Paper #5

Custom Cutting Guides do not Improve Total Knee Arthroplasty Outcomes at 2 Year Follow-up

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Introduction: To date, small cohorts and short follow-up have limited reports studying clinical outcomes of custom cutting guides (CCGs) versus standard intramedullary and extramedullary instrumentation. The purpose of this study was to determine if CCGs improve clinical outcomes following TKA at a mean of 2 years postoperatively.

Methods: This was a prospective cohort study of patients undergoing primary TKA using the same cruciate-retaining, cemented TKA system. Patients were offered the option of receiving a preoperative MRI and TKA with CCGs, and each patient self-selected for either the CCG or standard instrument group. The first 95 consecutive patients in each cohort were included. Alignment goals for all TKAs were a neutral, hip-knee-ankle (HKA) angle of 0°. University of California at Los Angeles (UCLA), SF-12, and Oxford Knee scores were collected preoperatively. These scores, along with the Forgotten Joint score and a patient satisfaction survey were administered at each patient's most recent follow-up visit. Postoperatively, rotationally controlled coronal scout CT scans were used to measure the HKA angle. Comparisons of the two cohorts were performed using independent samples t-tests and Chi-square tests, with a p-value < 0.05 considered significant.

Results: At a mean follow-up of 2.3 years, no differences were present for range of motion, UCLA, SF-12, Oxford Knee, or Forgotten Joint scores between the two cohorts (p=0.09 to 0.76). In addition, no differences were present for the incremental improvement in these scores from preoperatively to postoperatively (p=0.1 to 0.9). Patient satisfaction and the presence of residual symptoms were similar between the two cohorts (p=0.1 to 0.8). In addition, there was no difference in mean tourniquet time (59.1 + 13.2 mins in CCG vs. 59.7 + 14.7 mins in standard cohort; p=0.75) or percentage of outliers for overall mechanical alignment (31% in CCG versus 23% in standard cohort with HKA outside of 0° + 3°; p=0.2).

Conclusion: At two years follow-up, custom cutting guides fail to demonstrate any advantages in clinical outcomes versus the use of standard instrumentation in total knee arthroplasty. The benefit of CCGs must be proven prior to continued implementation of this technology.