

## CASE REPORT

# IRREDUCIBLE ELBOW DISLOCATION ASSOCIATED WITH A RADIAL NECK FRACTURE : A CASE REPORT

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**A rare case of an irreducible elbow dislocation is described. We discuss the causes of irreducibility and the treatment options. Intraoperative assessment of joint stability, repair of the lateral collateral ligament and appropriate postoperative management led to an excellent 5-year outcome, obviating the need for an external fixator or a radial head replacement.**

**Keywords :** elbow ; dislocation ; instability.

**Mots-clés :** coude ; luxation ; instabilité.

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### CASE DESCRIPTION

A 45-year-old female presented with marked pain, swelling and inability to move her elbow following a fall. The neurovascular status was normal. Radiographs revealed a posteromedial dislocation of the elbow with a fracture of the radial head, the latter occupying the olecranon fossa (figs. 1, 2, 3). Manipulation failed to reduce the dislocation, and open reduction was subsequently carried out. The radial head was found displaced into the olecranon fossa preventing the joint reduction. There was also an osteochondral fracture of the capitellum and a concomitant longitudinal avulsion of the capsule and lateral collateral ligament. The radial head and the osteochondral fragment were removed, and the ulnohumeral joint was reduced. The elbow was stable to 60° of flexion, and under fluoroscopic control (wrist screening and stress views) there was not any medial collateral or interosseous ligament injury. The lateral collateral complex was repaired using the Osborne - Cotterill (10) technique. Two transverse holes were drilled at the base of the lat-

eral epicondyle, and a heavy suture was passed through the bone to tie the capsule and ligament down tightly. After closure, the elbow remained stable through a full range of motion. Postoperatively a backslab was applied for three weeks followed by physiotherapy. Five years postoperatively the patient has no complaints. On clinical examination her elbow is stable with a full range of motion and without problems in the distal radioulnar joint. Radiographs did not show any heterotopic ossification or degenerative changes at the elbow while the carrying angle was normal (fig. 4). The wrist films did not show any proximal migration of the radius, and the ulnar variance was neutral.

### DISCUSSION

Approximately 10% of patients with a radial head fracture have an associated elbow dislocation, and 10% of elbow dislocations have an associated fracture of the radial head (7). If the coronoid process is intact the usual treatment for these combined injuries is to reduce the elbow and then deal with the fracture and the joint instability (6). Irreducibility can be attributed to intraarticular displacement of a fractured medial epicondyle, interposition of the lateral collateral ligament and part

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**Figs. 1, 2, 3.** — Anteroposterior, lateral and oblique radiographs of the elbow. Posteromedial elbow dislocation with a displaced fracture of the radial head, which occupies the olecranon fossa.



of the anterior capsule into the joint or to osteochondral fragments. Another frequently recognized cause is displacement of the radial head through a buttonhole in the capsule and the lateral collateral ligament. An associated acute longitudinal radio-ulnar dissociation (Essex - Lopresti injury) should be ruled out (4). We have only found one previous report of irreducible elbow dislocation due to interposition of the radial head (12).

According to Broberg and Morrey (1) and to O'Driscoll *et al.* (9) in Mason type III and IV radial head fractures, the head of the radius should be removed if open reduction and internal fixation is not possible and the intraoperative range of motion should be checked. If the elbow is stable in 45° of



**Fig. 4.** — Five-year postoperative radiographs. The carrying angle is normal and there are no degenerative changes or heterotopic ossification.

flexion, it can be held in a hinged splint with a 60°-extension stop, which the patient wears for a maximum of 12 days. If the elbow dislocates, direct repair of the ligamentous and capsular complex may be performed. If this repair does not achieve satisfactory stability, an implant may be inserted. Silicone implants have been used in the past ; however, they have a high rate of failure due to fracture and fragmentation, which produces synovitis or even inflammatory arthritis (2, 13). Clinical series of patients managed with metallic implants have shown good results (3, 5). Hinged external fixation with one pin through the epicondyle and two pins in the ulna has also been recommended (7). More recently a floating radial head made of high-density polyethylene and enclosed in a cobalt-chrome cup has been used with good results (11).

The lateral collateral ligament insufficiency is the essential lesion leading to elbow instability (8). To avoid this in our case we performed the Osborne & Cotterill repair (10), which was first described for the management of recurrent elbow dislocation. The good result in our case supports the statement of Rodriguez-Merchan (12) that not all Mason type IV fracture-dislocations are unstable and that radial head replacement or external fixation may not always be necessary. Such complex injuries often have an unfavorable outcome. Emphasis must be given to a thorough evaluation of the extent of the injury particularly regarding the integrity of the medial collateral ligament, concomitant fractures of the coronoid process and tears of the interosseous membrane.

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### SAMENVATTING

*J. CHARITIDES, C. KITSIS, A. TSAKONAS. Niet reduceerbare elleboog luxatie met luxatie van het radiuskopje. Gevalstudie.*

De schrijvers brengen een geval van niet reduceerbare luxatie van de elleboog en bespreken de oorzaken en de therapeutische mogelijkheden in gevallen van niet

reduceerbaarheid. Hier werd de elleboogstabiliteit operatief geevalueerd en het radiaal collateraal ligament werd gehecht ; een zeer goed resultaat werd bereikt niet-tegenstaande het radiuskopje niet werd vervangen en in de nazorg geen gebruik werd gemaakt van een uitwendige fixator.

### RÉSUMÉ

*J. CHARITIDES, C. KITSIS, A. TSAKONAS. Luxation irréductible du coude associée à une luxation de la tête radiale. Présentation d'un cas.*

Les auteurs rapportent un cas de luxation irréductible du coude. Ils discutent les causes de l'irréductibilité et les options thérapeutiques. Après évaluation peropératoire de la stabilité articulaire, ils ont réparé le ligament collatéral externe ; ils ont obtenu un excellent résultat à 5 ans de recul, ce qui peut remettre en question la nécessité d'un fixateur externe ou d'un remplacement de la tête radiale.