

## Incomplete lateral elbow dislocation in children: A report of two cases

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### ABSTRACT

Lateral elbow dislocation is an uncommon injury and more so in pediatric age. Most of the elbow dislocations in children and adults are either posterior or posterolateral. Lateral elbow dislocation cases in the literature are limited to anecdotal reports or few cases in large series of elbow dislocation. Out of two described variants, complete and incomplete dislocation, most of the reported cases are of the complete type. Incomplete lateral elbow dislocation thus is a rare injury. Here, we report the case series of two cases of an incomplete variant of lateral elbow dislocation of the left side in nine and eleven year old male children. The cases were successfully managed with closed reduction and the functional outcome measured by the Mayo Elbow Performance Score (MEPS) was excellent till minimum follow-up of ten and fifteen months respectively.

**Keywords:** *Closer education, Dislocation, Lateral elbow injury, Pediatric elbow.*

**E**lbow dislocation in children is an uncommon injury with a reported incidence of 3-6% of all injuries around elbow [1]. Lateral dislocation of the elbow joint is rare injury and is reported at very few occasions [2,3]. Most of these injuries are reported in adults [3]. There is a paucity of the literature regarding lateral elbow dislocation in children because of its rarity. In a recent large series of 48 pediatric elbow dislocations, only one case of lateral dislocation was described [4]. The incomplete lateral dislocation is a rarer variant of lateral elbow dislocation and is not reported in recent literature and authors could identify just one specific report of incomplete lateral dislocation of the elbow in a seven-year-old girl previously [5].

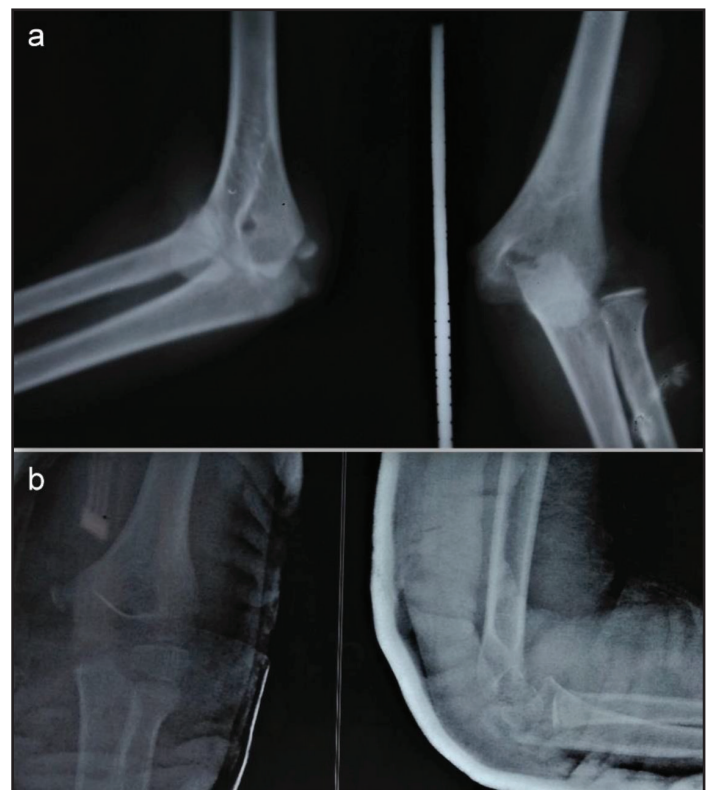
We believe that the true burden of these injuries may be difficult to assess as many of these injuries may be missed due to the improper acknowledgement of such injury patterns and difficulty in appreciating radiographs of immature skeleton. A good closed reduction of elbow dislocations invariably gives excellent results and is advocated unless surgical intervention is warranted.

### CASE SERIES

#### CASE 1

An eleven-year-old male child was brought to the department with a history of fall from a height one day back leading to injury to his left elbow region. The exact position and attitude of the limb at the time of injury was not properly recalled by the child.

On general examination, a deformity and mild swelling were present at the elbow region. There was no distal neurovascular deficit or other related injuries and the vitals were stable. The



**Figure 1:** Case 1 (a) The radiograph showing lateral elbow subluxation as the proximal radius and ulna are subluxated laterally without associated fractures; (b) The post-reduction radiographs showing well reduced joint with plaster slab applied.



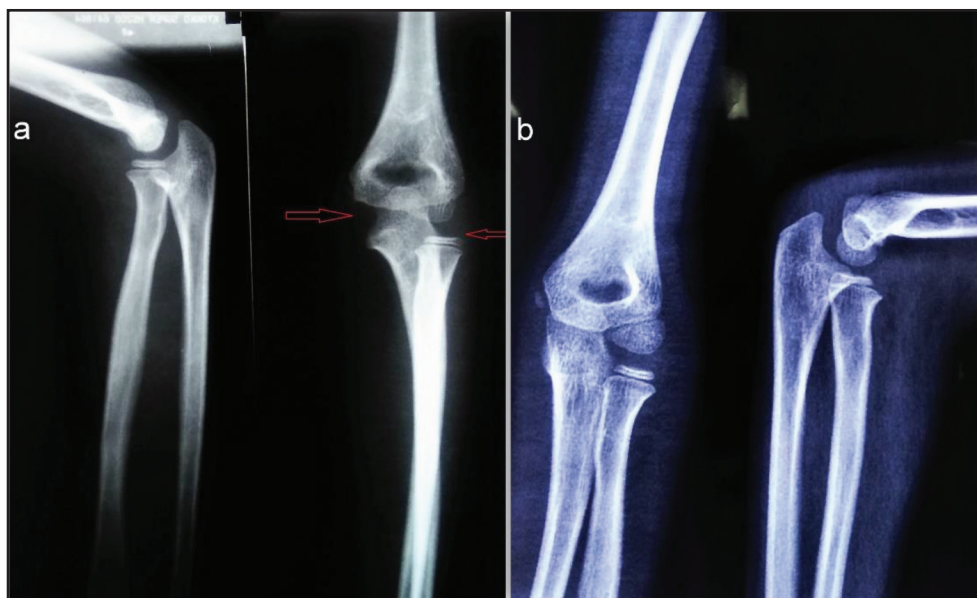
**Figure 2:** The good clinical outcome was noted in both cases with radiographs of case 1 (a) and case 2 (b).

radiograph of the elbow showed lateral incomplete dislocation of the elbow in anteroposterior (AP) view but near normal elbow position in lateral view thus suggesting lateral dislocation although the exact lateral view was not attained due to a painful

limitation of movement (Fig. 1a). No other investigations were advised. He was managed by closed reduction under sedation. Longitudinal traction to the distal forearm along with counter-traction applied from the upper arm followed by manual varus force at the elbow region led to the clinical reduction which was later confirmed on check radiographs (Fig. 1b). A plaster back slab in 90 degrees of flexion with forearm supination was given for three weeks followed by physiotherapy to regain full range of motion. No clinically significant instability was noted in the follow-up of ten months with the Mayo Elbow Performance Score (MEPS) score of 90 (Fig. 2a).

### CASE 2

A 9-year-old male child injured his elbow while doing acrobatics when he was landing on his left elbow after a somersault. On general examination, a mild swelling was present in the elbow with a painful limitation of movement. No other injury was noted, distal neurovascular status was intact and all the vitals were stable. The radiograph showed no bony injury but the increased gap was noted between humeroulnar joint along with radial lateral deviation of the proximal radioulnar region on the basis of a non-linear relationship of the radial head with capitellum (Fig. 3a). These subtle features were suggestive of lateral elbow incomplete dislocation. The joint was reduced easily on longitudinal gentle traction under general anesthesia and plaster slab was applied for three weeks in 90 degrees elbow flexion and supinated forearms (Fig. 3b). Radiographs showed reduced and stable joint in the follow-up of eleven months (Fig. 2b). There is a potential risk of instability or recurrence due to the ligamentous injury as a part of initial trauma and in some cases, it persists or noticed later. A well compliant splinting ensured optimal healing of soft tissue injuries in our cases. No recurrence



**Figure 3:** Case 2 (a) The radiograph of the elbow showing subtle signs of lateral subluxation in the form of abnormal gap between humeroulnar joint and radial head not collinear to the capitellum of the humerus; (b) The same elbow in the follow-up with normal anatomical relationships of stable elbow joint.

**Table 1:** Table describing key findings of recently reported cases of lateral dislocation in adults and children (year 2006 onwards) and its comparison with the present case.

Authors	Age/sex	Side	Mode of injury	Reduction methods	Post reduction splinting
Watanabe <i>et al</i> <sup>3</sup>	68/F	R	Fall on flexed elbow	Longitudinal traction and medial FA pressure	90° flexion, FA supination × 3 wk
Khan <i>et al</i> <sup>11</sup>	40/M	R	FOOSH	Stimson's prone method	90° flexion × 3 wk
Gokcen <i>et al</i> <sup>9</sup>	40/F	L	FOOSH	Longitudinal traction on semi-flexed elbow, FA medial pressure.	90° flexion in FA supination × 2 wk/f/b 2 wk night splint
Dharmshaktu <i>et al</i> <sup>2</sup>	37/M	R	Fall from height on lateral elbow	Longitudinal traction and medial push to FA	90° flexion, mid-prone × 3 wk Same as above
Reckers <i>et al</i> <sup>10</sup>	60/M 48/F	R B/L	Fall from moving vehicle Fall on extended elbow	Same as above Traction-counter-traction, lateral direct pressure to FA	Posterior slab (no mention of elbow position) × 3 wk
Vrettakos <i>et al</i> <sup>13</sup>	45/F	R	FOOSH	Traction on slight flexed elbow and pushing radial head in	90° flexion, FA supination × 3 wk , associated supracondylar process
Cumming <i>et al</i> <sup>14</sup>	23/M	L	FOOSH	No mention	No mention, operated for associated vascular injury, associated supracondylar process
<b>PAEDIATRIC CASES</b>					
Kushwaha <i>et al</i> <sup>16</sup>	9/M	L	Fall from roof	Longitudinal traction and medial elbow push	Plaster splint (no mention of elbow position) × 3 wk
Zarra <i>et al</i> <sup>8</sup>	14/M	–	–	–	–
Our Cases	11/M 9/M	L L	Fall from tree on extended elbow Fall during somersault	Longitudinal traction and medial FA pressure Same as above	90° flexion, FA supination × 3 wk Same as above

Abbreviations: M=Male, F=Female, Wk=Week, FOOSH=Fall on outstretched hand, L=Left, R=Right, FA =Forearm, f/b= Followed by, B/L=Bilateral.

and instability were noted in the follow-up of fifteen months with MEPS score of 91.2.

## DISCUSSION

The lateral elbow dislocation is a rare injury with only small series described in the literature. It has been classified into complete and incomplete variant [4]. In complete lateral dislocation of the elbow, the semilunar notch of the ulna may not have contact with the capitello-trochlear groove. Incomplete lateral elbow dislocation may often be missed in contrast to complete ones with olecranon positioned laterally to the capitellum. AP view shows the dislocation more clearly as, in the lateral view the joint may appear reduced. All our cases showed incomplete lateral dislocation on AP views. Traction with or without medial pressure has been found to be sufficient for the reduction in these cases including our cases [1, 5, 6]. However, there still remains a possibility that some of these dislocations could be transphyseal separations and resembling dislocation because of non-ossified physis. But these separations are found in children younger than seven years barring few cases reported in the age group of our cases [6].

The incidence of elbow fracture in children is rare and one recent case was reported from India and as per the authors, no previous literature was available regarding this injury in

children till that time [7, 8]. Key findings of recently reported cases of lateral dislocation in adults and children and its comparison with the present case are given in Table 1. The cases of incompletelateral dislocation of the elbow are rarer than the complete dislocations [12, 15].

## CONCLUSION

This report highlights the acknowledgement of rare injury pattern of incomplete lateral dislocation of the elbow and thereby adds valuable inputs to the current literature by above-presented cases. A keen observation of radiographs and understanding of normal radiographic landmarks in the pediatric elbow is critical to the diagnosis. It is important to not to miss these injuries because of the long-term negative impact on function.

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