MECHANISM OF FRACTURE-DISLOCATION OF THE NAVICULAR: BRIEF REPORT

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Injuries of the midtarsal joints are rare; various combinations of fracture-subluxations and dislocations can occur. Standard accounts of these injuries (Wilson 1976; Heckman 1984) are largely based on Main and Jowett's review of 71 patients in 1975. Their classification was based on different mechanisms of injury, inferring the direction of forces from the original radiographs.

We report one patient who sustained a fracture-

Fig. 1

dislocation of the midtarsus with direct evidence that the deforming force was that of plantarflexion, opposite to that suggested by Main and Jowett.

Case report. A 71-year-old woman was the front-seat passenger in a car that was involved in a head-on collision. She sustained a fracture-dislocation of the navicular and a fracture of the cuboid of the left foot (Fig. 1). Reduction was easily achieved by traction,

plantarflexion and direct pressure over the navicular. Percutaneous Kirschner wire fixation was needed to hold the position. The wires were removed six weeks later. The patient walked without pain, but had some limitation of movement of the forefoot.

Discussion. Main and Jowett's description of the mechanisms of midtarsal injuries was based solely on radiographic appearances, and was not substantiated either by clinical or experimental data. In their classification, the injury we report would result from longitudinal compression associated with a dorsiflexion of the foot. The deformity of her shoe (Fig. 2) indicates that her foot must have been forcibly plantarflexed at the moment of impact.

Fig. 2

Main and Jowett considered that longitudinal forces transmitted along the metatarsal rays would compress the navicular, produce vertical cracks and cause a large central fragment to be extruded dorsally. However, this implies rupture of the dorsal ligaments, which could fail only in tension produced by plantarflexion. Knowledge of this mechanism is useful when performing a closed reduction of a dislocated navicular.

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