Case study: The Use of EasyFuse® in flatfoot reconstruction via double arthrodesis and cotton osteotomy

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Patient overview

- The patient is a 57-year-old male stunt actor with chronic pes plano-valgus and posterior tibial tendon dysfunction for over 10 years in his left lower limb.
- Conservative treatments with orthotics, bracing, boot immobilization with crutches, and NSAIDs have failed to provide the patient with lasting relief.
- The patient has been recently diagnosed with diabetes mellitus, gout, high cholesterol, hypertension, and a hernia.

Operative treatment plan

- The selected surgical intervention was a double arthrodesis in the subtalar joint (STJ) and talonavicular joint (TNJ).
  - STJ: Two Salvation® 8mm midfoot nail with 3.5mm nonlocking screws.
  - TNJ: Two 5.0mm Fixos® cannulated screws and 20mm × 20mm EasyFuse Staple
- In addition to the above-mentioned surgical intervention a cotton osteotomy was also performed.
  - 6mm bone wedge and 18mm × 20mm EasyFuse staple in medial cuneiform.

Figure 1a Figure 1b

Figure 2a Figure 2b

Figure 3 a&b

Figure 4

Figure 1: Preoperative clinical image AP view of patient **(a)** and AP X-ray showing forefoot abductus, talar head uncovering and increased talonavicular angle. **(b)**

Figure 2: Preoperative imaging showing clinical view with heel in valgus position and too many toes sign **(a)** as well as an X-ray image of the calcaneal axial view showing similar findings. **(b)**

Figure 3: Preoperative lateral clinical view image **(a)** and lateral X-ray of the foot in weightbearing where severely low arch height with decreased calcaneal inclination angle and increased Meary's angle can be observed. **(b)**

Figure 4: Preoperative ankle AP and mortise X-rays of the ankle demonstrating the sub-fibular impingement indicative of severe heel valgus deformity.

Post-operative course

- The post operative plan was 2 weeks non-weight bearing in a short leg fiberglass splint followed by 4 weeks in a non-weight bearing fiberglass cast.
- At 6 weeks, the patient started partial weight bearing protected in a cam walker boot with assistive devices for a duration of 4 weeks and started physical therapy and home exercises.
- By 10 weeks the patient is full weight bearing in the cam walker boot with a plan for progression into a lace up ankle brace in sneakers by week 12-14.

Results

The use of EasyFuse staples in this case allowed for maintaining compression across the T-N fusion site. Which thereby allowed for a quicker rate of fusion and the cotton osteotomy site to ensure the allograft doesn't shift and incorporates quicker within the osteotomy site.

Figure 5: Postoperative clinical image **(a)** and post op AP X-ray of patient at 2.5 months. **(b)** There is good consolidation of the Cotton osteotomy site and continued compression across the talonavicular fusion site.

Figure 6: Postoperative ankle AP **(a)** and ankle mortise X-rays at 2.5 months. **(b)** There is no longer sub- fibular impingement.

Figure 7: Postoperative calcaneal axial clinical image showing there is no longer too many toes sign and heel is rectus **(a)** and calcaneal axial X-ray image at 2.5 months showing similar findings. **(b)**

Figure 8: Immediate Postoperative clinical image on the right showing increased arch height.

Figure 9: Post-op weight bearing lateral X-ray image at 2.5 months post-op showing the increased arch height of the foot with increased calcaneal inclination angle and Meary's angle is normal. The Easy fuse staple has allowed Cotton osteotomy site to consolidate completely and continues to assist in compression and fusion of the talo-navicular joint fusion site.

Discussion

EasyFuse is a comprehensive super-elastic nitinol staple system designed to provide fast and easy fixation in high demand applications of the foot and ankle. A variety of implant configurations are offered in compact, sterile implant packs along with a universal, single use instruments pack. EasyFuse maintains compression through its extra wide staple bridge which is designed to distribute forces and provide constant implant strength. Maintaining compression has been shown to be a vital aspect of post-surgery care as it aids in stability and bone healing. In this case, the use of EasyFuse staples allows for compression to be maintained across the T-N fusion site thereby allowing for quicker rate of fusion. Additionally, the EasyFuse staples ensure that the allograft does not shift and incorporates quicker at the cotton osteotomy site.

Figure 5a **Figure 5b**

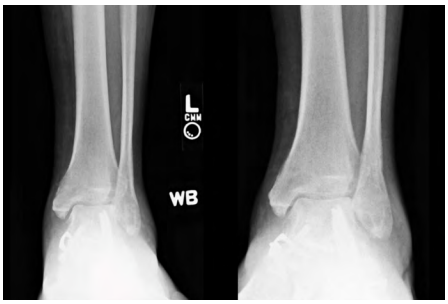

Figure 6a **Figure 6b**

Figure 7a **Figure 7b**

Figure 8

Figure 9

Brief summary of important product information

Indications for use

The EasyFuse dynamic compression system is intended to be used for fracture fixation, osteotomy fixation, and joint arthrodesis of the foot and ankle.

Contraindications

General surgical contraindications

- Infection;
- Physiologically or psychologically inadequate patient;
- Irreparable tendon system;
- Possibility for conservative treatment;
- Growing patients with open epiphyses;
- Patients with high levels of activity.

Contraindications specific to EasyFuse Dynamic Compression System

None

Warning

For safe and effective use of this implant system, the surgeon should be familiar with the recommended surgical procedure for this device. In every case, accepted surgical practices should be followed in post-operative care. The patient should be made aware of the limitations of the implant and that physical activity has been implicated in premature failure of similar devices. Patient sensitivity to implant materials should be considered and assessed prior to surgery. Do not modify implants.

Dr. Le is a paid-consultant of Stryker. The opinions expressed by Dr. Le are those of Dr. Le and not necessarily those of Stryker. Individual experiences may vary.

This case study is intended solely for the use of healthcare professionals. A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product or procedure when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery.

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AP-017851 12-2024