THE TREATMENT OF METATARSALGIA WITH HALLUX VALGUS

R. RAYMAKERS, LEICESTER, and W. WAUGH, NOTTINGHAM, ENGLAND

From Harlow Wood Orthopaedic Hospital, near Mansfield, Nottinghamshire

Discussion about the treatment of hallux valgus is largely confined to the merits of various operations on the big toe itself, and the problem of associated metatarsalgia is given rather less detailed consideration.

Metatarsalgia and secondary deformities of the lesser toes are common in association with hallux valgus. Bonney and Macnab (1952) recorded metatarsalgia in 45 per cent of the cases reviewed. Rogers and Joplin (1947) found that 75 per cent had dorsal subluxation of a proximal phalanx and 63 per cent had callosities under the middle three metatarsal heads.

When hallux valgus is associated with subluxation of one or more of the lesser metatarso-phalangeal joints the patient may have severe metatarsalgia. This can be dealt with by excision of one or more of the painful metatarsal heads, provided that the big toe is stabilised by arthrodesis of the metatarso-phalangeal joint. This paper reports a series of patients in whom this combined procedure was carried out.

CLINICAL MATERIAL

Twenty-five patients had arthrodesis of the first metatarso-phalangeal joint together with excision of one or more of the lesser metatarsal heads. Five patients had the operation on both feet, so that thirty feet were available for review. There were twenty-two women and three men. Their average age at operation was fifty-five years.

Symptoms before operation—These patients all had painful hallux valgus and severe metatarsalgia associated with subluxation of one or more of the lesser metatarso-phalangeal joints and a tender callosity under the prominent metatarsal heads.

Operation—In twenty-nine feet the first metatarso-phalangeal joint was arthrodesed by Marin's technique (1960), with screw fixation and without plaster-of-Paris immobilisation. In one foot Kirschner wires and plaster-of-Paris were used instead of a screw. The affected metatarsal heads were removed through a plantar incision in twenty-four feet and through a dorsal incision in six feet. The second head alone was removed in nineteen feet, the second and third heads in eight feet, the third head alone in two feet, and the second, third and fourth heads in one foot.

RESULTS

Each patient was seen and assessed after operation by one of us (R. R.). The length of follow-up was from one year to five years and eight months: the average was three and a half years. The presence or absence of metatarsal pain and callosities was noted and radiographs were taken. Measurements were made of the angle of fusion of the big toe and of the width of the foot; these were compared with radiographs before operation, which were available in all but two patients.

Arthrodesis of the first metatarso-phalangeal joint—Twenty-six feet were graded as excellent or good as far as the big toe was concerned and three were considered satisfactory. One patient had a fibrous union but this was painless.

Metatarsalgia—Results were graded as shown in Table I. No patient was made worse by the operation.

Incision—The plantar incisions all healed well and left almost invisible scars.

Shift of metatarsal pain—No patient had significant pain under an excised metatarsal head but in eight feet there was a shift of pain to a metatarsal head adjacent to the one excised;

for one only was further surgery needed and this was for the foot with fibrous union of the first metatarso-phalangeal joint. In the remaining seven feet the discomfort was either too slight to need treatment or a metatarsal pad provided relief.

Metatarsal callosity—A callosity was found under a remaining metatarsal head in thirteen feet but was usually not painful; sometimes it had been present before operation (metatarsal heads were not excised when associated with painless callosities).

TABLE 1
RESULTS (THIRTY FEET)

Grading		Number of feet
Excellent	(no pain and no callosity)	9
Good	(occasional pain or a callosity)	16
Satisfactory	(improved)	3
Poor	(not improved)	2

Radiographic assessment—The angle of fusion of the big toe was measured in antero-posterior and lateral radiographs. Most of the metatarso-phalangeal joints fused at an angle of more than 20 degrees of valgus had complete relief of metatarsalgia and were graded as excellent. Fusion at a lesser angle usually produced good, satisfactory or poor results in relation to metatarsalgia but no further distinction could be made. It was confirmed that the results in the big toe were better with a fusion in more than 20 degrees of valgus (Fitzgerald 1969).

The angle of fusion measured on the lateral radiograph averaged 22 degrees and was fairly constant in this series. No relationship between this angle and relief of metatarsalgia was found except in the two poor results of which one was fused at 37 degrees—the highest in the series—and the other—with fibrous union—at an angle of 31 degrees.

Width of the foot—The width of the soft tissues across the metatarsal heads was measured before operation and on comparable radiographs at follow-up. Narrowing (averaging only

FIG. 1

FIG. 2

Figure 1—Standing antero-posterior radiograph of both feet showing hallux valgus and dislocation of the second metatarso-phalangeal joints. Figure 2—Standing antero-posterior radiograph after the combined operation showing arthrodesis of the first metatarso-phalangeal joints and excision of the second metatarsal heads. Narrowing of the intermetatarsal angle between the first and second metatarsal shafts is apparent.

6 millimetres) was found in all but three feet; it bore no clear relation to the relief of metatarsalgia and was not appreciated by the patient in terms of shoe width. Four patients who had a fusion of the big toe with too little valgus noticed that they required wider shoes to accommodate that toe.

The first and second metatarsal angle—Radiographs before operation and at follow-up showed a clear diminution in the angle between the first and second metatarsal bones in every foot (Figs. 1 and 2). This is related to the improved muscle function following arthrodesis and not to removal of a metatarsal head.

DISCUSSION

This series is small but concerns an important facet in the problem of hallux valgus. During the five years under review we have treated surgically 128 patients with hallux valgus. This has involved operation on 198 feet; 135 had arthrodesis of the first metatarso-phalangeal joint; thirty-four had the Keller operation and twenty-nine had osteotomy of the first metatarsal neck. Arthrodesis of the big toe combined with excision of one or more of the lesser metatarsal heads was done in thirty-four feet (four patients were not available for follow-up). This represents approximately one in every six feet which were operated on for hallux valgus.

The most common operations carried out for hallux valgus in middle-aged and elderly patients are arthrodesis of the first metatarso-phalangeal joint and Keller's (1904) operation. The latter has many strong advocates (Cleveland and Winant 1950, Jordan and Brodsky 1951, Thomas 1962, Watson-Jones 1970) and it will often provide a result that is satisfactory for the patient. Nevertheless, metatarsalgia may persist or develop a number of years after the operation. In their analysis of Keller's operation Bonney and Macnab (1952) showed a histogram which indicated that metatarsalgia was unaltered, produced or made worse in over two-thirds of the patients reviewed. Holden (1954), referring to patients with hallux valgus and secondary toe deformities, found that after the Keller's procedure combined with secondary operation for the lesser toes the result could be classified as good in only 10 per cent of cases.

Arthrodesis of the first metatarso-phalangeal joint provides a stable and painless big toe. Moynihan (1967) found that metatarsalgia was relieved in about two-thirds of his patients after this operation.

If there are painful fixed deformities of the lesser toes these should be dealt with surgically at the time of the operation on the big toe. A flexion deformity of the proximal interphalangeal joint of a lesser toe can be satisfactorily straightened by arthrodesis only if there is no fixed subluxation of the metatarso-phalangeal joint.

After arthrodesis of the first metatarso-phalangeal joint the first metatarsal head takes full weight, which allows the excision of one or more of the lesser metatarsal heads without further weakening the forefoot; this corrects the deformity and removes the pressure on the underlying painful callosity.

The combined operation has a valuable place in the management of patients with hallux valgus and painful callosities associated with fixed subluxation of one or more of the lesser metatarso-phalangeal joints.

SUMMARY

1. Arthrodesis of the first metatarso-phalangeal joint combined with excision of those lesser metatarsal heads with fixed subluxation and painful callosities is an excellent treatment for painful hallux valgus with metatarsalgia.
2. A series of thirty feet in twenty-five patients is reported in which this combined operation was done.

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