A POSSIBLE RELATIONSHIP OF RADIO-CARPAL DISLOCATION AND DISLOCATION OF THE LUNATE BONE

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Dislocation of the radio-carpal joint without associated fracture or disruption of the intercarpal or radio-ulnar ligaments is rare (Russell 1949, Speed 1950). The case presented here shows complete dislocation of the radio-carpal joint without disturbance of the relationships of the carpal bones and may throw some light on the pathogenesis of forward dislocation of the lunate bone.

CASE REPORT

A woman of fifty sustained anterior radio-carpal dislocation of the left wrist. Reduction was obtained by traction under general anaesthesia. Radiographs were taken before and after reduction (Figs. 1 and 2). Reduction of the dislocation was maintained by a plaster extending above the elbow with the wrist in the neutral position. The plaster was kept on for four weeks, after which gentle mobilisation was begun. Six months later there was no radiographic evidence of avascular necrosis and there was an almost full range of movement.

The patient was re-examined eighteen months after injury. She complained of some loss of the power of lifting and an occasional ache about the wrist. The range of movement was very slightly less than that of the opposite wrist. Radiographs showed a small osteophyte low on the volar aspect of the radius (Fig. 3) but no other abnormality.

COMMENT

The incidence of radio-carpal dislocation with or without fracture of the styloid process or intercarpal subluxation is about 0-2 per cent of all dislocations (Gui 1957). The relationship of the small bones is usually disturbed in carpal dislocations (Wagner 1959). In this case their relationship was slightly altered. The lesion is more often associated with fracture of the anterior lip of the radius and requires transskeletal fixation combined with plaster in order to maintain reduction (McLaughlin 1959). The most recent radiograph in the present case shows an anterior radial osteophyte, probably the result of a ligamentous tear which may be the equivalent of an anterior fracture of the radius.

Mechanism—There are two explanations of dislocation of the lunate bone. The first suggests that under excessive dorsiflexion the lunate bone “pops anteriorly like a seed” (Wilson 1938, Seidenstein 1956, Gui 1957, Watson-Jones 1957), whereas the second maintains that there is perilunar dislocation as a first stage of injury and that the carpus then pushes the lunate forward to dislocate it (Böhler 1935, Key and Conwell 1942, MacAusland 1944, Wagner 1956).

MacConaill (1941) showed that the bones of the proximal row of the carpus separate on palmar flexion whereas on dorsiflexion they clamp down on the lunate bone; doubt is thus cast on the first suggestion.

In the case presented the mechanism of injury seems to have been dorsiflexion, with a shearing stress in the line of the carpo-metacarpal bones oblique to the radius.

From the original radiographs it seems clear that this lesion did not become an anterior dislocation of the lunate bone as the intercarpal ligaments were intact (Fig. 4).

It may be possible that dislocation of the lunate bone is preceded by radio-carpal dislocation and that with forces of increasing violence the resulting lesions would be, in order of severity: 1) Contusion and sprain with no bone or ligament damage. 2) Radio-carpal
dislocation, the radio-carpal ligaments being torn but the intercarpal ligaments left practically intact. The lunate may then impinge on the anterior radial lip and prevent spontaneous reduction of the carpus (Figs. 1 and 4). 3) Anterior lunate dislocation in which both the radio-carpal and the intercarpal ligaments are torn. An initial radio-carpal dislocation occurs, the lunate impinges on the radius but cannot hold the rest of the carpus, which then assumes a

![Fig. 1](image1)

Radiographs before reduction. The antero-posterior view shows minimum diastasis between the triquetrum and lunate bones. The lateral view shows that the ligaments between the capitate and the lunate bones are obviously under strain, allowing for a mild subluxation to take place, as the whole of the carpus is held dislocated.

![Fig. 2](image2)

Radiographs after reduction show absence of bony injury.

relatively reduced position leaving the lunate bone dislocated anteriorly, with a variable degree of rotation (Fig. 5). This mechanism would also explain those cases in which, on open reduction, the lunate bone is found completely detached from the carpus and the radius. 4) Displaced fracture-dislocation, with multiple fractures and ligamentous damage. It is well to remember that reduction of such a fracture-dislocation is often complicated by failure of the lunate to assume its correct position.
In order to cause a true radio-carpal dislocation the force applied must lie between very narrow limits, as it must divide the wrist ligaments and spare the whole of the intercarpal ligaments without producing fracture. Moreover, if small individual variations in the relative resistance of these two groups of ligaments are taken into consideration, the rarity of the lesion can be understood.

It has been maintained (Wagner 1956) that lunate dislocation is always preceded by perilunar dislocation and that this can be found out on reduction, but the presence of abnormal mobility can also be interpreted as evidence of a preceding radio-carpal dislocation.

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REFERENCES


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