The Second Ray Pathology

We distinguish three kinds of second ray pathology: claw or hammertoe, metatarsalgia, MTP dislocation.

**Hammer or claw toe**

Except in a congenital deformity, the cause of this deformity is usually hallux valgus. We made a study on 200 feet showing that secondary hammertoe due to hallux valgus does generally not appear before 40 years. In fact, we distinguish four phases in the hallux valgus chronology.

First, there is a painful bunion.

Secondly, the bunion is less or not painful, because of the medial displacement of the head which leaves the medial dorsal nerve laterally.

Thirdly, patients consult for secondary effects of the bunion, in most cases hammertoe, or metatarsalgia. This phase occurs between 40 and 60 years. The correction of hallux valgus does not change the hammertoe deformity, so that we have to perform a local treatment.

In most cases the soft tissue procedure combined with axial K-wiring of the toe ensures the hammertoe correction. The chronological surgery steps are detailed Fig. 19b-c-d, and Fig. 36b2, b3, b5.

PIP surgery: Resection arthroplasty has to be avoided because of the painful postoperative period and unpredictable long-term results.
When the hammertoe is rigid, PIP fusion is a good solution. But in fact, in most cases we can correct the deformity with PIP joint preservation (Fig. 36b3). It is the PIP plantar release.

Middle phalanx osteotomies: when the toe is too long, a good solution is the middle phalanx osteotomies. We use either the distal resection (mallet finger, impaired DIP joint) i.e. DIP arthroplasty or, preferably, the shaft resection i.e. (SRMP), which preserves the joints (Fig. 36b4): only point required: the middle phalanx has to be long enough.

Weil osteotomy: Single second metatarsal osteotomy may be performed when the condition is an elongated second metatarsal compared to the first metatarsal (dorso-plantar X-ray view) and to the third metatarsal (medial oblique X-ray view). In other types, we have to perform also the Weil osteotomy in the third and sometimes the other lesser rays.

In every case, the correction of a hammertoe needs a temporary toe, axial K-wiring and extensor lengthening.

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**Fig. 36b1. Second ray pathology – Hammertoe and hallux valgus correction.**

Even if the second hammer claw toe is due to the hallux valgus deformity, the correction of hallux valgus does not change the hammertoe which needs a special surgery.

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**Fig. 36b2. Second ray pathology – Hammer/claw toe correction: Chronological steps MTP Joint.**

1. Chronological steps.
2, 3, 4. MTP release: the loss of passive MTP plantar flexion requires MTP release. 3. Release by open procedure. 4. Per cutaneous release.