Tibial Tubercle Osteotomy in Revision Total Knee Arthroplasty: High Re-Revision Rate

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INTRODUCTION: Tibial tubercle osteotomy (TTO) may facilitate exposure or implant removal in revision total knee arthroplasty (TKA), however, there is a paucity of literature on this technique. The purpose of this study was to evaluate implant survivorship and radiographic union of TTOs in revision TKAs.

METHODS: We identified 36 revision TKAs that included a TTO performed between 1996 – 2022. Mean age was 65 years, mean BMI was 33 kg/m^2, and 58% were male. Mean number of prior knee operations was 5. Twenty patients (56%) had cemented tibial stems, 4 (11%) had sleeves, and 2 (6%) had cones. Twenty-two patients (61%) had a history of periprosthetic joint infection (PJI), with 13 (36%) having failed two-stage exchange arthroplasty. Indications for TTO included implant removal (n=17), exposure (n=13), exposure and implant removal (n=4), and correction of patella baja (n=2). Indications for revision TKA included explant for PJI (n=17), reimplantation (n=7), loosening (n=5), stiffness (n=2), implant failure (n=2), femoral periprosthetic fracture nonunion (n=2), and instability (n=1). Wires (n=35) and screws (n=1) were used for fixation. Mean follow-up was 10 years.

RESULTS: Excluding the 14 planned reimplantations, there were 13 re-revisions (59%) at mean 26 months after TTO. There was one TTO-specific re-revision (8%) for fixation failure and displacement. Other indications for re-revision included PJI (n=9), aseptic loosening (n=2), and instability (n=1). Two additional TTO-specific postoperative complications (8%) included ORIF for a periprosthetic tibial fracture and a nonoperatively managed proximal tibia fracture. Both patients had radiographically healed osteotomies. The overall rate of TTO radiographic union was 94%.

DISCUSSION AND CONCLUSION: Complex revision TKAs requiring TTO demonstrated high re-revision rates of 59%. However, union rates were high at 94% and TTO-specific re-revisions had an acceptable incidence of 8%. TTO remains a valuable option to aid in exposure or implant removal in revision TKAs with stiffness or well-fixed components.