CHAPTER **29**

Arthroplasty Of The First Metatarsophalangeal Joint

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Despite the significant changes that have evolved in surgery of the first ray over the last twenty years, arthroplasty of the first metatarsophalangeal joint is still a procedure which is required in some circumstances. Fortunately, there now appears to be a movement among foot surgeons to preserve joints whenever possible. Even eight to ten years ago, joints were almost automatically sacrificed and artificial prostheses utilized for even fairly minor degrees of cartilage destruction. Implants seemed a logical alternative compared to other procedures which may have been utilized, namely, the Keller arthroplasty. Within a profession searching for a means of creating suitable function following joint resection, the Keller seemed not only antiquated, but in most circumstances, ill-conceived. However, several members of the Podiatry Institute have found that various modifications of the "Keller" procedure will provide correction of deformity with good function which approximates, if not surpasses that of implant arthroplasty.

The author had the great privilege of spending time in the early 1980's with the late Dr. Jim Ganley. Ganley was strongly opposed to implant arthroplasty and considered it unphysiologic. His personal preference for a joint destructive procedure was the Keller arthroplasty. The modifications which Ganley advocated were published in the *Journal of the American Podiatric Medical Association*, in 1986. However, despite the fact that these modifications represented an improvement over the traditional approach, and noting that good correction of deformity and alleviation of pain were achieved, there was no specific means of restoring meaningful plantarflexory function to the hallux.

Herein lies the main problem with the Keller procedure: the disruption of flexor power to the hallux. Extensor tendon lengthening may be successful in preventing overt hallux extensus, but does nothing to achieve or enhance stabilization of the hallux in gait.

Specific measures which are used by the author to augment this type of arthroplasty include:

1. Use of an inverted-L medial capsular flap to enhance stability of the hallux.
2. Transfer of the adductor tendon (in cases of hallux abducto valgus) to derotate the sesamoid complex.
3. Careful measurements of preoperative radiographs to ensure that no more than one-third of the proximal phalanx is resected.
4. 0.062 inch Kirschner wire transfixation of the remaining joint space for several weeks.
5. Attaching the long flexor tendon to a drill hole in the central aspect of the base of the proximal phalanx to provide some measure of plantarflexory force.
6. Reattaching the medial capsular flap to drill holes in the medial aspect of the proximal phalangeal base.

By using the technique described previously, the author has noted good results with first metatarsophalangeal arthroplasty in selected patients. This approach is primarily utilized for repair of hallux limitus/rigidus and for the repair of hallux abducto valgus in older patients. It is also a viable option in surgical salvage of feet with iatrogenic deformity. It may also be a good choice in patients with neuropathy who require surgical intervention.

Evaluation of patients following this type of surgery utilizing the electrodynogram reveals that hallux purchase is as good as that noted preoperatively, and sometimes better. Although "normal" function is not anticipated, the author would propose that "normal" function is not achieved following implant arthroplasty. In fact, one can not expect that the early success which may be achieved with implant arthroplasty can be sustained, particularly once implant degeneration or osseous deterioration ensues. Therefore, even in this enlightened age, resection arthroplasty is still a viable and suitable means of addressing first ray deformities without sacrificing weightbearing function.