Treatment of Moderate to Severe Hallux Valgus without Osteotomy or Arthrodesis

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INTRODUCTION: Hallux valgus is a multi-planar deformity that has historically required osteotomies to correct a soft tissue deficiency. We describe our results with a method to correct the intermetatarsal abnormality without utilizing osteotomies or arthrodesis.

METHODS:

One hundred and thirty-four patients undergoing primary metatarsal re-alignment with modified McBride for moderate to severe hallux valgus were included with minimum three-month follow-up. After each patient underwent standard distal soft tissue procedure and modified McBride bunionectomy, the first metatarsal was manually reduced and brought parallel to the second. It was then held temporarily with a K-wire to ensure the first and second metatarsal heads are in the same transverse plane to prevent relative plantar or dorsiflexion of the first ray. A bioresorbable screw was then placed obliquely from the base of the first into the bases of the second and third metatarsals. Patients were assessed pre-operatively, at 2 weeks, 6 weeks, 3 months, 1 year, and 2 years, in addition to the most current follow-up if it occurred after 1 year (mean 26.3 months; range 3-182 months) for clinical outcome, complications, and radiographic evaluations for measurement of correction of the hallux valgus (HVA), intermetatarsal angles (IMA), and distal metatarsal articular angle (DMAA). Only patients who completed at least 3 months of follow up visits were included in this analysis (n=134).

RESULTS:

This procedure allows for significant correction of moderate and severe hallux valgus deformities with little radiographic evidence of loss of reduction in follow-up. Pre-operative assessment of HVA, IMA, and DMAA were 32.3 degrees (95% CI: 31.1-33.5), 14.8 degrees (95% CI: 14.2-15.3), and 25.3 degrees (95% CI: 29.4-32.1), respectively. Post-operative HVA was significantly improved at 2 weeks (10.4 degrees), 6 weeks (11.1 degrees), and 3 months (12.1 degrees); IMA was improved at 2 weeks (6.0 degrees), 6 weeks (6.8 degrees) and 3 months (7.8 degrees); DMAA was improved at 2 weeks (5.5 degrees), 6 weeks (6.6 degrees), and 3 months (7.5 degrees) ($p < 0.001$ for all). One-(43 patients) and two-year follow-up (20 patients) show maintenance of correction of HVA (1yr: 12.7 degrees, 2yr: 10.8 degrees), IMA (1yr: 7.9 degrees, 2yr: 8.0 degrees), and DMAA (1yr: 7.9 degrees, 2 yr: 7.2 degrees) ($p < 0.001$ for all). Complications were few including iatrogenic hallux varus (2/136, 1.4%), peri-implant fractures at the second metatarsal base (3/136, 2.2%), and valgus relapse, which was the only complication requiring re-operation (3/136, 2.2%).

DISCUSSION AND CONCLUSION: When combined with modified McBride bunionectomy, this proximal metatarsal realignment procedure provides a simple and effective method for treatment of severe and moderate hallux valgus deformities. Additionally, there is minimal radiographic evidence of loss of reduction over time. This procedure is simple to perform, easy to learn and does not “burn any bridges” with regards to future surgery.