

About a Rare Case: A Concomitant Divergent Dislocation of the Elbow and Radial Diaphyseal Fracture

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Abstract

Case Report

Concomitant lesions in the upper limb, due to trauma, have been rarely reported in the literature. The concomitant elbow dislocation and radial diaphyseal fracture is rare and constitutes challenging management for every orthopedic surgeon. Herein, we report a case of divergent elbow dislocation associated with a fracture of the ipsilateral radial shaft in a 26-year-old adult. Clinical and radiological findings prompted the patient to undergo surgery. The particularity of our case is that, although it is a rare dislocation of the elbow combined to complex fracture, surgical management followed by correct and long term rehabilitation had led to good outcomes.

Keywords: trauma, Radial Diaphyseal Fracture, complex fracture.

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INTRODUCTION

The elbow joint is one of the most inherently stable articulations of the human skeletal system. However, the elbow dislocation is frequent, which accounts for 6–13 cases per 100,000 people, and it accounts for 11–28% of all elbow's injuries [1]. Therefore, the concomitant elbow dislocation with a radial diaphyseal fracture is rare. Only a few cases have been reported in the literature [2, 3]. Herein, we report one additional case, and we detail how it was managed.

CASE REPORT

A 26 years old man, presented severe pain and total impotence functional of the left elbow following a road accident (motorcyclist was hit by a car). On

admission, he was conscious and well-oriented, with no hemodynamic or pulmonary distress. He reported a fall on the left palm while both ipsilateral wrist and elbow were in the extension position. On physical examination, we noted swollen, and disappearance of anatomical landmarks of the elbow; its palpation and mobilization were painful. The neurovascular examination was normal. X-ray of the elbow revealed a divergent dislocation of the elbow along with tearing of the coronoid process of ulna, and complex radial diaphyseal fracture (Fig-1a). We performed a 3-dimensional CT reconstruction that showed the same description with no incarceration of intraarticular fragments (Fig-1b), prompting the patient to undergo surgery.



Fig-1: X-ray of the elbow (a) and 3-dimensional CT reconstruction (b) of the left elbow revealed divergent dislocation (the radius was forwards of the humeral pallet and the ulna was in its backwards), and ipsilateral radial diaphyseal fracture along with tearing of the coronoid process of ulna

In the operating room, under general anesthesia, we performed an external approach to fix the diaphyseal fracture, followed by a reduction of the divergent luxation. However, the reduction was unstable, the reason for which we used a K-wire

immobilizing the ulnohumeral articulation at 90° of flexion of the elbow. (Fig-2c) then the patient was put in a splint elbow to the body for three weeks. At this follow up, the k-wire was removed (Fig-2d), and a gradual rehabilitation of the elbow was authorized.



Fig-2: (c) Intraoperative control radiograph (lateral view) showed the good position of the k-wire; (d) control radiograph after removing this k-wire (three weeks later)

At the last follow up of twelve months, he regained full range of motion of the elbow (Fig-3) with

no pain and no recurrent dislocation, and he returned to his previous activities.



Fig-3: Clinical aspect of the left elbow

DISCUSSION

The dislocation of the elbow is not uncommon [1]. Usually, it is reported to be associated with a radial head fracture or an olecranon fracture. However, its association with an ipsilateral radial diaphyseal fracture is extremely rare, and only a few cases were reported [2, 4, 5]. Moreover, our case presented the particularity that it is a rare dislocation of the elbow, which represents challenging management for orthopedic surgeons. It usually due to a high velocity of trauma, such as a road accident [6]. The exact mechanism is still controversial. In fact, Pascual *et al.*, [7] reported that the injury occurs when the wrist and elbow are in the extension position. For Carey *et al.*, [8], it occurs when the forearm is in a supination position. In our case, the probable mechanism of this injury is that when the

patient fell on his palm, an axial force was transmitted through the radius, which was in a supination position, to the elbow causing radioulnar dislocation and radial diaphyseal fracture, then, immediately, the trauma was extended to the diaphyseal ulna causing the dislocation of the ulnohumeral articulation. On the other hand, additionally to the bone lesions, concomitant severe soft tissue injuries around the elbow are reported (anterior capsule, the collateral ligaments, the radioulnar ligaments, and the interosseous membrane of the radius and ulna), which may participate to the instability of the dislocation after its reduction [2]. In our case, besides the soft tissue injuries, the tearing of the coronoid process of ulna participated, also, to the joint instability. In divergent dislocation of the elbow, the radiographs of the elbow are mostly in oblique view rather than anteroposterior and lateral views because of the swollen

and the deformity of the elbow. So, the computed tomography scan is required to analyze better this injury. [9] The goals of the management is to obtain stable, mobile and free pain joint. In joint instability, it is recommended to perform immobilization of the ulnohumeral articulation by a k-wire, or using an external fixation (static or dynamic) or ligaments reconstruction [5, 9, 10]. In our case, we elected for stabilization of the joint using a k-wire followed by plaster immobilization for three weeks. We did not fix the coronoid process because it was reduced after the stabilization of the joint, which remained stable.

CONCLUSION

Concomitant divergent dislocation of the elbow and ipsilateral radial diaphyseal fracture is a rare entity. Early diagnosis combined with a timely treatment can help to avoid joint dysfunction of the elbow. The particularity of our case is that, although, it presented a rare dislocation of the elbow combined to complex fracture of the radius, surgical management followed by correct and long term rehabilitation had led to good outcomes. At last, we hope that our case contributes to understanding better the exact mechanism of this rare injury.

Conflict of Interest: All authors declare that they have no conflict of interest.

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