

A Synthetic Form of Cannabinoid Does Not Decrease Opioid Use After Total Knee Arthroplasty: A Prospective Randomized, Double Blinded Study

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INTRODUCTION: Self-reported cannabis use in patients undergoing total knee arthroplasty (TKA) has increased since its legalization. Despite its endorsement, its efficacy has never been studied in a prospective randomized study in orthopaedic surgery. Therefore, the purpose of this study was to determine whether a synthetic delta-9-tetrahydrocannabinol (sTHC), dronabinol, decreases opioid use after TKA.

METHODS: 157 patients undergoing primary unilateral TKA were prospectively randomized into receiving dronabinol (2.5 mg BID, n=79) vs. a placebo pill (2.5 mg BID, n=78) as an *adjunct* to pain management. Patients, providers, our statistician and the research team were blinded of the groups. All patients were cannabis naïve and had drug screening prior to surgery. All patients received our standard perioperative multimodal pain regimen (including opioids) regardless of their randomization. The primary outcome was opioid morphine milligram equivalents (MME) at 2 weeks. Secondary outcomes included self-reported pain, sleep scores, nausea/vomiting after surgery, range of motion (ROM) and PROMS. Patients were followed for 6 weeks after surgery. Significance for all statistical tests was accepted at $p \leq 0.05$.

RESULTS: There were no differences for in-hospital MME consumed (sTHC 40 ± 75.5 vs. placebo 39.3 ± 77.8 , $p=0.1$). No differences in total MME were noted at 2 weeks (sTHC 370.9 ± 302.6 vs. placebo 372.6 ± 248.8 , $p=0.1$). Self-reported pain ($p=0.769$), hours of sleep per night ($p=0.1$), and nausea/vomiting ($p=0.7$) showed no differences between the groups at 2 and 4 weeks. No differences in patient reported outcomes at 6 weeks (ROM, KOOS, KSS, VR-12 MCS, VR-12 PCS) were noted between groups. No drug or placebo related complications were noted in either group.

DISCUSSION AND CONCLUSION: Despite the enthusiasm for different forms of cannabis after orthopaedic surgery procedures, this s-THC does not appear to limit opioid intake after primary TKA. Based on these data, THC may offer no benefit for patients after TKA.