

Risk-Stratified Thromboprophylaxis Effects of Aspirin versus Low-Molecular-Weight Heparin in Orthopaedic Trauma Patients

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Purpose: The PREVENT CLOT trial concluded thromboprophylaxis with aspirin was noninferior to low-molecular-weight heparin (LMWH) in preventing death in orthopaedic trauma patients. This secondary analysis sought to determine if the effects of aspirin versus LMWH differed based on patients' baseline risk of venous thromboembolism (VTE).

Methods: This PREVENT CLOT secondary analysis included 12,211 adult patients indicated for thromboprophylaxis due to an operatively treated extremity fracture or pelvis or acetabulum fracture. We used the Caprini Score to calculate patients' baseline risk of VTE, stratifying patients into risk quartiles ranging from low (<1%) to high risk (>10%). The primary outcome was a composite of thromboembolic outcomes within 90 days. We assessed treatment effects using the win ratio method. This approach paired all patients in each treatment group and compared the outcomes hierarchically, starting with death, followed by pulmonary embolism, deep vein thrombosis, then bleeding when the patients could not be differentiated on a more severe outcome. The win ratio is the number of wins in the aspirin arm divided by the number of wins in the LMWH arm.

Results: In the high-risk quartile (n = 3052), 46% of patients had a femur fracture, 42% had a pelvis or acetabulum fracture, 48% had a thoracic injury, 39% had a spinal injury, and 35% had a head injury. Low-risk quartile (n = 3053) patients most commonly had a tibia fracture (67%), and few had thoracic (5%), head (1%) or spinal (1%) injuries. In the high-risk quartile, there was no significant difference in the effect of aspirin compared to LMWH on the composite outcome (win ratio, 0.95; 95% CI, 0.83–1.09, P = 0.48). This result was consistent in the low-risk quartile (win ratio, 1.09; 95% CI, 0.85–1.40, P = 0.51), low-medium risk quartile (win ratio, 1.01; 95% CI, 0.82–1.26, P = 0.90), and medium-high risk quartile (win ratio, 0.98; 95% CI, 0.83–1.15, P = 0.78).

Conclusion: Thromboembolic outcomes were similar when either aspirin or LMWH is used for prophylaxis. This result held true even when considering patients at highest risk of VTE.