

Short-Term Functional Outcomes and Complications of Custom Patellofemoral Arthroplasty

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Background

One surgical option to address isolated patellofemoral arthritis resistant to conservative treatment is patellofemoral arthroplasty (PFA). PFA has shown promising results especially with the newer generation prostheses; however, many disadvantages still exist with off-the-shelf prostheses. With newer technology and the concept of individualized medicine, custom patellofemoral prostheses are designed to help improve complication rates seen with off-the-shelf prostheses. Custom-made patient-specific trochlear resurfacing implants replicate each patients' unique trochlear anatomy theoretically improving patellofemoral tracking allowing patients to return to a high level of activity. The purpose of this study is to evaluate short-term functional outcomes and complications of the custom PFA in treatment of isolated patellofemoral arthritis.

Methods

A retrospective study was conducted to analyze patients who received a patellofemoral arthroplasty operation from a single surgeon. Inclusion criteria were surgical patients from 2012 to 2018 who underwent patellofemoral arthroplasty using a custom prosthesis implant. Minimum follow-up was two years. Knee injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS, JR) and Lower Extremity Function Scale (LEFS) were collected both pre- and post-operative. Complications related to the index procedure were recorded.

Results

A total of 79 patients (94 knees) participated in the study; a majority, 55 (69.6%), were female. The mean age was 56.8 at the time of index arthroplasty; 15 patients (30 knees) were bilateral. Four patients were lost to follow-up and one patient was removed from the primary surgeon's practice for illicit drug use for a 94% follow-up rate. 74 patients (89 knees) were included in the final analysis. Median follow up was 3.6 years (2 – 8.9). Overall pre- and post-functional scores differed significantly for both KOOS, JR and LEFS. Post operative scores increased for KOOS, JR by 27.5 points, and for LEFS they increased 26.0 points; $p < 0.001$ for both. This difference was greater for females in both scores. Complications in the 89 knees included six reoperations (6.7%) related to patellofemoral arthroplasty: four conversions (4.4%) to total knee arthroplasty at a mean of 2.3 (1.5-3) years after index procedure, one VMO advancement (1.1%) secondary to patellar maltracking, and one manipulation under anesthesia (1.1%).

Conclusions

The custom patellofemoral arthroplasty in patients with isolated patellofemoral arthritis showed good short-term functional outcomes and low revision rates with very few complications. We believe patients with isolated patellofemoral arthritis who have failed nonoperative management may benefit from custom PFA.