Paper #6

Intraoperative Ketamine During Total Knee Arthroplasty: A Prospective Randomized Controlled Trial

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Introduction: Multimodal pan protocols have increased in popularity with the aim of reducing narcotic consumption and side-effects. Multiple studies have demonstrated that ketamine, a glutamate receptor blocker, may decrease postoperative pain in abdominal and orthopaedic surgeries. However, its role with spinal anesthesia and total knee arthroplasty remains unknown. The purpose of this study was to determine the efficacy of sub-anesthetic dosing of ketamine during total knee arthroplasty (TKA) on postoperative pain and narcotic consumption.

Methods: In this prospective, randomized double blinded clinical trial, we enrolled 90 patients undergoing primary TKA with spinal anesthesia in a single institution between January 2016 to April 2018. Patients were randomized to intraoperative ketamine incision at a rate of 6mcg/kg/min for 75 minutes or a saline placebo. All patients received spinal anesthesia and otherwise identical surgical approaches, pain management and rehabilitation protocols. Patient-reported visual analogue pain scores (VAS) were calculated preoperatively, postoperative day (POD) 0 to 7 and 14 days. Narcotic consumption was evaluated on POD 0 and 1.

Results: There was no significant difference between the groups in terms of average, least, or maximum VAS pain scores ($p>0.05$ for all) for any of the first seven postoperative days. Average daily pain was 35.1 and 32.5 on POD0 ($p=0.48$), 47.4 and 55.0 on POD1 ($p=0.19$), and 53.4 vs. 49.1 on POD2 ($p=0.49$) for ketamine and saline placebo, respectively. There was also no difference in total morphine equivalents on POD 0 (35.5 vs. 27.3 $p=0.31$), and a trend toward increased narcotic consumption for ketamine on POD1 (44.2 vs. 33.5, $p=0.05$). There was no difference in narcotic or ketamine related side effects.

Conclusions: As part of multimodal pain management protocol, intraoperative ketamine does not result in any clinically significant improvement of the measured outcomes following TKA.