

**NEGLECTED ULNA FRACTURE PRESENTED AS HYPERTROPHIC NONUNION:
CASE REPORT****¹Dr. Aditi Ranaut and ²Dr. Narinder Singh**¹MD Anesthesia, Zonal Hospital Dharamshala.²MS Orthopaedics, Zonal Hospital Dharamshala.***Corresponding Author: Dr. Narinder Singh**

MS Orthopaedics, Zonal Hospital Dharamshala.

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ABSTRACT

We report herein, a case of 39-year-old male with old untreated fracture of ulna presented as hypertrophic non-union. This patient was managed surgically with dynamic compression plate and bone grafting which results in union of fracture site.

KEYWORDS: Hypertrophic non-union, Dynamic compression plate, Bone grafting.**INTRODUCTION**

Non union is defined as absence of radiological and clinical signs of unions after an average period of six months.^[1] Non-unions of the forearm often cause severe dysfunction of the forearm as they affect the interosseous membrane, elbow and wrist. Ulnar fracture results from a direct blow against the soft tissue deficient ulnar border. Treatment of diaphyseal forearm nonunions differs from that of other type of diaphyseal nonunions because of the intimate relationship between the radius and ulna and their reciprocal movement. Although the best treatment remains a subject of debate, most surgeons aim for anatomical reduction and stable fixation to avoid disruption of distal radioulnar joint.¹ Operative treatment with adequate debridement, eradication of infection and stable fixation using compression will lead to high predictable rates of healing.^[2]

CASE PRESENTATION

A 39-year-old male presented with a history of an enlarging right forearm mass from 1.5 years. He has noted enlargement of his right forearm and associated pain with movement. The pain is worst with flexion on the lateral aspect of his forearm. His daily activities were not limited by pain and it improves with non-steroidal anti-inflammatory drugs. There was no numbness, tingling, weakness or unexpected weight loss. Patient has history of injury to his right forearm during a cricket match at the age of 18 years. He hasn't consulted any medical practitioner at that time. He has never had issues with his forearm until the last 1.5 years. He was a chronic smoker from 15 years. On physical examination, the patient has a notable deformity of the right forearm (figure 1). There was a palpable mass in the midulnar shaft without tenderness, erythema or skin break. His

elbow and wrist range of motions were preserved with mild pain in supination, pronation and elbow flexion. He had normal power and there was no neurovascular deficit. Plain radiography demonstrated a chronic and hypertrophic non-union ulnar diaphysis fracture (figure 2). The patient was managed surgically under supraclavicular brachial plexus block. The incision used was dorsal approach centered on the ulnar ridge for the ulna. The nonunion focal spot was covered with fibrotic tissue which was cleared and medullary recanalization was done. The routine bacteriological samples were collected and debridement with debridement of fracture site was done. The graft was then taken from the anterior ipsilateral iliac crest and packed opposite the nonunion focal spot. Fixation with dynamic compression plate (3.5mm DCP) was done after manual compression of the nonunion focal spot. The optimum application included at least three screws on either side of the focal spot. The upper limb was immobilized in a splint for 30 days and antibiotic prophylaxis was given to patient. Functional rehabilitation of the proximal and distal joints was carried out. All bacteriological samples taken were negative.



Figure 1: Hypertrophic non-union of ulna.

DISCUSSION

Paediatric and adolescent forearm diaphyseal fractures present a treatment challenge.^[1] Aseptic nonunion of the radius and ulna is a major complication of forearm fractures, accounting for 2% to 10% of all forearm fractures.^[1] The union rate for distal ulnar fracture is determined by the fracture characteristic and the fixation method.^[2] Other potential risk factors for non-unions are open fractures, inadequate stability (suboptimal immobilisation or surgical fixations), associated infections and insufficient metabolic response (callus formation, smoking and diabetes).^[2] Comminuted fracture with suboptimal reduction and extensive periosteal stripping is more likely to result in nonunion.^[3] Hypertrophic non-union is characterised by adequate callus formation without adequate stability.^[2] In some cases, despite non-union, patients may maintain reasonable function for years.^[1-3] There is currently no literature that looks specifically into the management of distal ulnar fracture nonunion, however historically both non-surgical and surgical treatments have been performed.^[4-6] There are few case series report the outcomes of ulnar shaft fracture nonunion managed by osteosynthesis and bone grafting as performed in present case study.^[5] Kloen et al reviewed 33 isolated ulnar shaft fracture nonunion managed with compression plate fixation and autologous bone graft, all nonunion healed within a median of 7 months.^[5] Ring et al reported 11 patients with atrophic nonunion of the ulnar diaphysis treated by autologous cancellous bone grafting and plate fixation, all patients achieved fracture union.^[7] The primary goal of treatment is to restore the functional anatomy between the radius and ulna through maintaining their respective lengths and thus obtain optimum function which was achieved surgically by applying dynamic compression plate over fractured bone in present case study.

CONCLUSION

Displaced isolated distal ulnar fracture is a rare upper limb injury. It should be suspected in patients with direct trauma against the soft-tissue-deficient ulnar border.

Minimally displaced distal ulnar fracture, which is defined as fracture with less than 50% translation and 15° of angulation, can safely be managed with casting. Displaced fracture should, however, be admitted and treated with anatomical reduction and rigid fixation to prevent disruption of distal radioulnar joint.

Conflict of interest

All authors declare they have no conflict of interest.

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Nil.

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