

Title: Evaluation of aspirin dose for post-operative VTE prophylaxis in major orthopedic surgery

Background: Venous thromboprophylaxis is a mainstay of post-operative management in patients undergoing orthopedic surgery to prevent venous thromboembolism (VTE). However, the preferred agent, dosing, and treatment duration is controversial. Aspirin is commonly preferred due to low cost and reduced risk of bleeding. Some data suggests that the antithrombotic effect of aspirin 81 mg twice daily is not as pronounced as aspirin 325 mg twice daily and could increase the risk of VTE. The purpose of this review is to determine the rate of VTE among orthopedic surgery patients who received aspirin 81 mg vs. 325 mg twice daily for VTE prophylaxis.

Methods: This retrospective medication use evaluation does not require review by the institutional review board. Data was collected from historical electronic health records of patients who received aspirin for VTE prophylaxis following major orthopedic surgery at SSM Health DePaul Hospital from January 1st, 2017 – December 31st, 2019. Major orthopedic surgery includes total knee arthroplasty, total hip arthroplasty, and hip fracture repair. Data from patients receiving aspirin 81 mg po twice daily and patients receiving aspirin 325 mg po twice daily for VTE prophylaxis was assessed for the presence of post-op DVT or PE while on thromboprophylaxis. Patients who did develop a DVT or PE will have the following data points obtained: age, gender, BMI, home aspirin regimen (if applicable), orthopedic surgery performed, prescribing physician, prophylactic aspirin dose and intended duration, and days of aspirin therapy until development of DVT or PE. All data was recorded confidentially and without patient identifiers. This data was used to compare the rate of symptomatic VTE among patients who received aspirin 81 mg twice daily or aspirin 325 mg twice daily for 42 days for VTE prophylaxis following major orthopedic surgery to help identify the most effective dosing strategy.

Results: The 2,222 patients who underwent major orthopedic surgery by two separate surgeons during January 2017-December 2019 were compared to outpatient direct oral anticoagulant (DOAC) or warfarin prescriptions during that time frame. Of the 185 DOAC or warfarin prescriptions prescribed by those physicians, only 27 had undergone orthopedic surgery during that time and received aspirin post-operatively for VTE prophylaxis. Of those 27, 6 developed symptomatic DVT or PE post-operatively. Five of these patients underwent total knee arthroplasty (TKA), and one underwent total hip arthroplasty (THA). Four of the 6 patients were prescribed aspirin 325 mg twice daily, and two were prescribed 81 mg twice daily. Four of these patients developed VTE while still on aspirin for the intended duration, while 2 developed after completion of aspirin therapy. Five out of the six patients were obese, increasing their risk of developing VTE.

Age/Gender	BMI	Orthopedic Surgery Performed	Aspirin Dose (mg)	Days until VTE developed	DVT or PE	Surgeon
71/Male	35	R TKA	325	22	DVT	Surgeon 1
72/Female	30	R TKA	325	4	PE	Surgeon 1
54/Female	42	R TKA	81	118	DVT	Surgeon 2
53/Male	30	R THA	81	15	DVT	Surgeon 2
63/Male	44	L TKA	325	62	PE	Surgeon 1
75/Female	20	R TKA	325	4	DVT	Surgeon 1

Conclusion: Due to the small number of outpatient DOAC or warfarin prescriptions during the study period, we were only able to positively identify a small number of patients who presented with

symptomatic VTE following major orthopedic surgery. Based on the limited data we did obtain from this evaluation, the most common aspirin regimen these patients were receiving was aspirin 325 mg twice daily and the most common orthopedic surgery performed was TKA. However, the onset of VTE on this regimen was highly variable among these patients which makes it difficult to determine whether a more potent antithrombotic medication should be investigated, or extending the duration of antithrombotic therapy is appropriate. Future directions include performing a prospective evaluation of the differing aspirin regimens in this patient population in order to better account for the presence of additional risk factors of developing VTE, medication adherence, and adherence to a physical therapy regimen.