Outcomes of First Metatarsophalangeal Joint Fusion in Patients with Greater Than Fifteen Percent Intermetatarsal Angle. Is Lag Screw Essential?

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Introduction/Purpose: Metatarsophalangeal arthrodesis has usually been performed using a dorsal plate to immobilize the MTP joint with or without lag screw fixation. Data in the literature is sparse on outcomes of dorsal plate plus lag screw fixation, especially in patients with IMA greater than 15 percent. Our objective was to compare IMA correction outcomes and union rates between dorsal plate only fusions and dorsal plate plus lag screw fixation in patients with IMA greater than 15 percent.

Methods: We retrospectively reviewed the charts of 36 patients (39 feet) who underwent first MTP joint arthrodesis for moderate to severe HV deformity between 2011 and 2015. Average age was 61 (range, 39 to 84) years. There were 24 females and 12 males. A single surgeon performed all operations. Joints were immobilized postoperatively using either dorsal locking plate alone or dorsal locking plate with a lag screw. Union (at least 3 bridging cortices) was determined radiographically at 6 weeks, 3 months, 6 months and yearly. All suspect nonunions were examined with CT. Other radiographic parameters examined included preoperative and postoperative hallux valgus, intermetatarsal, and dorsiflexion angles (HVA, IMA, and DFA respectively). Student’s t test was used to compare group means while Pearson’s Chi square test was used to compare group rates.

Results: Overall union rate was 82.1% (32/39). There was no significant difference in union rates between the two groups (dorsal plate only = 81.5% (22/27), dorsal plate plus lag screw group = 83.3% (10/12)) (P > 0.05). Average follow-up was 9 (range 7 to 35) months. Overall, the average IMA correction was 4.7 (preoperative = 17.8, postoperative = 13.1) degrees. Average IMA corrections were 4.7 and 4.54 degrees in the dorsal plate only group and dorsal plate plus lag screw groups respectively. Overall, average HVA correction was 21 (preoperative = 39.5, postoperative = 18.5) degrees.

Conclusion: Our findings indicate that there is no difference in the fusion rates between both patient groups with IMA greater than fifteen percent. Because other published studies have a wide range of IMAs preoperatively, our study represents more attainable goals in patients with severe (IMA greater than 15%) deformities. In addition, our findings suggest that in such patients, MTP arthrodesis may not be sufficient as a standalone procedure for correction of IMA. Additional proximal osteotomy may be required for correction of the IMA.