

# ROLANDO'S FRACTURE OF THE FIRST METACARPAL

## TREATMENT BY EXTERNAL FIXATION

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**External fixation of the first metacarpal was used in Rolando's fracture to counter the forces that cause shortening and articular incongruity. Satisfactory reduction was achieved and maintained in five patients.**

The treatment of Rolando's fracture of the first metacarpal depends on the severity of comminution of the base of the thumb and the degree of displacement. If the fragments are large, open reduction and internal fixation may be attempted, but if there is severe comminution, the treatment of choice is controversial (O'Brien 1982).

We have used closed reduction and external fixation between the first metacarpal and the trapezium.

### PATIENTS AND METHODS

Between 1989 and 1990, five men with Rolando's fracture were treated by this procedure. Their ages ranged from 18 to 42 years (mean 28.5). Three fractures were in the right hand.

Under anaesthesia, the fracture was reduced by longitudinal traction through the tip of the thumb using

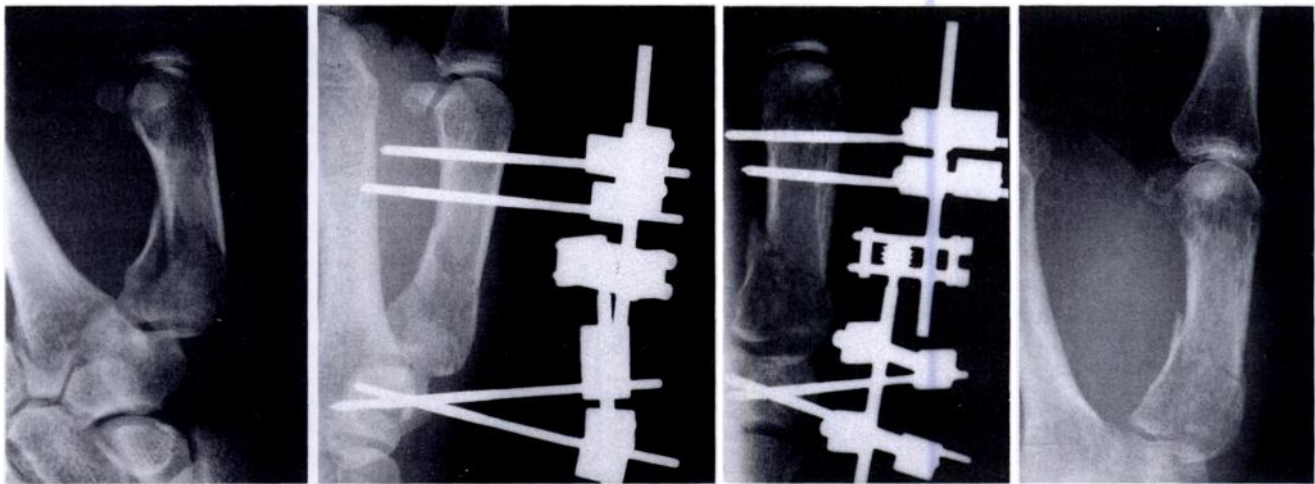


Fig. 1

Fig. 2

Fig. 3

Figure 1 - Intra-articular fracture of the base of the first metacarpal in a 25-year-old man. Figure 2 - Treated by external fixation. Figure 3 - Normal carpometacarpal joint three months later.

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a wire finger-trap and counter-pull on the upper arm, with the elbow flexed at 90°. Reduction of the fracture was confirmed on the image intensifier and an external fixator (Shearer Micro Fixator, Leeds, England) was applied.

The proximal two pins were placed in the trapezium

and the distal two in the first metacarpal, just distal to the fracture and a few millimetres volar and radial to the extensor pollicis brevis tendon (Figs 1 and 2).

The patients were instructed to exercise their fingers, wrist, elbow and shoulder joints. The fixator was removed at six weeks.

### RESULTS

Three months after injury all patients were free from pain and had a full range of thumb movements (Fig. 3). There were no pin-track infections, no case of reflex sympathetic dystrophy, and no lesions of the superficial sensory branch of the radial nerve.

### DISCUSSION

In 1910, Silvio Rolando described three cases of a Y- or T-shaped intra-articular fracture of the base of the thumb and noted the poor prognosis. Management has included closed reduction with the use of a bulky dressing (Gedda 1954), closed reduction with Kirschner wire fixation (Van Niekerk and Ouwens 1989), oblique traction (Spångberg and Thorén 1963; Gelberman, Vance and Zakaib 1979), and open reduction using a small plate (Rüedi, Burri and Pfeiffer 1971; Foster and Hastings 1987). The difficulty of obtaining and maintaining reduction of these fractures

is well known and the results with closed reduction and immobilisation in a plaster cast are disappointing (Griffiths 1964; Van Niekerk and Ouwens 1989). By using an external fixator, the reduction can be maintained without difficulty.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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