Aspirin May Be a Suitable Prophylaxis for Visceral Organ Malignancy Patients Undergoing Primary Total Knee Arthroplasty

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INTRODUCTION: Aspirin is the prophylactic agent of choice for venous thromboembolism (VTE) prevention in low-risk patients undergoing primary total knee arthroplasty (TKA). However, there remains a paucity of data in the literature on the efficacy of aspirin as a mode of chemoprophylaxis in patients with a diagnosis of cancer. The purpose of this study was to determine the efficacy of aspirin versus other anticoagulant medications in primary TKA patients who had a diagnosis of active visceral organ malignancy within 1-year of their arthroplasty procedure.

METHODS: This study utilized a national database to identify patients who underwent primary TKA between 2012 and 2022. Only patients with a diagnosis code for active visceral organ malignancy within 1-year prior to their primary TKA were included. Using demographic data, medical comorbidities, and preoperative anticoagulation use, primary TKA patients with cancer who were prescribed aspirin for thromboprophylaxis (n=2,833) were propensity score matched on a 1:1 basis to those that were on non-aspirin medications (n=2,833). The odds ratios (OR) for developing 90-day medical and surgical complications were determined for patients prescribed aspirin only, when compared to those prescribed other types of chemoprophylaxis.

RESULTS: 5,666 matched patients undergoing primary TKA were included in the analysis. Patients in the aspirin group had significantly lower odds of developing deep vein thrombosis (DVT) (1.9% vs. 3.2%; OR 0.59 [0.4 to 0.8], p=0.002) and pulmonary embolism (PE) (0.5% vs. 1.1%; OR 0.42 [0.2 to 0.8], p=0.008), when compared to their counterparts in the non-aspirin group. Furthermore, patients prescribed aspirin were significantly less likely to experience an emergency department (ED) visit following their procedure (7.9% vs. 11.6%; OR 0.65 [0.5 to 0.8], p<0.001).

DISCUSSION AND CONCLUSION: Based on these findings, aspirin may be a suitable option for VTE prophylaxis in patients with visceral organ cancer that are undergoing primary TKA.

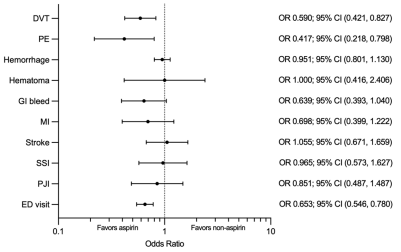

Table 1. Patient characteristics in the aspirin and non-aspirin groups before and after propensity score matching.

	Before Propensity Score Matching				After Propensity Score Matching			
Variable	Aspirin Group (n=4,940)	Non-Aspirin Group (n=3,735)	p-value	Standardized Difference	Aspirin Group (n=2,833)	Non-Aspirin Group (n=2,833)	p-value	Standardized Difference
Age (years)	70.4 ± 8.3	70.2 ± 9.3	0.327	0.021	70.1 ± 8.3	69.8 ± 9.2	0.266	0.030
Female	2,594 (52.5%)	2,215 (59.3%)	**<0.001**	0.137	1,704 (60.1%)	1,686 (59.5%)	0.626	0.013
BMI (kg/m²)	30.2 ± 5.2	31.0 ± 10.0	**0.021**	0.348	30.2 ± 5.3	31.9 ± 7.9	0.164	0.252
Hypertension	3,747 (75.9%)	2,911 (77.9%)	**0.023**	0.050	2,158 (76.2%)	2,143 (75.6%)	0.641	0.012
Diabetes Mellitus	1,538 (32.0%)	1,208 (32.3%)	0.768	0.006	902 (31.8%)	878 (31.0%)	0.492	0.018
COPD	512 (10.4%)	459 (11.8%)	**0.040**	0.044	298 (10.5%)	302 (10.7%)	0.863	0.005
CKD	928 (18.8%)	842 (22.5%)	**<0.001**	0.093	559 (19.7%)	553 (19.5%)	0.841	0.005
Heart Failure	668 (9.5%)	529 (14.2%)	**<0.001**	0.146	290 (10.2%)	309 (10.9%)	0.412	0.022
Myocardial Infarction	266 (5.4%)	243 (6.6%)	**0.021**	0.050	148 (5.2%)	153 (5.3%)	0.679	0.011
HIV	91 (1.8%)	34 (0.9%)	**<0.001**	0.457	27 (1.0%)	32 (1.1%)	0.513	0.017
Stroke	212 (4.3%)	155 (4.1%)	0.746	0.007	107 (3.8%)	116 (4.1%)	0.539	0.016
Liver Disease	808 (16.4%)	616 (16.5%)	0.865	0.004	477 (16.8%)	468 (16.5%)	0.748	0.009
PVD	396 (8.0%)	304 (8.2%)	0.698	0.008	202 (7.1%)	206 (7.3%)	0.837	0.005
PUD	50 (1.0%)	46 (1.2%)	0.333	0.021	33 (1.2%)	38 (1.3%)	0.550	0.016
Hemiplegia/Hemiparesis	37 (0.7%)	34 (0.9%)	0.409	0.018	22 (0.8%)	20 (0.7%)	0.757	0.008
Sepsis	197 (4.0%)	193 (5.2%)	**0.009**	0.056	120 (4.2%)	130 (4.6%)	0.518	0.017
Nicotine Dependence	734 (14.9%)	536 (14.4%)	0.508	0.014	393 (13.9%)	409 (14.4%)	0.542	0.016
Coagulation Defects	543 (11.0%)	557 (14.9%)	**<0.001**	0.117	342 (12.1%)	355 (12.5%)	0.599	0.014
Atrial Fibrillation	344 (7.0%)	869 (23.3%)	**<0.001**	0.467	329 (11.6%)	333 (11.8%)	0.869	0.004
Chronic Aspirin Use	2,675 (54.1%)	1,896 (50.6%)	**0.001**	0.071	1,448 (51.1%)	1,433 (50.6%)	0.690	0.011
Chronic Anticoagulation Use	2,345 (45.4%)	2,390 (64.0%)	**<0.001**	0.422	1,522 (53.7%)	1,539 (54.3%)	0.650	0.012

Data reported as mean ± standard deviation or count (%).
BMI, body mass index; *COPD*, chronic obstructive pulmonary disease; *CKD*, chronic kidney disease; *HIV*, human immunodeficiency virus; *PVD*, peripheral vascular disease; *PUD*, peptic ulcer disease.

Table 2. Rates of complications between the aspirin and non-aspirin groups.

Complication	Aspirin Group (n=2,342)	Non-Aspirin Group (n=2,342)	p-value
DVT	55 (1.9%)	92 (3.2%)	**0.001**
PE	13 (0.5%)	31 (1.1%)	**0.006**
Hemorrhage	282 (10.0%)	295 (10.4%)	0.568
Hematoma	≤ 10*	≤ 10*	-
GI bleed	27 (1.0%)	42 (1.5%)	0.069
MI	21 (0.7%)	30 (1.1%)	0.206
Stroke	39 (1.4%)	37 (1.3%)	0.817
SSI	28 (1.0%)	29 (1.0%)	0.894
PJI	23 (0.8%)	27 (1.0%)	0.570
ED visit	223 (7.9%)	328 (11.6%)	**<0.001**

*TriNetX does not report counts of ≤10.
DVT, deep vein thrombosis; *PE*, pulmonary embolus; *GI*, gastrointestinal; *MI*, myocardial infarction; *SSI*, surgical site infection; *PJI*, periprosthetic joint infection; *ED*, emergency department.