CASE REPORT

An unusual pattern of segmental forearm fracture in the immature forearm

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Introduction

Segmental fractures of the radius and ulna are associated with high energy trauma in adults. In children this condition is rather rare. A segmental fracture involving the distal physis has only been reported once previously in the orthopaedic literature. 2 A more common “segmental” fracture in the paediatric arm associated with high energy trauma is simultaneous ipsilateral diaphyseal forearm and supracondylar humeral fractures, the “floating elbow”. 3

Case report

An otherwise healthy 10-year-old boy was admitted to our institution following a fall from a swing in the local park. On clinical examination the left forearm and the right wrist were deformed. The soft tissue envelope was intact in both forearms. There was paraesthesia in the territory of the median nerve in the left hand, with no sign of a vascular injury in either limb. Plain radiographs showed his injuries as displaced midshaft fractures of the left radius and ulna as well as a Salter-Harris type II injury to the distal physis of the ipsilateral forearm (Fig. 1a and b). In the contralateral forearm he had sustained a Salter-Harris type II injury to the distal radial physis with 25° of apex volar angulation.

In the accident and emergency department the patient was given analgesia, the left arm was placed in an above elbow and the right forearm in a below elbow backslab. The patient was then prepared for an operation and taken to theatres.

Following a general anaesthetic and administration of prophylactic intravenous antibiotics (Cefuroxime 750 mg), the left forearm with the segmental fracture was dealt with first. Closed reduction was performed for the diaphyseal fractures of the radius and ulna under fluoroscopic control and fixed with elastic stable intramedullary nails. The ulna was nailed antegrade and the radius retrograde with 2.5 mm diameter nails, as per techniques previously described. 1,5 The Salter-Harris type II injury to the distal radial physis was then reduced and held with one smooth 1.6 mm Kirschner wire through the radial styloid (Fig. 2a and b). The right distal radial fracture was also reduced and then held with a single smooth 1.6 mm Kirschner wire through the radial styloid. Both forearmes were placed in below elbow Plaster of Paris. The paraesthesia in the territory of the median nerve in the left hand had resolved immediately postoperatively.

At 4 weeks both casts and the Kirschner wires were removed from both wrists. The intramedullary nails in the bones of the left forearm were subsequently removed 6 months following the injury. Fig. 3a and b show satisfactory union of radius and ulna prior to removal of the intramedullary nails. He had an uneventful recovery, with the return of full and symmetrical range of movement and function to both forearms.

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Discussion

Forearm fractures are one of the most common skeletal injuries in children comprising 40% of all paediatric fractures. Segmental fractures in the paediatric forearm are however rare. To our knowledge there has been one other report of a segmental fracture of the forearm involving the distal physaes and we are presenting the second case herein.

The use of elastic nails in the treatment of paediatric long bone fractures has gained much support over the past few years. The insertion technique is minimally invasive involving little soft tissue dissection, operative time is much shorter with better cosmesis and subsequent removal is not associated with the complication profile of removal of plates and screws. The ideal fracture for this technique is a transverse or short oblique diaphyseal fracture with minimal comminution in a long bone.

Due to the rarity of this injury there is little in the way of consensus regarding its management. The authors of the previously reported case treated their patient by open reduction and internal fixation with plates and screws. Soft tissue interposition had necessitated an open reduction. In our institution we advocate the use of elastic nails in paediatric long bone fractures.

References