

Venous Thromboembolism Following Delayed Surgery of a Hip Fracture

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Purpose: The goal of this study was to evaluate the incidence of venous thromboembolism (VTE) in patients with hip fractures whose surgery was delayed, and the effect of prophylaxis intervention regards to its success in preventing thromboembolic complications.

Methods: The medical records of patients who presented with a fracture were retrospectively obtained. Inclusion criteria were the following: (1) surgically treated patients with hip fracture, (2) surgical delay >24 hours from injury to surgery, (3) aged 50 years or older, and (4) low-energy injury. Exclusion criteria were (1) pathologic fracture and (2) multiple trauma patients. Delayed surgery was defined as surgery 24 hours after injury. All patients had DVT prophylaxis postoperatively. Our conventional protocol of prophylaxis for VTE was anti-embolism stocking without screening (group 1, n = 59). From September 2017, our intensive protocol for VTE was performed with indirect deep venous thrombosis (DVT) CT and pulmonary embolism (PE) CT (group 2, n = 60). When DVT was detected on screening, inferior vena cava (IVC) filter was applied before the operation. Our prophylaxis protocol consisted of mechanical prophylaxis immediately after admission and chemical prophylaxis from admission to postoperative 7 days. Overall postoperative symptomatic VTE incidence was evaluated. The relationship were analyzed between VTE and each age, sex, fracture classification, body mass index (BMI), time from injury to admission, time from admission to surgery, transfer from other hospital, preoperative infection, medical comorbidity using Charlson comorbidity index (CCI), history of DVT or varicose vein, preoperative anticoagulation agent, preoperative ambulation state using Koval score, operation method (osteosynthesis vs arthroplasty), operation time, ICU stay, and hospital stay. We compared the incidence of postoperative VTE between the 2 groups.

Results: 111 patients (38 males and 81 females) with a mean age of 78.2 years were enrolled. The percentage of patients transferred from other hospitals was 68.1%. There were 63 cases of femur neck fractures, 49 cases of intertrochanteric fractures, and 7 cases of subtrochanteric fractures. The average time from injury to admission was 90.2 hours (range, 0.5-2160 hours), and the average time from admission to the operation was 75.3 hours (range, 16-934 hours). The average time from injury to operation was 165.5 hours (range, 25-2250 hours). A total of 8 patients developed VTE (6.7%), of whom 2 had DVT, 3 had PE, and 3 patients had both DVT and PE. Four patients (6.7%) were screened on preoperative evaluation in group 2. The other 4 patients developed VTE postoperatively, and they were group 1. In group 1, postoperative VTE occurrence of 6.8% (4/59) was higher than that 0% (0/64) in group 2 ($P = 0.040$).

Conclusion: The patients with delayed hip fracture surgery showed a high prevalence of preoperative VTE, but our management protocol showed effective successful prevention of symptomatic VTE including PE.