TREATMENT OF FREIBERG'S DISEASE

A NEW OPERATIVE TECHNIQUE

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A method of treating Freiberg's disease of the metatarsal head by shortening the metatarsal bone is described. This operation has been performed in 15 patients (16 feet). Excellent relief of pain was obtained, although most patients had persistent stiffness of the metatarsophalangeal joint.

In his initial report of infraction of the second metatarsal head Freiberg (1914) described six cases. Subsequently the results of different methods of surgical treatment have been described, but always in small numbers (Smillie 1957; Giannestras 1973; Gauthier and Elbaz 1979). Between 1981 and 1987 we have seen 28 patients with Freiberg's disease. All of these have been kept under review and 13 improved with simple treatment, either with an insole or by application of a plaster cast. The other 15 patients (16 feet) failed to improve with conservative treatment and all had a new operation to shorten the involved metatarsal shaft.

PATIENTS AND METHODS

The 15 patients who had metatarsal shortening were reviewed between 2.0 and 7.5 years after operation (mean 4.9). All patients were female and their mean age at the time of surgery was 15 years. The second metatarsal head was involved in all cases except one in which it was the third. The severity of the disease and the degree of subsequent healing were assessed by standing radiographs.

Operative technique. A tourniquet is applied and a 4 to 5 cm dorsal incision is made in the line of the distal shaft of the affected metatarsal. The metatarsal shaft and metatarsophalangeal joint are exposed, but arthroscopy is not performed. A T-shaped small-fragment plate is selected and screw holes are drilled and tapped through its transverse component, adjacent to the metatarsal head. An osteotomy is then performed through the neck of the metatarsal and the bone is shortened by approximately 4 mm. The T-shaped plate is then reapplied and used to hold the two fragments reduced (Fig. 1). The wound is closed and a below-knee plaster applied; this is removed after four weeks. In all our cases the plate was removed after a minimum of 12 months.

RESULTS

In all cases but one the pain was relieved within 12 months of operation (mean 5.7). The one exception continued to complain of pain after 72 months. Dorsal swelling, which was present in all cases before operation, improved in four of the 16 feet. Persistent swelling was

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found to consist of a bony spur on the affected metatarsal head together with oedematous soft tissue. In most cases osteotomy was followed by radiological improvement in the fragmentation of the metatarsal head and in its congruity with the proximal phalanx. Seven of the 16 operations were followed by stiffness of the involved metatarsophalangeal joint; in four of these there was loss of flexion, so that the toe did not make contact with the ground when the patient stood barefoot.

Smillie (1957) attempted to restore the shape of the metatarsal head by elevation and bone grafting. Gauthier and Elbaz (1979) suggested a closing wedge osteotomy. Neither procedure is widely used as they are technically difficult and may damage the already compromised metatarsal head.

Shortening osteotomy of the metatarsal shaft is easily performed and does not damage the metatarsal head. Instead, it is often followed by apparent remodel-

At review each patient was asked to assess the result. Five were graded excellent, nine were very pleased or pleased; one was satisfied and one patient was unhappy with the result.

Conclusions. Two complications were seen. In one case a sinus developed several months after removal of the plate; this healed following exploration, no obvious cause having been discovered. In the other case the plate used for fixation broke; when the plate was removed the osteotomy was found to be united.

DISCUSSION

Giannestras (1973) suggested that in advanced cases of Freiberg's disease the metatarsal head should be resected. In our experience this leads to excessive load bearing on the adjacent metatarsal heads and even stress fractures of the metatarsal shafts. Trott (1982) suggested partial resection of the proximal phalanx and syndactyly of the second and third toes. We have preferred a procedure which seems more likely to correct the underlying pathological process.

REFERENCES


Fig. 2a

Fig. 2b

Fig. 2c

Freiberg's disease affecting the third metatarsal: (a) before operation; (b) six months after operation; (c) final appearance after removal of the plate.