Uncommon injury in a school punished child

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Abstract

Epiphyseal injuries are common in children predominantly of the small joints of hand and wrist. They account for nearly 17.9 percent of all paediatric fractures. Of which, 15 percent result into growth arrest. The junction between the metaphysis and epiphysis being the weakest point of a long bone in children makes it more vulnerable to shearing forces. We report this case because of its unusual mode of injury and to highlight the methods of punishment in school leading to injury, which sometimes goes unnoticed but may have serious sequale.

CASE HISTORY

A 10 years old right-handed female child came to the Accident and Emergency department accompanied by her school teacher. On examination, the dorsum of her right hand, second web space, index and middle fingers were swollen, bruised and tender and in position of extension at metacarpophalangeal and flexion at interphalangeal joints.

She gave a history of fall while playing. Radiographic examination revealed Type II Salter Harris growth plate injuries (Fig 1 and 2) of proximal phalanx of index and middle fingers.

Figure 1

Figure 1: (X- ray AP: type II epiphyseal injury of 2 and 3 proximal phalynx)

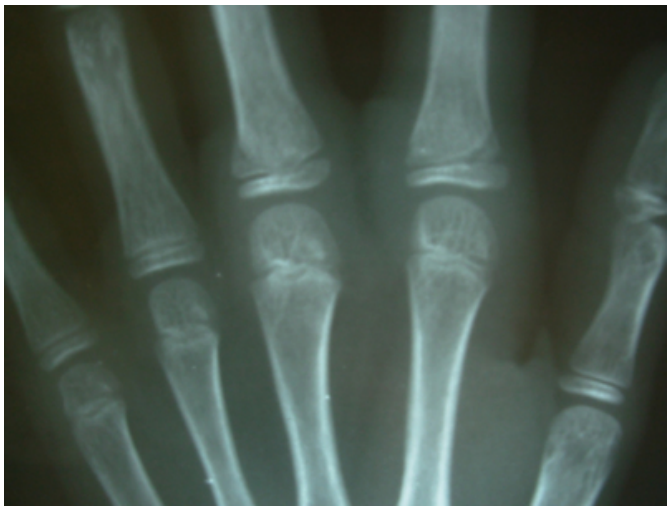
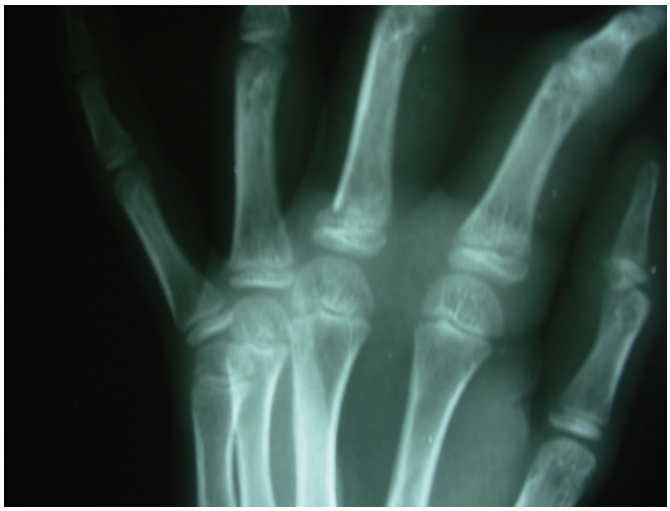


Figure 2

Figure 2: X-ray : oblique view



The contrast between mechanism of injury and radiographic findings was clearly discernible. Therefore, she was interrogated again. After repeated questionings, she came out with the real story, that she had been punished by her class teacher by keeping a pen in between her index and middle fingers and pressing them thereafter. Both fingers were pressed hard against the pen (Fig 3).

Figure 3

Figure 3: (Pictorial depiction of mode of injury)

Gross swelling after 3 hours of punishment made her teacher realize the gravity of the injury sustained by the child caused by her action. This story could very well explain the relevance of radiographic findings.

The deformity was reduced by gentle traction for about half a minute under analgesic sedation. The base of phalanx was then pushed along the epiphysis to restore its relationship with its diaphysis. Since it was not grossly displaced, it was managed in a moulded radial gutter slab for immobilization, which was discontinued after 4 weeks when the examination revealed full functional recovery. After a monthly follow up for one year she had fully recovered and had normal joint functions of the fingeres and was advised no further follow up.

DISCUSSION

The principles followed in treatment of epiphyseal injuries of the hand are essentially the same as those used in treating epiphyseal injuries elsewhere in the child. Special patience is required in treating the patients, and methods of immobilization must be modified appropriately for the active child. A knowledge of the mechanism of injury and potential effects on the growth potential of the digit are important in determining treatment and counseling parents on possible growth disturbance and later deformity. The epiphyses of the proximal phalanges of the fingers and the thumb metacarpal are the most frequently injured. Salter Type I and II fractures frequently demonstrate remarkable remodeling potential, whereas intra-articular Salter III and IV fractures often require surgical repair and may be more frequently associated with later problems of growth and post-traumatic arthritis.[1]

Multiple synchronous finger fractures involving phalanges or metacarpals of adjacent rays have been described in the literature [2] but we found no reports of a similar injury involving the adjacent phalanx. We speculate the hard push of fingers against hard object in between may result the fracture of shaft of proximal phalanx. What is responsible in this case is twisting which must have been clockwise and anticlockwise which could have resulted injury of both phalanges.

Most Type II Salter Harris disruptions [3] (also described as Thurston Holland's sign), of metacarpals and phalanx, irrespective of a mechanism of injury, can be satisfactorily managed with closed manipulation and POP immobilisation for about 4 weeks without any significant functional deficits [4].

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