

Successful Management of Atypical Bilateral Galeazzi Fractures with Unique Dorsal Displacement: A Case Report

Warid Altaf¹, Amit Chaudhari², Parag Sancheti¹

Learning Point of the Article:

This rare case of bilateral Galeazzi fractures with dorsal displacement, unclassified by the Walsh system, was successfully managed with ORIF using LCDCP. Spontaneous DRUJ realignment and early mobilization led to excellent 1-year functional outcomes.

Abstract

Introduction: This case report presents an exceptionally rare occurrence of bilateral Galeazzi fractures with dorsal displacement of both distal radius fragments and the distal ulna in a 39-year-old male following a high-impact motorcycle accident. This specific injury configuration, which has not been categorized within the Walsh system, was effectively managed through open reduction and internal fixation utilizing limited contact dynamic compression plates.

Case Report: Fracture reduction was achieved using a bilateral Henry's approach, which resulted in spontaneous realignment of the distal radioulnar joints without requiring supplementary stabilization. Intraoperative stability was evaluated using the piano key test, and post-operative immobilization with above-elbow back slabs supported optimal recovery.

Conclusion: At the 1-year follow-up, the patient demonstrated full functional recovery, including complete forearm range of motion and excellent grip strength. This case emphasizes the importance of prompt surgical management, precise anatomical realignment, and individualized intraoperative assessment in treating complex and rare bilateral forearm fractures. It also highlights the potential for excellent recovery outcomes with early and accurate intervention.

Keywords: Bilateral Galeazzi fractures, dorsal displacement, rare, open reduction internal fixation, limited contact dynamic compression plate, functional recovery.

Introduction

A Galeazzi fracture is characterized by a fracture of the distal third of the radius accompanied by either dislocation or subluxation of the distal radioulnar joint (DRUJ) [1-4]. While uncommon, these injuries represent approximately 3% of forearm fractures in children and up to 7% in adults [5]. First described by Sir Ashley Cooper in 1833, Riccardo Galeazzi later reported 18 cases in 1934 [4]. These fractures typically occur due to high-energy trauma, such as motor vehicle accidents or falls, where axial loading and rotational forces impact the forearm.

Due to the complex anatomy of the DRUJ, Galeazzi fractures can be overlooked, particularly in cases where joint disruption is subtle [10]. Precise anatomical restoration of both the radius and DRUJ is crucial to regaining normal forearm function. In adults, non-surgical treatment has led to unsatisfactory outcomes in up to 80% of cases, reinforcing the necessity of surgical management [6]. This report outlines a rare instance of bilateral Galeazzi fractures with dorsal displacement of both the distal radius and ulna fragments – an injury pattern not previously included in the Walsh classification system.

Author's Photo Gallery



Dr. Warid Altaf



Dr. Amit Chaudhari



Dr. Parag Sancheti

Access this article online

Website:
www.jocr.co.in

DOI:
<https://doi.org/10.13107/jocr.2025.v15.i06.5660>

¹Department of Orthopaedics, Sancheti Institute of Orthopaedics and Rehabilitation, Pune, Maharashtra, India,

²Department of Arthroscopy and Arthroplasty, Sportsmed, Mumbai, Maharashtra, India.

Address of Correspondence:

Dr. Amit Chaudhari,
Sportsmed, Parel, Mumbai-400025, Maharashtra, India.

E-mail: dramitschaudhari@gmail.com

Submitted: 15/03/2025; Review: 27/04/2025; Accepted: May 2025; Published: June 2025

DOI: <https://doi.org/10.13107/jocr.2025.v15.i06.5660>

© The Author(s). 2025 Open Access. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and non-commercial reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated.



Figure 1: Pre-operative anteroposterior and lateral X-ray views of bilateral forearm showing right and left Galeazzi fracture with dorsal displacement of both distal radius and ulna. The right side displacement is more than the left side.

Case Report

A 39-year-old male presented to the emergency department after being involved in a high-speed motorcycle collision. He was thrown from his motorcycle, landing on both outstretched arms. He reported severe pain, swelling, and deformity in both forearms. Despite the extent of his injuries, he remained hemodynamically stable and had no neurovascular deficits in either limb.

On physical examination, gross deformities and tenderness were observed over both distal radii. Radiographs confirmed bilateral Galeazzi fractures with dorsal displacement of the distal radius and ulna fragments, a pattern not previously classified in the Walsh system [7] (Fig. 1).

Initial management included bilateral above-elbow splints and



Figure 2: Immediate post-operative anteroposterior and lateral X-ray views of bilateral forearm showing good reduction of both radius and distal radioulnar joint.

intravenous analgesia. Following a detailed discussion with the patient, surgical intervention was planned. Open reduction and internal fixation (ORIF) was performed bilaterally under general anesthesia using a standard Henry's approach. Both fractures were stabilized using 7-hole limited contact dynamic compression plates (LCDCPs). During surgery, anatomical fracture reduction led to spontaneous DRUJ realignment, confirmed intraoperatively through the piano key test. Fluoroscopy verified proper alignment (Fig. 2).

Postoperatively, the patient was immobilized in supination with above-elbow back slabs. Three weeks later, controlled range-of-motion exercises for the wrist, elbow, and shoulder were initiated. Follow-up radiographs showed satisfactory healing. At 1 year, the patient achieved full bony union and functional recovery, scoring 95 on the Mayo wrist score.

Discussion

Galeazzi fractures occur due to axial compression combined with rotational forces acting on the wrist [10]. The radius, being the primary load-bearing bone in the forearm, is particularly susceptible to fractures under these conditions. Disruption of the DRUJ occurs due to tension imbalances in the triangular fibrocartilage complex, a key stabilizing structure [1]. High-impact trauma, such as motorcycle accidents, is a frequent cause of these injuries.

The transition zone between the radial shaft's thick cortical bone and the thinner metaphyseal bone predisposes this region to fractures [2]. The bilateral nature and dorsal

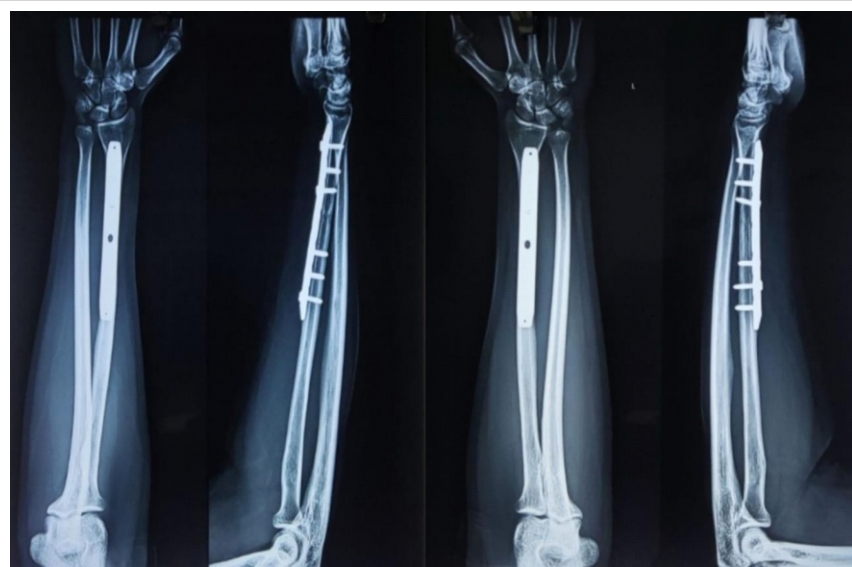


Figure 3: 6 months post-operative anteroposterior and lateral X-ray views of bilateral forearm. There is a normal union process of the radial fractures and no evidence of distal radioulnar joint instability.



Figure 4: 1-year post-operative anteroposterior and lateral X-ray views of bilateral forearm. There is a union of the radial fractures and stable distal radioulnar joint joints.

displacement of both distal radius and ulna fragments in this case represent an unclassified variation within the Walsh system (Fig. 1). The Walsh classification [7,10] categorizes Galeazzi fractures as follows:

- Type I: Dorsal displacement of the distal radius with volar ulna dislocation
- Type II: Volar displacement of the distal radius with dorsal ulna dislocation.

This fracture pattern did not fit either category, highlighting the importance of meticulous radiographic evaluation for detecting unusual presentations.

In pediatric patients, closed reduction and casting are often sufficient for managing Galeazzi fractures, yielding favorable results. However, in adults, surgical intervention is essential due to the strong deforming forces acting on the radius and DRUJ

instability [6]. ORIF using a volar (Henry's) approach remains the standard technique for treating Galeazzi fractures, allowing direct visualization and precise fracture stabilization [9]. In this case, 7-hole LCDCPs provided stable fixation, enabling controlled early mobilization (Fig. 2). DRUJ integrity was confirmed intraoperatively, with fluoroscopic imaging verifying proper realignment [8].

Post-operative care included immobilization in a long-arm cast for 3 weeks to prevent redislocation, followed by progressive range-of-motion exercises to minimize stiffness and optimize function. Potential complications include non-union, malunion, chronic DRUJ instability, and neuropathy. If inadequately treated, DRUJ injuries can lead to chronic pain and functional impairment, sometimes requiring salvage procedures such as the

Sauvé-Kapandji or Darrach operations [10].

This patient achieved an excellent functional outcome without complications. Intraoperative assessment, including the piano key test, confirmed DRUJ stability, negating the need for additional fixation. At the 1-year follow-up, the patient exhibited full range of motion and grip strength (Fig. 3-5).

Conclusion

This case describes an extremely rare presentation of bilateral Galeazzi fractures with dorsal displacement of both the distal radius and ulna fragments, a pattern not previously documented. Early surgical intervention, precise anatomical reduction, and intraoperative assessment of DRUJ stability were crucial in achieving successful management. LCDCPs provided rigid fixation, facilitating early mobilization and an



Figure 5: 1-year post-operative clinical images of forearm supination and pronation with wrist dorsiflexion and palmarflexion.

excellent recovery outcome.

This report highlights the importance of individualized evaluation in complex forearm injuries. Prompt recognition, appropriate surgical intervention, and structured rehabilitation are essential for achieving optimal results. Further documentation of similar cases may contribute to refining classification systems and treatment strategies for atypical Galeazzi fractures.

Clinical Message

This case presents a rare, unclassified variant of bilateral Galeazzi fractures with dorsal displacement of both the distal radius and ulna fragments, managed successfully with ORIF using LCDCP. Notably, spontaneous DRUJ realignment occurred without additional fixation, confirmed intraoperatively through the piano key test. Early mobilization following structured immobilization played a crucial role in achieving full functional recovery. This report highlights the need to recognize atypical fracture patterns and refine classification systems for complex forearm injuries.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

References

1. Rettig ME, Raskin KB. Galeazzi fracture-dislocation: A new treatment-oriented classification. *J Hand Surg Am* 2001;26:228-35.
2. Atesok KI, Jupiter JB, Weiss AP. Galeazzi fracture. *J Am Acad Orthop Surg* 2011;19:623-33.
3. Magill P, Harrington P. Complex volar dislocation of the distal radioulnar joint in a Galeazzi variant associated with interposition of the ulnar neurovascular bundle. *Eur J Orthop Surg Traumatol* 2009;19:265-7.
4. Sebastin SJ, Chung KC. A historical report on Riccardo Galeazzi and the management of Galeazzi fractures. *J Hand Surg Am* 2010;35:1870-7.
5. Eberl R, Singer G, Schalamon J, Petnehazy T, Hoellwarth ME. Galeazzi lesions in children and adolescents: Treatment and outcome. *Clin Orthop Relat Res* 2008;466:1705-9.
6. Giannoulis FS, Sotereanos DG. Galeazzi fractures and dislocations. *Hand Clin* 2007;23:153-63, v.
7. Tsai PC, Paksima N. The distal radioulnar joint. *Bull NYU Hosp Jt Dis* 2009;67:90-6.
8. Mikić ZD. Galeazzi fracture-dislocations. *J Bone Joint Surg Am* 1975;57:1071-80.
9. Chu PJ, Lee HM, Hung ST, Shih JT. Stabilization of the proximal ulnar stump after the Darrach or Sauvé-Kapandji procedure by using the extensor carpi ulnaris tendon. *Hand (N Y)* 2008;3:346-51.
10. Sivakumaran D, Pathinathan K, Madushanger SR, Gunawardena PM, Dimantha WH, Munidasa D. Bilateral symmetrical pronation type of Galeazzi fracture following high-speed motor traffic crash: A case report. *Int J Surg Case Rep* 2021;85:106284.

Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

How to Cite this Article

AltafW, Chaudhari A, Sancheti P. Successful Management of Atypical Bilateral Galeazzi Fractures with Unique Dorsal Displacement: A Case Report. *Journal of Orthopaedic Case Reports* 2025 June;15(6): 48-51.