

Combined high preoperative Pain and low radiographic Grade is associated with higher Intensity Persistent Pain 12 Months after Total Knee Arthroplasty

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INTRODUCTION:

Despite new technologies in total knee arthroplasty (TKA), a significant proportion of patients are dissatisfied with the outcome. A major reason for dissatisfaction and revision surgery after total knee arthroplasty (TKA) is persistent postoperative pain (PPP). Preoperative radiographic severity of osteoarthritis has been investigated as a predictor of TKA outcome, with conflicting results. The aim of this study was to determine if there is a difference in PPP intensity 12 months after TKA according to 1) pre-operative radiographic grade alone and 2) the combination of preoperative pain intensity and radiographic grade.

METHODS:

Three hundred patients undergoing primary TKA underwent preoperative data collection including clinical information (age, gender, preoperative knee pain), psychological variables (depression, anxiety, pain catastrophizing, expected pain) and quantitative sensory testing (temporal summation, pressure pain thresholds, conditioned pain modulation). Preoperative radiographic severity of osteoarthritis was graded using the Kellgren-Lawrence (KL) classification. All patients were followed-up for 12 months, with pain intensity (0-100) in the operated knee collected using the Western Ontario and McMaster Universities Osteoarthritis Index pain scale. Generalised linear models were used to explore differences in PPP outcome according to KL grade and combined preoperative pain and KL grade. Univariate and multivariate relative risk models were utilized to explore which preoperative variables were associated with the high preoperative pain/low KL grade group.

RESULTS:

PPP 12 months after TKA was not associated with preoperative KL grade alone. Higher PPP 12 months after TKA was observed in patients with a combination of high preoperative pain and a low KL grade ($p=0.012$). Patients in the high preoperative pain and low KL grade group were more likely to be male, younger and have higher preoperative pain catastrophizing, higher depression and lower trait anxiety (all $p \leq 0.05$).

DISCUSSION AND CONCLUSION:

Combined high preoperative pain and low radiographic grade, but not radiographic grade alone, was associated with higher intensity PPP 12 months after primary TKA. This group may have a more complex pain etiology that requires additional psychological interventions in order to optimize TKA outcomes.

