CHAPTER **24**

PLANTAR LONGITUDINAL INCISION FOR MORTON'S NEUROMA

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The most common surgical approach to a Morton's neuroma is through a dorsal longitudinal incision. However, this incision often provides limited access and visualization of the involved interspace. The surgeon must spend additional time and perform more dissection in a attempt to locate the interdigital nerve. Occasionally, the neuroma cannot be identified, and a resection of the interspace is performed.

The incision approach which provides unsurpassed visualization of the anatomic structures is the plantar longitudinal incision, as originally described by Hoadley (1893) and Betts (1940).

TECHNIQUE

The adjacent metatarsals are palpated and marked. A longitudinal incision is then made, beginning just proximal to the web space and extending proximally to the metatarsal heads. It is rarely necessary to extend the incision proximally between the metatarsal heads. The incision is deepened along its entire length with sharp dissection through the dense fibro-fatty connective tissue, until fibers of the superficial transverse intermetatarsal ligaments are identified. After these are severed, the common digital nerve with its proper digital branches should be in the surgical field. The two distal branches are severed and a clamp is applied. The nerve is distracted distally, and subcutaneous tissues are dissected proximally, so that the common digital nerve can be cut deep in the interspace, proximal to the metatarsal heads.

The wound is closed with 4-0 non-absorbable suture. No buried sutures are used to minimize the risk of a fibrotic nodule forming in the subcutaneous tissues. The fatty layer is reapproximated with one or two deep pull-out mattress sutures. Postoperatively, the patient is allowed to bear weight in a surgical shoe. The sutures are removed in 10 to 14 days.

Figure 1. The skin incision is placed in a non-weight-bearing location.

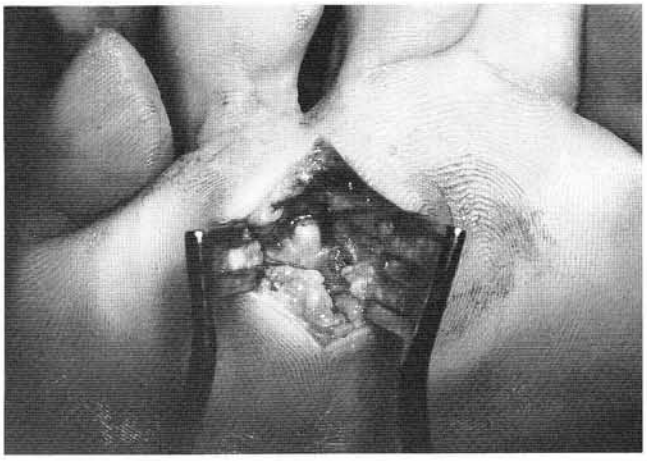

Figure 2. The incision is deepened by sharp dissection until the nerve becomes evident.

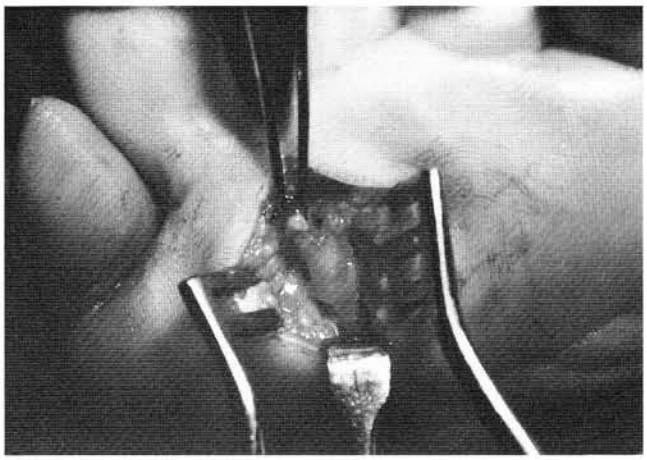

Figure 3. The nerve is isolated, and the proper digital branches are cut distally.

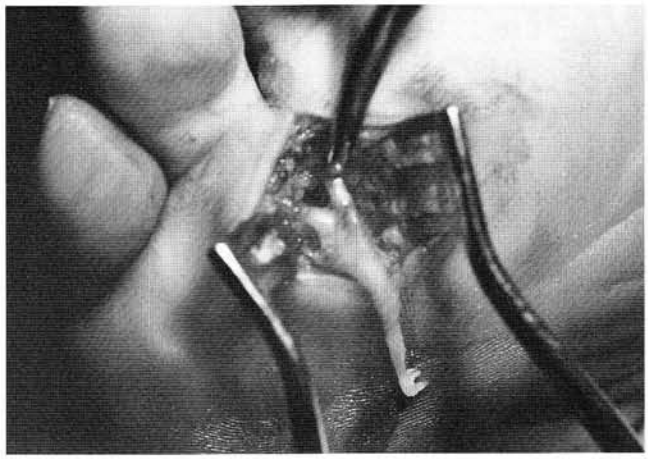

Figure 4. The common digital nerve trunk is severed proximal to the metatarsal heads.

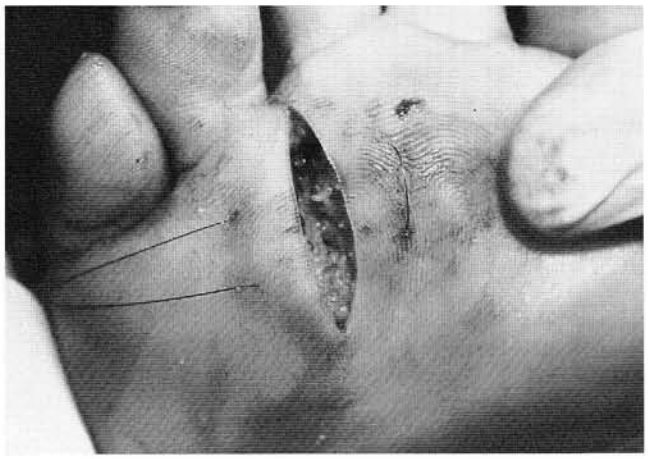

Figure 5. A 4-0 non-absorbable retention suture is placed beneath the subcutaneous tissue.

Figure 6. The fatty layer is approximated and dead space eliminated, without the need of an absorbable suture.

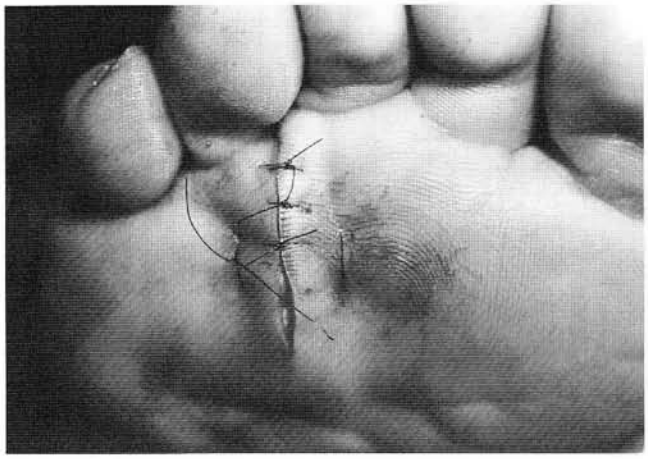

Figure 7. The wound is closed with simple sutures.

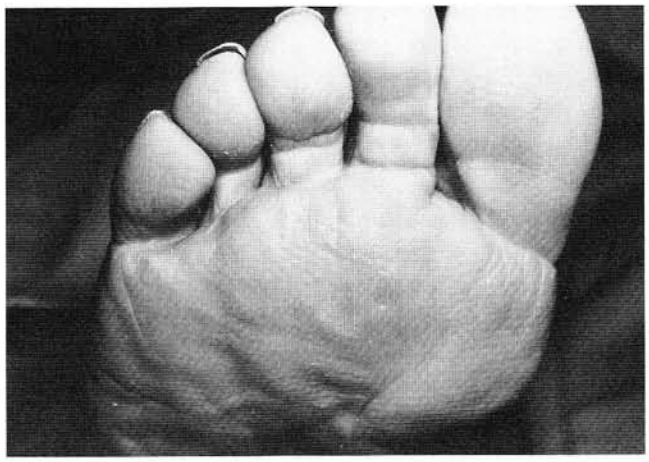

Figure 8. A postoperative scar from a second interspace neuroma resection, which is thin, soft, and nearly invisible.

ANALYSIS

The plantar longitudinal incision offers several advantages over the more conventional dorsal approach. The first is excellent visualization of the involved nerve. Surgical time and surgical trauma are reduced because the dissection is kept to a minimum. Access to the nerve is unencumbered by the metatarsal, therefore eventual transection of the nerve trunk can occur more proximally than through a dorsal incision, avoiding a stump neuroma in the vicinity of the metatarsophalangeal joint.

As the nerve lies deep to the intermetatarsal ligament, this structure can be preserved. Severing the deep transverse intermetatarsal ligament, as occurs through a dorsal approach, alters the mechanical effect of the lumbrical tendon, diminishing the purchase power of the digit.

Comparison of the subcutaneous layer dorsally and plantarly reveals marked differences. The thin gossamer-like dorsal layer is in distinct contrast to the thick fibro-fatty plantar layer. A plantar incision takes advantage of this anatomic distinction. Plantar wound closure completely eliminates all dead space, reducing the chance of hematoma formation, and provides for more rapid remodeling during the final phase of wound healing.

Finally, a plantar scar is not easily seen, and will not restrict metatarsophalangeal joint plantarflexion like a dorsal scar. The possibility of a thick, painful plantar cicatrix is minimized, because the scar is essentially non-weight bearing. This has not been a problem in the author's experience.