The Weil Lesser Metatarsal Osteotomy

History, Definition

The Weil osteotomy on the lesser metatarsal has been performed since 1985 by L. S. Weil (Chicago). It is a distal metatarsal oblique osteotomy, performed on the metaphysis and the metatarsal neck, which principally results in a proximal translation of the head, providing a longitudinal decompression; it can also provide a transverse displacement, medial or lateral.

In 1992, L. S. Weil came to Bordeaux to collaborate with me on modifications to the Scarf bunionectomy and, in a live surgery, performed the first case of a Weil osteotomy in Europ. During that time, I got used to the Weil osteotomy performing and studying this osteotomy, which is now very popular all around the world. It provides a great improvement in its specific indication in forefoot surgery. These indications are mainly those of a longitudinal decompression which is accurate, controlled and taking into account the harmony of the anatomical metatarsal curve.

The main drawback of this osteotomy was MTP stiffness in plantar flexion. We have now overcome these problems and this drawback is now significantly diminished thanks to the choice of indications, the improvement of the technique and the postoperative management.

Many authors wrote about this procedure [13-15, 30, 48, 66-85, 86-90, 92-122, 126].

Fig. 17a1. The Weil lesser metatarsal osteotomy.
This procedure provides a significant improvement in the treatment of transverse lesser toes deformities (2), of metatarsalgia (3) MTP dislocation (4) and generally of any disorder needing a longitudinal MTP decompression. We note that the second layer is necessary in most cases, as well as the respect of the metatarsal parabola (5).
Surgical Anatomy

We studied the surgical anatomy of the distal part of the metatarsal and its relationships with the Weil osteotomy. The blood supply was studied by B. Valtin and Th. Leemrijse (Paris). In regards to the muscles, and as already noted by E. Pisani, and T. Leemrijse, we have to remark that the 2nd metatarsal has only dorsal interosseous muscles and not plantar (Fig. 17a7). In this study we pointed out the relationships with the metatarsal plantar slope, notably with the studies of B. Valtin, Th. Leemrijse, and M. Benichou (Montpellier). We can combine Benichou’s and Valtin’s studies to emphasize that there is generally no lowering for the 2nd metatarsal when it is shortened less than 3mm. This was also observed by L. S. Weil and W. Graff, as a result of a geometrical study. The 3rd metatarsal can be horizontally displaced but a slight lowering may be observed and, in this case, the tarso-

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**Fig. 17a2.** Weil osteotomy: Surgical anatomy of the lesser metatarsal distal part.
1. A cross section on the neck level shows that the plantar border (pb) is sharp.
2, 3. Therefore performing Weil osteotomy results in leaving a sharp proximal spike (s) of the distal fragment. Furthermore it might exist an instability between the two fragments (rocking motion).
4, 5. Both to eliminate the spike and to improve the stability, a second layer is necessary in large displacements.
6, 7. In a sagittal plane the deeper part of the head is on its proximal part (a); this leads to set the screw in this proximal part and not more distally, both to have more bone thus more solidity, to avoid rocking motion of the plantar fragment, and to have the screw located at an equal distance of the two ends of the distal fragment.