

Anterior Shoulder Dislocation with Concomitant Humeral Shaft and Ipsilateral Distal Humerus Fracture: A Rare Combination

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Abstract

Case Report

Introduction: The anterior shoulder dislocation with concomitant humeral shaft and ipsilateral distal humerus fracture is very rare. Since 1940, there has been a total of twenty cases of anterior shoulder dislocation associated with ipsilateral humeral shaft fracture, but its association with ipsilateral distal humerus fracture has not been reported. **Case presentation:** He is a 34-year-old man with no particular antecedents, who was the victim of a work accident (the fall of a very heavy machine on his left arm). Upon arrival, the patient was in pain with an increase in the volume of the left arm with total functional impotence of the left upper limb. The patient's clinical examination showed associated radial paralysis and a skin opening on the left elbow. The x-ray examination had objectified an anterior shoulder dislocation with concomitant humeral shaft and ipsilateral distal humerus fracture. The patient was treated by percutaneous pinning of the distal humerus fracture and plating osteosynthesis of the humeral shaft fracture followed by an open reduction of the dislocation of the shoulder. The patient had early and prolonged functional rehabilitation with follow-up consultation every three weeks for three months, then every two months for one year. The patient achieved almost normal and painless range of motion at 12 months. **Conclusion:** The anterior shoulder dislocation with concomitant humeral shaft and ipsilateral distal humerus fracture is a rare lesion entity. Adequate treatment is essential to prevent the complications of the three lesions from adding up and compromising the limb's function. Functional rehabilitation is essential to achieve good functional results.

Keywords: Shoulder, humeral fracture, glenohumeral dislocation.

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INTRODUCTION

The anterior shoulder dislocation and ipsilateral humeral shaft fracture is a serious and rare lesional entity. There have been a total of 20 cases reported in the literature since 1940. [1, 2] but its association with ipsilateral distal humerus fracture has not been reported. We report a case of anterior shoulder dislocation with concomitant humeral shaft and ipsilateral distal humerus fracture and discuss the lesion mechanism, difficulties and therapeutic modalities.

CASE PRESENTATION

He is a 34-year-old male, a professional worker, with no significant pathological history, victim of a fall of a heavy object on his left arm. Upon arrival, the patient was conscious and hemodynamically stable. Clinical examination revealed a stage 1 open fracture of Cauchoux and Duparc (3) on the left elbow, abrasions

on the arm with associated radial paralysis. Peripheral pulses were present. The left shoulder was painful, swollen with loss of its normal contour. The arm was deformed in angulation. Standard radiographs showed an anterointernal dislocation of the left shoulder associated with a fracture of the greater tuberosity, homolateral humeral shaft fracture and an undisplaced supracondylar fracture of the ipsilateral distal humerus (Fig 1 & 2). The patient was operated on under general anesthesia. After surgical trimming of the two elbow wounds, osteosynthesis of the distal humerus fracture was performed by percutaneous pinning and then the fracture of the humeral diaphysis was treated with a plating osteosynthesis using a delto-pectoral approach, then the dislocation of the shoulder was reduced by mobilizing the proximal fragment with a forceps (Fig-3). The radial nerve was intact during exploration. In post-operative care, the shoulder was immobilized in a shoulder immobilizer sling with body strap for three

weeks, followed by functional rehabilitation. Consolidation was achieved three months after the operation. After four years of follow-up, the patient's shoulder was stable, painless with preserved joint amplitudes. Recovery of radial paralysis was achieved three months after the operation. No signs of omarthrosis or pathology of the rotator cuff were detected in the latest controls.



Fig-1: X-Ray of the left shoulder showing anterior shoulder dislocation associated with a greater tuberosity fracture and concomitant humeral shaft and ipsilateral distal humerus fracture



Fig-2: Scan image with 3D reconstruction of the shoulder and left arm showing anterior shoulder dislocation associated with a greater tuberosity fracture and concomitant humeral shaft and ipsilateral distal humerus fracture



Fig-3: X-Ray after reduction of shoulder dislocation and fixation of the humeral shaft fracture by plating osteosynthesis and distal humerus fracture by pinning

DISCUSSION

The anterior shoulder dislocation and ipsilateral humeral shaft fracture is a rare lesion, very few cases have been reported in the literature. The first case was described by Winderman *et al.*, in 1940 [1]. It is the result, in general, of a high-energy trauma [4]. Our case arose following a work accident. Many studies have described the mechanism of anterior shoulder dislocations. [5, 6]. The mechanism described is similar to that of the dashboard in a motor vehicle accident where a femoral shaft fracture is associated with a homolateral hip dislocation [7]. In cases of anterior shoulder dislocation associated with ipsilateral humeral shaft fracture, the force is transmitted through the axis of the humerus to the shoulder, which leads to the simultaneous occurrence of these two lesions [8, 9]. On the other hand, according to Kontakis *et al.*, [2], shoulder dislocation is the first event followed by a torsional force in the humerus axis that leads to the fracture of homolateral humerus. Some authors have suggested that shoulder dislocation is due to an indirect mechanism and homolateral humerus fracture to a direct mechanism [2, 10]. In our patient the mechanism was the fall of a very heavy machine on his left arm with transmission of forces to the left shoulder which caused an anterior shoulder dislocation with concomitant humeral shaft and ipsilateral distal humerus fracture. Different treatment methods have been described but no consensus on the best method of treatment for this type of combined lesion has been proposed [11]. Therapeutic modalities include: closed-focus reduction supplemented by the placement of a cast [12], centromedullary nailing [13] and plating osteosynthesis [14] of the humeral shaft fracture with reduction of shoulder dislocation. Closed reduction followed by external fixation was recommended by two authors [9]. Good clinical results have been reported with almost all therapeutic modalities. In our case, the patient was treated by pinning of the ipsilateral distal humerus fracture and plating osteosynthesis of the

humeral shaft fracture, then the anterior shoulder dislocation was reduced, with gentle intraoperative manipulation, under direct visual control. A post-operative immobilization of the shoulder in a sling was performed for three weeks.

Regular follow-up and early and prolonged functional rehabilitation helped our patient to achieve good functional results. The prognosis of these lesions is relatively good for most authors.

CONCLUSION

Anterior shoulder dislocation is rarely associated with humeral shaft and ipsilateral distal humerus fracture. Rapid management by open osteosynthesis of the humeral fracture helps to reduce shoulder dislocation, and improves the functional outcome of the shoulder in the postoperative period. The reduction of shoulder dislocation should not be attempted before fixation of the humeral fracture due to the high risk of neurovascular damage.

Conflicts of Interest: The authors do not declare any conflict of interest.

Contributions of the Authors: All authors have read and approved the final version of the manuscript.

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