

Patellar Height Influences Anterior Knee Pain in Osteoarthritic Patients after Total Knee Arthroplasty

Murodulla Karimov¹, Sarvar Madrakhimov²

¹Tashkent Medical Academy, ²Traumatology and orthopedics, Tashkent Medical Academy

INTRODUCTION: Anterior knee pain is a common complication following total knee arthroplasty (TKA), and it can be associated with patellar maltracking. Patellofemoral osteoarthritis (PFOA) and osteoarthritis (OA) of the knee joint are common indications for TKA, and patellar height has been suggested as a key factor influencing patellar tracking. However, the relationship between patellar height and anterior knee pain remains unclear in patients with PFOA or OA of the knee joint following TKA.

METHODS: A total of 100 patients (65 females and 35 males) with either PFOA or OA of the knee joint who underwent primary TKA were included in this study. Patellar height was measured using the Insall-Salvati ratio on lateral radiographs obtained preoperatively and at 6 months follow up. Anterior knee pain was assessed using the Knee Society Score (KSS) questionnaire at baseline and at 6 months postoperatively. Postoperative radiographs were also evaluated for patellar maltracking. The statistical analysis for the study involved several methods. The primary outcome was the incidence of anterior knee pain at 6, 12, 24 months postoperatively. Descriptive statistics were calculated for all variables, including means and standard deviations for continuous variables such as age, Insall-Salvati ratio, and KSS scores. Categorical variables such as gender, presence of PFOA or OA, and incidence of anterior knee pain were summarized using frequencies and percentages. Comparisons between groups were performed using independent t-tests for continuous variables and chi-squared tests for categorical variables. In particular, the difference in mean postoperative Insall-Salvati ratios between patients with and without anterior knee pain was assessed using an independent t-test. Logistic regression analysis was used to identify predictors of anterior knee pain after TKA, including patellar maltracking and Insall-Salvati ratio, while controlling for potential confounding variables such as age and gender. All statistical analyses were conducted using same software; a p-value of less than 0.05 was considered statistically significant.

RESULTS: The mean preoperative Insall-Salvati ratio was 1.15 ± 0.09 , and the mean postoperative ratio was 1.21 ± 0.08 . Twenty-five patients (25%) reported anterior knee pain at 6 months postoperatively. Patients with anterior knee pain had significantly lower postoperative KSS scores compared to those without anterior knee pain ($p < 0.001$). There was a significant difference in the mean postoperative Insall-Salvati ratio between the patients with and without anterior knee pain ($p = 0.02$). In addition, patients with patellar maltracking had a significantly higher incidence of anterior knee pain compared to those without maltracking ($p < 0.001$).

DISCUSSION AND CONCLUSION: Patellar height appears to influence the development of anterior knee pain in patients with either PFOA or OA of the knee joint following TKA. A higher postoperative Insall-Salvati ratio is associated with a higher incidence of anterior knee pain, whereas a lower ratio may increase the risk of patellar maltracking. Therefore, careful assessment of patellar height is essential when selecting the appropriate surgical technique for TKA in patients with PFOA or OA of the knee joint. Further research is needed to determine the optimal threshold for patellar height and the best surgical approach to achieve optimal patellar tracking during TKA. In addition, future studies may investigate different methods of patellar height measurement and their accuracy in predicting patellar maltracking and anterior knee pain after TKA.