

## Management of Hallux Valgus Deformity in Patients with Metatarsus Adductus: A Proposed Treatment Algorithm

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**Introduction/Purpose:** Metatarsus adductus (MA) is a congenital condition in which there is persistent adduction of the metatarsals, which has been shown to increase the risk of recurrence of hallux valgus in patients undergoing surgery. The rate of recurrence varies with the magnitude of the adductus, perhaps correlating with the type of surgery performed, ie. the treatment of the adductus deformity and not just the hallux valgus. The goal of this study was to further analyze a cohort of patients with severe MA and identify clinical/surgical factors that are associated with a lower rate of recurrent deformity.

**Methods:** An IRB approved retrospective review between 2002-2012 was completed. All patients undergoing hallux valgus surgery were identified. Patients were included if adequate radiographic information /clinical records were available and if the MAA was greater than  $31^\circ$  (normal values for the MA angle are  $< 20^\circ$ ). Clinical information collected included associated diagnoses, the presence of arthritis of the tarsometatarsal joints, the presence and degree of lesser toe valgus deformities and surgical procedures completed. Radiographic recurrence was defined as a postoperative HVA  $> 20^\circ$  (at most recent follow up).

**Results:** A total of 19 patients with severe MA/hallux valgus were identified. The average age of patients in this group was 55 years (51-60). Eight patients had associated tarsometatarsal arthritis and ten patients had severe valgus lesser toe deformities. Nine patients were treated with a modified Lapidus procedure and 10 patients underwent a distal first metatarsal osteotomy. Of the 9 patients who were treated with a modified Lapidus procedure, 5 patients underwent simultaneous realignment arthrodesis of the 2nd/3rd TMT joints for management of simultaneous midfoot arthritis. One of these patients had radiographic recurrence of deformity. Of the 7 patients who underwent a distal first metatarsal osteotomy without realignment arthrodesis of the 5 had recurrence of deformity. When evaluating patients for treatment of lesser toe deformity, 11 patients who were treated with simultaneous distal metatarsal realignment osteotomies, did not have recurrence of hallux valgus.

**Conclusion:** Based on our findings, the use of a modified Lapidus arthrodesis led to a lower rate of HV deformity recurrence in comparison to isolated distal first metatarsal osteotomies but only when performed in conjunction with realignment arthrodesis of the 2nd/3rd TMT joints and distal lesser metatarsal osteotomies. If the patient does not have arthritis of the lesser TMT joints proximal metatarsal osteotomies are sufficient for correction. Treatment of lesser toe deformity with distal osteotomies was associated with lower recurrence of HV deformity and should be included as part of the treatment algorithm.

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