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Patient Care

Safety and Efficacy of Extended Duration of Thromboembolic Prophylaxis Following Radical Cystectomy: An Initial Institutional Experience

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Abstract

Introduction: We evaluated the safety and efficacy of extended duration of pharmacological prophylaxis for preventing symptomatic venous thromboembolism following radical cystectomy.

Methods: We recorded symptomatic venous thromboembolism and lymphocele events within 30 days of radical cystectomy among patients treated with extended duration of pharmacological prophylaxis (enoxaparin 40 mg subcutaneously daily for 30 days). We compared these outcomes to those in the cohort of patients who underwent radical cystectomy at our institution in the year prior to extended prophylaxis implementation. Unadjusted descriptive statistics and univariate analyses were performed using the Pearson test or the Fisher chi-square test for categorical variables and the Wilcoxon rank sum test for continuous variables.

Results: We analyzed the records of 52 patients who did and 82 who did not receive extended duration of pharmacological prophylaxis after radical cystectomy. Only 1 patient (1.9%) discharged home on extended prophylaxis was diagnosed with venous thromboembolism within 30 days of RC compared to 5 (6.1%) who had not received extended prophylaxis. In 3 patients symptomatic lymphocele developed within 30 days of radical cystectomy, including 1 (1.9%) who had received extended prophylaxis and 2 (2.4%) who had not. No patient in either cohort was rehospitalized for bleeding complications.

Conclusions: Our initial experience suggests that extended duration of pharmacological prophylaxis is associated with a lower rate of venous thromboembolism following radical cystectomy and it does not increase the risk of bleeding or symptomatic lymphocele. These data warrant validation in larger patient cohorts, ideally in the prospective clinical trial setting.

Key Words: urinary bladder, cystectomy, venous thromboembolism, enoxaparin, prevention and control

Abbreviations and Acronyms

DVT = deep venous thrombosis

EDPP = extended duration of pharmacological prophylaxis

PE = pulmonary embolus

RC = radical cystectomy

VTE = venous thromboembolism

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Radical cystectomy with bilateral pelvic lymph node dissection represents the gold standard treatment for muscle invasive bladder cancer as well as high risk nonmuscle invasive disease. Nevertheless, this procedure has been associated with significant perioperative morbidity[1−3] with a resulting adverse impact on patient outcomes as well as health care system costs.[4]

In particular, RC has been associated with the highest rate of VTE, including DVT and PE, among urological procedures with VTE noted in 2% to 10% of patients following RC.[5−11] VTE results in a not insubstantial risk of patient mortality from PE[6] and it has been targeted as a surgical quality metric. Isolated DVT without PE also represents an important pathological condition due to the risk of proximal migration of the clot and the subsequent development of PE.[12] As such, efforts to decrease the patient risk of these events represent a critical opportunity to improve patient care and reduce health system costs. Accordingly, the AUA (American Urological Association) has developed a Best Practice Statement for pharmacological and mechanical prophylaxis for this high risk population during inpatient postoperative care.[13]

Interestingly, increasing data have demonstrated that in fact most VTE events after RC occur after hospital discharge.[6−8,14] Thus, the rationale exists to treat patients with EDPP to decrease the risk of VTE during the period when patients have been found to be particularly at risk. EDPP with low molecular weight heparin has been reported in other surgical populations to safely decrease post-discharge VTE events,[15] although these studies included a limited number of patients undergoing genitourinary surgeries and RC specifically.

We present our initial institutional experience with EDPP after RC to assess efficacy and safety in this patient cohort.

Methods

In May 2014 we enacted an institutional change in clinical practice by which patients undergoing RC received EDPP (enoxaparin 40 mg subcutaneously daily for 30 days) at the time of hospital discharge. Contraindications to EDPP included medication allergy, bleeding disorder and a history of heparin induced thrombocytopenia.

After receiving institutional review board approval we identified all patients who underwent RC at our institution from April 2013 to June 2015. These dates were chosen to include patients treated at our center in the year before the implementation of EDPP as a comparison cohort to those who received EDPP. Receipt of EDPP was assessed via billing records and confirmed by review of the discharge medical reconciliation sheet.

Patients were treated with RC by various surgeons using standard techniques. The extent of lymphadenectomy was not standardized. However, it was generally performed from the mid common iliac artery proximally to the inguinal ligament distally, the genitofemoral nerve laterally, the bladder medially and the pelvic floor inferiorly. Open RC and robot-assisted RC were included. All patients received subcutaneous unfractionated heparin at anesthesia induction, which was continued 3 times daily during hospitalization. Early ambulation as part of our RC clinical care pathway and mechanical prophylaxis with lower extremity sequential compression devices were standard across the entire cohort.

Clinicopathological variables recorded included age, gender, smoking status, ECOG (Eastern Cooperative Oncology Group) performance status, body mass index, history of VTE, renal function status, receipt of neoadjuvant chemotherapy, operative time, number of lymph nodes removed, pathological tumor stage, pathological lymph node stage, choice of urinary diversion and duration of postoperative hospitalization. Tumors were staged in accordance with the AJCC Cancer TNM classification, 7th edition.[16]

VTE within 30 days of RC was recorded as DVT alone, PE alone or DVT and PE. All events were symptomatic and confirmed with imaging, including Doppler ultrasound for DVT and chest computerized tomography for PE. Patients did not undergo routine screening after surgery for thrombosis. In addition, the rate of symptomatic lymphocele diagnosis as confirmed by imaging and requiring percutaneous drainage was recorded. Post-discharge hemoglobin and hospital readmission for bleeding complications were also evaluated, defined as blood loss anemia requiring transfusion or intervention. Events were captured from the medical record by 2 reviewers.

Unadjusted descriptive statistics and univariate analyses were performed using the Pearson test or the Fisher chi-square test for categorical variables and the Wilcoxon rank sum test for continuous variables in Stata®, version 12.0. The medication cost of EDPP was obtained from the Mayo Clinic pharmacy.

Results

A total of 204 patients underwent RC during the study period. Of these patients 24 had a history of VTE and, therefore, they were excluded from analysis. Furthermore, 46 patients who underwent RC after the institution of EDPP did not in fact receive enoxaparin at discharge home due to contraindication or patient/physician discretion. The supplementary table (http://urologypracticejournal.com/)