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Lawrence A. DiDomenico

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Master Surgeon

Rethinking the Hallux Valgus Correction

Historically, there have been more than 130 different types of procedures described in the medical literature regarding the surgical correction of the hallux valgus deformity. Over the years, this deformity has proven to be elusive by escaping definitive correction. Furthermore, the medical community has never come to a unanimous conclusion as to what is the most effective surgical procedure for the correction of hallux valgus. Of course, there are popular go-to surgical procedures for the correction of hallux valgus such as

This predicament leads me to the following questions: Why are many procedures for the correction of hallux valgus deformity designed to osteotomize a normal (straight, nonpathologic) first metatarsal? Why would a surgeon want to take a normal bone (straight first metatarsal) and make it abnormal? Why would a surgeon want to potentially violate the natural vascular supply to the bone (periosteal stripping and osteotomies of the bone)? Do these procedures address the underlying etiology? Why does the surgeon typically remove the medial eminence,

performing a lateral release to correct the hallux valgus? Are these procedures being used because they are easy to perform or because they comprise an easy postoperative course? Another issue of concern is that

surgeons will often push the limits of a simple procedure, such as a McBride or Austin bunionectomy, beyond its intended scope. Is this because so many of us fall to complacency and are most comfortable performing procedures that are less demanding? Are we categorizing each deformity and performing "routine" procedures that we are most comfortable with? My question to those surgeons is: Are you really addressing the muscle/tendon imbalances with a malaligned first metatarsal?

I find it effective to draw parallels to limb deformity correction as described

Lawrence A. DiDomenico, DPM, FACFAS

Director, Reconstructive Rearfoot & Ankle Surgical Fellowship

Adjunct Professor, Ohio College of Podiatric Medicine, Ankle and Foot Care Centers

by Paley (ie, the center of rotational angulation [CORA]). The thoughts parallel limb deformity correction in that for the primary, virgin bunion, the CORA never involves the first metatarsal. Typically, the first metatarsal is a normal bone (straight), and the deformity is an angular deformity in all 3 planes at the metatarsal-cuneiform joint. Typically, the first metatarsal does not have a large medial eminence. Clinically, it appears to have a large medial eminence because of soft tissue changes.

According to Root et al⁴, hypermobility of the first metatarsal segment is responsible for the widest range of foot trouble. Hansen¹ suggested that 35% of the weight of the body is carried through the first metatarsal and 2 sesamoids, with the remainder of the weight distributed through the remaining lesser metatarsals. Hansen¹ also proposed that the inability of first ray to plantarflex adequately leads to subluxation of the first metatarsal-phalangeal joint and to gradual hallux valgus, limitus, and/or rigidus deformity. It is notable that the first ray is stabilized in a plantar, posterior, and lateral direction by the peroneus longus muscle. Please remember that as normal biomechanics falter, the peroneus longus loses its mechanical advantage. Normal motion of the first ray was described by Root et al and was said to be 5 mm above and below the plane of the lesser metatarsals. Bednarz and Manoli² stated that excessive mobility of the first metatarsal is in the sagittal plane, and 1 full-thumb

“In rethinking the hallux valgus correction, I think beyond the metatarsal-phalangeal joint.”

distal and proximal metaphyseal osteotomies. Despite the fact that these types of surgical procedures appear to produce favorable results, my experience is that it is difficult to obtain *consistently positive long-term results*. In my opinion, there has been a very narrow focus on the deformity and failure to approach this issue from a global perspective.

It appears that there is a disconnect and that there has been limited thought given as to why the hallux valgus deformity develops and how this deformity can be reversed. In my experience, there is rarely a deformity in the first metatarsal itself.

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distance of dorsal motion is usually indicative of hypermobility. Although debatable, normal mobility versus hypermobility has not been quantified. It is well accepted that this is a clinical phenomenon that one must be able to identify and diagnose.

Several years ago at a national foot-and-ankle surgical meeting, I was asked to speak about the Austin bunionectomy. Understanding that this is probably the most popular bunionectomy performed by foot-and-ankle surgeons, I initially struggled with deciding which aspect of the Austin bunionectomy I should discuss because I believed that most of the physicians in the audience probably knew everything there is to know about the Austin bunionectomy. This invitation prompted me to conduct a retrospective analysis of the Austin bunionectomies performed by 16 different surgeons in my practice. I contacted patients who had undergone the Austin bunionectomy up to approximately 8 years prior. Most of the procedures were technically done very well, and the postoperative radiographs were very adequate. However, I found some surprising results. It was evident that there was a significant amount of undesirable long-term clinical and radiographic outcomes that led me to question the validity of this procedure and other procedures that are often done for the correction of hallux valgus. Some of the conditions found were transfer lesion, hyperkeratosis around the first metatarsal phalangeal joint and the interphalangeal joints, reoccurrence of hallux valgus, and the development of hallux limitus/rigidus.

Oftentimes when I lecture about the shortcomings of these types of procedures, I get responses such as, "I have been doing this procedure for X amount of time and my results are good," or "My patients are very happy with the result," and so forth. In the short term, I would agree; however, I challenge you to ask yourself the same questions that I have asked of myself. Have we been intellectually honest with ourselves? Have we really looked at these patients over the

Figure 1.

This X-ray is showing a pre operative case of Hallux Valgus deformity. Note that there is no deformity in the first metatarsal, this patient presents clinically with a large bursa; there is no large medial eminence. Please notice the tibial sesmoid position, hallux valgus angle, the subluxed first metatarsal phalangeal joint and the angular deformity (CORA) at the tarsal metatarsal joint.



long term? Have we called these patients back several years later and evaluated the radiographs and clinical outcomes? When I reflected on these very questions, I realized that I needed to seek out a more predictable procedure that provides better long-term outcomes for my patients. I discovered that I was already using the type of procedure that provided such results, albeit infrequently: the Lapidus bunionectomy procedure.

The history of the Lapidus bunionectomy procedure begins in 1911 with Albrecht, who was the first to describe the lateral closing wedge with the fusion of the first met-cuneiform. Lapidus published his original article in 1934, in which he advocated proper patient selection but lacked internal fixation and so

Figure 2.

A post operative X-ray with screws. Please notice the first metatarsal remains straight and parallel to the second metatarsal; there is no deformity in the first metatarsal. The clinical bursa and excess tissue at the first MPJ eventually contract. No medial eminence was resected. The intermetatarsal angle is reduced (almost parallel to the second metatarsal). By realigning the first tarsal metatarsal joint the intermetatarsal angle is reduced and the pre operative subluxed first metatarsal phalangeal joint is automatically reduced and maintains normal anatomical alignment, and the sesmoid alignment is improved. No stiffness, numbness or hallux varus will occur at the first MPJ as no surgery/dissection was performed in this area.



abandoned the procedure. Traditional Lapidus indications include first-ray deformities, high intermetatarsal angles, arthrosis of the first metatarsal cuneiform joint, diffuse ligamentous laxity, recurrent hallux valgus, and first-ray insufficiency (hypermobile).³ The most prominent goals of the Lapidus bunionectomy promote the establishment of a congruous first MPJ with a reduction of

IM angle and realignment of the sesamoids. Furthermore, the Lapidus bunionectomy seeks to restore weight-bearing function of the first ray and to maintain first MPJ range of motion while repositioning the hallux in a rectus alignment. The overall goal is to control and/or correct the factors that lead to the development or deformity. When I perform a Lapidus bunionectomy, I do not resect the medial eminence. I have found that when the appropriate reduction is performed, the medial eminence is no longer proud; therefore, it does not need to be resected. I do not perform a lateral release. Subsequently, there is an excellent intermetatarsal angle reduction—I have found that a lateral release is not needed. By reducing the intermetatarsal angle anatomically (congruent first metatarsal phalangeal joint), the adductor tendon is essentially lengthened, and the first metatarsal moves back over the sesamoids. This will help alleviate any potential for a postoperative stiff first

metatarsal phalangeal joint, hallux varus, or nerve entrapment.

Possible complications of the Lapidus bunionectomy include malunion or nonunion, pseudoarthrosis, undercorrection or overcorrection of the IM angle, failure of the fixation device (surgeon failure and sesamoiditis), as well as any typical complication that may occur as a result of foot-and-ankle surgery.

In rethinking the hallux valgus correction, I think beyond the metatarsal phalangeal joint. I think of the metatarsal cuneiform pathology, the mobility of the first ray, the weight-bearing load, and the tendon imbalance originating far proximal to the hallux itself. When one considers the benefits of a properly performed Lapidus procedure, reverting to distal metatarsal bone and soft tissue procedures becomes difficult. A significant reduction of the intermetatarsal angle, realignment of the sesamoid apparatus, and restoration of the metatarsal phalangeal joint congruencies are

all garnered. Conversely, overstating the metatarsal head, the risk of hallux varus, creating a stiff joint, and development of neuritis all are successfully averted. As surgeons, we are obliged to rethink procedures and methods when it comes to hallux valgus. I have found that the Lapidus bunionectomy should be our procedure of choice. **FAS**

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