Comparison of the 15-year Trends of Operative Method Preference and Early Complications for the Surgical Treatment of Hallux Valgus Deformity

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INTRODUCTION: Hallux valgus is a common cause of forefoot pain, deformity, and one of the most common pathologies treated by orthopaedic foot and ankle surgeons. However, there has been limited research into the trends in utilization and complications associated with the most common surgical techniques for the treatment of hallux valgus. This study looks to examine utilization trends and complications associated with the following hallux valgus correctional surgeries amongst early-career orthopaedic surgeons: metatarsal osteotomy (MO), first tarsometatarsal arthrodesis (FTMTA), and Akin osteotomy (AO). A secondary objective is to evaluate the effect of foot and ankle fellowship training on technique selection.

METHODS:
A retrospective review of the American Board of Orthopaedic Surgery (ABOS) Part II Oral Examination Case List Database from 2008 to 2023 was conducted. Common Procedural Terminology (CPT) codes were used to identify procedure type; in 2017, the CPT coding for metatarsal osteotomy was subdivided into distal osteotomy and proximal osteotomy which were combined for the purpose of our analysis. Patient demographics, surgical technique, type of fellowship training, postoperative self-reported complications, and early surgical failures resulting in recurrence and/or revision surgery were recorded. ANOVA and Chi-Squared tests were used to compare continuous and categorical variables, respectively. Linear regression was performed to evaluate temporal trends in utilization, and multivariable logistic regression was used to control for confounding variables. P-values <0.05 were considered significant.
RESULTS:
A total of 2509 cases and 2717 procedures were included in this study. Utilization of included procedures from 2008 to 2023 are presented in Figure 1. Although it was the most commonly utilized procedure, the utilization of MO declined over the course of the study period (β=-5.6, P=0.011) (Figure 1). Utilization of FTMTA (β=2.3, P<0.01) and AO (β=1.5, P=0.02) increased over the course of the study period (Figure 1). FTMTA had a significantly higher rate of overall complications (P<0.01), surgical complications (P<0.01), major complications (P=0.02), and non-unions (P<0.01) compared to the other three procedures (Figure 2). When controlling for confounding variables, patients who underwent FTMTA still had a higher rate of surgical complications (OR= 1.7, P=0.04). Finally, surgeons with foot and ankle fellowship training performed most procedures (89.5% vs 10.5%), and, compared to surgeons without foot and ankle fellowship training, had a significantly higher rate of reoperations (1.5% vs 0%, P=0.04). There were no significant differences with respect to foot and ankle fellowship training for overall complications (P=0.2), surgical complications (P=0.2), major complications (P=0.12), or minor complications (P=0.54).
DISCUSSION AND CONCLUSION:
Amongst early-career orthopaedic surgeons, this study found that MO, despite being the most utilized procedure for hallux valgus, has decreased in use in recent years, in favor of the increase in the FTMTA and AO use. Additionally, FTMTA had a significantly higher rate of non-unions and overall complications compared to those treated with other techniques. Even when controlling for confounding variables, patients who underwent FTMTA still had a higher rate of surgical complications. The authors of this study have additionally initiated a request from the ABOS for data on metatarsophalangeal arthrodesis, and the analysis for which will be included in the manuscript for this study.