Is Patellofemoral Joint Replacement Still a Wise Choice as Opposed to Modern Total Knee Arthroplasty in Patients with Isolated Patellofemoral Osteoarthritis?

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INTRODUCTION: For patients with isolated patellofemoral arthritis (PFA), patellofemoral joint replacement (PFJR) may offer enhanced functional outcomes compared to total knee arthroplasty (TKA). While less invasive than TKA, PFJR may however carry a higher risk of revision and early post-operative complications. The literature on this is limited and controversial, so we sought to use a large database approach to report differences in outcomes between the two procedures, as well as low-incidence complications that are difficult to demonstrate in smaller studies.

METHODS: A retrospective cohort study was performed using data from a healthcare claims database. Patients undergoing PFJR were matched directly in a one-to-one ratio on age, sex, Charleson Comorbidity Index (CCI), and obesity to patients with isolated patellofemoral arthritis undergoing TKA. Patient demographic factors (age, sex, insurance plan type), 90-day medical complications (need for transfusion, deep vein thrombosis, pulmonary embolism, urinary tract infection, acute kidney injury), 90-day wound complications (wound disruption, hematoma), 90-day infectious complications (superficial infection, periprosthetic joint infection (PJI)), and 10-year orthopaedic complications (loosening, dislocation, lower extremity fracture, revision at two and 10 years) were compared between study groups using Chi-Square tests. Multivariate regression was performed on outcomes of interest identified in bivariate analysis to further delineate the type of intervention as an independent risk factor.

RESULTS: 1,498 PFJR patients were matched to 1,498 TKA patients. Between matched groups, PFJR patients had significantly higher rates of loosening (OR 19.0, $P < 0.0001$), lower extremity fracture (OR 2.70, $P < 0.00001$), broken implant (OR 4.8, $P < 0.0034$), surface wear (OR 5.0, $P < 0.043$), knee dislocation (OR 2.7, $P < 0.00001$), PJI (OR 2.1, $P < 0.005$), patella dislocation (OR 5.0, $P < 0.002$), revision at two years (OR 3.0, $P < 0.00001$), revision at 10 years (OR 3.9, $P < 0.00001$), and length of stay (Δ0.8 days, $P < 0.01$) compared to TKA patients. Furthermore, multivariate regression considering the effect of age, sex, CCI, obesity, osteoporosis, and surgery type on these outcomes revealed PFJR to be independently associated with the adverse outcomes reported ($P < 0.013$).

DISCUSSION AND CONCLUSION: This large database approach to comparing PFJR and TKA for isolated PFA enabled the detection of differences in complications that have not previously been reported. This study supports previous findings of an elevated risk of orthopaedic complications like surface wear, knee dislocation, patella dislocation, and revision that may result from altering patellar tracking during the PFJR procedure. Surgeons should remain extremely selective when indicating patients for PFJR as TKA is still the gold standard with a significantly lower risk of revision and other complications.