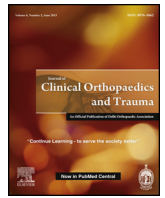




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Case report

Unusual association of elbow dislocation with humeral biepicondylar fracture in a child: A case report and review of literature

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ABSTRACT

Humeral biepicondylar fracture with elbow dislocation is an unusual pattern of injury encountered in paediatric population. We reported a case of humeral biepicondylar fracture-dislocation of elbow in a 11-year-old boy, who presented with tender, swollen, and deformed left elbow following fall on his outstretched hand. Roentgenographic and CT evaluation confirmed the diagnosis, and also showed incarcerated medial epicondylar fragment. Closed reduction was unsuccessful; open reduction and internal fixation was performed with headless screws. Avulsed medial collateral ligament was repaired with suture anchor. Following 4 weeks of immobilization, physiotherapy was started. The child regained satisfactory range-of-motion of the elbow with complete bony union within 3 months. Two years following operation, the child is asymptomatic, with pain free stable elbow. High index of suspicion and astute clinical and radiological assessment is utilitarian for timely diagnosis and appropriate management. Open reduction and internal fixation is believed to be pivotal to restore elbow stability and functionality.

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1. Introduction

Fractures around the elbow are commonplace in paediatric age group; however, elbow dislocation is relatively rare accounting for 3 to 6% of all elbow injuries.¹ Concomitant fractures or avulsion injuries are encountered in substantial number of paediatric elbow dislocations (64 to 75%), which mandate careful radiological assessment very crucial. Avulsion of the medial epicondyle is by far the most common associated injury (25 to 36%); on the contrary, concomitant injuries of the lateral compartment are infrequent.^{1,2} Humeral biepicondylar elbow fracture-dislocation is a very unusual pattern, which is exemplified by the fact that only few case reports are published so far.^{3–7}

We report a case of biepicondylar fracture with elbow dislocation in a 11-year-old boy. We also intended to review relevant literature concerning mechanism of injury, diagnosis and management of this unusual injury pattern. Appropriate consent was obtained from parents for reporting the case and radiographs.

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2. Case report

A 11-year-old boy presented to the emergency department of our hospital within 3 h of sustaining injury to his left upper limb following fall from bed on his outstretched arm. Clinical examination revealed grossly swollen and deformed left elbow, which was tender to palpation on both medial and lateral aspect. Neuro-vascular status of that limb was intact, and further work-up did not find any other associated injury. Roentgenographic assessment with anteroposterior (AP) and lateral view of the left elbow ended up showing postero-lateral dislocation of the elbow with fracture of both medial and lateral epicondyle along with incarceration of the medial epicondyle fragment inside the joint. (Fig. 1) Computed tomography (CT) was obtained which corroborated the roentgenographic assessment. (Fig. 2)

Closed reduction was attempted in emergency department under sedation which was unsuccessful to reduce the elbow dislocation and extract the incarcerated fragment; open reduction and internal fixation (ORIF) was deemed necessary. Child was shifted to operation theatre, and under general anaesthesia, and in lateral decubitus position posterior approach was made. Medial and lateral epicondylar fragments were fixed with headless compression screws. After reduction and fixation, intraoperative evaluation demonstrated valgus instability of the elbow, hence

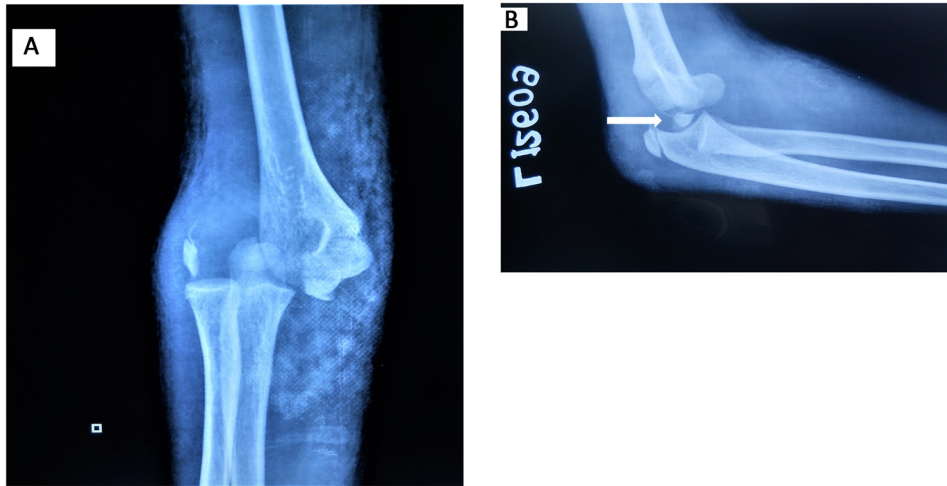


Fig. 1. Antero-posterior (A) and lateral radiographs (B) of left elbow depicting postero-lateral elbow dislocation with biepicondylar fracture with incarcerated medial epicondylar fragment (white arrow).

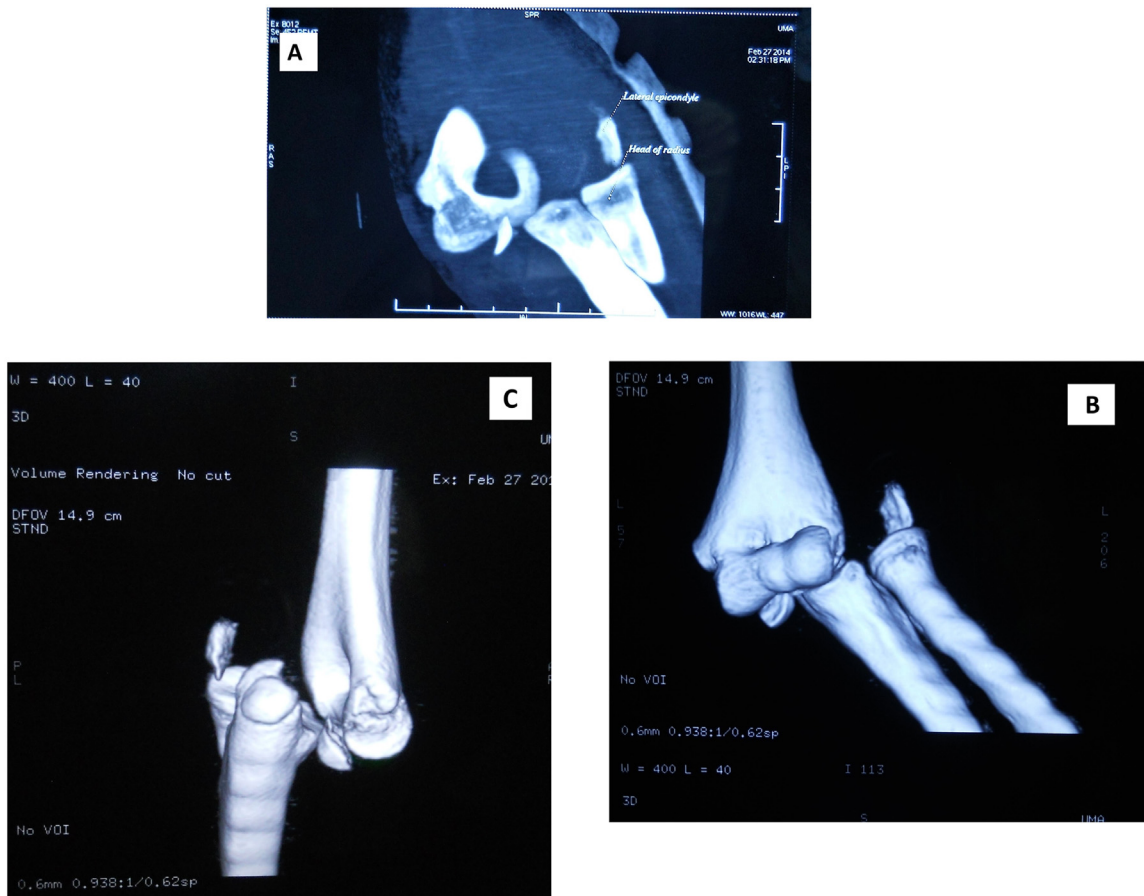


Fig. 2. Sagittal (A) and 3D reconstruction (B, C) CT scan corroborating radiographic finding of biepicondylar fracture-dislocation of elbow with incarcerated medial epicondylar fragment.

avulsed medial collateral ligament (MCL) was fixed with suture anchor. (Fig. 3) Postoperatively, elbow was stable and immobilized in posterior POP splint for 4 weeks. After removal of splint, active and passive range-of-motion (ROM) exercises were commenced.

After 3 months postoperatively, complete bony union was achieved, and elbow ROM was 0–130° of flexion, and full supination-pronation. At final follow-up two years postoperatively, child had full asymptomatic ROM, and stable, pain free elbow.

3. Discussion

Incidence of medial epicondyle fracture is next to supra-condylar and lateral condyle fracture in paediatric population. It is most frequently associated with elbow dislocation.⁵ Usual mechanism of injury is valgus avulsion forces exerted by the flexor-pronator muscle mass during fall on outstretched hand, when elbow is locked in extension and wrist and fingers are

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