Hammertoe Surgery and the Medial Incisional Approach

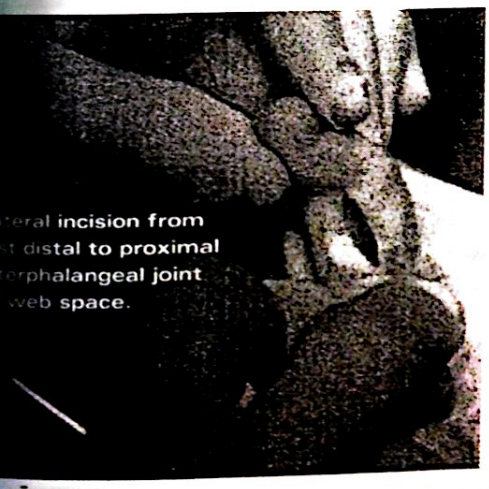
Employing a medial or lateral incision for digital correction can improve the toe's cosmetic appearance while achieving the desired result, these podiatrists argue.

By John D. Mozena, DPM, FACFAS,

Mark Yeske, DPM, FACFAS, and Paul Clint Jones, DPM

Many surgical procedures exist for treating digital deformities, and numerous incisional approaches currently are employed to accomplish the desired correction.

We feel, however, that avoiding incisions on potential high-pressure areas provides a better postoperative cosmesis while achieving the same clinical result. For that reason, we strongly advocate a medial incisional approach to corrective hammertoe surgery.



Since Post first described a digital arthroplasty in 1882, many different procedures and modifications of these techniques have been advocated. These variations include the following incisional approaches: dorsal longitudinal, dorsal longitudinal semielliptical, dorsal transverse semielliptical, plantar longitudinal, and medial/lateral longitudinal.

We have been using medial and lateral incisions for hammertoe surgery for the past 10 years with excellent results. Most of these procedures involve proximal phalangeal head resection with or without metatarsophalangeal joint capsulotomy, extensor tenotomy/lengthening and flexor tenotomy/lengthening, depending on the level of deformity.

The medial incision method

The involved digit is anesthetized, utilizing a digital V-block consisting of 3cc of a 1:1 mixture of 2% mepivacaine and 2% lidocaine. A 1:100,000 mix of lidocaine with epinephrine may be used in the office setting to achieve hemostasis.

Using a number-64 blade, a 2cm incision is made longitudinally along the digit's medial aspect. The incision begins just distal to the proximal interphalangeal joint (PIPJ) and ends at the web space (see photo, left). The dorsal and plantar neurovascular bundles are identified and retracted. The incision site then is deepened sharply to the retinacula and capsule of the PIPJ.

Identifying the flexor and extensor tendons, the blade is passed between the tendon and bone, sweeping from the skin incision's distal-most aspect to its most proximal, sharply separating the superficial tendons from the underlying bone. (Care should be taken not to cut the tendon.)

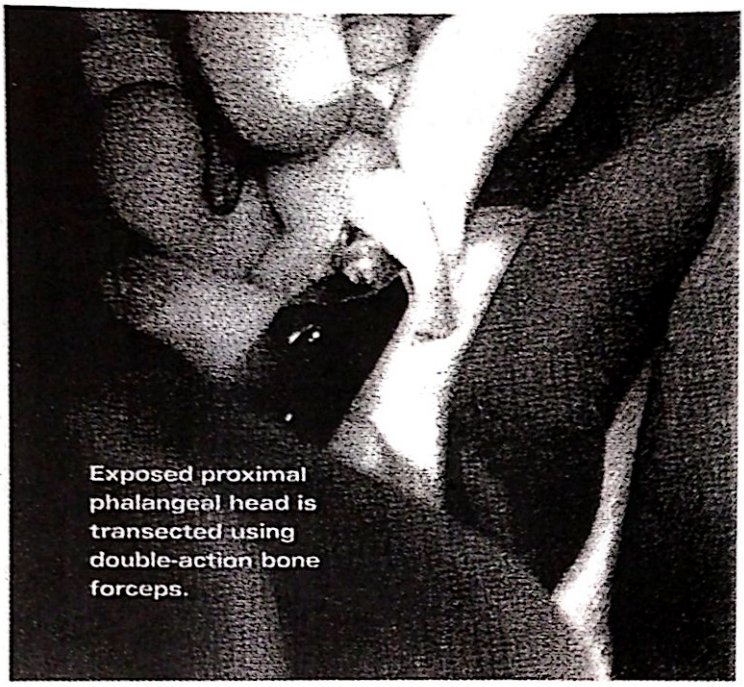
continued on page 52

Dr. Mozena has practiced in Portland, Ore., for 14 years, and has written several clinical papers on surgical procedures. Dr. Yeske practices in Pendleton, Ore. Dr. Jones helped complete this article during his preceptorship in Burlington, Iowa.

continued from page 50

Distracting the toe, the medial collateral ligaments of the PIPJ are transected. The distal toe is laterally dislocated and the joint capsule's proximal portions are denuded from the proximal phalanx head.

Using a double-action bone forceps, the phalangeal head is transected at the metaphyseal-diaphyseal junction and removed in toto (see photo, below). The osteotomy site is visually checked and palpated for bone spicules. A Bell rasp is utilized to smooth the remaining bone.



Exposed proximal phalangeal head is transected using double-action bone forceps.

The surgical site is irrigated with a sterile solution of choice. As needed, a K-wire may be placed for added stability at this stage of the procedure. 4-0 nylon is used to close the skin incision via two deep horizontal mattresses and three simple interrupted sutures.

The toe is dressed with Soft Stretch (*Chaston, Dayville, Conn.*) and saturated with Betadine (*Purdue Frederick, Norwalk, Conn*). Coban (*3M, St. Paul, Minn.*) then is used to create a compressive splint for the toe. To achieve further stability, the corrected digit may be splinted to an adjoining toe.

The patient is placed in a surgical wooden shoe. The sutures are removed in 10 to 14 days, after which Coban is applied to the toe during the day. The Coban wrap is removed overnight to keep the digit from macerating, and is reapplied in the morning. This treatment is continued for three to four weeks to maintain correct alignment and control postoperative edema.

The lateral approach follows the same pattern as the medial method, except for incision location. This lateral approach can be performed on digits two through four depending on other procedures and on the required result.

Results

We feel that the medial/lateral incisional approach to hammertoe correction prevents many of the undesirable postoperative results and complications, such as excessive scarring and high pressure on the incision site.

It should be noted that many factors may have contributed to our success with this procedure, including adequate preoperative evaluation, minimal surgical trauma, placement of the incision in a low-pressure insult area, and adequate postoperative bandaging and splinting. Still, we can cite several clinical considerations to support the medial/lateral incision method.

For one, neurovascular compromise is always a concern during surgical dissection, but the medial/lateral incision is placed between and parallel to the digits' neurovascular bundles. This minimizes the potential for trauma to the vital structures.

Second, the skin incision for any surgery is critical. Proper incisional placement in digital surgery can contribute to a procedure's success. A successful surgery requires a balance of maximal exposure, minimal trauma, and simplicity of technique.

The use of a medial/lateral incision achieves these goals. Cutting from the digit's side is technically simple since it requires minimal dissection. Because of the incision location, critical structures can easily be avoided. The technique also lends itself to increased postoperative stability because of minimal trauma to periarticular structures, and intact flexor and extensor tendons.

This incisional approach also allows the podiatrist to avoid high-pressure areas secondary to shoe gear. The medial incision is especially well-suited for the fifth digit, as it can prevent undue scar pain and trauma.

Additionally, while a procedure's clinical effects usually are emphasized, cosmetic results also are important after elective surgery, especially when it comes to earning patient satisfaction. This represents yet another benefit to our approach, since the resultant scar from a medial incision is concealed between the digits.

Also, a medial scar on the fifth digit can pull the digit toward the other toes, not away from the fourth digit. This can lead to an inherent stability of the operative site.

Because digital deformity corrections are among the most commonly performed foot pro-

cedures, we felt it was important to revisit hammertoe correction and perfect a procedure that offers simplicity in anatomical dissection, avoids high-pressure areas, and provides a cosmesis that pleases both patient and podiatrist.

As podiatric surgery moves toward the 21st century, proven surgical procedures will continue to be critiqued for improved results. Podiatrists must be willing to re-examine and improve upon accepted techniques if we are to maintain our edge as the foot and ankle specialists.

SUGGESTED READING

1. Post AC. Hallux valgus with displacement of the smaller toes. *Med Rec* 1882, 22:120.
2. Sorto LA Jr. Surgical correction of hammertoes: A 5-year postoperative study. *J Amer Pod Assn* 1974, 64(12):930-940.
3. Kelikian H. Deformities of the lesser toes, in "Hallux Valgus, Allied Deformities of the Forefoot and Metatarsalgia," Vol. 1, ed. by H Kelikian. Philadelphia: WB Saunders, 1965.
4. McGlamry ED, Banks AS, Downey MS. "Comprehensive Textbook of Foot Surgery," Vol. 1. Baltimore: Williams and Wilkins, 1992.
5. Augustine DF, Jacobs JF. Restoration of toe function with minimal traumatic procedures including advanced diaphysectomy. *Clin Pod* 1985, 2(3):457-470.
6. Weinstein F. Foot surgery, in "Principles and Practice of Podiatry," ed. by F Weinstein. Philadelphia: Lea and Febiger, 1968.
7. Harrington DB, Chen TA. The anatomy of joints: gross, histologic, and fine structures. *J Amer Pod Assn* 1982, 72:222-227.
8. Edmonson AS, Crenshaw AH. Miscellaneous affections of the foot" in "Campbell's Operative Orthopedics," ed. by AS Edmonson and AH Crenshaw. St. Louis: C.V. Mosby Co.,1980.
9. Giannestras NJ. Other problems of the forefoot, in "Foot Disorders: Medical and Surgical Management," ed. by NJ Giannestras. Philadelphia: Lea and Febiger, 1967.
10. Dockery GL. Hypertrophic and keloid scars. *J Amer Pod Assn* 1995, 85:57-60.
11. Bilotti MA, Caprioli R, Porcelli PV. A new incisional approach to the rheumatoid foot. *J Foot Ankle Surg* 1993, 32(2):140-152.
12. Sarrafain SK. Correction of fixed hammertoe deformity with resection of the head of the proximal phalanx and extensor tendon tenodesis. *Foot Ankle Int* 1995, 16(7):449-451.
14. Pfeffer GB, Frey CC. Lesser toe deformities, in "Current Practice in Foot and Ankle Surgery: A Review of State-of-the-Art Techniques," Vol. 2, ed. by GB Pfeffer and CC Frey. New York: McGraw-Hill, 1994.
15. Butterworth R, Dockery GL. Surgery of the lesser digits, in "Color Atlas and Text of Forefoot Surgery," ed. by R Butterworth and GL Dockery. St. Louis: Mosby-Year Book, 1992
16. Myerson MS, et al. Use of skin Z-plasty for management of extension contracture in recurrent claw- and hammertoe deformity, in "Principles and Practice of Podiatry," ed. by F Weinstein. Philadelphia: Lea and Febiger, 1968. □