



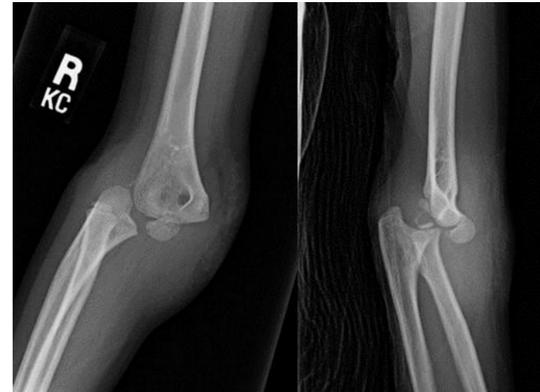
## BACKGROUND

- Up to 60% of pediatric elbow dislocations are associated with a medial epicondyle fracture.<sup>1-4</sup> In these incidences, intra-articular incarceration of the fragment after closed reduction has been reported to be as high as 25%.<sup>1</sup> Missed incarceration of the medial epicondyle can lead to longstanding complications for the affected extremity.<sup>5</sup> Chronic pain, decreased range of motion, elbow instability and ulnar nerve complications have all been described.<sup>5</sup> Because of these complications, incarceration of the fragment has long been considered to be an absolute indication for surgical management.<sup>1</sup>

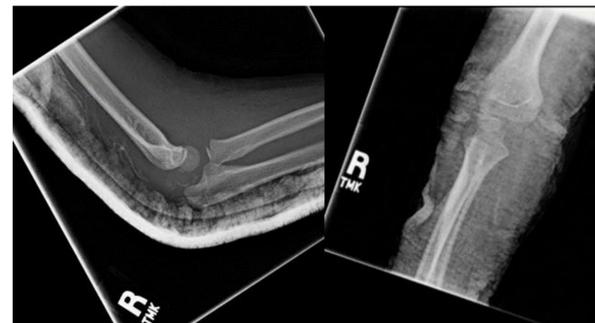
## CASE

- A 7-year-old female presented to the emergency department (ED) after a fall from height with an elbow dislocation and medial epicondyle fracture. (Image 1A) The patient underwent two reduction attempts performed by ED staff. Post reduction imaging after the 2<sup>nd</sup> attempt demonstrated incarceration of the medial epicondyle fragment. (Image 1B) This finding was missed in the ED at that time. She was placed into a posterior long arm splint and referred to our clinic for outpatient follow up. Four days later x-rays demonstrated concentric reduction of the elbow joint and a displaced, but no longer incarcerated, medial epicondyle fragment. (Image 1C) Given the spontaneous reduction of the medial epicondyle fragment, treatment options were discussed at length and patient and family elected for non-operative treatment in long arm cast.
- The patient followed up at 4 weeks with removal of the cast and imaging of the right elbow demonstrating a healing medial epicondyle fracture without incarceration and with maintenance of reduction of the elbow joint. Clinically, the patient was pain free and with anticipated post cast stiffness.
- At 10 weeks after the injury, the patient continued to be pain free with full flexion and supination, and near full extension and pronation but lacking a few degrees of each. X-rays demonstrated incomplete union of the medial epicondyle fragment and anatomic alignment of the elbow joint. The patient and parents were advised of a likely asymptomatic fibrous non-union.
- Final follow up occurred at one year from injury. Patient had returned to all previous activity without concerns for her elbow. Physical exam demonstrated full range of motion in the affected extremity in flexion, extension, supination and pronation, equal to that of the contralateral extremity. She demonstrated no neurovascular complications. Radiographs of the right elbow demonstrated continued reduction of the elbow joint with some continued displacement of fracture fragment. (Image 1D)

## IMAGING



**Image 1A** Injury radiographs demonstrate a posterolateral elbow dislocation with displaced medial epicondyle fragment.



**Image 1B** Post reduction radiographs demonstrate elbow joint reduction with incarceration of the medial epicondyle fragment in the elbow joint.



**Image 1C** Radiographs obtained 4 days after injury in clinic follow up, demonstrate spontaneous reduction of the incarcerated medial epicondyle fragment.

**Image 1D** Images of the right elbow demonstrate fibrous non-union of the medial epicondyle fracture.

## CLINICAL OUTCOME



**Fig 2 A to 2D** Clinical images at 1 year follow up demonstrate full and equal range of motion of the affected right elbow. The patient returned to pre-injury activity level without pain or loss of function.

## FUTURE IMPLICATIONS

Our case raises the question of whether more closed reductions of incarcerated medial epicondyles should be attempted in the ED, and if time should be allowed for potential spontaneous reduction before proceeding to surgery. It also demonstrates that conservative management of the spontaneously reduced incarcerated fragment can be successful. Larger studies are required, but perhaps immediate operative treatment of incarcerated medial epicondyle fragments is over treatment in some cases. Further studies may elucidate incarceration patterns more likely to spontaneously reduce and optimal timing of observation for spontaneous reduction before surgery.

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