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Case Report

Delayed Union of Radial Neck Fractures

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Abstract

Non-union of Radial neck fractures are extremely rare however symptomatic non-union may require surgical intervention. We present a case series of 3 patients presenting with symptomatic non-union but with persistant conservative management the radial neck fractures healed.

Keywords: *Radial Neck Fracture; Delayed Union; Non-Operative*

Introduction

Radial neck fractures are predominantly treated non-operatively with the majority of patients returning to full activities after 2 - 3 months. Non-union of radial neck fractures are extremely rare, but a few cases have been reported in the literature. Most authors would advocated early surgical intervention for symptomatic non-unions [1-6].

We present a case series of three patients with delayed union of a radial neck fracture, with all proceeding to union in the long-term after non-operative treatment.

Case Reports

Patient 1: A 38 year-old male had a fall off his bicycle sustaining an isolated closed undisplaced right radial neck fracture (Figure 1a and 1b). The patient was otherwise fit and well and a non-smoker, and right hand dominant. This was managed conservatively but at three months post injury he was still symptomatic. There was tenderness over the radial neck, and further imaging with CT and MRI confirmed a radial neck non-union with no evidence of avascular necrosis of the radial neck (Figure 2).

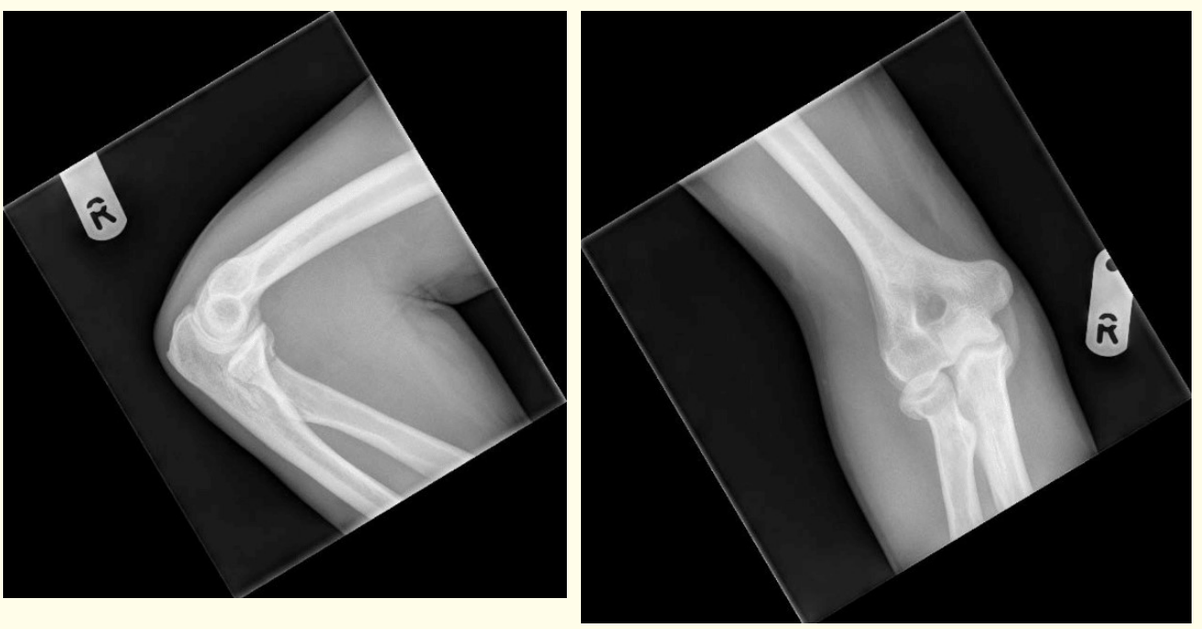

Figure 1a and 1b: *Undisplaced fracture of radial neck at presentation.*

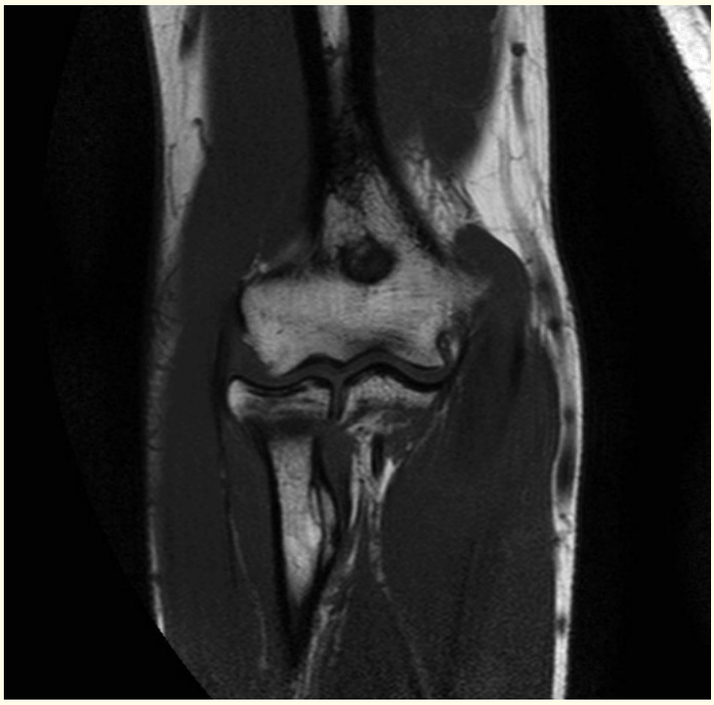

Figure 2: *MRI confirming the diagnosis of non-union at 3 months.*

At six months post injury the patient was asymptomatic and a subsequent x-ray follow-up revealed union of the fracture (Figure 3). The patient remained symptom free with full range of motion at the elbow.

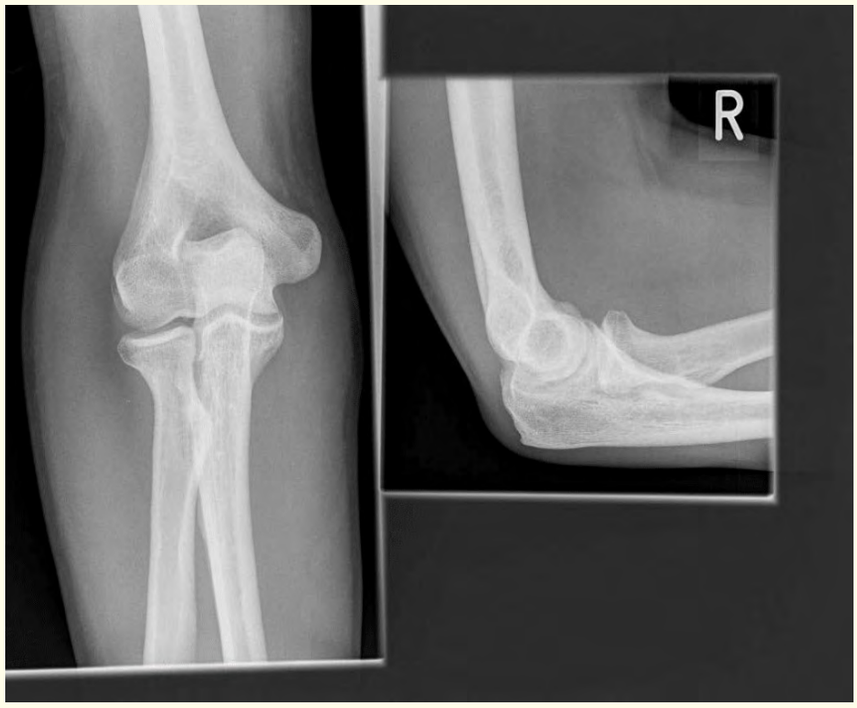

Figure 3: *Union of fracture at 6 months.*

Patient 2: A 61 year-old lady who had a simple fall and sustained an isolated undisplaced right radial neck fracture. It was a closed injury and neurovascularly intact. She was right hand dominant otherwise fit and well and a non-smoker. She was treated with early full range of movement and at two months post-injury she had full range of motion at the elbow joint but with minimal pain. Follow up x-rays showed non-union, but given the lack of symptoms, was offered no further treatment. She was subsequently follow up at 12 months showed clinical and radiological union with full range of motion at the elbow joint.

Patient 3: A 41 year old female sustained an isolated fracture dislocation of her elbow after a fall onto the point of the elbow. X-rays revealed an undisplaced fracture of the neck of the radius associated with the dislocation. She was otherwise fit and well, and was a non-smoker. The elbow was reduced closed and managed in a sling for 2 weeks when mobilisation was allowed. At 6 weeks full range of movement was achieved despite x-rays showing a non-union of the radial neck. At 3 months follow-up a CT confirmed non-union.

The patient remained asymptomatic with full range of motion at the elbow and so it was decided to continue conservative treatment. At 7 months repeat x-rays showed complete union of the fracture and patient remained asymptomatic with good range of moment.

Discussion

Non-unions of undisplaced radial neck fracture are very rare [2,4,7]. There are reports in literature, which are usually associated with high velocity injuries in displaced fractures. Other factors that may contribute including smoking, alcohol excess, age and other associated injury [3,8-11].

Faraj A., *et al.* reported cases of non-union in undisplaced low velocity fractures leading to non-union and required surgical intervention [3]. However most of these fractures were treated before 6 months of injury due to persistant pain. He also showed radial excision was an effective treatment for symptomatic non-union of radial neck. Similarly, Water., *et al*. reported a few cases of non-union in children but all these patients had a high velocity injury with displaced fractures [12].

The incidence of delayed union in radial neck fracture is unknown and has not been reported. Delayed union, by definition, is present when an adequate period of time has elapsed since the initial injury without achieving bone union, taking into account the variables such as age, bone involved, level of the fracture, and associated soft tissue injury. Most authors would advocate early surgical management for symptomatic non-union of radial neck fractures and hence there is not much information in literature regarding delayed non-unions [1,3,4,6].

Most undisplaced radial neck fractures go onto union with conservative management and early mobilisation. The inherent stability of this type fracture with intact annular ligament and capsule with a good blood supply has the potential for bony union inspite of early mobilisation. The potential for disruption of blood supply with high velocity fractures and displaced fractures are relative indications for early operative intervention.

We report 3 cases of symptomatic non-union managed with prolonged conservative measures that eventually united. No surgical treatment was performed in our series, because in all cases, the symptoms were mild and not felt to be inhibiting day-to-day activities. Our cases showed delayed union for at least 6 months following their initial injury and therefore we would advocate delaying surgery as long as possible in case spontaneous union, and resolution of symptoms, is achieved.

Conclusion

We believe this is the first case series to report on delayed union in undisplaced low-velocity radial neck fractures in previously fit and well individuals. We have highlighted the fact that surgery should be delayed in otherwise fit and well patients, especially in the presence of mild symptoms, to allow time for spontaneous union of the fracture.

Declaration

We confirm that all authors were fully involved in the study the paper has not been submitted/published elsewhere and there has been no financial gains towards this publication. The manuscript has been read and approved by all authors, and each author believes that the manuscript represents honest work.

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