

Total Elbow Arthroplasty in a Case of Acute Distal Humerus Fracture of an Old Neglected Elbow Trauma – A Case Report

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Abstract

Introduction: Total elbow arthroplasty (TEA) is a recognized treatment option for complex intra-articular distal humerus fractures in elderly patients. However, there is limited literature on managing fresh fractures in elbows with a history of long-standing neglect. We present a unique case of a 65-year-old patient who sustained neglected elbow trauma 50 years prior, and subsequently suffered a fresh fall resulting in a distal humerus fracture. This case was successfully managed with TEA, resulting in a favourable functional outcome.

Presentation of the Case: A 65-year-old, right-handed male presented with acute left elbow pain and swelling after a recent fall. He had a history of untreated elbow trauma from 50 years ago, which was managed conservatively and he was functionally well adapted. Clinical examination showed tenderness, restricted joint movement, and crepitus. Radiological evaluation confirmed a distal humerus intra-articular fracture, displaying dysplastic changes consistent with the old neglected trauma. A Total Elbow Arthroplasty was performed, achieving full intraoperative range of motion. Postoperatively, the patient had complete pain relief, restored elbow function, and at one-year follow-up, exhibited a good Mayo Elbow Performance Index (MEPI) score of 85, reduced DASH score (80 preoperatively to 21), and a range of motion from 0 - 130 degrees.

Discussion: Total Elbow Arthroplasty (TEA) is increasingly being favoured for managing not only cases of advanced elbow arthritis, but also comminuted distal humerus fractures in elderly patients. Many studies have shown better functional outcomes and reduced operative time with TEA compared to open reduction and internal fixation. However, rates of revision surgery after TEA are particularly high in post-traumatic and inflammatory conditions, with a mean time to revision of around 5-7 years. Careful surgical decision-making is crucial when choosing between TEA and open reduction, with the posterior triceps-elevating approach being preferred over olecranon osteotomy in TEA cases. TEA is generally contraindicated in active joint infections and patients under 65

years old. Despite limited reported cases, TEA's success in managing old neglected elbow trauma with fresh fractures remains noteworthy.

Conclusion: In cases of distal humerus fractures with a prior neglected elbow trauma in the elderly, primary total elbow arthroplasty should be considered as a treatment option. This procedure has been shown to provide excellent functional results, including a pain-free and a mobile joint with close to normal range of motion.

Keywords: Total elbow arthroplasty; Distal humerus fracture; Dysplastic elbow

Introduction

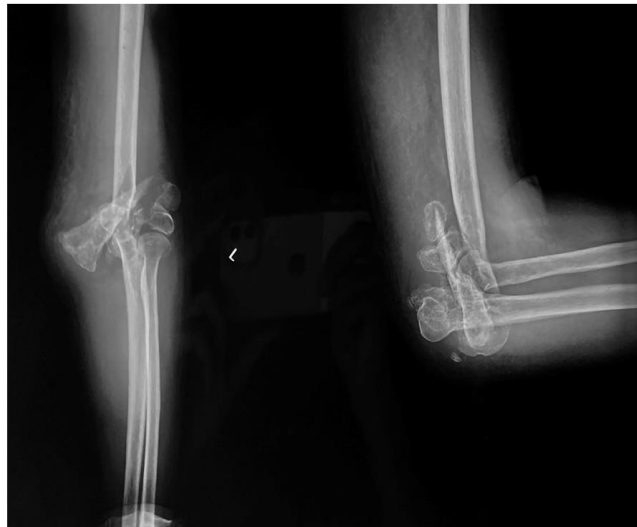
Distal humerus fractures represent a challenging orthopaedic injury. These fractures can result from various mechanisms, such as falls, direct trauma, or high-energy injuries. They are often associated with significant pain, swelling, deformity, and functional impairment [1]. Distal humerus fractures are classified based on their complexity, ranging from simple, non-displaced fractures to complex, intra-articular fractures involving multiple fragments. Treatment approaches vary depending on the fracture pattern, patient age, and overall health. Surgical intervention, such as open reduction and internal fixation or total elbow arthroplasty, may be necessary to restore joint alignment, achieve stable fixation, and enable early rehabilitation. The management of distal humerus fractures requires a thorough evaluation and tailored treatment plan to optimize outcomes and preserve elbow function [2,3]. Total Elbow Arthroplasty (TEA) has been described as a viable option for complex intra-articular distal humerus fractures in the elderly [4]. However, the literature on managing an old neglected elbow trauma with a fresh fracture is scarce. We present one such case of a 65 year-old patient with neglected elbow trauma 50 years ago who presented with a fresh fall on the outstretched hand and was managed with TEA with a good functional outcome. A written informed consent was taken from the patient to publish this case report.

Case Presentation

A 65 year old right hand dominant man presented to our outpatient department with complaints of pain and swelling of the left elbow due to slip and fall 1 week back outside his house. He gave a history of trauma to the same elbow 50 years back (at the age of 15) in his village which was managed by a traditional “bone setter” by massage and splint. No radiological investigation was done at that time. Functionally, the patient claimed that he had recovered well and did farming without difficulty for all the years with the only limitation being inability to lift heavy weight with the left upper limb. He did not have any other co-morbidities. On examination, there was an obvious deformity at the left elbow joint apart from the edema and ecchymosis on the skin overlying the joint. Tenderness was present and the three point bony relationship between the lateral epicondyle, medial epicondyle and the tip of olecranon process was altered. Joint movements were painful, restricted and crepitus was palpated. The patient was neurovascularly intact.

The radiological assessment (**Figure 1**) revealed a distal humerus intra-articular fracture. The elbow joint appeared dysplastic with changes consistent with the history of an old neglected elbow trauma. The periarticular bony region was osteoporotic. The radial head was dislocated and appeared rounded suggesting the chronic nature of

radiocapitellar dislocation. Although we did not have any radiological evidence, we hypothesized that the patient must have had a posterior elbow dislocation 50 years back.

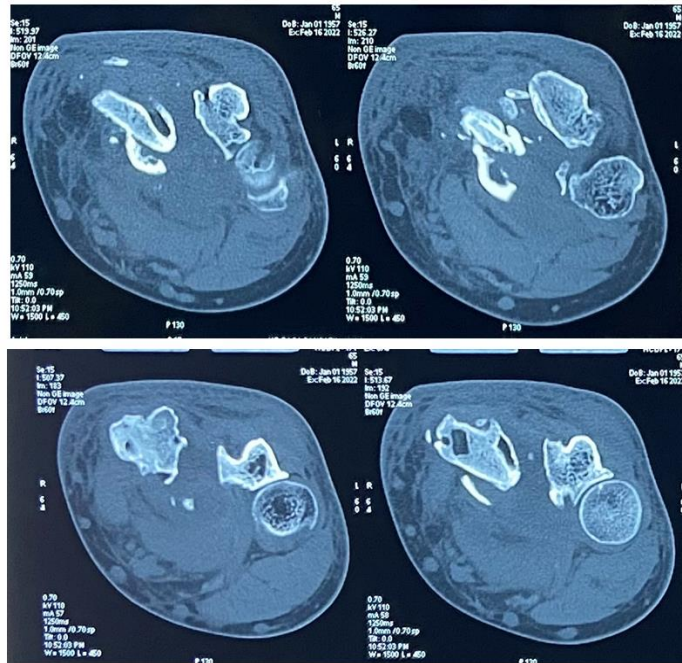


CT scan (**Figure 2**) was done to better understand the fracture anatomy and decide further management.



A Total Elbow Arthroplasty was planned. Under general anaesthesia, the patient was given a lateral decubitus position and a Bryan Morrey (Triceps reflecting) approach was taken. The Ulnar nerve was identified and protected. The recent nature of the distal humerus fracture was confirmed and the fracture fragments excised. A Conrad-

Morrey Semi-Constrained prosthesis was used (Zimmer-Biomet). Full Elbow range of motion was achieved intra-operatively. We inserted bone graft into the proximal humeral flange (**Figure 3**) to enhance thickening of the bone stock where maximum stress occurs. It also reduces posterior displacement and a torsional force which in turn helps protect bone-cement & implant cement interface.



(**Figure 4** – Post op Xray).



Post-operatively, the patient had complete pain relief and achieved a functional range of motion from 20-130°. Supination and Pronation was full compared to the normal limb.

At 1 year follow up, the Mayo Elbow Performance Index (MEPI) score was 85 (Good) and the DASH score reduced from 80 preoperatively to 21 at the follow up. The range of motion at one year was 0 - 130° (Figure 5).



Discussion

TEA is a motion-preserving surgery that is gaining popularity for the treatment of various debilitating elbow disorders. It is an acceptable option for intraarticular comminuted distal humerus fractures in the elderly. In a multicentre, prospective, randomized controlled trial by McKee et al [5], TEA patients were reported to have statistically significant better functional outcomes and shorter operating times than ORIF. They also showed greater range of motion and lower reoperation rates with TEA. However, revision surgery with implant revision after primary TEA isn't rare. Perretta et al [6] reported nearly 50% of TEAs were revised in post-traumatic disorders and 20% of inflammatory disorders. This study also reported an average of 5 years between component implantation and revision. Several authors have reported superior functional outcomes achieved for TEA when used in treating severe RA when compared to acute trauma or post-traumatic arthritis. Our patient had distorted distal humerus and proximal radius-ulnar anatomy which would make it difficult to use anatomical plates for fixing the fracture. His bones were osteoporotic too, increasing the risk of failure of fixation. Moreover, he was 65 years old and had retired from his work as a farmer. His activity level was low and he preferred to have a good range of motion for his household chores. All these factors led us to the decision of managing this case with a total elbow arthroplasty.

When the surgeon is in doubt regarding the final modality of management and decides to take the decision between ORIF and TEA intraoperatively, olecranon osteotomy must be avoided as it is contraindicated when a TEA is

planned. In such cases, it is best to proceed with the posterior triceps-elevating approach described by Bryan & Morrey [7]. The approach gives excellent exposure to the distal humerus achieved by detaching the triceps insertion subperiosteally from the proximal ulna towards the radial side. At the end of the procedure the triceps is reattached to the ulna through bone tunnels using non-absorbable sutures. TEA is contraindicated in active joint infection and patients who are physiologically < 65 years as it has shown poor functional outcomes in younger patients [8,9]. Kanakaraddi et al [10] reported a case of old unreduced posterior elbow dislocation with radial head and coronoid fracture managed with sloppy hinged TEA and showed good function till 6 weeks of follow up. Our patient had an old neglected elbow trauma with an acute distal humerus fracture managed with a TEA which has not been reported in literature to the best of our knowledge.

Conclusion

For elderly patients presenting with distal humerus fractures in conjunction with a history of long-standing neglected elbow trauma, the option of primary Total Elbow Arthroplasty (TEA) merits serious consideration as a therapeutic approach. Extensive evidence supports the effectiveness of this procedure in yielding outstanding functional outcomes, characterized by pain alleviation, restoration of joint mobility, and nearly normal range of motion.

References

1. [Anglen J. Distal humerus fractures. J Am Acad Orthop Surg. 2005;13\(5\):291-7.](#)
2. [Pollock JW, Faber KJ, Athwal GS. Distal humerus fractures. Orthop Clin North Am. 2008;39\(2\):187-200.](#)
3. [Galano GJ, Ahmad CS, Levine WN. Current treatment strategies for bicolunar distal humerus fractures. J Am Acad Orthop Surg. 2010;18\(1\):20-30.](#)
4. [Hildebrand KA, Patterson SD, Regan WD, MacDermid JC, King GJ. Functional outcome of semiconstrained total elbow arthroplasty. J Bone Joint Surg Am. 2000;82\(10\):1379.](#)
5. [McKee MD, Veillette CJ, Hall JA, Schemitsch EH, Wild LM, McCormack R, et al. A multicenter, prospective, randomized, controlled trial of open reduction—internal fixation versus total elbow arthroplasty for displaced intra-articular distal humeral fractures in elderly patients. J Shoulder Elbow Surg. 2009;18\(1\):3-12.](#)
6. [Perretta D, van Leeuwen WF, Dyer G, Ring D, Chen N. Risk factors for reoperation after total elbow arthroplasty. J Shoulder Elbow Surg. 2017;26\(5\):824-9.](#)
7. [Iselin LD, Mett T, Babst R, Jakob M, Rikli D. The triceps reflecting approach \(Bryan-Morrey\) for distal humerus fracture osteosynthesis. BMC Musculoskelet Disord. 2014;15\(1\):1-5.](#)
8. [Lauder A, Richard MJ. Management of distal humerus fractures. Eur J Orthop Surg Traumatol. 2020;30\(5\):745-62.](#)
9. [Sanchez-Sotelo J, Morrey BF. Total elbow arthroplasty. J Am Acad Orthop Surg. 2011;19\(2\):121-5.](#)
10. [Kanakaraddi S. Primary total elbow replacement in a patient with old unreduced complex posterior elbow dislocation. Bull Hosp Jt Dis. 2013;71\(4\):294.](#)

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