FRACTURES OF THE RADIAL HEAD WITH DISTAL RADIO-ULNAR DISLOCATION

Report of Two Cases*

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During the last three years two unusual cases of comminuted fracture of the head of the radius associated with dislocation of the distal radio-ulnar joint have been treated. In the first the mechanism of the injury was not at once appreciated and the head of the radius was unwisely excised.

Case 1—In October 1947 a man aged forty-six years was pushing hard on a loaded truck, with his arms almost extended, when it was suddenly stopped and he sustained a violent longitudinal compression force on his forearms. He felt a severe pain in the left elbow and,

on examination six hours later, crepitus could be felt over the head of the radius on rotation of the forearm. No pain in the wrist or swelling of the forearm was noted. Radiographs (Fig. 1) showed a comminuted fracture of the head of the radius. It is obvious now that the shaft of the radius had been driven up into the head with relative shortening of this bone compared with the ulna. The significance of this in terms of the distal joint was not immediately recognised and the radial head was excised. The post-operative radiograph showed that the radial shaft had moved up even farther and was in contact with the capitulum (Fig. 2); it was then realised that the distal radio-ulnar joint must be dislocated. Radiographs of the wrist (Fig. 3) confirmed this and showed a depressed fracture of the radial styloid as further evidence of the longitudinal compression force.Radial deviation of the hand was marked (Fig. 4). At this time the radius could be moved down easily into its normal position and determined attempts were made by traction to maintain reduction but with incomplete success.

The patient returned to full work as a coal heaver eight months after the injury and when reviewed two years and nine months after injury he reported that he was handling twenty-six tons of coal a day with only an occasional ache in the wrist and no symptoms in the elbow. Radial deviation of the hand was still present; elbow movement was full, and rotation of the forearm 110 degrees (supination 65 degrees; pronation 45 degrees). It should be noted that he was the type of patient who would get a good result after any injury. Radiographs of the elbow at this review (Fig. 5) showed no evidence of post-traumatic arthritis and the rounded shaft of the radius was not in contact with the capitulum.

Comment—The initial mistake of excising the head created real difficulty in reducing the dislocation, and it was decided that in a future case this should not be done. From then on careful watch was kept for another like it, but, while there was opportunity for observing the high proportion of patients who complain temporarily of aching in the distal radio-ulnar
joint after excision of the radial head, it was not until two and a half years later that the second case was seen. During the interval over 300 cases of fracture of the radial head in adults had been treated at the hospital.

**Case 2**—A man, aged thirty-five years, fell from a ladder and, putting out his left arm to save himself, sustained a longitudinal compression force of the forearm. On examination one and a half hours later there was swelling of the left elbow with maximal tenderness over the radial head. He did not complain of pain in the wrist and no swelling of the forearm was noted. Radiographs (Fig. 6) showed a comminuted fracture of the head of the radius with backward displacement of a large fragment, and it was apparent that the radial shaft had moved proximally. Radiographs of the wrist confirmed subluxation of the distal radio-ulnar joint (Fig. 7).

At operation on the day after admission the radius could be pulled down easily and this
made possible a reduction of the fragments. These were drilled and fixed, and after suture of the orbicular ligament the radial head appeared quite stable. Post-operative radiographs showed successful reduction of the distal radio-ulnar joint (Fig. 9). Shortly after operation the patient left the district and I am indebted to his practitioner, Dr A. Heap of Nelson, for the clinical and radiographic follow-up examination seven months after the injury. The elbow movement was from 135 degrees to 60 degrees, and the range of rotation 45 degrees. He had returned to work. Radiographs (Fig. 8) showed union of the fragments of the radial head but there was evidence of post-traumatic arthritis.

**DISCUSSION**

In 1946 Curr and Coe reported an injury of this type and could find no previous reference to similar cases in the literature. Their patient complained of severe pain and had gross swelling of the whole forearm, which they ascribed to tearing of the interosseous membrane. Neither of the two patients reported here had this pain or swelling. The elbow movement in Curr and Coe's case one year after injury was from 150 degrees to full flexion and rotation was only 5 degrees.

The mechanism of the injury appears to be a violent longitudinal compression force in the long axis of the radius and differs from the usual mechanism of forcible abduction at the elbow joint which is responsible for most fractures of the radial head. The condition must be very uncommon, for Murray (1940) could find no obvious wrist changes in his survey of 450 fractures of the radial head; Burton (1942) found none in his report of fifty cases; and Gaston and others (1949) reported none in a review of 113 cases. Nevertheless recognition of the injury is important, for after excision of the head in Case 1 the dislocation of the distal radio-ulnar joint was aggravated and recurred in spite of efforts to prevent it. The crux of the problem is in the distal joint and, since the radius can be pushed down more easily than pulled down, the following lines of approach are suggested: 1) Reconstruction of the head. In the case so treated (Case 2) the distal subluxation was reduced but, as might have been expected from the severity of the injury to the elbow joint, full movements have not been regained. 2) Where severe comminution precludes reconstruction two possible courses are open. The first is to accept some distal radio-ulnar subluxation, leaving the radial head undisturbed. Alternatively, after immediate excision a prosthesis could be used temporarily in place of the radial head to hold the radius down until the distal joint and interosseous membrane had healed and become stable.

**REFERENCES**


