

Lesser Metatarsal Osteotomy



Matthew D. Sorensen, DPM, FACFAS*, Lowell Weil Jr, DPM, FACFAS

KEYWORDS

• Lesser metatarsal • Weil osteotomy • Plantar plate • Floating toe • Hypermobility

KEY POINTS

- Central metatarsal osteotomy is an effective approach in alleviating pain oriented to the forefoot.
- The procedures individually are straightforward in the isolated scenario.
- A working knowledge of the specific and unique pathobiomechanics is imperative when considering surgical intervention for the given pathologic scenario.
- The surgeon must be cognizant of the complication potpourri, prepare the patient expectations, and engage a level of proactivity against sequelae to ensure the best possible and most predictable outcome.

INTRODUCTION

It is well established that there is no more potentially frustrating pathologic disorder of the foot than that of the lesser metatarsal, particularly when paired with a contracted hammer toe deformity. Adding to the difficult nature of lesser metatarsal pain and hammer toe deformity is the lack of predictability of conservative and surgical intervention. There remains little in the way of blinded, controlled, outcome-driven study to help guide the surgeon's direction of care for patients with the lesser metatarsal malady.

Secondary to the known deficit of predictable treatment options, emphasis must be directed toward knowledge of the pathomechanics contributing to the specific patient complaint. It is well understood that lesser metatarsal pathology can arise from a plethora of biomechanical, genetic, traumatic, and progressive pathologies.^{1–19} To give patients the most predictable result with improvement in symptoms, each surgeon must engage a working knowledge of the contributing local

Disclosures: Dr Sorensen – Consultant and Design Surgeon for Stryker Orthopedics and Treace Medical; Dr Weil – Consultant/Design Surgeon for Arthrex and Consultant/Design Surgeon for Treace Medical.

Weil Foot & Ankle Institute, Golf River Professional Building, 1455 East Golf Road, Des Plaines, IL 60016, USA

* Corresponding author.

E-mail address: mdsoren34@gmail.com

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and global factors. Treating the obvious problem singularly at the toe or treating only radiographic findings has little place in metatarsalgia and hammer toe corrective intervention. External and more proximal pathology must be considered as well as that which is directly apparent. Treatment of the high point of the deformity is as important in this context as any other treatable pathology; otherwise, one faces sub-par predictability and high rates of recurrent pain or concomitant pathology such as the floating toe.

This article addresses lesser metatarsal pathology from the surgical perspective of osteotomy. The importance of concomitant soft-tissue or bony pathology that must be accounted for when considering directed treatment is also discussed. It is accepted that the learning curve for lesser metatarsal procedures, technically, is shallow. The difficulty is associated with the intrinsic pathology, both of bone and soft tissue, and the decision-making threshold in treating concomitant pathology. Unfortunately, there is no standardized protocol in this regard. Subsequently, surgeon expertise, experience, and the art of medicine come at a premium in directing predictable outcomes therein.

CLINICAL EVALUATION

Typical presentation includes specific complaint of lesser metatarsal pain. Evaluation includes isolation of the specific locale of pain. Depending on the pathology, the nidus of pain varies. It is important to assess the history of presentation, including any history of trauma. Insidious onset usually arises secondary to gradual biomechanical developmental deformity and subsequent overload to the lesser metatarsals.

Once the pain locale is isolated, it is important to evaluate the intrinsic high point of deformity. In posttraumatic scenarios, generally the lesser metatarsal pain is secondary to malhealing in the sagittal or transverse plane of a fracture pattern, secondary to direct insult to soft-tissue/capsular structures, or a combination of both.

In the nontraumatic presentation, pain is usually secondary to functional biomechanical fault. This condition can be congenital, occurring in younger age groups, such as brachymetatarsia or short first ray ([Fig. 1](#)). In addition, lesser metatarsal pain can be seen in populations in which abnormal mechanics have contributed to break down over many years, with sudden pain onset that makes little sense to the patient. The “straw that breaks the camel’s back” adage is appropriate here. A global biomechanical evaluation is of utmost importance in such cases. An isolated approach or one of tunnel vision, focusing only on the anatomic pain site, leads to less-than-



Fig. 1. Brachymetatarsia.

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