## Lower Extremity Osteotomies for Limb Preservation: Indications, Outcomes, and Risk Factors

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**Purpose:** Lower extremity deformity resulting from traumatic injuries or developmental-related growth disorders significantly affect quality of life. The goal of this study was to delineate the key factors associated with treatment success or failure for patients undergoing lower extremity osteotomies to address limb deformity at an integrated limb preservation center (ILPC).

**Methods:** Patients were included when they had at least 1 year of follow-up data regarding previous surgery to correct trauma- or developmental-related deformities between January 1, 2005, and October 1, 2022. Patients were categorized based on etiology (developmental vs traumatic) and then based on the nature of deformity (joint, limb, nonunion). Patient demographics, operative details, patient-reported outcome measures (PROMs), and outcomes were extracted from the medical record and compared. Treatment failure was defined as conversion of the limb preservation surgery(ies) to amputation of any type.

**Results:** 139 patients were included for analysis—47 patients in the developmental-related cohort, and 92 patients in the trauma-related cohort. The treatment success rate in terms of preserving the affected limb for patients undergoing lower extremity osteotomies was 94.7% for the developmental-related cohort and 92.4% for the trauma-related cohort. 57.4% of patients in the developmental-related cohort and 59.8% of patients in the trauma-related cohort underwent unplanned secondary procedures. Concurrent osteomyelitis debridement (P = 0.01) and postoperative infection (P = 0.049) were the only factors measured significantly associated with conversion to amputation.

**Conclusion:** Patients undergoing osteotomies at an ILPC to address developmental-related or trauma-related joint and/or limb deformities experienced high short-term success (>90%) with respect to preserving the affected limb. However, 56% of patients required subsequent unplanned surgeries, which should be emphasized to the patient preoperatively. In our experience, keys to success include patient assessments, education, and support delivered by an integrated team committed to comprehensive individualized care along with registry-based data collection for complete and accurate outcome assessments. While further research that includes larger cohorts of patients and longer-term outcomes is needed, the results of this study support the inclusion of lower extremity osteotomies as an important component of limb preservation.