

Fourth-Generation Minimally Invasive Bunion Surgery Using a Commercial Guiding Device

Cary B Chapman¹, Dino Fanfan, Christopher W Hodgkins, Thomas P San Giovanni¹

¹Miami Orthopedics & Sports Medicine Institute

Introduction

Minimally invasive techniques for the surgical management of hallux valgus have increased in popularity over the past few years. Most published studies involve combined minimally invasive Chevron and Akin osteotomies performed by a single surgeon. This video reviews the radiographic and clinical results of patients who underwent minimally invasive transverse distal first metatarsal and Akin osteotomies performed by three fellowship-trained foot and ankle orthopaedic surgeons. A minimally invasive transverse distal first metatarsal osteotomy is advantageous compared with a minimally invasive Chevron osteotomy because it is less technically demanding and, in theory, the surgeon can control first metatarsal head rotation to improve sesamoid position.

Methods

A total of 95 consecutive patients who had symptomatic hallux valgus without first tarsometatarsal or metatarsal phalangeal joint arthritis or tarsometatarsal joint instability were followed for at least 1 year between 2019 and 2021. Primary radiographic outcomes included preoperative and postoperative hallux valgus and first and second intermetatarsal angles. Pain relief was measured using visual analog scale scores. Patient-reported outcomes included Foot and Ankle Mobility (FAAM) activities of daily living and sports scores. Patient-reported outcomes were measured at 1-year follow-up. Radiographic recurrence was defined as a change in the hallux valgus angle greater than 2.6° between any two postoperative radiographs and a hallux valgus angle greater than 15° . Z-scores were calculated using patient demographics based on normative values to assess deviation from normal population FAAM scores.

Results

Demographics and preoperative bunion classification for all patients were recorded. The mean preoperative hallux valgus angle and intermetatarsal angle were 24.9° and 12.2° , respectively. At 3-month follow-up, the mean hallux valgus angle and intermetatarsal angle were 8.43° and 5.86° , respectively ($P < 0.01$). At 12-month follow-up, the mean hallux valgus angle and intermetatarsal angle were 9.39° and 6.85° , respectively; however, this change was not statistically significant ($P = 0.35$). Mean visual analog scale scores improved from 5.37 preoperatively to 1.9 at final follow-up ($P < 0.01$). The mean postoperative FAAM activities of daily living score was (86.34 ± 17.18), and the mean postoperative Z-score was (-0.08 ± 1.16). The mean postoperative FAAM sports score was (66.12 ± 30.93), and the mean postoperative Z-score was (-0.26 ± 1.94).

Discussion and Conclusion

Overall, the results of the study affirm that fourth-generation minimally invasive hallux valgus surgery is a good treatment option. This study showed no infections in patients undergoing minimally invasive hallux valgus surgery, and correction of the hallux valgus angle persisted at 12 months postoperatively, with low recurrence rates. Currently, studies show a trend toward lower FAAM sports scores postoperatively; however, the difference is not substantial in any subscore domain from that of the normal population. Longer follow-up is necessary to further evaluate the trend.