41 - Title: Proton Pump Inhibitor versus H2 Antagonists for Gastrointestinal Prophylaxis in Total Knee Arthroplasty: A Retrospective Cohort Study

Author(s): Rafael B. Madera, Uttsav Patel, Sean Jang, Ethan Lizarraga, Brian Lynch

Faculty Mentor(s): Brian Lynch

Background: Gastrointestinal (GI) prophylaxis is commonly used after surgical procedures to reduce the risk of stress-related mucosal damage and upper GI bleeding. However, the existing literature on gastrointestinal prophylaxis following total knee arthroplasty (TKA) is both limited and inconclusive. This study aims to compare post-operative outcomes among patients receiving proton pump inhibitors (PPIs), H2 receptor antagonists (H2RAs), or no prophylaxis after TKA.

Methods/Research Design. This retrospective cohort study utilized data from the TriNetX Research Network. Patients who underwent TKA were identified using CPT and ICD-10 codes. Individuals with a documented history of PPI use prior to surgery were excluded. The remaining cohort was stratified based on use of post-operative PPI therapy versus no prophylaxis. Propensity score matching was performed to balance cohorts by age, sex, race, obesity, chronic lower respiratory disease, hyperlipidemia, hypertension, nicotine dependence, alcohol use disorder, chronic kidney disease (CKD), type 2 diabetes mellitus (DM2), and coronary artery disease (CAD). The incidence of selected post-operative outcomes was then compared between cohorts at 2 years following surgery, identified using ICD-10 and CPT codes. Additionally, a secondary analysis compared TKA patients who received post-operative PPIs to those who received post-operative H2RAs, excluding individuals with prior exposure to either medication.

Results (or Preliminary Results, as applicable for a project in progress): In the primary analysis, post-operative PPI use was associated with significantly increased risks for periprosthetic fracture (0.377% vs 0.298%, P:0.0038, RR:1.266, 95%CI:1.079-1.486), and periprosthetic osteolysis (0.047% vs 0.021%, P:0.0032, RR:2.211, 95%CI:1.286-3.8), instability of internal knee prosthesis (0.474% vs 0.406%, P:0.0295, RR:1.168, 95%CI:1.015-1.343), mechanical complication of internal joint prosthesis (2.726% vs 2.517%, P:0.0057, RR:1.083, 95%CI:1.023-1.146), periprosthetic osteolysis (0.09% vs 0.061%, P:0.0257, RR:1.473, 95%CI:1.046-2.074). However, PPI use was associated with significantly lower risks of internal joint infection (1.885% vs 2.028%, P:0.0291, RR:0.93 95%CI:0.871-0.993), and revisions (0.97% vs 1.145%, P:0.0003, RR:0.847, 95%CI:0.774-0.927).

In the secondary analysis, PPI use compared to H2RA was associated with increased risks for periprosthetic fracture (0.3.75% vs 0.251%, P:0.0039, RR:1.494, 95%CI:1.136-1.966), mechanical complications of internal joint prosthesis (2.547% vs 2.302%, P:0.0382, RR:1.106, 95%CI:1.005-1.217), and periprosthetic osteolysis (0.109% vs 0.059%, P:0.0243, RR:1.85, 95%CI:1.074-3.187).

Conclusion (or Preliminary Conclusion, as applicable for a project in progress): Post-operative PPI use following TKA was associated with an increased risk of mechanical complications, periprosthetic fractures, and osteolysis compared to controls, while being associated with a reduced risk of joint infection and revision surgery. In the secondary analysis, PPI use was similarly linked to higher rates of periprosthetic fracture, mechanical complications, and osteolysis when compared to H2RA use. These findings suggest that while PPIs may offer protective benefits against infection and revision, they may also increase the risk of mechanical failure and bone-related complications.