Evaluating the use of a bicompartmental patellar and unicondylar knee joint prosthesis - follow up on patient reported outcomes and survivorship for up to 8 years in 47 patients

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Introduction

Bicompartmental knee arthroplasty (BKA) has become a convincing alternative treatment to total knee arthroplasty in the last years, due to its improved technique, prosthesis design enhancement and convincing clinical results. Advantages are the respect of knee biomechanics, lower complication rates, shorter hospital stay and faster rehabilitation. Moreover, in case of failure of the first implant the conversion to TKA is undemanding and can be compared to a standard prosthesis. This technique can especially be recommended in individuals with higher functional requests. In the short term, BKA showed excellent pain relief and knee function and low complication rates. The aim of this study was to observe BKAs durability and clinical outcomes in the longer term (< 5 years) for combined medial unicondylar and patellar BKA.

Methods

Retrospective clinical data from 47 patients (age: 58.2 ± 7.4; BMI: 31.3 ± 6.0; 66% fem.) who underwent combined UKA/PFJ surgery were analysed. Patient-reported outcomes were collected via an online registry (SOS, Arthrex GmbH, Munich) before surgery and at annual follow-up time points up to 8 years postoperatively. The VAS score was used to assess pain, KOOS JR for knee functionality, KSS for patient satisfaction, and the VR-12 scale for mental and physical health. Additionally, survivorship data were collected at the same follow-up time points. For up to five years (N = 12), repeated Measures ANOVAs was performed, followed by the post hoc Tukey Kramer test ($\alpha = 0.05$). Missing data were imputed via the k-nearest neighbour cluster algorithm. Further, survivorship for up to 8 years was analysed.

Results

Patients have reached different follow-up time points depending on their enrolment year. All 47 enrolled patients have passed their three-year post-op follow-up. For more than 5 years, less than five follow-ups were available. Seven patients were lost to follow-up or died within the follow-up period. At five years, VAS significantly decreased from 6.9 ± 1.8 before surgery to 1.5 ± 1.2 ($p< 0.001$), KOOS JR. significantly increased from 43.3 ± 12.3 to 75.0 ± 11.5 ($p < 0.001$), VR12-Physical significantly increased from 31.5 ± 7.2 to 45.3 ± 8.2 ($p < 0.001$) and VR-Mental from 45.4 ± 15.2 to 52.7 ± 8.9 ($p < 0.034$). The Patient satisfaction (KSS; range 0 - 40) increased from 13.6 ± 1.7 to 30.2 ± 8.2 ($p < 0.001$). One device-related revision was reported within the 1–2-year post-operative window. In summary, an overall survival rate of 100% was observed up to two years post-operatively, and a consistent survival rate of 97.8% thereafter.

Conclusion

Combined patellar and unicondylar BKA shows excellent clinical results in the long term. Results for more than five years should be interpreted with caution due to the small sample size in this study.