The Association of Dual Antiplatelet Therapy with Post-Surgical Complications following Total Knee Arthroplasty

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INTRODUCTION: Given the increased use of aspirin as deep vein thrombosis (DVT) prophylaxis following total joint arthroplasty, patients who are already on an antiplatelet agent such as clopidogrel end up being on dual antiplatelet therapy (DAPT) in the postoperative period. DAPT has been shown to heighten the risk of bleeding events, hematoma formation, and infection — all of which pose a significant risk to patient outcomes. The purpose of this study was to determine the incidence and risk of postoperative complications in patients receiving DAPT following total knee arthroplasty (TKA).

METHODS: The PearlDiver database was queried for patients who underwent total knee arthroplasty from 2010-2023 and were postoperatively maintained on DAPT consisting of clopidogrel and aspirin. These patients were then propensity matched to patients postoperatively maintained on single antiplatelet therapy (SAPT) consisting of only clopidogrel. The propensity score match was conducted at a 1:3 match ratio and 0.01 caliper. Matching was performed across several covariates to mitigate baseline risk imbalances between cohorts, with chronic antiplatelet use (including P2Y12 inhibitors) and chronic anticoagulant use specifically accounted for as covariates. Clinical outcomes were assessed with the following measures: DVT, myocardial infarction, pulmonary embolism, ED admission, hospital admission, GI bleed, wound dehiscence, hematoma, blood transfusion, transient ischemic attack, blood loss anemia, stroke, pneumonia, acute kidney injury, sepsis, surgical site infection, periprosthetic joint infection, periprosthetic fracture, aseptic loosening, revision, and mortality.

RESULTS: A total of 17,701 patients (4,470 DAPT and 13,231 SAPT) who underwent TKA were analyzed following propensity match. The mean age of the DAPT and SAPT cohorts were 67.7 ± 8.26 and 67.8 ± 7.98, respectively. Chi-square analysis revealed that patients who underwent DAPT had a higher risk of adverse outcomes for several items: wound dehiscence (risk ratio [RR], 1.41 [95% CI, 1.09-1.81], p=0.01), cerebrovascular accident (risk ratio [RR], 1.40 [95% CI, 1.16-1.70], p<0.001), myocardial infarction (risk ratio [RR], 2.07 [95% CI, 1.70-2.52], p<0.001), acute kidney injury (risk ratio [RR], 1.46 [95% CI, 1.26-1.70], p<0.001), surgical site infection (risk ratio [RR], 1.65 [95% CI, 1.09-2.51], p=0.02), periprosthetic joint infection (risk ratio [RR], 1.27 [95% CI, 1.07-1.52], p=0.007), sepsis (risk ratio [RR], 1.60 [95% CI, 1.19-2.15], p=0.002), and mortality post-90 days (risk ratio [RR], 2.28 [95% CI, 1.38-3.77], p=0.001). Additionally, the DAPT cohort was associated with a higher risk of readmission (risk ratio [RR], 1.28 [95% CI, 1.15-1.41], p<0.001) and ED visits (risk ratio [RR], 1.19 [95% CI, 1.10-1.29], p<0.001). There was no statistical difference between the cohorts when comparing incidence and risk of DVT, pulmonary embolism, GI bleed, hematoma, blood transfusion, transient ischemic attack, blood loss anemia, pneumonia, periprosthetic fracture, and aseptic loosening.

DISCUSSION AND CONCLUSION: DAPT maintenance following TKA was shown to be associated with an elevated risk of several postoperative complications including wound dehiscence, periprosthetic joint infection, and mortality. Surgeons should consider these elevated risks when planning DVT prophylaxis postoperatively. Notably, there was not a heightened risk of DVT or pulmonary embolism for patients on SAPT after TKA. If patients are already on a single antiplatelet agent such as clopidogrel, orthopedists may consider discussing DVT prophylaxis with patients' medical teams to avoid the increased risks of DAPT if it is not medically necessary.