A Plantar Closing Wedge Osteotomy of the Medial Cuneiform for Residual Forefoot Supination in Flatfoot Reconstruction

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Summary:
We evaluate our experience with a plantar closing wedge osteotomy of the medial cuneiform (PCWOMC), which we refer to colloquially as the “Reverse Cotton Osteotomy,” for use in the setting of residual forefoot supination in stage II posterior tibial tendon reconstruction. We describe the technique, demonstrate its efficacy, and discuss its advantages over the standard Cotton procedure.

Introduction:
Residual forefoot supination is commonly encountered during a flatfoot reconstruction, and a new technique for its treatment is described. Contrary to the standard Cotton osteotomy, a plantar closing wedge osteotomy of the medial cuneiform (PCWOMC) was performed, which has a number of advantages.

Methods:
We followed 10 feet in 9 patients who had a PCWOMC performed as the last step of a standard flatfoot reconstruction for the correction of residual forefoot supination. These patients were evaluated pre- and postoperatively by standardized radiographic parameters, Short Form-12 (SF-12), and Foot and Ankle Outcome Score (FAOS).

Results:
Patients were followed for an average of 25.8 months with final radiographic analysis performed at an average of 9.9 months. A significant difference ($P < .001$) between pre- and postoperative parameters was demonstrated for both lateral talus–first metatarsal angle and medial-cuneiform-to-ground distance. Likewise, there was a statistically significant improvement in the SF-12 score and 4 out of 5 components of the FAOS. One patient developed internal hardware–related symptoms, which were relieved following implant removal. All osteotomies healed uneventfully.

Conclusion:
A PCWOMC can be considered an alternative to the Cotton osteotomy for the treatment of forefoot supination deformity in adult flatfoot reconstruction. The main advantage of this technique over the Cotton osteotomy was simplicity, as an additional dorsal incision and bone graft were not required.