

## A Comparison of Post-Operative Patient Reported Outcome Measurements Following Bunion Surgery: Modified Lapidus vs Minimally Invasive Techniques

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**Introduction/Purpose:** The modified Lapidus procedure (MLP) or a minimally invasive surgery distal transverse osteotomy (MISDTO) are acceptable surgical treatment options for hallux valgus. The current literature is evolving when comparing the effects of each procedure on patient reported outcomes and post-operative complications. The purpose of this study is to compare postoperative outcomes, time to weight bear, and patient reported outcomes using the Patient Reported Outcome Instrumentation System (PROMIS) for the MLP and MISDTO.

**Methods:** This study retrospectively reviewed patients who underwent a MLP or MISDTO for hallux valgus correction at Prisma Health Midlands between February 2020 – February 2022. Data collected included: demographic data, postoperative outcomes, time to weight bear, and PROMIS scores, including Pain Interference (PI), Physical Function (PF), and Mobility scores. Paired Student's T-Test and Wilcoxon Rank Sum test were used to compare continuous variables and Chi-Squared test for categorical variables.

**Results:** A total of 81 patients undergoing MLP and 78 undergoing MISDTO were included in the study. Average follow-up for MLP and MISDTO patients was 53.7 and 43.4 weeks, respectively. MLP demonstrated significant improvement in PI (52.5 vs 56.8,  $P < 0.001$ ) and Mobility (46.3 vs 43.4,  $P = 0.044$ ) scores, while MISDTO demonstrated a significant improvement in PI (48.8 vs 57.1,  $P < 0.001$ ), PF (50.2 vs 44.9,  $P < 0.001$ ), and Mobility (49 vs 42.8,  $P < 0.001$ ) scores. MISDTO patients had significantly larger improvements in PI (7.6 vs 4.5,  $P = 0.008$ ), PF (5.3 vs 2.2,  $P = 0.026$ ), and Mobility (5.5 vs 2.9,  $P = 0.02$ ) compared to MLP patients. MISDTO patients had a significantly lower non-union rate (13.6% vs 2.6%,  $P = 0.025$ ), hardware failure rate (0% vs 9.9%,  $P = 0.007$ ), and time to weight-bear (2.2 vs 7.8 weeks,  $P < 0.001$ ).

**Conclusion:** Both MLP and MISDTO procedures are effective treatments for improving the pain and mobility issues associated with hallux valgus while maintaining patients' function. MISDTO was found to improve patient reported outcomes significantly more than MLP, with a lower non-union rate, lower hardware failure rate, and shorter time to weight-bear. These findings suggest MISDTO is superior to MLP in improving patient reported outcomes and postoperative outcomes in the treatment of hallux valgus. Further study multicenter and long term outcome studies could be useful further evaluate these short term findings.