Case Report

Deep Vein Thrombosis After Laparoscopic Nephrectomy: A Case Report

Zijian Zhang *

Posted Date: 18 July 2024

doi: 10.20944/preprints202407.1544.v1

Keywords: deep vein thrombosis; nephroureterectomy; surgical complication

Case Report

Deep Vein Thrombosis After Laparoscopic Nephrectomy: A Case Report

Zhang Zijian

Department of Urology, Beijing Chaoyang Hospital, Capital Medical University; zzhang742@uwalumni.com

Abstract: This case report presents a 63-year-old male patient who developed deep vein thrombosis (DVT) shortly after undergoing retroperitoneal laparoscopic nephroureterectomy for ureteral and renal pelvis tumors. Despite early postoperative mobilization and administration of low molecular weight heparin, the patient developed DVT, highlighting the limitations of current postoperative management strategies. The patient was promptly treated with the placement of an inferior vena cava filter and continued anticoagulation therapy, preventing the progression to pulmonary embolism and leading to a successful discharge. The report emphasizes the importance of vigilant postoperative monitoring and timely intervention in preventing complications such as DVT. It suggests that current strategies, including early mobilization and standard anticoagulation therapy, may not be sufficient to fully prevent DVT, necessitating further optimization of postoperative care. Regular monitoring of D-Dimer levels and ultrasound examinations, as well as appropriate limb protection measures during surgery, are recommended to detect and manage potential DVT early. This case contributes valuable insights into the early detection and management of postoperative DVT, providing useful references for similar cases and stressing the need for enhanced postoperative monitoring and timely intervention.

Keywords: deep vein thrombosis; nephroureterectomy; surgical complication

Introduction

Retroperitoneal laparoscopic nephroureterectomy is a widely used minimally invasive surgery for treating ureteral tumors and renal pelvis tumors. However, due to the common use of the lateral decubitus position, the risk of postoperative deep vein thrombosis (DVT) must be considered. In this case, despite early postoperative mobilization and administration of low molecular weight heparin for anticoagulation, the patient developed DVT shortly after surgery. Following the insertion of an inferior vena cava filter and continued anticoagulation therapy, the patient did not develop pulmonary embolism and was successfully discharged. This case report aims to share the diagnostic and treatment experience, enhance clinical vigilance for postoperative DVT, and explore potential improvements in postoperative management strategies.

1. Medical Record Data:

1.1. Patient Information and Medical History

Patient: Male, 63 years old,
First Admission Date: July 29, 2021
Last Follow-up Date: June 30, 2024

Chief Complaint: Discomfort in the left waist and abdomen for 5 months, 4 years after bladder cancer surgery. Current Medical History: The patient underwent transurethral resection of bladder tumor (TUR-BT) 4 years ago for "bladder cancer," with postoperative pathology indicating invasive urothelial carcinoma. A second TUR-BT was performed, with pathology reporting "considered

 doi:10.20944/preprints202407.1544.v1

urothelial dysplasia." The patient underwent regular chemotherapy and follow-up. Five months ago, the patient experienced discomfort in the waist and abdomen without urinary symptoms. Further diagnosis at our hospital revealed CT findings of bladder wall thickening and left ureteral wall thickening, suspecting bladder cancer involving the ureter with secondary hydronephrosis and lymph node enlargement. The patient was admitted with "left hydronephrosis and post-bladder cancer surgery."

Past Medical History: The patient is generally healthy aside from the aforementioned conditions, denies family and genetic history, and has no epidemiological history.

1.2. Physical Examination

Temperature: 36.5°C, Pulse: 80 bpm, Blood Pressure: 120/70 mmHg.

Abdomen: No abnormal masses detected upon inspection or palpation. No tenderness in the ureteral area, no costovertebral angle tenderness, and kidneys not palpable. No percussive pain in the kidney areas. No vascular sounds heard in the renal areas. No edema in the lower limbs, muscle strength in both lower limbs is normal.

1.3. Auxiliary Examinations

1. Blood Routine: WBC 6.5710^9/L *(normal), Neutrophils 65.9% (normal), Hemoglobin 141g/L (normal), Platelets 178*10^9/L (normal).
2. Blood Biochemistry: Albumin 48.1g/L (normal), Creatinine 106.5 umol/L (normal), Urea Nitrogen 6.60 mmol/L (normal), Uric Acid 320 umol/L (normal).
3. Coagulation: PT 11.4 seconds (normal), APTT 25.2 seconds (normal), D-Dimer 0.73 mg/L FEU (slightly elevated).
4. Enhanced CT of Urinary System: Bladder wall thickening, left ureteral wall thickening, secondary hydronephrosis, lymph node enlargement, significant left kidney atrophy, and perirenal and peritoneal effusion.
5. Renal Scintigraphy: Reduced left kidney perfusion, severely impaired glomerular filtration and renal clearance functions. Split renal GFR: Left kidney 5.63 ml/min, right kidney 37.55 ml/min.

1.4. Diagnosis and Differential Diagnosis

Current Diagnosis: Ureteral tumor, non-functional kidney, hydronephrosis, history of bladder malignancy.

Diagnostic Basis: Elderly male with a history of bladder cancer surgery 4 years ago, recent discomfort in the left waist and abdomen, and CT findings of bladder wall and ureteral thickening, and significant left kidney atrophy. These clinical and imaging findings support the diagnosis.

Differential Diagnosis:

1. Bladder cancer recurrence: Requires bladder biopsy for confirmation.
2. Ureteral tumor: CT suggests left ureteral wall thickening, biopsy needed.
3. Ureteral stone: Imaging does not support this diagnosis.
4. Chronic pyelonephritis: Chronic left kidney atrophy and perirenal effusion, no infection indicators in blood and urine tests.

 doi:10.20944/preprints202407.1544.v1

1.5. Treatment Intervention

Preoperative checks completed, anticoagulant therapy with low molecular weight heparin and elastic stockings started. Considering the diagnosis of a non-functional left kidney and suspected ureteral tumor, the patient underwent transurethral bladder tumor resection and laparoscopic left nephroureterectomy with bladder cuff excision. Postoperative care included anti-inflammatory and fluid therapy, with low molecular weight heparin given after 24 hours. On the 5th postoperative day, the patient developed right leg swelling, with a significantly elevated D-Dimer (9.63 mg/L FEU). Ultrasound and CT indicated right leg DVT. Vascular surgery consultation led to anticoagulation therapy with rivaroxaban and low molecular weight heparin. An inferior vena cava filter was placed to prevent fatal pulmonary embolism.

1.6. Treatment Outcome, Follow-up, and Prognosis

The patient recovered well, with biochemical tests showing mild abnormalities, and was discharged with instructions for follow-up. The D-Dimer level decreased, and no pulmonary embolism occurred. Regular follow-ups and imaging were scheduled to monitor for tumor recurrence and kidney function.

2.1. Discussion

Retroperitoneal laparoscopic nephroureterectomy is a widely utilized minimally invasive surgery, primarily for the treatment of ureteral and renal pelvis tumors. The procedure commonly employs the lateral decubitus position, which increases the risk of postoperative deep vein thrombosis (DVT)[1-2]. In this case, the patient developed DVT despite early postoperative mobilization and administration of low molecular weight heparin for anticoagulation. Compared to existing literature, this case highlights that early mobilization and standard anticoagulation therapy may still fail to completely prevent the occurrence of DVT, reflecting the limitations of current postoperative management strategies .

In contrast to other similar published cases, the innovation of this case lies in the fact that the patient developed DVT early postoperatively but did not progress to pulmonary embolism due to the timely placement of an inferior vena cava filter and effective anticoagulation therapy[3-4]. The value of this case report is in providing early detection and management experience of postoperative DVT, emphasizing the importance of close monitoring and timely intervention in postoperative management. The main challenge in the diagnostic and treatment process is how to identify DVT early postoperatively and take effective preventive measures. Specific solutions include regular postoperative monitoring of D-Dimer levels and ultrasound examinations to detect potential DVT early. Additionally, taking appropriate limb protection measures during surgery to avoid prolonged single positioning can also reduce the occurrence of DVT.

This case, where DVT occurred despite early postoperative mobilization and standard anticoagulation therapy, suggests that postoperative management strategies need further optimization. Timely placement of an inferior vena cava filter and enhanced postoperative monitoring are key to preventing the further development of DVT. The successful management of this case provides useful references and experience for similar cases.

References

1. W H, Bergqvist D, Pineo G F, et al. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest, 2008, 133(6 Suppl): 381S-453S. DOI:10.1378/chest.08-0656.
2. Gould M K, Garcia D A, Wren S M, et al. Prevention of VTE in nonorthopedic surgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest, 2012, 141(2 Suppl): e227S-e77S. DOI:10.1378/chest.11-2297.

 doi:10.20944/preprints202407.1544.v1

3. Raskob G E, van Es N, Verhamme P, et al. Edoxaban for the Treatment of Cancer-Associated Venous Thromboembolism. N Engl J Med, 2018, 378(7): 615-24. DOI:10.1056/NEJMoa1711948.
4. Ma S G, Yang Y, Huang Y. Venous thromboembolism risk assessment scale for prediction of venous thromboembolism in inpatients with cancer: A meta-analysis. Thromb Res, 2024, 240: 109058. DOI:10.1016/j.thromres.2024.109058.