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Metatarsal Osteotomy for Relief of Metatarsalgia

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Summary. If surgery is indicated for metatarsalgia, osteotomy of the metatarsals should be considered. In the years 1967-1977 we have operated on 35 feet. The first 17 we performed a proximal V-shaped osteotomy, the next 18 we performed a distal oblique osteotomy. The results were excellent in 18 cases, good in 13 cases and poor in 4 cases. We recommend the oblique distal osteotomy because the operation is simple, recovery is rapid and symptoms are well relieved.

Zusammenfassung. Wenn eine chirurgische Behandlung für die Metatarsalgie indiziert ist, sollte eine metatarsale Osteotomie in Betracht gezogen werden. In den Jahren 1967-1977 haben wir 35 Fälle operiert. Bei den ersten 17 wurde eine proximale Osteotomie und bei den nächsten 18 Fällen eine distale schräge Osteotomie durchgeführt. Die Resultate waren sehr gut in 18 Fällen, gut in 13 und schlecht in 4 Fällen. Wir empfehlen die schräge distale Osteotomie wegen der operativen Einfachkeit, schnellen Heilung und guten Resultate.

A common problem in everyday orthopaedic surgery is metatarsalgia with associated clavus formation in the skin under the metatarsals. This is most often located beneath the heads of the second and third metatarsals. This disability can usually be solved with properly placed metatarsal pads, but when this conservative treatment fails, and the pain is severe, surgery is indicated. Different surgical procedures can be used, such as excision of the metatarsal head (Fowler 1957), condylectomy (Du Vries 1953), shortening of the metatarsal (McKeever 1952; Giannestras 1954) or various forms of osteotomy to alter the weight-bearing characteristic of the metatarsals (Gagnon 1968; Thomas 1969; Wolf 1973; Thomas 1974; Helal 1975).

The purpose of this report is to present the operative results of basal and distal osteotomy of the metatarsal bones causing metatarsalgia.

Material and Methods

During the 10 year period of 1967-1977 we have operated on 28 patients for metatarsalgia caused by dropping of the metatarsal head, 6 men and 22 women. The mean age was 53 years, ranging from 32 to 78 years. Seven patients were operated on both feet. The number of operated feet is 35. We have operated on 1-3 metatarsals in the same foot, the metatarsals operated on are listed in Table 1.

Up to 1974 we operated by removing a wedge, the base dorsal, from the proximal end of the metatarsal (Fig. 1), in this way shortening and elevating the dropped metatarsal. The position was secured by a cerclage of wire followed by a walking cast for 6 weeks. We have operated on 17 feet according to this technique.

From 1974 we performed a simple operative procedure exposing the collum of the metatarsal, and just proximal to the head making an oblique osteotomy in distal and plantar direction (Fig. 2). In this way the metatarsal heads are sliding in proximal and dorsal direction. Soft dressing is applied and

Table 1. Metatarsals operated on for metatarsalgia

Metatarsal(s)	Feet
II	9
III	6
IV	2
II + III	12
III + IV	2
II + III + IV	4
Total	35

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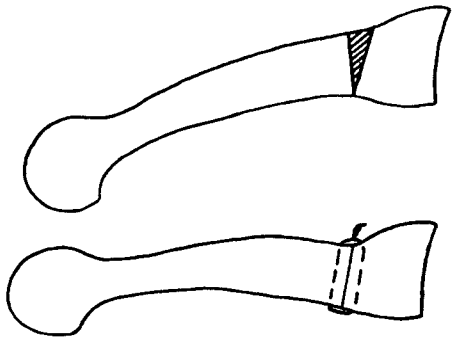

Fig. 1. Proximal V-shaped osteotomy of the metatarsal

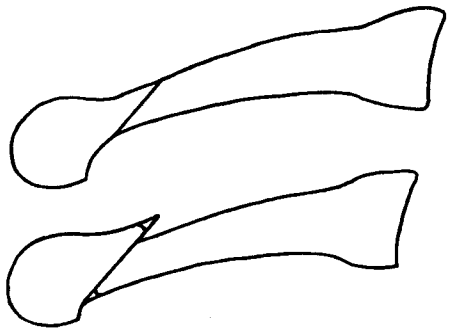

Fig. 2. Distal oblique osteotomy of the metatarsal

Table 2. Results at follow-up examination of 35 feet operated for metatarsalgia

	Proximal osteotomy	Distal osteotomy	Total
Excellent	8	10	18
Good	7	6	13
Poor	2	2	4
Total	17	18	35

weight-bearing allowed the afternoon of the surgical procedure. In this way the plantar pressure will force the head into the correct position. We have operated on 18 feet according to this method.

A follow-up examination of the operated feet has been performed on an average of 5.5 years after the operation, ranging from 2-12 years.

Results

All osteotomies have healed. The results were classified according to the following criteria: Excellent if there were relief of symptoms of metatarsalgia. Good if there were slight symptoms, but the patient was satisfied. Poor if the situation was unchanged or worse.

The results (Table 2) were excellent in 18 cases, good in 13 cases and poor in 4 cases. All patients except one were relieved of callosities beneath the operated metatarsals. On the other side, the patients with good or poor results developed callosities on adjacent metatarsal heads during the first year after the operation. In those with a poor result the shortening and elevation of the operated metatarsals was too much, putting pressure on the adjacent metatarsals to a degree that was not tolerated.

Discussion

The weight on the foot in standing position is borne posteriorly by the tuber calcanei and anteriorly by the five metatarsal heads. If some of the metatarsals are too long or dropped, they may cause metatarsalgia by plantar callosities. If surgery is indicated, metatarsal osteotomy with several modification should be considered in order to alter the weight-bearing characteristic of the metatarsals. Osteotomy of the proximal end of the metatarsals (Giannestras 1954; Thomas 1974) requires a rather extensive dissection, bone fixation and a walking cast for 6 weeks. There is also the possibility of the surgeon not finding the correct position of the metatarsal head, putting too much pressure on the adjacent heads. Distal osteotomy has been recommeded (Thomas 1969; Wolf 1973; Helal 1975). By doing this in an oblique way through the neck of the metatarsal, adequate displacement is easy to obtain, securing shortening and elevation of the head. The plantar pressure will force the head into correct position just by walking on the foot. The technique is very simple, and as the patient is allowed to walk on the operated foot the day of surgery, the method can also be recommended for out-patient clinics.

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