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Injury of the ulnar nerve associated with fracture of the ulna: A case report

VS Pai

Hastings Memorial Hospital, Hastings, New Zealand.

INTRODUCTION

Although injury of the ulnar nerve is uncommon following closed fractures, it has been reported following Monteggia fracture,⁴ Galeazzi fracture,² fracture of the distal radius^{1,6} and less commonly with carpal fracture.⁵ Entrapment of the ulnar nerve in a fracture of the ulna is rare.³ The author reports a case of entrapment of the ulnar nerve in the fibrous tissue at the site of a fracture, with complete recovery of function after freeing the nerve from the bone.

Key words: *ulnar nerve entrapment, fracture of both forearm bones*

CASE REPORT

A 13-year-old boy sustained fractures of the middle third of his radius and ulna following a fall onto his right outstretched hand. Neurological examination showed decreased sensation in the little and ring fingers. Those intrinsic muscles supplied by the ulnar nerve were paralyzed. Because of the closed injury with minimal initial displacement, the nerve injury was assumed to be neuropraxia and the fracture was

treated in an above elbow plaster. A week later, the fracture became displaced in the cast (Fig. 1) and it was elected to perform internal fixation. The radial fracture was reduced and internally fixed through an anterior Henry's exposure, and the ulna was fixed through a posterior Boyd's approach. The ulnar nerve was not exposed at the time of fixation.

After 12 weeks there was good healing of the fractures, but the neurological deficit was still present. Tinel's sign was positive at the level of the fracture. Electromyography at this time revealed denervation of the ulnar innervated intrinsic muscles and there was no response to stimulation of the nerve proximal to the fracture. Through a separate anterior incision, the ulnar nerve was explored and was found to be trapped in fibrous tissue at the site of the fracture. The nerve was carefully dissected from the ulna without disturbing the healed fracture. There was moderate intra-neural scarring (Fig. 2) and no attempt was made to perform internal neurolysis. Recovery of ulnar nerve function was evident 6 weeks after operation and 12 months later there was complete recovery of sensation and motor function.

DISCUSSION

The ulnar nerve is separated from the ulna in the proximal part of the forearm by the bulk of the flexor digitorum profundus, but distally it lies close to the bone and is at risk of injury in displaced fractures.³

Address correspondence and reprint requests to: Dr VS Pai, Hastings Memorial Hospital, Hastings, New Zealand.

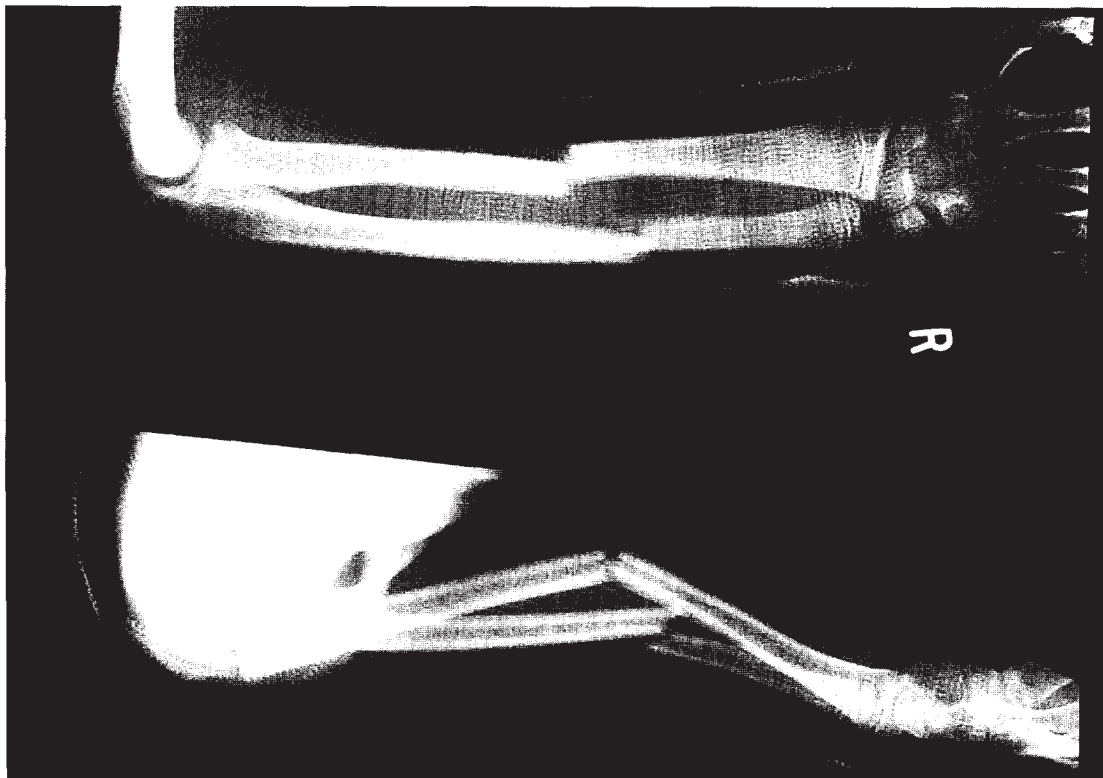


Figure 1 X-ray showing a closed fracture of both forearm bones with displacement within the cast.

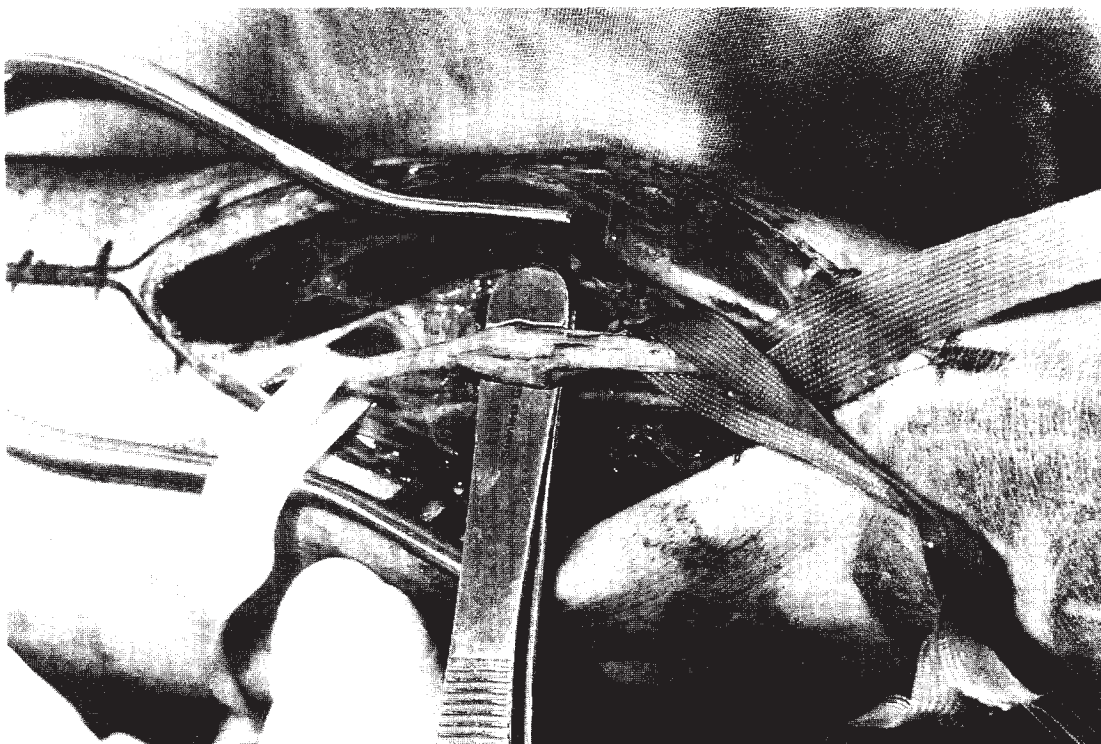


Figure 2 Intra-operative photograph showing exploration of the entrapped ulnar nerve. Neuroma is seen in continuity at the fracture site.

Immediate neurological deficit may present following a closed fracture. In this case surgical exploration was not thought to be indicated in view of the author's previous experience of spontaneous nerve recovery in closed fractures. However this patient did not recover after expectant observation, and on exploration it was found that there was entrapment of the ulnar nerve in the dense fibrous tissue connected to the fracture site. Such entrapment is rare and only one such case has been previously reported in greenstick fractures of the ulna.³

In the present case the nerve fascicles were mainly in continuity despite marked angulation of the nerve at the fracture site. At the time of external neurolysis, it was thought that this child may need a later excision

of a segment and a nerve graft. However, on waiting for the plastic surgeon's review, it was noted that the patient was progressively improving and therefore no further surgical procedures were undertaken.

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REFERENCES

1. **Howard FM.** Ulnar nerve palsy in wrist fractures. *J Bone Joint Surg* 1961, 43-A:1197-8.
2. **Poppi M, Padovani R, Martinelli P, Pozatti E.** Fracture of the distal radius with ulnar nerve palsy. *J Trauma* 1978, 18:278-9.
3. **Prosser AJ, Hooper G.** Entrapment of the ulnar nerve in a greenstick fracture of the ulna. *J Hand Surg* 1986, 11-B:211-2.
4. **Stein F, Grabias SL, Deffer PA.** Nerve injuries complicating Monteggia lesions. *J Bone Joint Surg* 1971, 53-A:1432-6.
5. **Vance RM, Gelberman RH.** Acute ulnar neuropathy with fractures at the wrist. *J Bone Joint Surg* 1978, 60-A:962-5.
6. **Zoega H.** Fracture of the lower end of the radius with ulnar nerve palsy. *J Bone Joint Surg* 1966, 48-B:514-6.