: A Case Report and Review of Literature. 2020. *Journal of Advances in Medicine and Medical Research* 32 : 67-73.
13. Thomas RA, Hennrikus W. Bilateral Asynchronous Displaced Olecranon Fractures in a Patient With Osteogenesis Imperfecta. *Cureus*. 2022. 14: e23433.
14. Nazifi O, Gunaratne R, D'Souza H, Tay A. The Use of High Strength Sutures and Anchors in Olecranon Fractures: A Systematic Review. *Geriatr Orthop Surg Rehabil*. 2021. 12: 2151459321996626.

15. Canton G, Roman F, Ghassempour D, Murena L. Simultaneous bilateral olecranon fracture: a case report and review of the literature. *Acta Biomed.* 2021. 92: e2021029.