Post-Operative Marijuana Use Does Not Impact Opioid Use in Patients S/P ACDF and Lumbar Fusion Surgery

Michael Carter[1], BS, Rajkishen Narayanan[1], MD, Gregory Toci[1], MD, Yunsoo Lee[1], MD, Nick Pohl[1], MS, Olivia Opara[1], BS, Nathaniel Pineda[1], MS, Shiraz Mumtaz, MS, Sebastian Fras[1], BS, Amit Syal[1], BS, Jose Canseco[1], MD PhD, Alan Hilibrand[1], MD, Alexander Vaccaro[1], MD, PhD, MBA, Christopher Kepler[1], MD, MBA, Gregory Schroeder[1], MD
[1]Department of Orthopaedic Surgery, Rothman Orthopaedic Institute at Thomas Jefferson Univesity, Philadelphia, PA
Presenting author Email: Michael.carter@rothmanortho.com

Disclosures: M. Carter: None. R. Narayanan: None. G. Toci: None. Y. Lee: None. N. Pohl: None. O. Opara: None. N. Pineda: None. S. Mumtaz: None. S. Fras: None. A. Syal: None. J. Canseco: 4; PathKeeper Surgical. 5; Accelus. 8; Wolters Kluwer Health - Lippincott Williams & Wilkins. 9; Cervical Spine Research Society. A. Hilibrand: 4; Paradigm Spine. 7A; Biomet, CTL Amedica. A. Vaccaro: 4; Accelus, Advanced Spinal Intellectual Properties, Atlas Spine, Avaz Surgical, AVKN Patient Driven Care, Cytonics, Deep Health, Dimension Orthotics, Electrocore, Flagship Surgical, FlowPharma, Globus Medical, Harvard Medtech, Innovative Surgical Design, Jushi (Haywood), Nuvasive, Orthobullets, Parvizi Surgical Innovation, Progressive Spinal Technologies, Sentryx, Stout Medical, ViewFi Health. 6; AO Spine, Sentryx. 7A; Atlas Spine, Globus Medical, Medtronic, Spinal Elements, SpineWave, Stryker. 7B; Elsevier, Jaypee, Taylor Francis/Hodder and Stoughton, Thieme. 9; National Spine Health Foundation. C. Kepler: 7A; Curetiva, Regeneration Technologies Inc.. 8; Clinical Spine Surgery. G. Schroeder: 3B; Advance Medical, Bioventus, Surgalign. 5; Cerapedics, DePuy, Medtronic Sofamor Danek. 8; Wolters Kluwer Health - Lippincott Williams & Wilkins. 9; AO Spine, Cervical Spine Research Society.

INTRODUCTION

The use of marijuana for pain management is a controversial topic that lacks extensive research. As social and legal acceptance of marijuana increases, questions have arisen about its therapeutic potential alongside opioids, necessitating more comprehensive studies on this topic. Cannabis is hypothesized to provide pain relief via modulation of neuron neurotransmitter release as well as cytokine release in immune cells which may limit the use and dependence on opioid analgesics; however, at present, there is limited evidence to support or refute these claims. This study aims to explore the usage of postoperative opioids and morphine milligram equivalents (MME) among patients undergoing ACDF and lumbar fusion who have consumed marijuana, comparing them to a matched cohort of non-users.

METHODS

A retrospective analysis covering the period from 2017 to 2021 was conducted to identify patients who had undergone ACDF and lumbar fusion and subsequently used marijuana. All patients were aged 18 or older. Age, gender, race, marital status, BMI, Elixhauser scores, and levels fused were documented. Socioeconomic status was assessed using the Distressed Community Index (DCI). A comparable cohort of patients who did not use marijuana post-surgery was assembled based on these criteria to facilitate comparison. Opioid utilization, including the total number of prescriptions and morphine milligram equivalents (MME) per day, was tracked for both sets of patients from one year prior to the surgery up to one year post-surgery, utilizing data from the Pennsylvania Prescription Drug Monitoring Program (PDMP). Opioid-related data was further categorized by time intervals (60-30 days and 30-0 days before surgery, 0-30 days and 30-90 days after surgery). Pre-and post-operative benzodiazepine use, muscle relaxant use (i.e. baclofen) and gabapentin/pregabalin were also recorded for each patient utilizing the PDMP. Patients lacking PDMP data were excluded from this study.

RESULTS

We identified 41 patients who underwent ADCF surgery who consumed marijuana and 111 matched patients who did not. We also identified 50 patients who underwent lumbar surgery who consumed marijuana and 135 matched patients who did not. No significant differences existed between either groups with regards to age (p=0.708 for ACDF, 0.508 for lumbar fusion), gender (p=0.778 for ACDF, 0.982 for lumbar fusion), BMI (p=0.852 for ACDF, 0.478 for lumbar fusion), marital status (p=0.978 for ACDF, 0.063 for lumbar fusion), DCI score (p=0489 for ACDF, 0.561 for lumbar fusion) and quintile (p=0.444 for ACDF, 0.713 for lumbar fusion), Elixhauser (p=0.905 for ACDF, 0.870 for lumbar fusion), or number of levels fused (p=0.959 for ACDF, 0.866 for lumbar fusion). There were no significant differences in pre-operative opioid use (p=0.365 for ACDF, 0.910 for lumbar fusion), total prescriptions taken (p=0.135 for ACDF, 0.838 for lumbar fusion), and total MME (p=0.241 for ACDF, 0.681 for lumbar fusion) one year prior to surgery.

Post-operatively, there were no significant differences in the percentage of patients using opioids 0-30 days (p=0.661 for ACDF, 0.564 for lumbar fusion), 30-90 days (p=0.906 for ACDF, 0.249 for lumbar fusion), and beyond 90 days (p=0.774 for ACDF, 0.694 for lumbar fusion) post-operatively. There were also no significant differences in total prescriptions taken (p=0.797 for ACDF, 0.646 for lumbar fusion), and total MME (p=0.848 for ACDF, 0.664 for lumbar fusion) during that time. A sub-analysis of MME use revealed no significant differences from 0-30 days (p=0.168 for ACDF, 0.407 for lumbar fusion), 30-90 days (p=0.705 for ACDF, 0.110 for lumbar fusion), and 90-365 days (p=0.256 for ACDF, 0.470 for lumbar fusion) between the marijuana group and non-marijuana group.

DISCUSSSION

The use of marijuana for post-operative pain management is still a controversial topic that traverses both medical and legal lines. In states that have legalized marijuana, its usage is still not commonplace as a modality of pain management likely due to concern for dependence, the perception of marijuana being a “gateway” drug, and an inability to monitor marijuana use as we can monitor opioid use. Nevertheless, as the prevalence of cannabis users grows, an increasing number of patients who present for spine surgery will use marijuana both pre-and postoperatively as a means of pain control. This study serves as a preliminary investigation into the use of marijuana after spine surgery; further research is needed to more thoroughly explore this topic.

SIGNIFICANCE/CLINICAL RELEVANCE

Our study suggests that post-operative marijuana does not appear to impact the rate of post-operative opioid use following spine surgery. While it may not be advisable to recommend marijuana as a method to reduce postoperative opioid use, it also does not appear to be associated with increased opioid use after surgery.

ACKNOWLEDGEMENTS: None.