VIDEO SECTION

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Single-Port Robot-Assisted Post-Chemotherapy Unilateral Retroperitoneal Lymph Node Dissection: Feasibility and Surgical Considerations

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ABSTRACT

Introduction: Retroperitoneal lymph node dissection (RPLND) is indicated for testicular cancer patients with residual masses post-chemotherapy or stage I-II non-seminomatous germ cell tumors (NSGCT) (1, 2). Open RPLND remains the standard but carries significant morbidity. The laparoscopic approach, while minimally invasive, presents notable technical challenges (3). Robotic-assisted RPLND (rRPLND) offers a minimally invasive alternative with comparable oncological outcomes (4, 5). The Da Vinci Single Port (SP) system presents new possibilities for reducing surgical morbidity (6, 7).

Methods: We report a case of SP-rRPLND using a unilateral modified template and a lower anterior access (LAA) in a 41-year-old man with NSGCT (pT2, UICC Stage IB) who underwent left orchiectomy, followed by adjuvant chemotherapy. A CT scan revealed a 3.5 cm residual retroperitoneal mass in the left hilar region.

The surgical procedure, performed with the Da Vinci SP system, involved a 2.5 cm McBurney incision for retroperitoneal access. Instrument configuration followed a "Camera below" setting. The unilateral left-sided modified template guided dissection from the aortic bifurcation to the renal hilum, preserving vascular structures. A 3,5 cm residual mass and para-aortic nodes were excised with the help of flexible Greena® applicator for clips.

Results: Anesthetic management prioritized opioid-sparing techniques to enhance recovery. The patient received regional anesthesia, multimodal analgesia, and had an NRS pain score of 0 at discharge.

The console time was 79 minutes, with minimal blood loss and no complications. The patient resumed oral intake on postoperative day 1 and was discharged on day 2. Postoperative recovery was uneventful, with no complications or need for conversion to open or laparoscopic surgery.

Final histopathological examination revealed a germ cell tumor with features suggestive of immature teratoma, along with over 10 lymph nodes showing sinus histiocytosis. At six months post-RPLND, the patient remains disease-free, with a good general condition and no new symptoms. Tumor markers (AFP, β-hCG, LDH) are within normal limits, and CT imaging shows ***no evidence*** of

recurrence or residual retroperitoneal masses. Renal function and hormonal profile are stable. Given prior chemotherapy exposure, cardiovascular monitoring is advised. Follow-up will continue with clinical exams and tumor markers every 3-4 months, with the next CT scan planned at 12 months, unless symptoms warrant earlier imaging.

Conclusions: As far as we know this is the first reported case of SP-rRPLND in Europe. The LAA provides safe access while minimizing morbidity, potentially improving recovery (8). A unilateral approach, avoiding transperitoneal access, may further reduce morbidity (9). Future studies should validate long-term oncological outcomes and compare SP-rRPLND with multiport and open approaches. SP-rRPLND represents a promising advancement in minimally invasive testicular cancer surgery.

Data Availability

https://zenodo.org/records/14841220

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CONFLICT OF INTEREST

None declared.

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