

Treatment of Pes Planovalgus Deformity following Failed Arthrodesis in a Patient with a History of Non-union using a SymALIGN® Evans Osteotomy Wedge

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CASE STUDY

Pes planovalgus (Flatfoot) is a common deformity of the foot which includes abduction of the forefoot, calcaneus valgus, and considerable pain.¹ When conservative therapy fails, surgical treatment may be considered, such as Evans osteotomy to lengthen the lateral column and/or Cotton osteotomy to restore the medial longitudinal arch. In an Evans osteotomy procedure, typically, a lateral opening in the calcaneus is filled with a bone graft to create lateral lengthening. A Cotton osteotomy typically involves the insertion of a wedge dorsally in the medial cuneiform to cause plantarflexion of the first ray, restoring medial arch height. A number of complications associated with these procedures have been reported, including non-union, subsidence and displacement.²⁻⁴ Graft displacement is of particular concern due to potential difficulty in repairing a displaced graft. SymAlign Evans and Cotton osteotomy allograft wedges were developed to minimize the chance of graft displacement.⁵ The wedges are sourced from donated human tissue using dense cancellous bone from femoral heads and condyles, talus, or calcaneus. SymAlign wedges have a unique textured design that increases the coefficient of friction between the graft and the bone at the implant site.⁵ The SymAlign osteotomy wedges, with their unique textured design and high density, are designed specifically to resist graft displacement and maintain deformity correction.⁵

The following describes the use of a SymAlign Evans osteotomy wedge to correct pes planovalgus deformity in a patient with a history of non-union.

Patient

55-year-old female

In October 2012, the patient experienced a Lisfranc injury in the left foot involving dislocation of the first and second metatarsal cuneiform joints, which was initially treated with casting. One year later, the patient underwent an arthrodesis procedure to fuse the first, second, and third metatarsal joints. After 12 weeks, there was no evidence of healing. A bone stimulator was ordered, which ultimately led to fusion over the arthrodesis site. In 2018, she returned to the office reporting hip, knee, sinus tarsi, and first metatarsal pain. She had diffuse pain over her hardware and severe flatfoot deformity due to previous non-union and resulting malunion of the first and second metatarsal cuneiform joints (Figure 1).

Procedure

The original plates and screws in the first through the third metatarsal joints of the left foot were removed, along with a Gastrocnemius recession procedure. A lateral opening was created in the calcaneus, followed by insertion of a SymAlign Evans osteotomy allograft wedge into the osteotomy site. The patient requested no fixation due to her concern for sensitivity to surgical hardware.

Results

At 8 weeks post-operative, the patient showed fusion on radiographs (Figure 2). By 12 weeks, the patient was weight bearing in a cam walker, and at 16 weeks, returned to normal daily activities in running shoes. Radiographic images taken 6 months post-operative demonstrate full graft incorporation and fusion, as well as noted improvements in the anterior-posterior talocalcaneal angle, the lateral talar declination angle, and the lateral calcaneal inclination angle (Figure 3).

Conclusion

This case demonstrates the successful treatment of severe pes planovalgus deformity using a SymAlign Evans osteotomy allograft wedge in a patient with a history of non-union. In this case, no fixation or bone stimulator beyond SymAlign implantation was necessary post-procedure, and full healing was achieved by 16 weeks post-operative.

Results from case studies are not predictive of results in other cases. Results in other cases may vary. Bench/Laboratory testing may not be indicative of clinical outcomes.

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Figure 1.

Pre-operative radiographic images taken in the (A) anterior-posterior and (B) lateral views



Figure 2.

Radiographic fusion was observed 8 weeks after implantation of the SymAlign Evans wedge in both the (A) anterior-posterior and (B) lateral views.

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Figure 3.

Post-operative radiographic images taken 6 months after the SymAlign Evans wedge was implanted showing the (A) anterior-posterior and (B) lateral views. Full healing was observed, as well as noted improvements in the anterior-posterior talocalcaneal angle, the lateral talar declination angle, and the lateral calcaneal inclination angle.

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References

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