



International Journal of Case Reports in Orthopaedics

E-ISSN: 2707-8353

P-ISSN: 2707-8345

Impact Factor (RJIF): 6.09

IJCRO 2025; 7(2): 233-235

www.orthocasereports.com

Received: 12-09-2025

Accepted: 15-10-2025

Dr. R Hariharasudhan
MBBS Junior Resident
Academic Department of
Orthopaedics Mysore Medical
College and Research Institute
Mysore, Karnataka, India

Dr. Sunil Kumar PC
MBBS, DNB Professor
Department of Orthopaedics
Mysore Medical College and
Research Institute
Mysore, Karnataka, India

Dr. Mohd Ejazul Haq Chand
MBBS, MS Assistant Professor
Department of Orthopaedics
Mysore Medical College &
Research Institute Mysore,
Karnataka, India

Management of open type II ulnar fracture with multiple extensor tendon lacerations: A case report

R Hariharasudhan, Sunil Kumar PC and Mohd Ejazul Haq Chand

DOI : <https://www.doi.org/10.22271/27078345.2025.v7.i2d.293>

Abstract

Background: Open forearm injuries involving both fractures and multiple extensor tendon lacerations are complex and present significant challenges in restoring function. Early surgical intervention combining fracture fixation and meticulous tendon repair is critical to optimize recovery and prevent disability.

Case Presentation: An 18-year-old female sustained a left forearm open type II ulnar fracture with complete lacerations of multiple extensor tendons (extensor carpi ulnaris, extensor digiti minimi, extensor digitorum, extensor indicis, and extensor pollicis longus) following a sharp object injury. Surgical treatment involved open reduction and internal fixation of the ulna with a dynamic compression plate, and tendon repairs using modified Kessler (3-0 Ethilon) and 90-90 suture techniques (4-0 Ethilon), supplemented with epitendinous suturing. The limb was protected with slab for 8 weeks, along with structured physiotherapy.

Results: At three months, the patient achieved radiological union of the ulna and near-normal hand function, with full finger and thumb extension, complete wrist mobility, and minimal residual pain. There were no postoperative complications such as tendon rupture or infection.

Conclusion: This case underscores the importance of integrated surgical management and early, guided rehabilitation in complex upper limb trauma. Employing evidence-based tendon repair techniques alongside stable fracture fixation facilitates excellent functional outcomes in open forearm injuries with multiple tendon lacerations.

Keywords: Open ulnar fracture, extensor tendon injuries, tendon repair techniques, modified Kessler suture, upper limb trauma, rehabilitation after tendon repair

Introduction

Combined forearm injuries, including open fractures and multiple extensor tendon lacerations, represent complex clinical scenarios with considerable risk for long-term functional disability if inadequately treated. Extensor tendons, lying superficially over the dorsum of the forearm and hand, are particularly susceptible to trauma, and their injury often occurs in conjunction with bony injuries due to proximity and mechanism of force. Literature supports immediate surgical intervention for open fractures with concomitant tendon injuries, emphasizing thorough assessment and individualized management according to injured zones. Rigid fracture fixation and prompt tendon repair using robust core suture techniques such as the modified Kessler and 90-90 suture configurations are crucial to restore tendon glide and hand function. Early, supervised rehabilitation programs have demonstrated improved outcomes, reducing adhesion formation and enhancing recovery [1, 2].

Case Report

An 18-year-old female presented with a left forearm injury following accidental laceration by a sharp object. Clinical assessment revealed a deep open wound with minimal contamination over the ulnar border of the dorsal aspect of the left forearm, exposed bone and tendon ends, loss of finger extension, and inability to abduct or extend the thumb. Open Gustilo-Anderson type II fracture of ulna was present and ulna fracture was further confirmed by radiographs. A detailed neurological and vascular assessment was within normal limits.

Emergency protocol included tetanus prophylaxis, wound irrigation, intravenous antibiotics (IV Cefazolin), and prompt surgical exploration under regional anesthesia performed within six hours of injury, in line with current recommendations for open forearm fractures. Intraoperative findings included complete transection of the extensor carpi ulnaris, extensor

Corresponding Author:

Dr. R Hariharasudhan
MBBS Junior Resident
Academic Department of
Orthopaedics Mysore Medical
College and Research Institute
Mysore, Karnataka, India

digiti minimi, extensor digitorum, extensor indicis, and extensor pollicis longus tendons in zone 8 of extensor region, along with partial laceration of the abductor pollicis muscle. Firstly, the Fracture was reduced and stabilized using a 3.5-mm dynamic compression plate. Proximal and distal Tendon ends were carefully identified based on their natural orientation, color, pattern of injury and tension during passive movement. Tendon ends were repaired meticulously with core and epitendinous suturing; the modified Kessler technique with Ethilon 3-0 was used for the extensor carpi ulnaris, extensor digiti minimi, and extensor pollicis longus, while the 90-90 technique with Ethilon 4-0 restored extensor indicis and extensor digitorum continuity, in keeping with best practices for extensor repair. Muscle repair of the abductor pollicis employed interrupted Vicryl 2-0. Accurate alignment and repair

ensured minimal gap formation and hence preparing the patient for active mobilization.

Postoperatively, functions of all the injured muscles and tendons were checked gently and was found appropriate. A below-elbow volar slab was applied in cock-up position for a total of 8 weeks. Graduated physiotherapy was initiated under supervision from day 3 of surgery, starting with passive range-of-motion, passive movement with active hold and subsequently progressing to active movement initial without resistance then with resistance to improve strength a regimen supported by current studies to reduce adhesions and enhance tendon glide.

At three months, assessment revealed fracture union and restoration of hand and thumb extension, full wrist mobility, normal grip strength, and minimal pain. There were no post-operative complications such as tendon rupture, infection, or neurovascular deficit.



Fig 1: The wound showing injured tendons

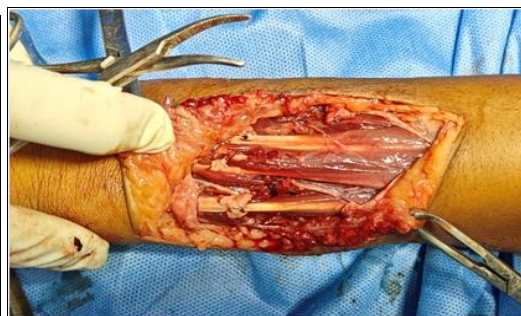


Fig 2: Post repair of tendons



Fig 3: Preop and post op radiographs

Discussion

The coordinated management of open forearm fractures alongside multiple tendon injuries is essential to optimize functional outcomes. Surgical repair techniques for extensor tendons, such as the modified Kessler and 90-90 sutures, provide high resistance to gap formation and facilitate safe early mobilization, reducing the risk of adhesions and re-rupture. The literature has emphasized the value of anatomical repairs based on correct identification of tendon ends by color, pattern, and tension, with intraoperative verification [3, 4].

Early intervention in open fractures has historically focused on the “six-hour rule”, but newer evidence suggests that primary irrigation, immediate antibiotic administration, and timely surgery (within 6-24 hours) support optimal outcomes, particularly in low-grade injuries. Immobilization and a structured rehabilitation protocol, featuring passive

and active mobilization within weeks of repair, are well-documented to improve muscle strength and functional scores [5].

Long-term outcome studies confirm that multi-tissue injuries, such as those affecting both bones and several tendons, require multidisciplinary care and regular follow-up to identify and mitigate complications such as contractures and complex regional pain syndrome (CRPS). Our case demonstrates that combining evidence-based surgical techniques with individualized rehabilitation can restore near-normal function within months after injury.

Conclusion

This case exemplifies the successful surgical management of open ulnar fracture with multiple extensor tendon injuries via coordinated fracture fixation, anatomical tendon repair, and early rehabilitation. Incorporation of best-practice

protocols from current literature led to excellent recovery with minimal morbidity in the short-term follow-up. Comprehensive care and strict adherence to evidence-based principles remain the cornerstone for favourable outcomes in complex upper limb trauma.

Financial support and sponsorship

Nil

Conflict of Interest

The authors declared no potential conflicts of interest with regards to this article. Each author certifies that he or she has no commercial associations that might pose a conflict of interest in connection with the submitted article.

Ethical standards

Institutional ethics committee approved the study.

Informed consent was obtained from the participant included in the study.

References

1. Griffin M, Hindocha S, Jordan D, Saleh M, Khan W. Management of extensor tendon injuries. *Open Orthop J.* 2012; 6:36-42. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC3293224/>
2. Rafi BM, Tiwari V. Forearm fractures. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [updated 2023 Aug 8; cited 2025 Nov 8]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK574580/>
3. PhysioPedia. Extensor tendon injuries of the hand - treatment and rehabilitation [Internet]. PhysioPedia; 2024 [cited 2025 Nov 8]. Available from: https://www.physio-pedia.com/Extensor_Tendon_Injuries_of_the_Hand
4. Piskin A, Yuceturk A, Tomak Y, Ozer M, Gulman B, Ataman A, *et al.* Tendon repair with the strengthened modified Kessler, modified Kessler, and Savage suture techniques: a biomechanical comparison. *Acta Orthop Traumatol Turc.* 2007;41(3):238-243. Available from: <https://www.aott.org.tr/Content/files/sayilar/438/438-4691.pdf>
5. Sreenivas S, Kumar SR, Kasturi A. Outcome of active mobilization after tendon repair: a study in a tertiary care centre [Internet]. *Indian J Orthop Surg.* 2020 [cited 2025 Oct 29];6(3):242-246. Available from: <https://doi.org/10.18231/j.ijos.2020.045>

How to Cite This Article

R Hariharasudhan, Kumar PCS, Chand MEH. Management of open type ii ulnar fracture with multiple extensor tendon lacerations: A case report. *International Journal of Case Reports in Orthopaedics* 2025; 7(2): 233-235.

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.