Risk Factors for Failure of Cheilectomy for Hallux Rigidus
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Introduction/Purpose: Hallux rigidus occurs in 2.5% of the population over 50 years of age and is commonly treated with cheilectomy or arthrodesis. While long-term outcomes following cheilectomy for hallux rigidus are promising, questions remain concerning indicators for failure of a cheilectomy. The goal of this study was to use clinical, radiographic, and subjective assessments to determine potential risk factors for failure of cheilectomy and indicators for success of cheilectomy.

Methods: A retrospective review of 66 patients with hallux rigidus treated with cheilectomy by two orthopaedic foot and ankle surgeons between 2007 and 2016. A list of patients was generated using the CPT code 28289. Patients were excluded if they had prior forefoot surgery, a cheilectomy with fusion involving the first metatarsal, or if they did not have postoperative FAOS scores. Data was collected regarding demographics, clinical classification, medical history/comorbidities, radiographic measurements, surgical information, complications, and pre and postoperative FAOS. The cheilectomy was considered a failure if the patient was converted to a metatarsophalangeal fusion following the cheilectomy or if their postoperative FAOS score failed to improve compared to their preoperative FAOS score. Independent samples t-test and chi-square tests were used to analyze the continuous variables and categorical variables, respectively. A two-way repeated measures ANOVA was used to analyze the pre and postoperative radiographic outcomes between and within the two groups.

Results: 21 out of 66 patients had decreased postoperative FAOS scores and were considered the failure group. There was no difference between the two groups for age at surgery, BMI, gender, ASA, diagnoses, or medical history. Clinically, the failure group had more subsequent surgeries compared to the success group (p=0.039), resulting in longer postoperative follow-up time (10 months vs. 32.4 months, p=0.005). Radiographically, the failure group had a lower mean AP talar-1st Metatarsal Angle pre-operatively (8.10mm) compared to the success group (12.77mm, p=0.028). Postoperatively, the failure group had an increased Calcaneal Pitch (p=0.048), despite no significant difference between groups preoperatively (p=0.087). The failure group also demonstrated a reduced ratio of first metatarsal to second metatarsal length postoperatively (p=0.007), which was not seen in the success group.

Conclusion: Our study found radiographic measurements to be different in patients with a failed cheilectomy as compared to patients with a successful cheilectomy. Preoperatively, a decreased AP Talar-1st Metatarsal Angle may be a risk factor for failure of cheilectomy. Postoperatively, a decreased length of the first metatarsal and an increase in Calcaneal Pitch may result in worse outcomes following cheilectomy.