

COMPARISON OF EARLY OUTCOME OF ULTRACONGRUENT, CRUCIATE RETAINING AND POSTERIOR STABILISED DESIGNS IN TOTAL KNEE REPLACEMENT

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INTRODUCTION:

The three commonly used designs are the cruciate retaining total knee replacement (CR TKR), the posterior stabilized TKR (PS), and the anterior stabilized ultracongruent TKR (UC). The question of which TKR design (PS, CR or UC) is better has been the subject of intensive debate. This study aims to compare the short term outcome of the UC, CR and PS TKR.

METHODS:

Patients who had undergone PS TKR were recruited from Hospital Sultanah Bahiyah while those with UC and CR TKR were recruited from UMMC. The study retrospectively enrolled patients who underwent total knee replacement for at least 1 year duration between 2014 to 2017. Oxford knee score (OKS), range of motion, patient satisfaction, instability, alignment of the prosthetic components, and radiolucency at the bone-cement interface were compared between the three groups.

RESULTS:

41 knees (30 patients) received PS inserts while 43 knees (31 patients) and 40 knees (30 patients) received UC and CR inserts respectively. The mean age of the three groups combined were 69.5 years (range, 50-85). The mean age of the PS group was younger at 65.7 years compared to AS (70.1 years) and CR (72.7 years). All three groups were comparable in BMI and co-morbid. The mean follow-up durations for the UC, CR and PS groups were 15.3 months, 16.7 months and 17 months respectively (range, 12 to 24 months).

There was no statistically significant differences between UC, CR and PS TKR in terms of functional outcome (OKS), range of motion, and radiological parameters at a minimum of 1 year follow up. No patients were found to have progressive radiolucent lines or loosening in any groups. However, 4.5% of the PS TKR cohort were dissatisfied with the outcome and had knee instability requiring revision surgery. All patients in the CR and UC groups were satisfied.

The mean postoperative knee flexion of the UC and CR groups were reduced by 14° and 7° respectively. However, the PS group gained 8° of postoperative knee flexion. Further breakdown revealed that all patients with more than 110° of preoperative knee flexion experienced decrease in knee flexion postoperative. The reductions of UC, CR and PS groups were -19°, -16° and -2° respectively. Of note, the CR and PS cohort with less than 90° preoperative knee flexion gain significant knee flexion of 18° and 22° respectively. UC and CR patients with 91° to 110° preoperative knee flexion had minimal gain of 3° and 1° respectively. PS group however gained 14°.

CONCLUSION:

UC TKR has similar functional and radiological outcome as PS and CR TKR. However PS TKR has the largest increase in knee flexion postoperatively.