

# Ipsilateral Simultaneous Shoulder and Elbow Dislocation: A Case Report

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## Abstract

Simultaneous shoulder and elbow dislocation is an uncommon condition, with only about ten cases reported in the literature. It is also called bipolar humeral dislocation or floating humerus. Nerve involvement is sometimes associated but radial nerve impairment is yet to be described. We report a case of bipolar dislocation of the humerus associated with radial nerve impairment occurring on a young 22 years old. Non-surgical treatment was undertaken with a reduction of the elbow followed by a reduction of the shoulder under general anaesthesia. Nerve and functional recovery were achieved at two and ten months respectively.

## Keywords

Bipolar Dislocation, Humerus, Nerve Involvement

## 1. Introduction

Joint dislocations are very frequent injuries in the clinical practice of orthopaedic surgeons. Shoulder dislocation is the most common pattern followed by elbow dislocation [1]. After inter-phalangeal dislocations, shoulder and elbow dislocations are the most common joint dislocations, with shoulder dislocations being almost 5 times more frequent (24 per 100,000 person-years) [2] than elbow dislocations (5.2 per 100,000 person-years) [3]. Simultaneous dislocation of both joints of the same limb rarely occurs and only about ten cases have been reported in the literature [1] [4]-[12]. It is also called bipolar humeral dislocation or floating humerus and is often reported as a clinical fact [13]. Nerve involvement is sometimes associated with this clinical course and has been described in four cases [1] [6] [9] [11].

We report a case of ipsilateral simultaneous anterior shoulder and posterior elbow dislocation associated with radial nerve neurapraxia.

## 2. Case Report

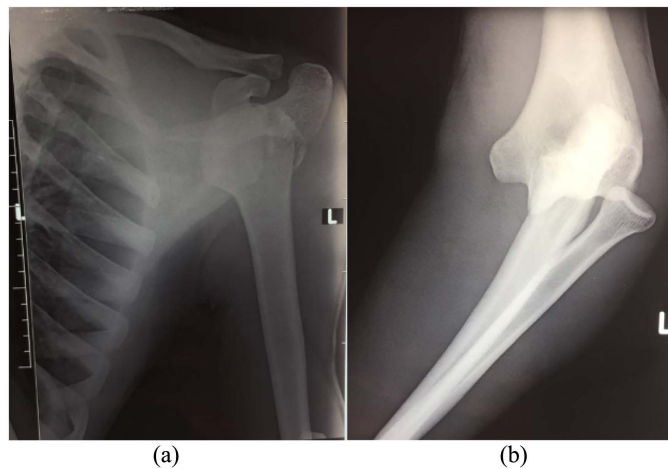
He was a 22-year-old computer graphics student, right-handed, with no dislocation history. He was received two hours after a road accident. He was an unhelmeted motorbike driver who underwent a head-on collision with a light vehicle and was propelled with first reception on the left hand and then on the right knee. Following this accident, he presented with a polytrauma combining a cranioccephalic trauma without initial loss of consciousness, a closed trauma of the left shoulder and elbow, and a closed trauma of the right knee.

On arrival, the patient was aware and hemodynamically stable with a Glasgow score of 15. Examination of the left upper limb revealed pain, absolute functional impotence, shoulder tumefaction, failure to find the deltopectoral groove, empty glenoid fossa, and the humeral head palpated at the deltopectoral groove. The elbow was also swollen with a loss of bony landmarks (**Figure 1**). Vascular and nervous complications were not assessed in the emergency room. Examination of the other limbs showed tumefaction of the right knee, dermabrasions on its anterior surface, a depression located in front of the kneecap, a patellar tap, and right lower limb extension failure.

X-rays revealed a fracture dislocated of the left shoulder with an anteromedial glenohumeral dislocation in its sub-coracoid pattern and greater tuberosity fracture (**Figure 2(a)**), a posterolateral dislocation of the left elbow (**Figure 2(b)**) and a Duparc type III fracture of the right patella.



**Figure 1.** Clinical picture of the shoulder and elbow after trauma.

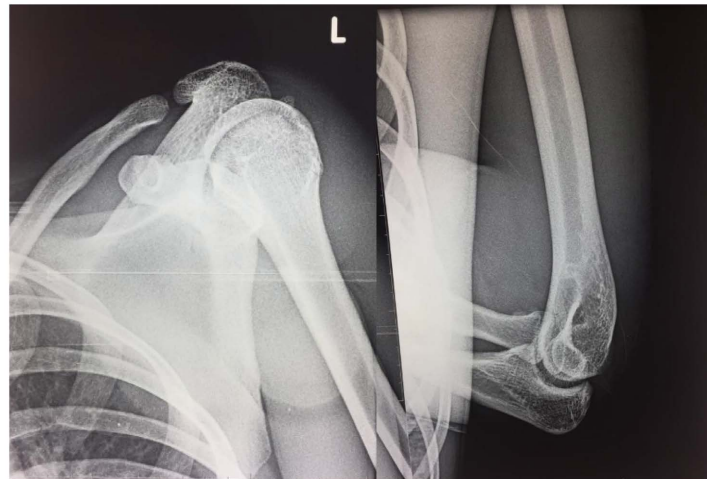


**Figure 2.** X-rays before réduction. (a) anteromedial fracture-dislocated of the shoulder. (b) Postero-lateral dislocation of the elbow.

An emergency reduction of the elbow followed by the shoulder was performed under general anaesthesia. Post-reduction X-Rays showed good repositioning of the elbow and shoulder with the greater tuberosity fracture not requiring synthesis (**Figure 3**). The reduction was stable and an elbow to body mayo-clinic immobilisation was applied for three weeks. Patella synthesis was performed two days later by an anterior tension band.

On examination at two days post-operatively, a wrist extension deficit was found with the conservation of the first commissure back-side sensitivity, indicating radial nerve involvement (**Figure 4**). The rest of the vascular-nervous examination was unremarkable.

Treatment consisted of self-rehabilitation sessions during and after immobilisation and vitamin B administration. Full nerve recovery was achieved at two months and full functional recovery at ten months (**Figure 5**).



**Figure 3.** Post-reduction X-rays of the shoulder and elbow.



**Figure 4.** Mayo-clinic immobilisation and drooping hand suggesting radial nerve involvement.



**Figure 5.** Complete recovery after 10 months.

### 3. Discussion

Suman was the first who reported an ipsilateral dislocation of the shoulder and elbow in a 31-year-old patient who underwent a road traffic accident under the influence of alcohol [12] in 1981. Bipolar dislocation of the humerus is an uncommon condition. Only about ten cases have been reported. It occurs in adults after high-energy trauma, either after a road accident as described in our case or after a high height fall. The mechanism of injury is not well known and difficult to define. On most occasions, patients are unable to recall their position during the trauma. A transmitted force through the forearm with the elbow flexed and the shoulder externally rotated may be a possible cause of dislocation [9]. Diagnosis can be difficult in patients under the influence of alcohol who are unable to locate the pain or only report hyperalgesic elbow pain. This is also the case in obese patients where the shoulder deformity may be inconspicuous [4] [9] [11]. The diagnosis is easy in our case because the swellings were clearly visible in our patient. The importance of the swelling is related to the violence of the trauma in the case of a motorbike accident.

The dislocation is divergent from an anterior shoulder dislocation and a posterior elbow dislocation in our patient and corroborates with most cases [4] [6]-[12]. A case of inferior shoulder dislocation associated with posterior elbow dislocation has been reported [1] and a case of posterior shoulder dislocation associated with trans-elbow anterior dislocation [5]. It may be associated with an ipsilateral humeral fracture [7] or with a fracture of the other limbs [8]. The associated injury in our patient was a patella fracture that required a surgical approach. With this kind of trauma, one must be very careful about a probable neurovascular injury. Re-examination must be carried out following reduction. The association of a nerve injury is not uncommon and the involvement of the radial nerve is described for the first time in our patient with complete recovery at two months as in the majority of cases (Table 1). Nerve recovery was not achieved only in one case. It's about the case of a bipolar dislocation of the humerus associated with axillary nerve damage diagnosed at three months' follow-up with

**Table 1.** Nerve involvement during dipolar humeral dislocation.

Author	Year	Age/sex	Shoulder dislocation	Elbow dislocation	Nerve involvement	Diagnosis timelimit	Clinical features	Recovery (timelimit)
Khan et Mirdad [9]	2001	35/M	Anterior	Posterior	Median	J0	Paresthesia	YES (2 months)
Cobanoğlu <i>et al.</i> [6]	2014	43/F	Anterior	Posterior	Ulnar	J0	Hypoesthesia	YES (after reduction)
Prada <i>et al.</i> [11]	2019	54/F	Anterior	Posterior	Axillary	J0	Hypoesthesia	YES (3 months)
Utkan <i>et al.</i> [1]	2020	21/M	Inferior	Posterior	Axillary	M3	Deltoïde amyotrophy	NO
Our case	2021	22/M	Anterior	Posterior	Radial	J4	Wrist extension deficit	YES (2 months)

good functional recovery [1]. The reduction was closed and stable, usually with a first reduction of the elbow, as reported in our case and in most authors [1] [4] [5] [6] [9] [10] [11]. After performing this first step, having achieved stability of the distal portion of the limb, the shoulder reduction was performed. To carry out the latter, it seems reasonable to choose one of the reduction maneuvers that keep the elbow in flexion while performing shoulder reduction and thus avoid maneuvers that can destabilize the elbow in extension, losing the initial reduction obtained and probably causing more damage. The evolution is unremarkable in all cases with good functional recovery after one year.

#### 4. Conclusion

Bipolar dislocation of the humerus is uncommon, it can be associated with nerve involvement and radial nerve impairment is described for the first time. It is usually followed by functional recovery within two to three months after non-surgical treatment.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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