

Youngswick Modification Of The Austin Osteotomy For Hallux Limitus

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Hallux limitus and rigidus are defined by progressive degrees of loss of first metatarsophalangeal joint range of motion. The etiology has been well-described as being multifactorial. Painful degenerative arthritis in the elderly is typically seen following long-standing hallux valgus, or secondary to activities which have placed excessive stress on the metatarsophalangeal joint. The traditional procedure in the appropulsive elderly patient is either a Keller arthroplasty or an implant arthroplasty. Either procedure generally provides a satisfactory result in the appropulsive patient.

Hallux limitus, when seen in the young or middle aged patient, is usually associated with both an elongated and dorsiflexed first ray. Radiographically, the first metatarsal head has a squared off appearance. A Keller or implant arthroplasty, in this patient group, leaves both functional limitations and inadequate long-term results. Enclavement procedures, while decompressing the joint, do not functionally address the underlying etiology.

The procedure which the author has found most useful is the Youngswick Modification of the Austin osteotomy. A second more proximal osteotomy is made dorsal to the axis guide, and parallel to the first dorsal cut. The interposing piece of bone is removed, and the capitol fragment is both plantarflexed and shortened (Fig. 1). By altering the angle of the dorsal and plantar wings, varying degrees of plantarflexion and shortening can be obtained. Plantarflexion of the capitol fragment is imperative not only to address the underlying structural deformity but to restore weight bearing to the shortened first metatarsal (Fig. 2).

Since the osteotomy is performed within the confines of the joint capsule, joint decompressing is obtained. Internal compressive fixation allows for early aggressive range of motion exercises while subchondral drilling of cartilaginous defects promotes articular repair.

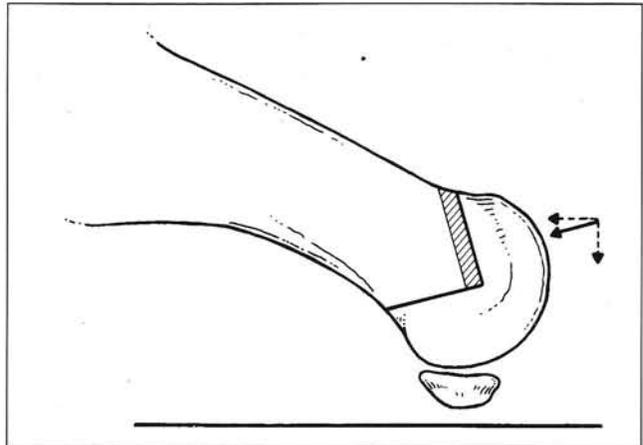


Figure 1. Removal of bone from the dorsal wing of the osteotomy results in both shortening and plantarflexion.

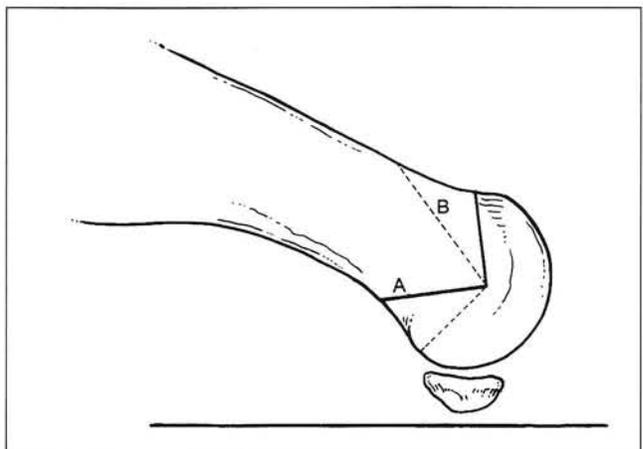


Figure 2. Altering the orientation of the plantar arm affects the structural correction. Osteotomy (A) will result primarily in shortening, while osteotomy (B) which is 45 degrees to the supporting surface, will result in equal shortening and plantarflexion.

PROCEDURE

A dorsal longitudinal skin incision is made over the metatarsophalangeal joint. The incision is deepened directly to bone with minimal subcutaneous dissection. Periosteum is linearly incised and reflected. Dissection is extensive about the metatarsal head, essentially degloving the distal end of the bone. Osteophytes are commonly present on the base of the proximal phalanx, and unless they are prominent, periosteal dissection and osseous remodeling is minimized. A McGlamry metatarsal elevator is used to release adhesions on the plantar surface of the metatarsophalangeal joint, freeing the sesamoid apparatus. The metatarsal head is recontoured so that it is no larger than the base of the proximal phalanx. An axis guide is inserted across the metatarsal head and into the second metatarsal to prevent loosening.

The osteotomy is then performed with the dorsal and plantar arms angled approximately 90° to one another. The plantar cut is made first, as it dictates the direction of correction. The more vertical its orientation, the greater plantarflexion will be obtained. Conversely, by directing it more horizontal, there will be greater shortening than plantarflexion. The dorsal distal cut is made next, followed by the proximal dorsal cut (Fig. 3). Fixation is accomplished with two, 2.7 mm screws parallel to one another and perpendicular to the dorsal wing.



Figure 3. Intra-operative view of the Youngswick osteotomy.