Dedicated Anticoagulation Management Protocols in Fragility Femoral Fracture Care: A Source of Significant Variance and Limited Effectiveness in Improving Time to Surgery

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Purpose: Approximately 20% of femoral fragility fracture patients take anticoagulants, typically warfarin or direct oral anticoagulant (DOAC). These can impact timing of surgery affecting patient survival. Due to several possible approaches and numerous factors to consider in the preoperative workup of anticoagulated patients, potential for variations in clinical practice exist. Some hospitals employ dedicated anticoagulation management protocols to address this issue and to improve time to surgery. This study aimed to determine the proportion of hospitals with such protocols, compare protocol guidance between hospitals, and evaluate the effectiveness of protocols in facilitating prompt surgery.

Methods: Data were prospectively collected through a multicenter approach involving hospitals across the United Kingdom. Femoral fragility fracture patients aged ≥60 years and admitted to hospital between May 1 and July 31, 2023 were included. Information from dedicated anticoagulation management protocols at participating units were collated on several domains relating to instructions on timing of surgery. Logistic and linear regression were used to evaluate effects of dedicated protocols on time to surgery.

Results: Dedicated protocols for warfarin and DOAC patients were present at 41 (52.6%) and 43 (55.1%) hospitals. International normalized ratio (INR) values for proceeding to surgery in warfarin patients varied between protocols: 1.5 (n = 28), 1.8 (n = 6), and 2 (n = 6). For DOAC patients, 35/43 (81.4%) and 8/43 (18.6%) protocols advised timing of surgery based on renal function and absolute time from last dose, respectively. Analysis of 10,197 patients across 78 hospitals found mean time to surgery was delayed by 10.64 hours (95% confidence interval [CI] 4.14-17.15, P = 0.001) and improved by 13.64 hours (95% CI 25.06-2.21, p=0.019) among DOAC and warfarin patients, respectively, who presented to hospitals with dedicated protocols compared to those without. Fewer patients taking DOACs received surgery within 36 hours of admission at hospitals with dedicated protocols compared to those without (odds ratio [OR] 0.73, 95% CI 0.54-0.99, P = 0.040), while there were no differences among patients taking warfarin (OR 1.64, 95% CI 0.75-3.57, P = 0.219).

Conclusion: Around half of hospitals employed a dedicated anticoagulation management protocol for femoral fragility fracture patients. Substantial variation in guidance was found between protocols. Dedicated protocols currently being used are ineffective at improving proportion of patients receiving surgery within the defined target of 36 hours of admission.