The Influence of Surgical Approach on Rates of Symptomatic Venous Thromboembolism in Primary Total Hip Arthroplasty

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INTRODUCTION: Venous thromboembolism (VTE) is an infrequent but potentially serious complication after total hip arthroplasty (THA). During femoral work in posterior approach (PA) THA, adduction and internal rotation kinks the proximal femoral vein producing venous stasis and potentially increasing VTE risk. During direct anterior approach (DAA) THA, femoral work is carried out in hip external rotation, a position which may better preserve venous flow. Consequently, we investigated the influence of surgical approach on VTE rates and associated factors.

METHODS: We identified (n=28,174) patients who underwent primary, unilateral THA either through the PA (n= 21,662) or DAA (n= 6,472) from 2016 to 2022 at an academic center. Our primary outcome was 90-day symptomatic VTE. A Firth's multivariate regression analysis was used to find an association between surgical approach and VTE.

RESULTS: The VTE rate was 0.26% (n=74). There were 36 deep venous thromboses (DVT), 33 pulmonary embolisms (PE) and 5 simultaneous DVTs and PEs. VTE rate in the DAA group was lower (0.08% - n=5) compared to that of the PA group (0.32% - n=69, $p<0.001$). Multivariable regression analysis revealed that the DAA was associated with a significantly lower likelihood of developing VTE (Odds ratio (OR) 0.25, Confidence interval (CI) 0.09-.0.66, $p=0.005$). Prolonged surgical duration (OR 1.01, CI 1.01-1.02, $p<0.001$), age 80+ (OR 4.95, CI 2.30-10.64, $p<0.001$) and blood transfusion (OR 6.25, CI 1.46-26.74, $p=0.014$) were associated with increased VTE risk.

DISCUSSION AND CONCLUSION: The use of DAA was associated with lower VTE rates than the PA. In addition, the DAA was associated with a reduced likelihood of developing VTE, whereas increased surgical duration and age 80+, history of VTE and blood transfusion were found to increase the risk of VTE.