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TRANS-SCAPHOID PERILUNATE DISLOCATION IN A CHILD

A Case Report

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An acute trans-scaphoid perilunate dislocation in a 10-year-old boy is reported. Closed reduction was successful and normal strength and mobility resulted 9 weeks after injury. The mechanism of production and the reason for the rarity of this injury is discussed.

Key words: child; dislocation; fracture; lunate bone; scaphoid bone; wrist

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Trans-scaphoid perilunate dislocations are very unusual carpal injuries (McAusland 1944, Aitken & Nalebuff 1960, Witwoet & Alliew 1973). Moreover, fractures and dislocations of the carpus are exceedingly rare in children (Blount 1955). In the following a trans-scaphoid perilunate dislocation in a child is described. To our knowledge a case of this type has not been reported previously.

CASE REPORT

A 10-year-old boy was admitted to the hospital 3 hours after having fallen from a terreplein about 5 metres high on to the extended hand held away from the body.

At examination a swollen and painful wrist was noted and the patient was unable to move his wrist without pain and could flex his fingers only slightly.

Roentgenograms revealed a dorsal trans-scaphoid perilunate dislocation (Figure 1, A and B). Under general anaesthesia a closed reduction was performed without difficulty. The reduction was accomplished by increasing the deformity while applying traction and pressing with the thumb against the os capitate; then the hand was forced into flexion. Replacement of the navicular fragment took place simultaneously with the reduction of the dislocation.

The arm was then immobilized with a dorsal brachial plaster slab, including the proximal phalanx of the thumb, and with the wrist in slight flexion. Post-reduction roentgenograms showed an adequate reduction (Figure 2, A and B) and the patient was discharged the next day.

The cast was removed 7 weeks later, at which time range of motion exercises were instituted. The roentgenograms showed good early union (Figure 3, A and B) and a bone relationship the same as in the uninjuried wrist (Figure 4, A and B). At 9 weeks he had achieved full and pain-free range of motion. After 16 weeks there were no subjective complaints and the mobility and strength of the wrist were normal. The patient was not seen thereafter.

DISCUSSION

Dorsal perilunate dislocations are caused by forcible hyperextension of the wrist during a fall on the outstretched hand (McAusland 1944, Aitken & Nalebuff 1960) away from the body (Aitken & Nalebuff 1960). The force is directed against the palm resulting in extension of the carpal bones, but not to the extent that would produce dislocation of the lunate bone alone. For this latter to occur, during the fall the hand is close to the body directing the force against the fingers and the metacarpal heads thus causing extreme hyperextension of the hand (Aitken & Nalebuff 1960).

The navicular functions as a connecting rod between the two rows of the carpus (Wagner 1959). During the injury the navicular is fractured by compression between the styloid process and the capitate (Witwoet & Alliew 1973) and the fragments become separated, the proximal pole of the navicular remaining with the lunate

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Figure 1, A and B. Anteroposterior and lateral roentgenograms demonstrating the trans-scaphoid perilunate dislocation.

Figure 2, A and B. Anteroposterior and lateral roentgenograms demonstrating successful closed reduction.

while the distal part accompanies the capitate and the rest of the carpus, producing the trans-scaphoid perilunate type of carpal dislocation (Dunn 1972).

Dorsal trans-scaphoid perilunate dislocation has also been produced in a cadaver when a hard blow was applied longitudinally to the palm of the hand while the wrist was held in hyperextension and full ulnar deviation (Weiss et al. 1970).

This lesion occurs in middle aged or young men (Campbell et al. 1964). The youngest patients reported were 17 years (Campbell et al. 1964) and 18 years old (Peiró & Mut 1975). We have been unable to find a case as young as the one described in this report.

The reason for the rarity of this injury is that, usually, if the force exceeds the range of dorsiflexion permitted by the various ligaments, the

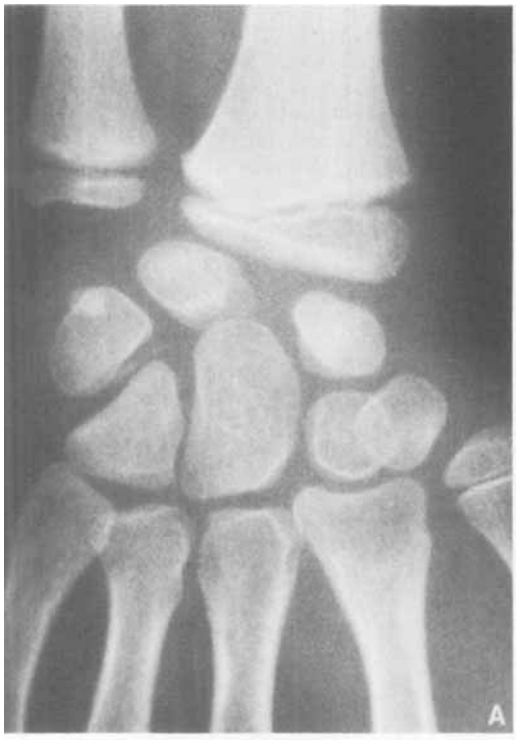

Figure 3, A and B. Anteroposterior and lateral roentgenograms 7 weeks after injury.

Figure 4, A and B. Anteroposterior and lateral roentgenograms of the uninjuried wrist showing normal bone relationships.

distal radius gives way, resulting in the typical Colles' fracture seen in adults (Wagner 1959) or the epiphyseal fracture in children. These injuries are more easily produced than those of the carpus.

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