

Paper #158

Hyperextension Developed After Posterior Substituting Total Knee Arthroplasty

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Summary:

To avoid recurvatum deformity in PS-TKA, excessive TPSA should be avoided, and care should also be taken in patients with small PCO and in patients that have severe varus deformity with large HKA.

Abstract:

Introduction

Recurvatum deformity is a complication that develops in 0.5–1% of patients after total knee arthroplasty. Literature report that its clinical outcome is significantly worse when hyperextension is = 5 degrees. Treatment is difficult once it occurs, thus it is important to prevent it from developing. However, there is lack of knowledge on what factors cause the development of recurvatum deformity. This study aimed to investigate factors associated with de novo development of hyperextension after posterior substituting total knee arthroplasty (PS-TKA).

Methods

Medical records of 255 patients that received PS-TKA were retrospectively reviewed, including 85 patients with = 5 degrees of hyperextension developed during follow-up (hyperextension group) and 170 patients without hyperextension (control group). Patient demographics and pre- and postoperative clinical and radiological variables—hip-knee-ankle angle (HKA), tibial posterior slope angle (TPSA), posterior femoral condylar offset (PCO)—were analyzed.

Results

There was no significant difference between two groups in regard to sex, age, or body mass index. No patients of both groups showed hyperextension preoperatively. Preoperative flexion contracture and further flexion was, respectively, 5.2° and 130.4° in the hyperextension group and 6.7° and 127.4° in the control group ($p > 0.05$). Preoperative TPSA of both groups showed no difference. Compared to the control group, the hyperextension group demonstrated 4.61° larger preoperative HKA (13.24° vs. 8.63°, $p < 0.001$) and 2.04° larger postoperative TPSA (3.74° vs. 1.70°, $p < 0.001$). Both preoperative PCO (25.3 mm vs. 28.8 mm, $p < 0.001$) and postoperative PCO (25.9 mm vs. 30.3 mm, $p < 0.001$) were smaller in the hyperextension group.

Discussion And Conclusion

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Preoperative HKA was larger in patients with hyperextension. While preoperative TPSA did not differ between the 2 groups, the hyperextension group had larger postoperative TPSA. These patients also demonstrated smaller pre- and postoperative PCO.

To avoid recurvatum deformity in PS-TKA, excessive TPSA should be avoided. Care should also be taken in patients with small PCO and in patients that have severe varus deformity with large HKA.