

## **Unlike Tobacco Users, Cannabis Users are Not at an Increased Risk of Adverse Events following Total Hip Arthroplasty**

Oghenewoma Praise Oghenesume<sup>1</sup>, Meera Dhodapkar, Philip Prakash Ratnasamy<sup>1</sup>, Zachary Radford, Lee Eric Rubin<sup>2</sup>, Jonathan N Grauer

<sup>1</sup>Yale School of Medicine, <sup>2</sup>Yale University

### **INTRODUCTION:**

Following total hip arthroplasty (THA), tobacco users have been shown to have greater risk of perioperative adverse events, inferior patient-reported outcomes, and need for revision over time. While the impacts of tobacco use on outcomes following THA have been well characterized, it is currently unclear whether perioperative cannabis users are at similar risks following THA.

The impact of cannabis use on outcomes following THA has been sparsely investigated. Further, prior studies have not routinely separated cannabis use from potential concomitant tobacco use. Thus, the current study set out to evaluate the influence of cannabis use independent of tobacco use on 90-day outcomes following THA using a large administrative dataset.

### **METHODS:**

Patients undergoing THA for osteoarthritis indications were identified from the 2010-2021 national insurance administrative dataset. Patients were excluded if they were: under 18 years of age, had their procedure performed for trauma, neoplasm, or infection, or if they were not active in the database for 90 days postoperatively.

Subcohorts without and with cannabis and/or tobacco use in the year prior to their THA were identified based on coding and equally matched based on patient age, sex, and Elixhauser Comorbidity Index (ECI) scores to yield groups of non-users, tobacco users, tobacco and cannabis users, as well as cannabis users. The incidences of 90-day adverse events were determined and compared using univariate and multivariate analyses that controlled for age, sex, and ECI. Bonferroni correction was applied.

### **RESULTS:**

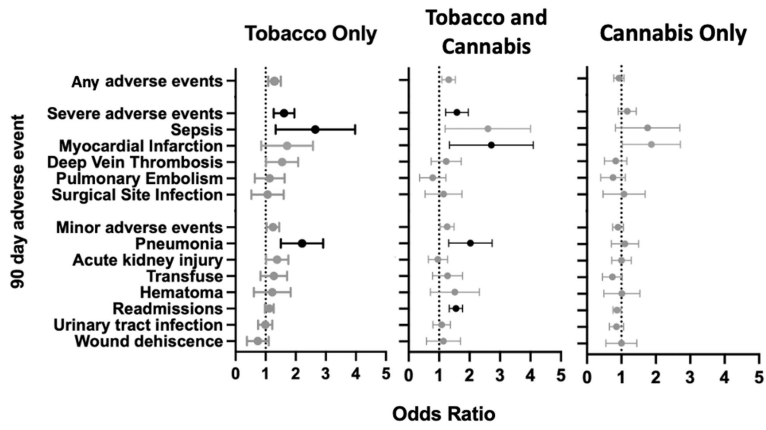
Of 494,431 THA patients, non-users were 442,000 (89.40%), tobacco users 46,925 (9.50%), tobacco and cannabis users 3,390 (0.69%), and cannabis users 2,116 (0.43%). A 1:1:1:1 matching was done based on age, sex, and ECI yielding 1,897 patients in each group with no significant residual differences in age, sex, or ECI.

By multivariate analyses (Figure), tobacco only users were at significantly greater risk of severe adverse events (SAEs) (OR 1.59), sepsis (OR 2.41), and pneumonia (OR 2.13) ( $p < 0.001$  for [each](#)). Somewhat similarly, tobacco and cannabis users were at significantly higher odds of SAEs (OR 1.56), myocardial infarction (OR 2.47), pneumonia (OR 1.94), and hospital readmissions (OR 1.54) ( $p < 0.001$  for each). Conversely, cannabis only users were not at significantly higher odds than non-substance users in any individual or aggregate adverse events assessed.

### **DISCUSSION AND CONCLUSION:**

Cannabis use has been rising over the last 20 years and is expected to rise further as more states legalize its use. Therefore, it is important to understand how cannabis use may impact outcomes following common orthopaedic procedures, such as THA.

The current study confirmed that THA patients with tobacco use were at greater risk of perioperative adverse events (relatively similarly if this was with or without concurrent cannabis use). Conversely, those with cannabis only use were not found to be at greater risk of perioperative outcomes. Of note, concomitant tobacco and cannabis use accounted for 61.57% of cannabis users, which may be a confounding factor for studies that do not account for this overlap.



**Figure:** Forest plot of odds ratios for 90-day postoperative outcomes in total hip arthroplasty patients who did and did not have tobacco and marijuana use prior to and within 1 year of their surgery. Bonferroni correction applied;  $p < 0.001$  considered significant and displayed in bold above.