Comparing Aspirin and Low-molecular-weight heparin for VTE Prophylaxis after Total Knee Arthroplasty

Authors: Cleveland McCarty, BS[1,2]; Noah Schetselaar, BS [1,2]; Aubrey Bailey, BS[1,2]; Cooper Erickson, MBA[1,2]; Shirin Haan, BS[2]; Benjamin Wu[2]; R. Jacob Kaler MD[1,3]; Quincy Tran MD[2,4,5]; Trager Hintze Pharm.D., BCCCP[1,2]

Objective

To compare aspirin vs LMWH thromboprophylaxis following TKA, examining postoperative VTE, major bleeding, and associated health outcomes.

Methods

We conducted a retrospective cohort study using TriNetX data of adults undergoing primary total knee arthroplasty (TKA) for osteoarthritis, comparing ASA versus LMWH for postoperative VTE prophylaxis. The primary outcome was the occurrence of VTE (PE and DVT) at 30 and 90 days. Secondary outcomes included mortality, bleeding, reoperation, and prosthetic joint infection. Propensity-score matching was performed to reduce confounding using 1:1 nearest-neighbor matching without replacement with a 0.1 caliper. Covariate balance was assessed using standardized mean differences. Absolute risk, risk difference, and risk ratio with 95% confidence intervals were calculated for outcomes at 30 and 90 days.

Results

At 30 days the VTE absolute risk for LMWH (N = 23,398) was 1.1% and ASA (N = 23,516) was 1.0% yielding a risk difference of 0.1% (0.1%, 0.3%; p = 0.257) with a risk ratio of 1.106 (0.929, 1.316). At 90 days the VTE absolute risk for LMWH was 1.7% and ASA was 1.4% yielding a risk difference of 0.2% (0.1%, 0.5%; p = 0.034) with a risk ratio of 1.169 (1.012, 1.357). Secondary outcomes of major bleeding events, reoperation, and prosthetic joint infection were all comparable in terms of risk difference and risk ratio at both 30 and 90 days.

Conclusion

No meaningful difference in VTE was observed between LMWH and ASA post TKA. As an alternative to LMWH, ASA demonstrates similar observed effectiveness in a large, propensity-matched real-world cohort. Furthermore, ASA did not demonstrate an increased risk of major bleeding events or other post-surgical complications. Given the comparable outcomes and practical advantages including lower cost and ease of oral administration, these findings support further consideration of ASA as an alternative prophylactic strategy. Further prospective research may help confirm these findings.

Author Affiliations

[1] Alice L Walton School of Medicine, Bentonville, Arkansas, United States

[2] Research Associate Program in Emergency Medicine & Critical Care, Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland, United States
[3] Mercy Health Northwest Arkansas, Rogers, Arkansas, United States
[4] Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, Maryland, United States
[5] Program In Trauma, The R Adam Cowley Shock Trauma Center, University of Maryland School of Medicine, Baltimore, Maryland, United States