Instability of the lesser metatarsophalangeal (MTP) joints is a spectrum of disease including synovitis, subluxation and dislocation of the lesser metatarsophalangeal joints. The adequate position of the toe in relation to the MTP joint depends on a delicate balance between dynamic factors (the extensor tendon and the intrinsic tendons, interossei and lumbricals) and static factors (capsule, collateral ligaments and plantar plate).

The direction of displacement of the proximal phalanx can be either in the horizontal or in the sagittal plane. It will depend on which supporting structures are affected the most. Pain under the metatarsal head is the most common complaint in patients with MTP instability (1).

Historically metatarsalgia has been addressed with a modified Weil osteotomy, removing a slice of bone to avoid depression of the metatarsal head trying not to change the center of rotation of the joint. Our own results show that a modified Weil osteotomy has a 15% revision rate, and it predisposes the toe to a floating position and to a loss of strength. Stability has been reinforced with flexor tendon transfers, with poor results (2). Back to 2007, plantar plate repair was suggested as a means to improve results when treating metatarsalgia and toe instability. In the following years, the importance of the plantar plate as a static stabilizer of the mtp joint was demonstrated, and more information relative to metatarsophalangeal instability, clinical examination staging and surgical findings were published (3)(4).

In our experience, we have limited the use of the Weil osteotomy due to its intrinsic shortening effect of the metatarsal, which relaxes the plantar fascia which added to the plantar plate damage, will tend to produce a floating toe. Our preferred osteotomy to treat metatarsalgia is the Wolf osteotomy, which can be used to treat second and third rocker metatarsalgia. If access to the plantar plate is needed in order to perform a repair, it can be done without any osteotomy (5) or after performing the Wolf osteotomy. Relative to the concurrent presence of hammertoe deformities, present in up to 50% of lesser toes instability cases (6), we favour fixating the PIP joint in flexible and rigid deformities, as we have shown that there is a tendency for this procedure to protect against floating toe or loss of toe purchase (personal information, not published).

Our algorithm for crossover toe deformity follows the clinical grading for metatarsophalangeal instability presented by Nery, as follows:

Grade 0 :Main concern is pain, no toe deviation.  
Preferred Surgical technique: Wolf Osteotomy and dorsal MTP soft tissue release

Grade 1: Main concern is pain, mild toe deviation, less than 50% subluxable MTP joint
Preferred Surgical Technique: Wolf osteotomy, dorsal MTP soft tissue release, and plantar plate repair.
Grade 2: Main concern is pain, deformity, more than 50% subluxable MTP joint, frequent hammer toe deformity associated
Preferred surgical technique: Wolf osteotomy, dorsal release, plantar plate repair. Consider lateral or medial displacement of the metatarsal head when fixing it to correct additional deviation. Fix the PIP joint with intramedullary implant.

Grade 3 and 4: Dislocatable MTP joint, hammer toe deformity
Preferred surgical technique: Wolf osteotomy, dorsal MTP release, plantar plate repair considering adding to the repair the flexor tendons. Fix the PIP joint with intramedullary implant.

References

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