

BUNIONECTOMY WITHOUT OSTEOTOMY: The Next Generation

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INTRODUCTION

The mini-TightRope bunionectomy has been used by the author for 2 years to correct flexible hallux valgus deformities. This technique has provided an alternative to nonweight-bearing osteotomies and Lapidus procedures. Due to a 15% frequency of second metatarsal stress fractures and a smaller collection of suture failure at the bone interface, a refinement in the technique has been made. Instead of using drill holes through the first and second metatarsals and the mini-TightRope apparatus (Arthrex Corporation, Naples, FL), #2 FiberTape is used to create a pseudoligament between the metatarsals. The modified technique addresses both the stress fracture and suture failure complications, and it causes less trauma to the involved metatarsals.

TECHNIQUE

The modified technique involves the same first metatarsophalangeal joint anatomic dissection as the initial technique. A curvilinear dorsal incision approach is used. A release of the adductor hallucis tendon from the proximal phalangeal base and release of the fibular sesamoid ligament are performed. A medial capsular flap is created for exposure of the dorsomedial eminence of the first metatarsal head. After the eminence is resected, a subcutaneous tunnel is created in the first intermetatarsal space to gain exposure of the second metatarsal neck.

Using a flexible suture passer or right angle hemostats, the 2 ends of the FiberTape are passed around the second metatarsal neck and through the loop creating a cinch knot around the second metatarsal. The free ends are then passed subperiosteally around the dorsal, medial, and plantar sides of the first metatarsal neck. The 2 free ends are passed laterally on opposing sides of the suture bridge and tied on top of the bridge creating a second cinch knot. Medial capsulorrhaphy, dorsal capsule and skin closure are then performed. The patient is bandaged with the hallux in anatomic position and allowed to bear weight as tolerated in a postoperative shoe. Once the skin has healed and swelling has reduced, the patient can be transitioned to a lace-up gym shoe with medial splinting of the joint.

There are advantages of the FiberTape technique over the mini-TightRope technique. The cinch knots around the metatarsals avoid drilling holes through these bones reducing the risk of stress fractures. This also reduces the potential for suture failure at the drill holes from the bone cutting into the suture. The modified procedure only requires one incision so less dissection is needed resulting in less pain and edema. FiberTape is wider and flatter than the FiberWire. This construct disperses friction to a wider area around the metatarsals reducing the possibility of the material cutting through the bone.

The modified technique can be used on patients with weaker bone. Like the initial technique, the modified technique is contraindicated in rigid deformities. The modified technique is illustrated below.



Figure 1. Clinical preoperative photo of a typical large, flexible hallux valgus deformity.



Figure 2. Preoperative dorsal plantar radiograph.

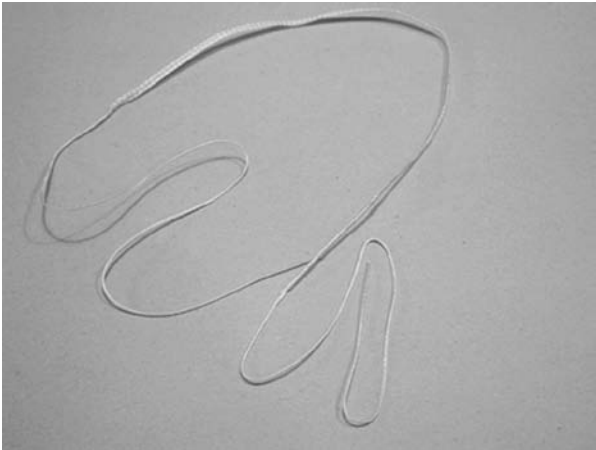


Figure 3. Arthrex #2 FiberWire. Notice the suture ends and the tapelike central portion.

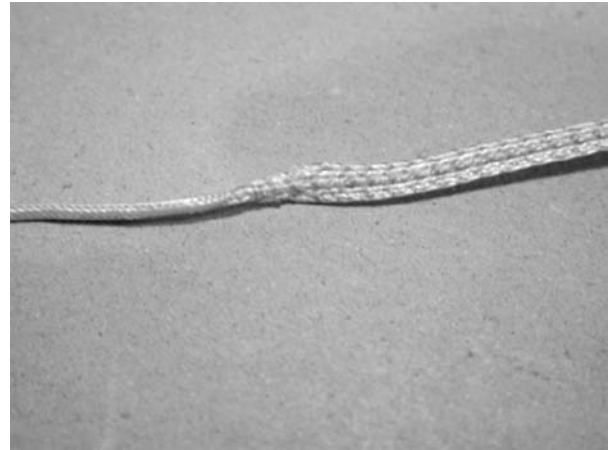


Figure 4. Close-up of FiberTape.



Figure 5. Loading suture ends in the jaws of a hemostat.



Figure 6. Passing suture ends below the second metatarsal.



Figure 7. Transferring suture ends to the hemostat above the second metatarsal.



Figure 8. Suture ends passed through the loop creating a cinch knot.



Figure 9. FiberTape passed around the first metatarsal with free suture ends passed around the opposite sides of bridge.



Figure 10. Free ends tied creating cinch knot around first metatarsal. Dorsal view.



Figure 11. Plantar view of the finished FiberTape bridge.



Figure 12. Postoperative dorsal plantar radiograph.