**ABSTRACT FORM**

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TITLE OF ABSTRACT: GREATER IMPROVEMENT IN PATELLAR TILT IN PATIENTS UNDERGOING MPFL RECONSTRUCTION WITH AMO VERSUS MPFL RECONSTRUCTION ALONG: A COHORT STUDY



**Background:** Understanding how surgical procedures influence risk factors associated with patellar instability can help guide surgeons when planning treatments for individual patients. This study sought to understand the radiographic outcomes for pediatric patients undergoing medial patellofemoral ligament reconstruction (MPFLR) with or without an antero-medializing osteotomy of the tibial tubercle (AMO). The authors hypothesized that the tibial-tuberosity to trochlear groove (TT-TG) distance would only decrease in those undergoing MPFLR with AMO (MPFLR+AMO), while patellar tilt (tilt) would decrease in all patients.

**Methods:** All patients who underwent MPFLR+AMO by one of two senior orthopedic surgeons at a single institution were identified. Patients with a history of previous ipsilateral knee surgery, obligate or fixed patellar dislocations, cerebral palsy, Down syndrome, nail patella syndrome, or Rubenstein Taybi syndrome, and no pre-operative MRI were excluded. Pre-operative and post-operative MRIs were used to measure TT-TG, while radiographs were used to measure tilt. Patients were matched based on age at surgery (within 2 years) and pre-operative TT-TG distance (within 2 mm) to a comparison cohort of patients who underwent MPFLR without osseous procedures (iMPFLR).

**Results:** A total of56 patients were included in this study (28 per group). The mean age of the cohort was 15.5±2.0 years and was similar between both groups (15.9 vs. 15.1 years, p=0.143). When comparing the two cohorts, TT-TG decreased by 8.1 mm for MPFLR+AMO and 1.2 mm for iMPFLR (p<0.001). Pre-operative versus post-operative comparisons demonstrated significant changes significant changes in tilt for both MPFLR+AMO (p<0.001) and iMPFLR (p=0.013). Post-operative tilt was 13.2 ± 5.5° for MPFLR+AMO and 16.5 ± 4.4° for IMPFLR (p=0.017).

**Conclusion:** In age and pre-operative TT-TG matched participants, TT-TG and tilt was noted to significantly decrease in patients undergoing MPFLR with AMO, while MPFLR alone only resulted in a significant correction in tilt. Furthermore, post-operative tilt was noted to be 3.3° lower following MPFLR with AMO than MPFLR alone. These findings suggest that surgeons seeking to correct patellar tilt in patients with patellar instability and an elevated TT-TG may seek to perform MPFLR with AMO. Future studies should aim to analyze additional outcomes and patient reported measures to determine the success of these procedures.