

MCBRIDE BUNIONECTOMY WITH TIGHTROPE

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INTRODUCTION

Procedures for correction of hallux abducto valgus have evolved over the past several decades. Initially, the soft tissue correction with resection of the medial eminence described by McBride was a popular choice among foot surgeons.

The frequency of incomplete correction and recurrence of the deformity led to the development of osteotomies and arthrodesis techniques. These allowed for greater, longer-lasting correction, but required an extended recovery time due to bone healing. Avascular necrosis, delayed union, malunion and nonunion were some of the additional complications that developed with osseous procedures. The ideal characteristics of a procedure for bunion correction would be reduced soft tissue dissection, limited osseous involvement, and long-lasting correction.

With over 7 years of performing the McBride bunionectomy procedure, the author noticed the ease of correction of the intermetatarsal and hallux abductus angles in patients with a flexible deformity. A rapid recurrence was frequently observed in these more flexible deformities. Similar findings were also observed when osteotomies were performed in the more flexible deformities. While fusion of the first metatarsal cuneiform joint would stabilize the correction, this procedure required a more extensive recovery time and is associated with non-union and shortening of the first ray. Also, by fusing the first metatarsal cuneiform joint, the physiologic frontal plane motion at this joint is negated.

The TightRope procedure was developed by Arthrex for ankle syndesmosis tears. It consists of #5 FiberWire, non-absorbable braided suture with titanium buttons, which are run through a drill hole through the distal tibia and fibula. This technique stabilizes the syndesmosis and allows for soft-tissue healing without rigid screw fixation. This same principle has been incorporated into hallux abducto valgus correction by the author to reduce

the intermetatarsal angle and provide stability to the first metatarsal cuneiform joint. To date, 17 procedures have been performed with this technique with promising results.

OPERATIVE TECHNIQUE

The McBride procedure is performed with or without fibular sesamoidectomy, depending on presence of articular erosions or extensive lateral soft-tissue contractures. Following resection of the dorsomedial first metatarsal eminence, a 2.8 mm smooth Steinman pin is used to create a drill hole proximal to the metatarsal neck from medial to lateral perpendicular to the long axis of the first metatarsal. The intermetatarsal angle is manually reduced and the pin is then advanced through the second metatarsal cortices. A second linear incision is made over the second metatarsal shaft over the area where the drill hole was made. A #2 FiberWire suture is threaded through a 3.5 mm button. The two suture ends are then passed through the drill holes from medial to lateral, using a suture passer, and threaded through a second 3.5 mm button at the lateral side of the second metatarsal. The suture ends are then crossed over and rethreaded through the lateral button, passed through the drill holes from lateral to medial, and rethreaded through the medial button. The intermetatarsal angle is reduced and the suture is tightened and secured with knots.

An intra-operative C-arm fluoroscopy picture is taken to confirm desired correction prior to tying the knots. Standard medial capsulorrhaphy and adductor tendon transfer are performed as necessary. Closure of capsule and skin are performed with absorbable suture. A splint dressing is applied for the first post-operative week. A removable splint is then applied for the next 5 weeks. Ambulation is allowed as tolerated with a postoperative shoe for the first 2 to 3 weeks. Ambulation in a lace up gym shoe is allowed between postoperative weeks 2 and 4 depending on edema. Postoperative radiographs are taken as indicated (Figures 1-4).



Figure 1. Preoperative dorsal-plantar radiograph.



Figure 2. Postoperative dorsal-plantar radiograph at 3 months.



Figure 3. Preoperative dorsal-plantar radiograph.



Figure 4. Postoperative dorsal-plantar radiograph at 5 months.

COMPLICATIONS

As with any procedure, this technique is not without complications. One patient (2 feet) broke the suture in both feet and had a mild recurrence of the deformity. The patient was obese and a #0 suture was used in both feet. Since increasing the diameter of the suture to #2, no breakage has been observed. Another patient suffered a stress fracture of the second metatarsal 4 months postoperative. The drill hole in the second metatarsal was made more distal than in the other cases. This patient was also obese and had a history of rheumatoid arthritis treated with long-term prednisone. Two patients had transient sesamoiditis, which resolved with time and dancer's pad accommodation. One patient developed a mild flexible hallux varus deformity that was asymptomatic. She had a fibular sesamoidectomy as part of her procedure.

OBSERVATIONS

Postoperative pain and swelling have been reduced with this technique due to less soft tissue disruption and absence of osteotomy. Recovery time has been reduced as well from 6 to 8 weeks to 4 to 6 weeks. Patients have been pleased with their results and the shortened recovery period. Even the patient with the recurrence was pleased with her result and did not elect for revision.

While more time is needed to fully assess the application of TightRope in hallux abducto valgus correction, the early results appear promising. The duration of the fixation is not known. Whether the suture will break or pull through the bones is not known. Long-term follow-up will prove if the technique stands the test of time. The indications for osseous procedures could be significantly limited with continued long-term success of this new technique. Arthrex is currently developing a pre-threaded package on a smaller scale compared to the ankle syndesmosis set. This combined with C-arm fluoroscopy could lead to smaller incisions with even less soft tissue dissection.