Noninferiority of Aspirin to Other Anticoagulants for VTE Prophylaxis in Low Risk Patients Undergoing Aseptic Revision TKA

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INTRODUCTION:
While aspirin has been widely adopted as an effective method for deep venous thrombosis (DVT) prevention following primary total knee arthroplasty (TKA), concerns remain with regards to its efficacy in the setting of revision TKA. However, the risk for thromboembolic events must be weighed against the increased potential for bleeding with more potent anticoagulants. This study aimed to compare venous thromboembolism (VTE) and transfusion rates between patients receiving aspirin (ASA) versus non-aspirin anticoagulation (non-ASA) following aseptic rTKA.
METHODS:
We identified patients undergoing aseptic rTKA from 2016–2023 in an administrative database. Those with infection, fracture, prior VTE, coagulopathy, or preoperative anticoagulant use were excluded. Patients were grouped by postoperative prophylaxis: aspirin alone or non-aspirin anticoagulants. Groups were mutually exclusive, except patients who began on aspirin but were transitioned to anticoagulation after VTE remained in the ASA group. Propensity score matching (1:1) was performed on demographics, insurance, comorbidities, postoperative home health use, hospital length of stay ≤1 day, surgery year, and CPT code, yielding 4,585 patients per group. Outcomes included 30- and 90-day DVT, pulmonary embolism (PE), overall VTE, and transfusion.
RESULTS:
In the matched cohort, ASA use was associated with lower 90-day DVT (0.8% vs. 2.1%), PE (0.6% vs. 2.2%), and VTE (1.1% vs. 3.3%) (all p<0.001). Transfusion was also lower in the ASA group at 30 days (0.6% vs. 1.2%; p=0.003) and 90 days (0.7% vs. 1.4%; p=0.002) [Table-1]. DVT ultrasound utilization within 30 days was significantly higher in the non-ASA group (7.1%) compared to ASA (5.1%, p<0.001), which may partly account for the higher VTE detection. Regression controlling for either single component or both component revision still showed reduced odds of VTE with ASA compared to non-aspirin prophylaxis [Table-2].
DISCUSSION AND CONCLUSION: Aspirin is a safe, effective, and noninferior option for VTE prophylaxis following aseptic rTKA in appropriately selected patients.

Table 1.

	Revision TKA		
	Non-ASA (n=4,585) "CONTROL"	ASA (n=4,585) "TREAT"	P-value
BLEEDING OUTCOMES			
90-day Transfusion, n (%)	65 (1.4%)	33 (0.7%)	**0.002**
30-day Transfusion, n (%)	56 (1.2%)	28 (0.6%)	**0.003**
90-day Any Bleeding Complication, n (%)	79 (1.7%)	70 (1.5%)	0.509
30-day Any Bleeding Complication, n (%)	52 (1.1%)	51 (1.1%)	1.000
90-day Hemorrhagic Stroke, n (%)	0 (0.0%)	0 (0%)	-
30-day Hemorrhagic Stroke, n (%)	0 (0.0%)	0 (0%)	-
90-day GI Bleed, n (%)	35 (0.8%)	30 (0.7%)	0.619
30-day GI Bleed, n (%)	16 (0.3%)	15 (0.3%)	1.000
90-Day Hematoma, n (%)	25 (0.5%)	31 (0.7%)	0.503
30-Day Hematoma, n (%)	22 (0.5%)	29 (0.6%)	0.400
90-day "Post-op Bleeding", n (%)	32 (0.7%)	31 (0.7%)	1.000
30-day "Post-op Bleeding", n (%)	25 (0.5%)	29 (0.6%)	0.682
THROMBOEMBOLIC OUTCOMES			
90-day DVT LE, n (%)	96 (2.1%)	38 (0.8%)	**<0.001**
30-day DVT LE, n (%)	72 (1.6%)	26 (0.6%)	**<0.001**
90-day PE, n (%)	102 (2.2%)	26 (0.6%)	**<0.001**
30-day PE, n (%)	84 (1.8%)	17 (0.4%)	**<0.001**
90-day VTE, n (%)	152 (3.3%)	51 (1.1%)	**<0.001**
30-day VTE, n (%)	124 (2.7%)	34 (0.7%)	**<0.001**
DVT US performed within 90d	426 (9.3%)	350 (7.6%)	**0.005**
DVT US performed within 30d	326 (7.1%)	235 (5.1%)	**<0.001**

Table 2

	Multivariable regression for VTE events, controlling for Knee CPT Code	
Outcome: PE	**OR [95% CI]**	**P-value**
ASA (ref = AC)	0.25 [0.16-0.38]	**<0.001**
CPT-27487 (ref = CPT-27486)	1.3 [0.91-1.93]	0.160
Outcome: DVT (Lower extremity)		
ASA (ref = AC)	0.39 [0.27-0.57]	**<0.001**
CPT-27487 (ref = CPT-27486)	1.41 [0.98-2.06]	0.0736
Outcome: VTE		
ASA (ref = AC)	0.32 [0.24-0.45]	**<0.001**
CPT-27487 (ref = CPT-27486)	1.46 [1.08-2.00]	**0.0148**