An Increased Patella-Patellar Tendon Angle is a Risk Factor for Reoperation Following Patellofemoral Arthroplasty

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INTRODUCTION: Patellofemoral arthroplasty (PFA) is an effective treatment for isolated patellofemoral osteoarthritis (PFOA), although some patients may experience poor outcomes that necessitate reoperation. The role of preoperative sagittal plane alignment in PFA outcomes remains underexplored. This study investigates whether patellofemoral (PF) parameters, such as patella-patellar tendon angle (P-PTA) and sagittal tibial tubercle-trochlear groove distance (sTT-TG), are associated with an increased risk of reoperation following PFA.

METHODS: A retrospective case-control study was conducted on 63 patients (64 knees) undergoing PFA between 2010 and 2023, with preoperative MRI and at least 1-year follow-up. Patients were divided into groups of non-reoperation (n=47) and reoperation (n=17). Preoperative P-PTA, sTT-TG, Insall-Salvati (IS) index, and Wiberg patellar morphology were assessed on MRI. Demographic data were also collected.

RESULTS: The reoperation group had a significantly higher P-PTA (138.82° ± 6.05° vs. 135.26° ± 4.34°, p=0.04) and lower sTT-TG (2.75 mm ± 3.75 mm vs. 5.35 mm ± 6.00 mm, p=0.04) compared to the non-reoperation group. No significant differences were found in IS index, Wiberg morphology, and demographics. Logistic regression identified P-PTA as an independent predictor of reoperation (OR=1.15, 95% CI: 1.01–1.32), with a 14.6% increased odds per degree of P-PTA.

DISCUSSION AND CONCLUSION: An increased degree of preoperative P-PTA was found to be a significant risk factor for reoperation following PFA. Reduced sTT-TG was also associated with reoperation, but not as an independent predictor. These findings highlight the importance of preoperative sagittal PF alignment and suggest P-PTA as a potential screening tool to optimize PFA outcomes and reduce the risk of reoperation.