ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

12th Biennial ISAKOS Congress • May 12-16, 2019 • Cancun, Mexico

Paper #219

Outlier Alignment Does Not Adversely Affect Implant Survival and Function Ten Years After Kinematically Aligned Total Knee Arthroplasty Performed without Restrictions on Preoperative Deformity

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Summary:
With the limitation that a large case series unlikely represents the full range of preoperative deformities and native alignments, treatment of patients with kinematically aligned total knee arthroplasty with patient-specific instrumentation without restricting the preoperative deformity did not adversely affect the 10-year implant survival, yearly revision rate, and level of function.

Abstract:

Introduction

There are concerns that postoperative varus or valgus outlier alignment of the tibial component, knee, and limb might adversely affect the long-term results of kinematically aligned (KA) TKA particularly when patients are selected without restrictions based on the severity of the preoperative varus-valgus and flexion deformities.

Methods

Clinical and radiographic data were reviewed retrospectively to determine the 10-year implant survivorship, yearly revision rate, Oxford Knee Score (OKS), and WOMACTM Score of 216 patients (220 knees) treated in 2007 with a KA TKA that were selected without restrictions on preoperative deformity. Post-operative alignment of the tibial component, knee, and limb was categorized as in-range, varus outlier, or valgus outlier according to mechanical alignment criteria.

Results

The implant survivorship (yearly revision rate) was 97.5% (0.3%) for revision for any reason (Figure 1) and 98.4% (0.2%) for aseptic failure (Figure 2). The causes were deep infection (N=2), posterior subsidence of the tibial component (N=1), dissociation of the patella component (N=1), and patella instability (N=1). Seventy-eight percent of tibial components (Figure 3), 31% of knees (Figure 4), and 7% of limbs were varus outliers (Figure 5). Four percent of knees, and 19% of limbs were valgus outliers. Grouping of patients in-range or outlier categories of alignment according to mechanical alignment criteria had no affect implant survival and function scores. The OKS (48 best) and WOMACTM score (0 best) averaged 43 and 7 points, respectively.

Conclusion

At 10-year follow-up, post-operative varus or valgus outlier alignment of the tibial component, knee, and limb did

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not adversely affect implant survival, yearly revision rate, and level of function when KA TKA was performed on 220 knees without restrictions on preoperative deformity. The strategy of aligning the components to the native joint lines, and restoring the native alignments of the tibia, knee, and limb was not associated with any undesirable consequences at longer-term follow-up.