

# A very rare Presentation of Bifocal Non Union Radius with Ipsilateral Ulnar Shaft Non Union: Case Report

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## What to Learn from this Article?

Plate fixation and bone grafting can lead to success even in rare, very old, complex and multifocal non- unions.

## Abstract

**Introduction:** A bifocal non-union of shaft of radius associated with ipsilateral non-union shaft of ulna in an adult has not been reported in the literature till date to the best of our knowledge, though few similar cases of fresh fractures have been reported. The case being reported by us is the first of its kind.

**Case Presentation:** We report a case of bifocal non-union of shaft radius with non-union ipsilateral shaft of ulna in a 48-year-old right handed male along with discussion of alternative treatment options.

**Conclusion:** We describe an extremely rare and complicated non-union in which our patient got excellent results along with satisfactory functional recovery as a result of appropriate surgical treatment.

**Keywords:** Bifocal, Non-union, forearm, plating, bone grafting

## Introduction

In clinical practice, non-union in fractures of forearm bones is commonly encountered but non-union of bifocal fracture of shaft of radius is rare. We report a case of bifocal non-union of fracture shaft of radius along with non-union of ipsilateral shaft of ulna (with implant failure in case of non-union of fracture ulna). We couldn't find evidence of any previous reports relating to the surgical treatment of such a non-union in our review of scientific literature. Only the cases like one involving management of fresh trifocal fractures of radius along with fracture mid shaft ulna, two cases of management of fresh segmental fractures of radius and shaft of ulna and one case of management of fresh trifocal ulna fracture with bifocal radius fracture with supracondylar humerus fracture in a child have been reported in the past.

## Case Presentation

A 48-year-old right handed male presented to us in the orthopaedics out patient department with chief complaints of deformity in the left forearm and loss of function of left forearm for the last two months. Patient had been earlier operated for bifocal fracture shaft of radius and fracture shaft of ulna by open reduction and internal fixation with square nails 4 years back. According to the patient, the square nail for radius was removed one year after primary surgery

because of impingement but no record was available with the patient. Patient, a bus driver by occupation complained of progressive increase in forearm deformity that got aggravated for the last two months prior to seeking consultation in our institution.

On examination, there was gross deformity of left forearm with marked wasting and old healed surgical scar marks on dorsum and ulnar border on inspection (Fig. 1 and 2). On palpation, there was painless abnormal mobility at all three fracture sites (two in radius and one in ulna). There was no distal neurovascular deficit.

Radiographs revealed bifocal atrophic non-union of radius with non-union of ulnar shaft fracture with broken square nail for ulna in situ (Fig. 3).

Patient was subsequently planned for the surgery after the complete workup. Under regional block, ulna was approached through direct subcutaneous approach. Broken square nail was removed followed by freshening of fracture ends and fixation with 7 Hole 3.5 mm Locking Compression Plate with bone grafting using blocks of cortico-cancellous graft harvested from the iliac crest. Using Thompson's approach, radial non-unions were exposed, fracture ends at both the non-union sites were freshened followed by fixation with single 10 Hole 3.5 mm Locking Compression Plate after filling the gaps in between fracture ends with blocks of cortico-cancellous bone taken from the iliac crest. Wounds

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## Author's Photo Gallery



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Figure 1: Preoperative Clinical Picture (anterior view)



Figure 2: Preoperative Clinical Picture (posterior view)



Figure 3: Preoperative X-rays

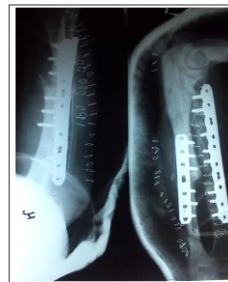


Figure 4: Postoperative X-rays



Figure 5: Post operative clinical picture

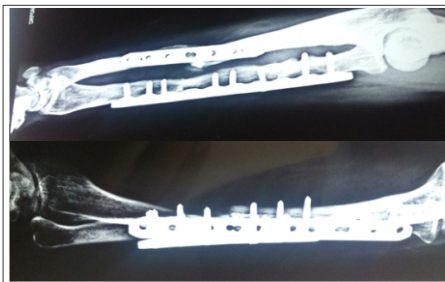


Figure 6: X-rays at final follow-up



Figure 7: Final follow-up clinical image

were closed on negative suction drains and above elbow back slab was applied (Figures 4 and 5). Patient was closely observed for the signs of compartment syndrome but the post operative period was uneventful.

After two weeks, skin staples and back slab was removed and patient was put on physiotherapy in the form of wrist and elbow range of motion exercises.

At 6 weeks follow up, fracture started showing signs of union and patient was allowed limited activity.

At 12 weeks post operatively, full activities were allowed as fracture had united.

At one year follow up, the patient who could not hold anything in his left hand at the time of presenting to us, had resumed his occupation as a bus driver and was now holding steering wheel of bus using same left hand and had good functional and cosmetic results (Figures 7, 8 and 9), with radiographs showing good consolidation of the fractures (Figure 6).

### Discussion

Mazin Ibrahim *et al* [1] reported a fresh case of unilateral, trifocal diaphyseal fracture of radius with mid shaft ulna fracture managed by fixation of bifocal radius fractures with two Titanium Dynamic Compression Plates using Henry's volar approach to radius and fixation of ulna with Titanium Dynamic Compression Plate as well. In our case, Thompson's dorsal approach was used for fixation of non-unions of radius to prevent devascularisation of volar aspect of radius and to use old healed surgical scars on dorsum of forearm from previous surgery. We used single long plate instead of two plates to avoid stress shielding.

Our further search revealed few more similar cases of fresh trauma. Rafiq *et al* [2] reported the management of a case of an ipsilateral diaphyseal fracture of radius, ulna and radial head managed with plating of forearm fractures along with radial head replacement.

Harsh Raval *et al* [3] reported management of two fresh cases of segmental complex radius fractures with mid shaft ulna successfully treated by combination of nailing, plating and K-wire fixation.

Ravi Mittal and Vijay Sharma [4] reported the management of case of



Figure 8: Final followup clinical image (continued)



Figure 9: Final followup clinical image (continued)

ipsilateral fracture supracondylar humerus with trifocal ulna and bifocal radius. Mseddi *et al* [5] and Goa *et al* [6] reported good results with intramedullary devices but in our case, intramedullary fixation had failed and hence plating was preferred.

Ring *et al* [7], in their study of 38 cases of fracture radius and ulna reported successful treatment with plating and autologous cancellous bone grafting. A similar management was carried out in our case.

Through this case report, we have highlighted successful management of rare non-union with good functional outcome.

### Conclusion

The present case report is the first of its kind emphasizing the fact that the rigid fixation and autologous cortico-cancellous bone grafting should be the preferred modality of treatment even in such complex non-unions yielding successful outcome.

### Clinical Message

Intramedullary implants have high rate of failure in forearm fractures and should be preferentially treated with plating in adults. Non-unions, and especially segmental non-union as seen in our case poses a greater challenge and needs fixation with locking plates with adequate bone grafting. Single plate avoids stress shielding and using same approach as used earlier avoids circumferential periosteal stripping.

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