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# Weight bearing after arthrodesis of the first metatarsophalangeal joint

## A randomized study of 61 cases

Harald I. H. Lampe, Peter Fontijne and Bert van Linge

We performed a prospective randomized study of 61 cases of arthrodesis of the first metatarsophalangeal joint in 56 patients. In the first group, full weight bear-

ing was allowed after 2-4 days and in the second group at 4 weeks. Radiographic union of the arthrodesis in the two groups did not differ.

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The treatment after arthrodesis of the first metatarsophalangeal joint (MTP) varies from full weight bearing directly after the operation to nonweight bearing during a period of 6-8 weeks (McKeever 1952, Wilson 1958, Mann 1986). In a prospective and randomized study, we investigated the radiographic union of arthrodesis of the first MTP joint after early and late weight bearing.

Table 1. Composition of the study group and rate of union

|            | Early weight bearing |       |        | Late weight bearing |       |        |
|------------|----------------------|-------|--------|---------------------|-------|--------|
|            | Total                | Male  | Female | Total               | Male  | Female |
| Number of  |                      |       |        |                     |       |        |
| Patients   | 29                   | 5     | 24     | 27                  | 11    | 16     |
| Operations | 32                   | 6     | 26     | 29                  | 12    | 17     |
| Union      | 28                   | 6     | 22     | 25                  | 11    | 14     |
| Age        |                      |       |        |                     |       |        |
| Mean       | 50                   | 44    | 51     | 47                  | 40    | 52     |
| Range      | 24-78                | 32-54 | 24-78  | 19-69               | 19-55 | 30-69  |

## Patients and methods

From 1983 to 1988, all the patients undergoing arthrodesis of the first MTP joint were randomized into two groups. In the first group, full weight bearing was allowed in a below-the-knee walking cast 2-4 days after the operation. In the second group, weight bearing was not allowed until 4 weeks postoperatively. After exclusion of the patients with a postoperative wound infection, previous surgery on the same joint, simultaneous surgery on the forefoot, acromegaly, and those using corticosteroids, there were 61 operations in 56 patients (Table 1).

The operation was performed through a dorso-medial incision medial to the extensor hallucis longus tendon. An osteotomy of the proximal phalanx and the metatarsus was performed, and the bone was cut off perpendicular to the metatarsal surface. Fixation was obtained by using a Rush nail or two crossed Kirschner wires.

Radiographs were taken at regular intervals until radiographic union was achieved. At follow-up, the

radiographs were independently examined by 2 of us (HL, PF). Nonunion was defined as union later than after 26 weeks. In case of disagreement, new radiographs were taken.

For the statistical analysis, the Mann-Whitney *U*-test, the chi-square test, and the Fisher exact probability test were used.

## Results

Union was achieved in 28 patients in the early weight-bearing group and in 25 patients in the late weight-bearing group (Table 1). We were unable to demonstrate an effect of gender, age, or fixation technique on the rate of union.

## Discussion

Our study shows that early full weight bearing results in the same rate of union as in delayed weight bearing, and our results are at least comparable to those of others (Moynihan 1967, Beauchamp et al. 1984).

We can confirm that nonunion does not necessarily lead to a painful metatarsophalangeal joint (Moynihan 1967, Fitzgerald 1969, Beauchamp et al. 1984, Mann and Thompson 1984); only two of the joints with non-union were painful.

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