Fractures of the Scaphoid Bone
A Follow-up Study

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Summary. Fracture of the scaphoid bone is the most common fracture of the carpal bones (Dunn 1972). Primary diagnosis can be difficult, and misdiagnosis with subsequent inadequate treatment often results in a permanently painful wrist with reduced function of the hand. We have observed that the immobilization time for scaphoid fractures at this clinic is shorter than is usually reported (Cooney et al. 1980; Dunn 1972; Eddeland et al. 1975). We have also observed that in some cases major diastasis in the fractures coincided with delayed union or non-union. Since opinions on the treatment of these fractures have varied on some points, we find it worthwhile to present our results. The major aims of the study were to evaluate whether the short immobilization time has any bearing on the fracture healing and, furthermore, whether the presence of a significant diastasis of the fracture affects the healing.


Patients and Methods

From 1972 through 1978, 158 patients with 160 scaphoid fractures were treated at the outpatient clinic of the Reykjavik City Hospital. One hundred ten patients with 112 scaphoid fractures showed up for the follow-up study and these constitute the basis of this report. Of the original 158 patients, 13 had died, 19 had moved to other parts of the country or abroad, and 16 could not be traced. The age and sex distribution of the followed-up patients is shown in Figs 1 and 2: 85 (79%) of the patients were male and 25 (21%) female; 19 (17%) of the patients were children (11-15 years of age).

In all the patients except one, the clinical signs were regarded as clear enough to warrant plaster cast treatment from the time the patient sought medical attention, even if the fracture could not be demonstrated on the first radiological examination. In 12 cases a radiological re-examination was made 10-14 days later, which in all cases showed the fracture. Most fractures were seen within 24 h after the injury, but several were first seen considerably later (Table 1).

The initial radiological examination included conventional scaphoid series, i.e., posterior anterior, lateral and two oblique projections, and further posterior anterior and lateral projections of the radiocarpal joint. The follow-up examination included the scaphoid and the wrist series. All the previous films were reviewed together with the follow-up radiographs.

The fractures were divided into four types (Fig. 3, London 1961), the distribution of which is given in Table 2.

In the clinical follow-up study, the wrist movements were measured according to the diagram of the American
Orthopedic Association (Iversen and Clawson 1977). The strength of the grip was tested with a dynamometer.

**Treatment**

One hundred three patients with 105 fractures were treated in below-elbow casts, where the thumb was included in the cast to the interphalangeal joint. Two patients with fracture types II and IV, respectively, were treated with above-elbow casts.

The plaster cast was changed after 1-2 weeks and thereafter as needed. Duration of the immobilization depended primarily on the clinical findings. In patients where clinical findings were normal but the radiological results were equivocal, the plaster treatment was terminated but the patients were followed until radiologically healed.

**Results**

One hundred five fractures (93.8%) healed with plaster treatment alone. Both fractures that were treated with a plaster slab healed. Seven fractures needed surgical intervention. Two of these were proximal fractures (type III). Four were waist fractures (type II), and one was a distal fracture (type I). In six of the fractures that did not heal the initial diastasis was ≥ 1 mm.

In two of three patients who sought medical aid 30 days or more after the injury, the fractures healed with plaster treatment only. In the group in which treatment started 7-30 days after injury all fractures healed in plaster, and where treatment started 1-7 days after injury all except one healed with plaster treatment. Mean times in plaster for the different fracture types are presented in Table 3).

Subjective symptoms attributable to the fractures that healed proved to be rather frequent. The symptoms were slight, though, with few exceptions, and in no case did the patient have to change occupation. Three patients complained of some pain at rest and one had troublesome pain.

Twenty-seven patients had some tenderness in the wrist when working, and five complained of rather severe pain during heavy manual work. The symptoms could not be correlated to the site of fracture,