Combined Robotic-assisted Laparoscopic Radical Prostatectomy and Partial Nephrectomy, Rare Coincidence

Cagri Akpinar, Evren Suer, Kadir Turkolmez, and Yasar Beduk

The incidence of second primary cancer detection in patients with prostate cancer undergoing cross-sectional imaging for staging workup is 1.5%.[1] Concomitant prostate cancer and clear-cell renal cell carcinoma is a rare condition. The coexistence of 2 synchronous neoplasm is highly infrequent. In this case, we present a combined robot-assisted operation for both procedures concurrently with a port strategy allowing reuse of ports. UROLOGY 128: 1–4, 2019. © 2019 Elsevier Inc.

CASE

Patient

A 54-year-old man with no previous urologic history was referred to our clinic with an elevated Prostate Specific Antigen (PSA) of 15.2 ng/mL incidentally discovered. A 12-core transrectal prostate biopsy was received from the patient. A prostate adenocarcinoma was finally diagnosed with a Gleason score 6(3 + 3) of 6 (right dominant) of 12 cores, clinical stage T_1C. Preoperative bone scintigraphy did not reveal typical scintigraphic findings suggesting the presence of metastasis. There was no pelvic enlarged lymph node in the abdomen-pelvic computed tomography, but demonstrated an incidental heterogeneously enhancing exophytic solid mass in the lower pole medial posterior of the left kidney measuring 2 cm, suspicious for renal cell carcinoma.

Preoperative serum creatinine level as 0.88 mg/dL and no major comorbidities were found. A robot-assisted laparoscopic radical prostatectomy (RALRP) followed by open or laparoscopic partial nephrectomy (PN) of the renal mass was suggested. However, the patient requested a surgical removal of the renal mass concurrently with RALRP, if possible. Upon this the case was discussed in a multidisciplinary meeting. Since the patient did not have major comorbidity, it was decided that the patient could be operated simultaneously for prostate cancer and kidney tumor and a concomitant robotic surgery was planned.

In this case we aimed to show the feasibility of performing concurrent RALRP and robot-assisted partial nephrectomy (RAPN) surgeries by reusing port incisions.

Port Placement and First Operation Radical Prostatectomy

The patient was placed in a supine position with a Foley catheter inserted in the bladder. Pneumoperitoneum of 15 mmHg was established for port placement. Port points to be entered were marked. Ports were placed for the robotic radical prostatectomy portion of the procedure as indicated in Figure 1. The patient was marked approximately 15 cm superior to the pubic symphysis which was distance from the symphysis pubis to the umbilicus. The camera port was placed 2 cm superior to the umbilicus. Two 8-mm da Vinci trocars were placed 2.5 cm below the level of the umbilicus, pararectally, on either side. A 5-mm trocar was placed between the umbilicus and the 8-mm port on the right side. A 12-mm assistant port was placed approximately 3-4 cm superomedial to the iliac crest in a line drawn directly between the iliac crest and the camera port. Lastly, a 5-mm assistant port was placed directly between the 2 previously placed right-sided ports approximately 4 cm superior to a line drawn between the 2 trocars. Next, prostatectomy was performed according to previously described anterior surgical approach.[2] The extraperitoneal space was entered through an inverted, U-shaped incision on the parietal peritoneum, superior to the dome of the bladder and lateral to the medial umbilical ligaments. Then the bladder was dissected off the anterior abdominal wall to enter into the space of Retzius. Both endopelvic fascia were opened. Dorsal venous complex was controlled using diathermy. A 1-cm incision was made in the anterior bladder neck at 12-o'clock. A 30-degree lens was preferred for this part of the dissection. The anterior wall and posterior bladder neck were divided

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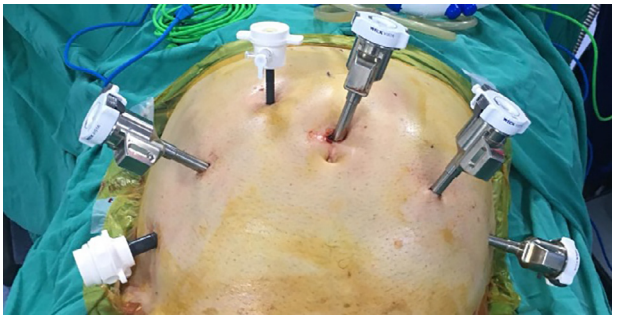

Figure 1. Port placement for robotic radical prostatectomy. The left robotic port more inferiorly than the normal position. (Color version available online.)

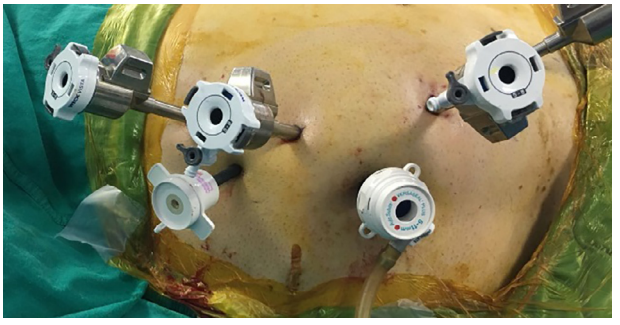

Figure 2. Port placement for robotic partial nephrectomy after radical prostatectomy. The 12-mm camera port is replaced for the periumbilical assistant port and the right robotic port was placed, from the left robotic port. (Color version available online.)

in the midline at the prostatic vesicle junction. The presence of median lobe was not observed. The vas deferens were dissected and clipped bilaterally and both seminal vesicles were released. The Denonvillier's fascia was incised and was dissected posterior to apex of the prostate. The prostatic pedicles were dissected on either side, and divided with the Hem-o-lok clips followed by unilaterally (left) performed nerve-sparing approach. Apical dissection and transection of the urethra were completed. The bilateral pelvic lymph node dissection and then urethrovesical anastomosis were performed. The urethrovesical anastomosis was performed with a running suture technique using 2 15-cm 3/0 barbed V-Loc absorbable sutures. The anastomosis was completed, and the Foley catheter was inserted. The bladder was filled and no anastomotic leak was observed.

Second Operation Partial Nephrectomy

Following the radical prostatectomy, the robot was undocked, and the ports were removed. Camera port and left robotic port sites were covered with a sterile adhesive drape and the other robotic port sites were closed. The patient was repositioned from supine Trendelenburg to full flank position. The sterile adhesive drape was removed, and ports were placed for the robotic partial nephrectomy portion of the procedure (Fig. 2). A 12 mm assistant port was placed in the previous camera port and the right robotic port was placed from the left robotic port. New entry locations were used for other robotic ports and a 5-mm assistant port. The robot was then redocked to the patient. The white line of Toldt was incised and the colon was reflected medially. The kidney was released by sharp and blunt dissections. The ureter dissected and retracted. The renal vessels were dissected and the renal pedicle was revealed. Then the segmental artery leading to the lower pole was found. The tumor was scored with monopolar cautery, including an edge of normal renal parenchyma to delineate the boundaries of resection. Intravenous mannitol and furosemide was administered, then the bulldog klemp was placed to the segmental artery and tumor was excised with cold excision under warm ischemia. Due to the mass was predominantly an exophytic tumor intraoperative ultrasound was not used. Renorrhaphy is typically performed with the sliding-clip technique.[3] The resection bed was closed with a running monocryl 3/0 suture preloaded with a Hem-o-lok clip followed by the Monocryl was brought outside through the parenchyma and secured with a Hem-o-lok clip. Finally, floseal was applied on the defect and cortical renorrhaphy was performed. Prostatectomy and partial nephrectomy specimens were placed in a retrieval bag and removed by extending periumbilical 12-mm assistant port.

Outcome

Total operative time was 335 minutes. The total console time for RALRP and RAPN was 95 and 130 minutes, respectively. Selective ischemia time was estimated as 11 minutes. Intraoperative blood loss was measured approximately 280 mL (120 cc prostatectomy, 160 cc partial nephrectomy). The patient did not require blood transfusion. The patient was discharged on the third postoperative day. Histopathology of the final prostatectomy was reported as limited to the GG 7 (3 + 4) adenocarcinoma organ, surgical margin negative. Histopathology of partial nephrectomy was, clear cell carcinoma, Fuhrman grade 2, pathological stage T1a, and surgical margin negative. In the third month follow-up, the patient's PSA level was undetectable and no residual renal tumor was observed.

DISCUSSION

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RARP is a minimally invasive surgical method with a shorter learning curve and high applicability in patients with prostate cancer.[4,5] When looking at partial nephrectomy surgery, a minimally invasive method, laparoscopic partial nephrectomy (LPN) is a challenging procedure because it has a long learning curve.[6] However the da vinci surgical system, RAPN may offer significant advantages over conventional LPN. In a meta-analysis of 7 nonrandomized studies, the shorter warm ischemia time was detected in RAPN compared to LPN.[7] Nowadays, minimally invasive procedures can be used in many surgeries

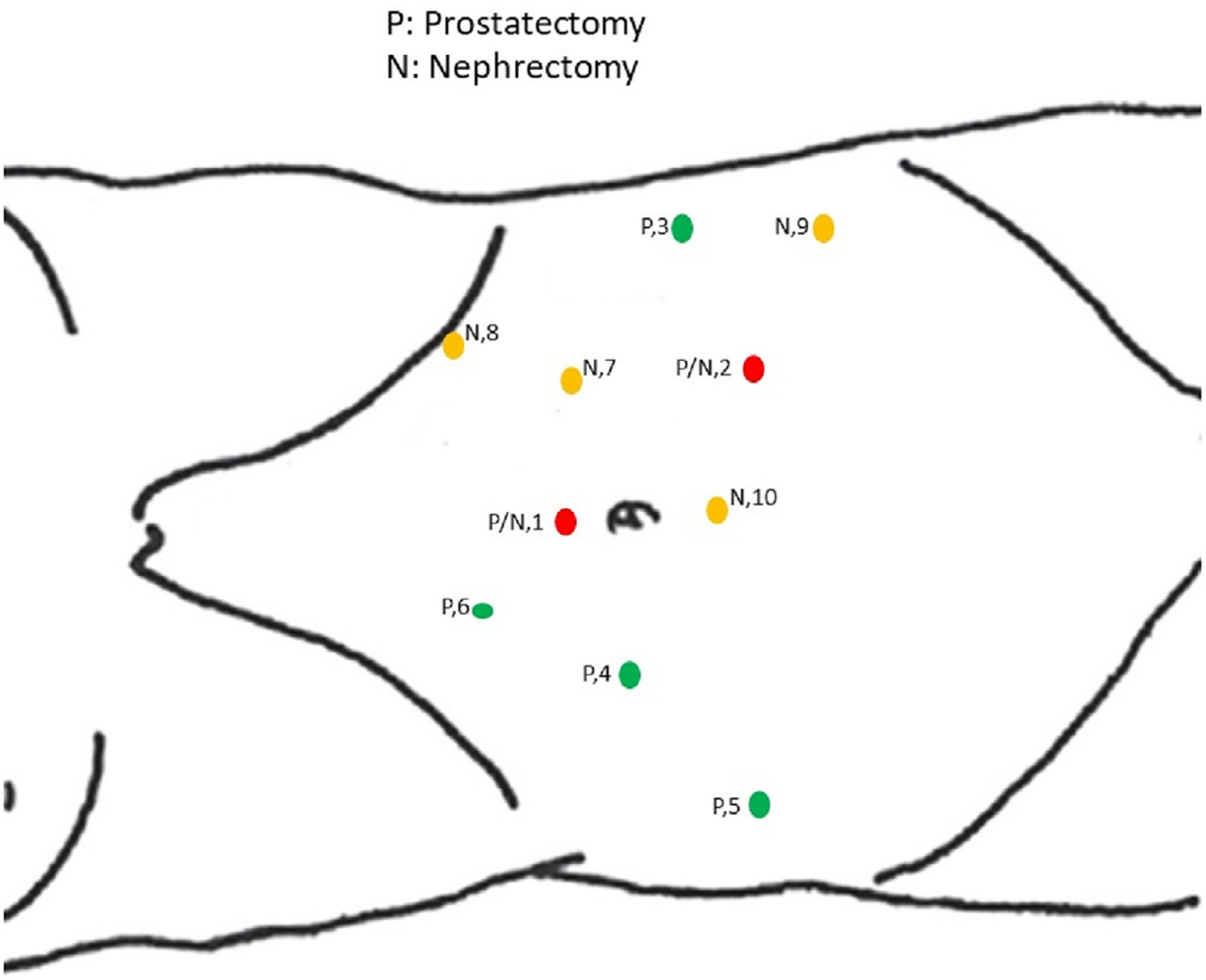

Figure 3. Diagram of port placement for combine procedure; red ports were used for both procedures, green ports for RARP, and yellow ports for RAPN. (1) A 12-mm camera port for RARP and assistant port for RAPN, (2-4) and (7-9) robotic ports, (5,6, and 10) assistant ports. (Color version available online.)

with urological malignancies, including simultaneous urological malignancy surgeries.[8,9]

Patel et al reported simultaneous robotic partial nephrectomy and radical prostatectomy surgery which was performed with an anterior approach.[10] Although simultaneous surgery is not recommended for all patients, the combined procedure may minimize total anesthesia time and recovery time in selected patients, and may also reduce multiple hospital admissions. Raheem et al reported simultaneous retzius-sparing robot-assisted radical prostatectomy and partial nephrectomy.[11]

Besides the known minimally invasive procedures, advantages of robotic-assisted surgery treatment are reduced recurrent anesthesia induction, secondary hospitalization, and high-cost associated with secondary surgery. Moreover, reducing the number of ports used minimizes the risk of injury due to trocars, and the removal of both specimens from the single incision provides a faster postoperative improvement and a better cosmetic appearance.

In their study, Jung et al stated that although they warned against the concurrent procedure-related long-term anesthesia and pneumoperitoneum disadvantage, reduction in hospital stay, avoidance of 2 separate procedures, and minimized port placement were provided.[12]

In robotic radical prostatectomy, there are 2 different techniques to reach the retrovesical area: anterior and posterior. In our procedure, the total operation time was shorter in radical prostatectomy which was performed by anterior approach and partial nephrectomy (427 min in Patel). Port localizations were modified and less port incisions were achieved with the use of common ports. In particular, we placed the left robotic port more inferiorly than the normal position. This allowed us to use the 2 ports in both surgeries (Fig. 3).

CONCLUSION

In conclusion, combine approach provided decreased overall hospital stay, avoidance of 2 separate procedures

and reduced cost. Although the operation time is longer, this time can be shortened by surgeon experience.

Upper and lower urinary tract robot-assisted surgical treatment is a safe and feasible method with reuse of port incisions in patients without additional comorbidities. However, these combined procedures are challenging, and we recommend that such cases are performed only in referral centers with sufficient volumes and surgical expertise to undertake these cases safely.

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