

# Risk of venous thromboembolism in abdominal versus minimally invasive hysterectomy for benign conditions

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## Objective

We sought to describe the incidence of venous thromboembolism (VTE) following hysterectomy for benign conditions and to estimate if VTE incidence differs for abdominal and minimally invasive hysterectomy.

## Study Design

Data for patients who underwent hysterectomy for benign conditions from 2010 through 2012 were abstracted from the American College of Surgeons National Surgical Quality Improvement Program database. Cases of VTE were compared to those without VTE. Minimally invasive hysterectomy was defined as both vaginal and laparoscopic hysterectomy. Pearson  $\chi^2$  test, Student *t* test, and binary logistic regression were used for analysis.

## Results

A total of 44,167 patients underwent hysterectomy; 12,733 (28.8%) underwent open hysterectomy, 22,559 (51.1%) underwent laparoscopic hysterectomy, and 8875 (20.1%) underwent vaginal hysterectomy. The incidence of VTE for open hysterectomy was higher (0.6%, 81/12,733) than minimally invasive hysterectomy (0.2% 73/31,434,  $P < .001$ ). Open surgery ( $P < .001$ ), body mass index ( $P = .006$ ), race ( $P < .001$ ), diabetes ( $P = .037$ ), preoperative functional status ( $P < .001$ ), American Society of Anesthesiologists class ( $P < .001$ ), total operative time ( $P < .001$ ), and time from surgery to discharge ( $P < .001$ ) were each associated with VTE. Age, hypertension, current smoking, pack-year history, and year operation was performed were not associated with VTE. Using binary logistic regression, open surgery ( $P < .001$ ), operative time ( $P < .001$ ), and length of stay ( $P < .001$ ) remained associated with VTE. The odds ratio for VTE after open hysterectomy compared with minimally invasive hysterectomy was 2.45 (95% confidence interval, 1.77–3.40).

## Conclusion

In this large quality database, a minimally invasive approach to hysterectomy was independently associated with a decreased incidence of VTE when compared with open hysterectomy.