How Does Aspirin Compare to Other Anticoagulants in Patients Undergoing Knee Prosthesis Explantation with Spacer Insertion?

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Background

- Venous thromboembolism (VTE) remains an important complication following total knee revision arthroplasty (rTKA)
- rTKA for periprosthetic joint infection (PJI) is associated with increased risk of VTE compared to aseptic rTKA [1].
- Previous studies reported Aspirin to be safe and effective in prevention of VTE after aseptic rTKA.
- However, there is limited literature on optimal VTE prevention drug after knee explantation with spacer insertion for PJI.

Objectives

We conducted a propensity-score matched analysis to:

Compare the safety and effectiveness of Aspirin monotherapy with non-Aspirin monotherapy and dual therapy following knee explantation with spacer insertion in preventing VTE

Methods

- We conducted a retrospective analysis using the Research Network on the TriNetX healthcare database (2006 – 2025)
- We identified adult patients undergoing their first knee explantation with spacer insertion for PJI using ICD-10 and CPT codes.
- Patients were required to have a preoperative PJI diagnosis and a concomitant spacer insertion code on the same day of surgery.
- Patients with spacer removal/exchange and/or arthrotomy codes on same day of surgery were excluded.
- Stratified based on the postoperative VTE drug prescribed (defined as prescription within 2 weeks after surgery [2]) into 3 cohorts:
  1. Aspirin
  2. Non-Aspirin (Rivaroxaban, Apixaban or Enoxaparin)
  3. Dual therapy (Aspirin and a non-Aspirin)
- Ensured no overlapping prescriptions in monotherapy cohorts.
- 1:1 propensity score matched for relevant comorbidities, including age at surgery, sex, history of VTE, stroke, cancer, coagulopathy, body mass index, tranexamic acid use, glycemic control and smoking among other variables.
- Outcomes of interest: VTE, transfusion, wound disruption, bleeding and death
- TriNetX built-in tool for statistical analysis.
- Used chi-square test for categorical variables and student t-test for continuous variables
- Significance threshold was set at $p<0.05$.

Results

The initial query resulted in 3,653 patients with 1,318 receiving Aspirin, 1,470 receiving non-Aspirin and 865 receiving dual therapy.

Non-Aspirin vs Aspirin
- After matching, each cohort consisted of 1,031 well-balanced patients
- 90 days: Non-Aspirin monotherapy was associated with higher rates of VTE, transfusion) and wound disruption compared to Aspirin monotherapy (Table 1).

Dual therapy vs Aspirin
- After matching, each cohort consisted of 734 well-balanced patients.
- 90 days: Dual therapy was associated with higher 90-day VTE rates compared to Aspirin

Outcome	Non-Aspirin (n=1,031)	Aspirin (n=1,031)	RR (95% CI)	p-value	Dual therapy (n=734)	Aspirin (n=734)	RR (95%CI)	p-value
VTE %	5.04%	2.43%	2.08 (1.30-3.33)	**0.002**	5.45%	2.59%	2.11 (1.23-3.6)	**0.005**
Transfusion %	10.38%	8.24%	1.26 (0.96-1.65)	**0.096**	10.49%	8.58%	1.22 (0.89-1.68)	0.214
Wound disruption %	7.37%	5.14%	1.43 (1.02-2.02)	**0.037**	5.31%	4.09%	1.30 (0.82-2.07)	0.267
Bleeding %	2.04%	1.55%	1.31 (0.69-2.50)	0.407	2.32%	1.91%	1.21 (0.60-2.45)	0.586
Death %	2.04%	1.84%	1.11 (0.60-2.04)	0.750	2.04%	2.18%	0.94 (0.47-1.88)	0.856

Confidence interval (CI), Risk ratio (RR), Venous thromboembolism (VTE). Bold indicates statistical significance ($p<0.05$).

Table 1: Summary of the results after 1:1 matching comparing use of Aspirin with non-Aspirin and Dual therapy after septic knee explantation with spacer insertion.

Discussion

- Aspirin was not associated with increased risk of VTE, bleeding or wound disruption compared to non-Aspirin and dual therapy.
- Data aligns with recent study reporting lower 90-day rates of VTE and transfusion when comparing Aspirin with low-molecular-weight Heparin following knee prosthesis explantation with spacer insertion for PJI [3]
- Limitations:
  - Unavailable microbiology and antibiotic data
  - Adherence, dose and duration of prophylactic drug
  - Couldn't determine reimplantation, type of spacer, intraoperative complications and blood loss.

Conclusion

- Our data suggests that Aspirin might be safe and non-inferior to other anticoagulant regimens for VTE prevention following knee prosthesis explantation with spacer insertion
- Further prospective studies are needed to confirm these findings.

References

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