

Posterior Stabilized versus Cruciate-Substituting Total Knee Arthroplasty: Midterm Results

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Introduction: There is no consensus whether a traditional post and cam-style posterior stabilized (PS) total knee device is superior to a deep-dish, more congruent cruciate-substituting (CS) device. This study compared the clinical and radiographic outcomes of two such devices. The primary hypothesis was that the clinical outcomes would be equivalent and the secondary hypothesis was that there would be measurable differences in the tourniquet time and intraoperative blood loss.

Methods: This prospective randomized study compared the outcomes of 56 patients who received a Triathlon® PS tibial insert and 55 patients who received a Triathlon® CS lipped tibial insert (Stryker®, Mahwah, NJ, USA). All patients undergoing elective primary total knee arthroplasty were eligible for participation. Institutional Review Board approval and informed consent from participants were obtained. Regular clinical and radiographic assessments were performed preoperatively, 6 weeks, 6 months, and annually. Data were compared using chi-square test and T-test with a significance level of .05.

Results: The mean follow-up period is 45 months (range, 30 - 57 months). There were no statistically significant differences in demographic characteristics, intraoperative blood loss, and the pre- postoperative hemoglobin. There was a significantly greater amount of blood transfused for the male PS subgroup ($P < .039$) and tourniquet time was 9.87% longer for the PS group ($P < .015$). There were no significant differences between groups for the Knee Society scores, the Lower Extremity Activity Scale, ROM, and alignment (preoperative versus 1-year postoperative).

Conclusion: As hypothesized, the clinical outcomes of the two groups were equivalent statistically. There was a statistically longer tourniquet time for the PS group and more blood transfused in the male PS subgroup. At the 2-year follow-up point in this 5-year study, the results cannot clearly demonstrate superiority of either device.

