Acta Orthop Scand 55, 567–568, 1984

# Fracture of the head of the radius treated by elbow cast

The management of fractures of the radial head is still a controversial subject. Fifty cases of radial head fractures have been treated by conservative means. These cases were immobilized in a plaster of Paris cylinder cast for 3 weeks to restrict the movement of flexion and extension at the elbow, while encouraging supination and pronation movements from the very beginning. The cases have been evaluated and 43/50 have shown excellent results.

**Navnendra Mathur**
**Chandra Shekhar Sharma**

Departments of Orthopaedics, E.S.I. Hospital and S.M.S. Medical College and Hospital, Jaipur, India

Correspondence: A-28/2 Ugam Path, Collectorate Road, Bani Park, Jaipur-302 006, India

There is still no definitive treatment of the various types of radial head fractures. Excision of the radial head in comminuted fractures is the usual treatment (Key 1931, Bohrer 1933, Arner et al. 1957). This, however, produces a subluxation at the inferior radio-ulnar joint due to the shortening of the radius, and hence rotation becomes painful and difficult (Levin 1973). This can be prevented by prosthetic replacement of the radial head (Taylor & Connor 1964), but this is a formidable operation for routine use and the results are not uniformly good. Removal of the loose fragments alone gives poor results (Charnley 1961). Hence a technique of conservative treatment in a cylinder cast with immobilization for 3 weeks followed by early mobilization, as advocated by McAusland & Wymann (1975), has been tried in 50 cases and the results are evaluated.

## Material and methods

A series of 50 patients older than 15 years of age with fracture of the head of the radius were studied. All those who were able to accomplish 70° pronation and 70° of supination movements at the time of initial examination were included, irrespective of type of fracture. In all selected cases a well padded cylinder cast applied over stockinette extended from wrist to axilla (Figure 1). Extra cotton wool padding was applied over the forearm and wrist to provide enough space in the cylinder cast for supination and pronation. **Patients** were asked to perform active supination and pronation during the application of the plaster so that the cast set to allow these movements. Active supination and pronation were encouraged from the very beginning. The limb was rested in a triangular sling. The patient was reviewed after 2 days to check on the movements of supination and pronation, and again after 3 weeks; the cast was then discarded. A complete check-up was done for pain, swelling, tenderness and range of movements. The patient was asked to continue the use of the triangular sling and advised to carry out gradual active movements at the elbow joint. The final check-up was after 10 weeks.

Out of 50 cases, there were 20 undisplaced fractures, 14 displaced fractures and 16 comminuted fractures of the head of the radius.

Evaluation of the results was based on the criteria suggested by Arner et al. (1957) with a slight modification.

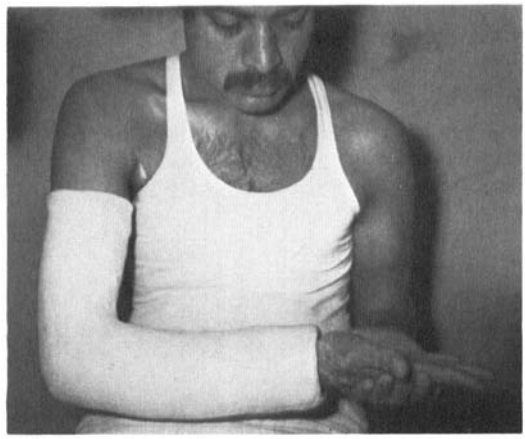

Figure 1. Cylinder cast extending from axilla to wrist. Patient can perform full supination and pronation movements in cast.

*Excellent:* Complete freedom from discomfort with normal elbow mobility.
*Good:* Complete freedom from discomfort and/or loss of extension or flexion of, at the most 10°, but no loss of supination or pronation.
*Fair:* Slight discomfort but no hindrance in the patient's occupation, and/or loss of extension or flexion at the most of 10–20° and 5° in supination or pronation.
*Poor:* Slight to moderate discomfort and/or loss of mobility greater than 20° in flexion or extension and 5–10° in supination or pronation movements.

## Results

In this series, 43 patients had excellent results, six good results, and one patient had a fair result. No case was encountered with a poor result.

Among the 43 patients with excellent results, 16 had undisplaced fractures, 13 had displaced fractures and 14 had comminuted fractures of the head of the radius. Among six patients with good results, four had undisplaced fractures, one had a displaced fracture and one had a comminuted fracture. The one patient with only a fair result had a comminuted fracture and he reported to us after 6 days of massage.

## Discussion

Analysis of injury reveals that the radial head fracture is only a part of the extensive injury at the elbow joint. The commonly associated injuries are tearing of the medial collateral ligament and bruising of the articular cartilage over the capitulum. This might be the cause of restriction of movements at the elbow and discomfort in the elbow during work. Another important fact is that radiographic examination cannot accurately predict the outcome of the injury. This is evident from the fact that excellent and good results were seen not only in undisplaced fractures but also in displaced and comminuted fractures of the head of the radius.

This method of conservative treatment using a cylinder cast and early active supination and pronation seems to be an interesting approach. Rest is provided for the soft tissue injuries, along with active supination and pronation at the joint. It can be argued that the use of a sling may be adequate to provide rest to the elbow. However, a cast provides more rest than a sling, and pronation-supination can be carried out far more freely, even immediately after reduction of a dislocated elbow.

## References

Arner, O., Ekengren, K. & Schreeb, T. (1957) Fracture of the head and neck of the radius. A clinical and roentgenographic study of 310 cases. *Acta. Chir. Scand.* **112**, 115–134.

Bohrer, J. V. (1933) Fracture of the head and neck of the radius. *Ann. Surg.* **97**, 204–208.

Charnley, J. (1961) *Closed treatment of common fractures.* Livingstone, Edinburgh, London.

Key, J. A. (1931) Treatment of fractures of head and neck of radius. *J. Am. Med. Assoc.* **96**, 101–104.

Levin, P. D. (1973) Fracture of the radial head and dislocation of distal radio-ulnar joint. Treatment by prosthetic replacement. *J. Bone Joint Surg.* **55**-A, 837–840.

McAusland, W. R. & Wyman, E. T. (1975) Fractures of the adult elbow. *Instruction course lectures.* The American Academy of Orthopaedic Surgeons **24**, pp. 169–181.

Taylor, T. K. F. & Connor, B. T. (1964) The effect upon the inferior radio ulnar joint of excision of head of the radius in adults. *J. Bone Joint Surg.* **46**-B, 83–86.