CASE REPORT

UROLOGICAL ONCOLOGY

Simultaneous robot assisted laparoscopic radical nephroureterectomy; genital tract and paravaginal nerve sparing radical cystectomy; superextended lymph node dissection and intracorporeal Studer pouch reconstruction for bladder cancer: Robotic hat–trick

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The case of a simultaneous robotic radical nephroureterectomy, genital tract and paravaginal nerve–sparing robotic radical cystectomy, super–extended pelvic lymph node dissection and intracorporeal Studer pouch construction on a 57–year old female patient with muscle invasive bladder and distal ureteral tumors, along with a hydroureteronephrotic nonfunctioning right kidney is presented. The entire surgery was completed through a total of 8 ports in 9.5 hours. The patient was discharged home on postoperative day–6 and a JJ–stent attached to the urinary catheter was removed altogether on postoperative day–21. This complex surgery can be done safely robotically with excellent oncological outcomes and no surgical and wound complications in the short term.

Key Words: bladder cancer ‹› genital tract preservation ‹› intracorporeal Studer pouch ‹› paravaginal nerve sparing ‹› robotic nephroureterectomy ‹› robotic radical cystectomy

INTRODUCTION

Robotic radical cystectomy (RARC) is increasingly being performed while the number of centers performing totally intracorporeal RARC, including the urinary diversion, is limited. We reported our outcomes related with RARC and intracorporeal urinary diversion while explaining our technique [1, 2].

An increasing number of publications related with gynecologic–tract sparing cystectomy in female patients with bladder cancer exists in literature suggesting that this approach provides acceptable oncological outcomes, safety and good functional outcomes that include voiding function, better sexual function and the potential for fertility preservation and improved quality of life [3, 4].

Only two papers exist related to simultaneous laparoscopic/robotic nephroureterectomy and radical cystectomy(RC) in published English literature [5, 6]. In neither of the studies, simultaneous gynecologic–tract sparing cystectomy and/or intracorporeal urinary diversion were reported [5, 6].

To the best of our knowledge, we are reporting the very first case of simultaneous robotic nephroureterectomy (RANU), genital tract and nerve–sparing(NS) RARC with super–extended pelvic lymph node (LN) dissection, and intracorporeal Studer urinary recon-

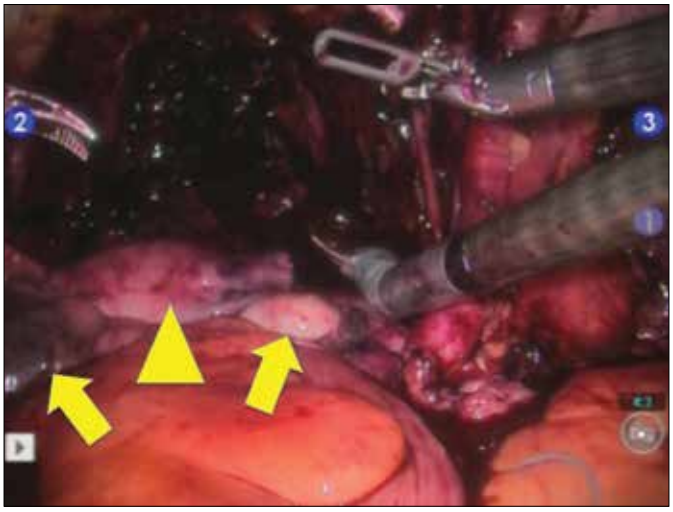

Figure 1. *Completed robot–assisted laparoscopic radical cystectomy with preservation of uterus (arrowhead) and ovaries (arrow).*

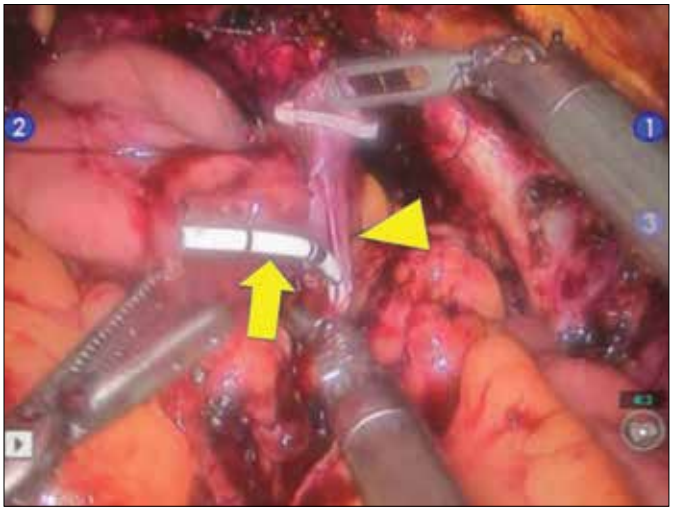

Figure 3. *Appearance of anastomosis between the ureter (arrowhead) and Studer pouch with JJ stent insertion (arrow).*

Figure 2. *Appearance of super extended pelvis lymph node dissection (midline presacral area). Arrowheads: inferior vena cava and common iliac artery, Arrow: presacral area.*

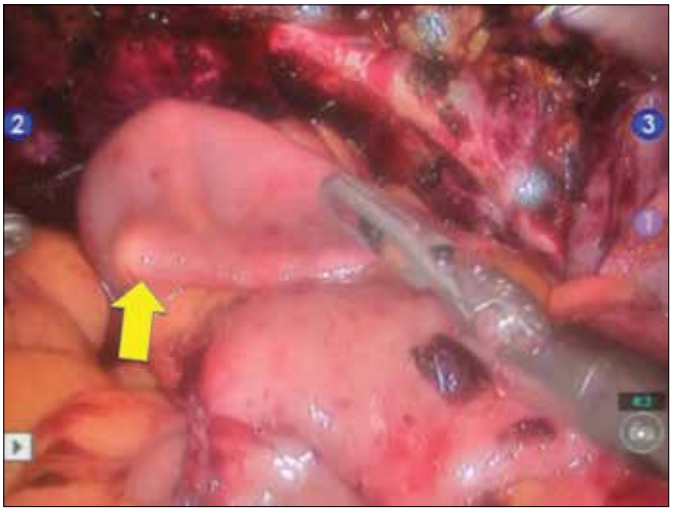

Figure 4. *Appearance of completed Studer pouch. Please note the tip of the urethral catheter in the Studer pouch (arrow).*

struction on a female patient with muscle invasive bladder and a distal ureteral tumor.

CASE REPORT

A 57–year old female patient with painless macroscopic hematuria was admitted to an outside hospital. Abdominal ultrasound revealed a mass in the bladder with concomitant right hydroureteronephrosis. She underwent transurethral resection of the bladder tumor. Histopathology revealed muscle invasive, high–grade urothelial carcinoma (pT2). Postoperative computerized tomography (CT) of the thorax and abdomen revealed no systemic metastasis but right hydroureteronephrosis. A MAG–3 renal scan confirmed a non–functioning right kidney. Her body mass index was 40 kg/m^2.

The patient was placed in 90° – right decubitis position for RANU, in supine 30° – and 10° –Trendelenburg positions for RARC and lymphadenectomy and for intracorporeal Studer pouch construction, respectively. A total of 8 abdominal were placed (4–ports for RANU, additional 4–ports for the rest of the case). Following the completion of RANU, genital tract and NS RARC with super–extended pelvic LN dissection and intracorporeal Studer urinary reconstruction were performed (Figures 1–4).

The estimated blood loss was 800cc, and the entire operation took 9.5 hours. Postoperative course was uneventful. The patient was ambulated and oral feed-

ing started on postoperative day–1. She had bowel movements and passed stool on postoperative day–3. Despite being ready to be discharged on postoperative day–4, she wished to stay two more days and was discharged home on postoperative day–6. The urethral catheter and the JJ–stent tied to it were removed altogether after a cystography showed complete healing of the Studer pouch 21 days after the surgery.

Histopathology revealed a 3x3 cm sized tumor involving the right ureteral orifice in the bladder invading the deep muscular layer, in addition to a ureteral tumor of 7 cm in the distal right ureter invading the periureteric fatty tissue(pT3) of high–grade urothelial carcinoma with clear surgical margins(SMs). Overall LN yield was 39 (17 right, 18 left). Additionally, 4 more LNs were removed from the interbifurcatio and presacral areas. Of the 17 LNs removed from the right pelvic area, 5 LNs were found to harbor urothelial cell carcinoma metastasis(pN2). Pathological examination of the right kidney revealed chronic pyelonephritis without any evidence of malignancy. No complication was detected during the perioperative (0–30 days) period. Currently, she is fully continent during the day with a serum creatinine of 2 mg/dL and receiving chemotherapy.

DISCUSSION

Robotic surgery is increasingly being applied in the surgical management of bladder cancer. We identified only two papers published in English literature (Pubmed/Medline) related with simultaneous laparoscopic/robotic nephroureterectomy and cystectomy suggesting that more than one surgical procedure can be performed in the same session by robotic surgery [5, 6].

Barros et al included 8 patients (7 males, 1 female) with bladder cancer [5]. Of those, 7 underwent laparoscopic and 1 underwent RARC with RANU (unilateral [n = 6], bilateral [n = 2]). Extracorporeal urinary diversion was performed in all patients. No intraoperative complications occurred and there were 1 major and 2 minor postoperative complications. Limited and extended pelvic LN dissections were performed with negative SMs. In the female patient, total abdominal hysterectomy and bilateral salpingo–oophorectomy was performed [5]. Ou et al. performed simultaneous RANU and RARC in 8 patients (5 females, 3 males) with uremia and urothelial cell carcinoma [6]. Mean operation time was 306 minutes, estimated blood loss was 496 mL and there were no intraoperative complications. The extent of pelvic LN dissection and whether RARCs were performed with sparing of the gynecologic–tract in females was not mentioned. Urinary diversion was not performed [6]. Both studies concluded that simultaneous RANU and RARC could be performed safely. Our case further supports this conclusion by taking it one step forward with the inclusion of robotic intracorporeal Studer pouch construction in the same robotic session.

Gynecologic–tract sparing RC has been reported in various open surgical series that included patients with unifocal tumors in clinical stage T2bN0M0 or less located away from the trigone, sexually active women and internal genitalia free of tumor [3, 4]. This approach was feasible with favorable oncological outcomes in selected women along with good functional outcome, better sexual function and the potential for fertility preservation [3, 4]. Gynecologic–tract sparing cystectomy has been also reported in robotic approaches [7]. Hosseini et al stated that in cases when a vaginal–sparing dissection is planned and there is no suspicion of tumor invasion towards the uterus exists, the uterus can be dissected separately [7]. The preoperative clinical stage of our case was suitable for gynecologic–tract sparing cystectomy and the tumor did not involve the trigone.

Urinary retention has been reported as a common complication after orthotopic neobladder urinary diversion following RC with prior or concurrent hysterectomy in females [8]. Neocystocele formation and urethral kinking were suggested as common anatomical factors [8]. In order to prevent facing these problems postoperatively, we suggest gynecologic–tract sparing RARC in selected cases.

Radical cystectomy for invasive bladder cancer followed by orthotopic neobladder replacement in patients with solitary functioning kidney were previously reported [9, 10]. It was concluded that a solitary kidney should not be regarded as a contraindication for neobladder following RC [9, 10].

Simultaneous RANU, genital tract and paravaginal NS RARC and super–extended pelvic LN dissection with intracorporeal Studer pouch reconstruction for bladder cancer is a highly complex procedure which can be done safely by utilizing minimally invasive techniques such as robotic surgery with excellent oncological outcomes and minimal complications.

References

1. Akbulut Z, Canda AE, Ozcan MF, Atmaca AF, Ozdemir AT, Balbay MD. Robot–assisted laparoscopic nerve–sparing radical cystoprostatectomy with bilateral extended lymph node dissection and intracorporeal studer pouch construction: outcomes of first 12 cases. J Endourol. 2011; 25: 1469–1479.

2. Canda AE, Atmaca AF, Altinova S, Akbulut Z, Balbay MD. Robot–assisted nerve–sparing radical cystectomy with bilateral extended pelvic lymph node dissection (PLND) and intracorporeal urinary diversion for bladder cancer: initial experience in 27 cases. BJU Int. 2012; 110: 434–444.

3. Ali–El–Dein B, Mosbah A, Osman Y, El–Tabey N, Abdel–Latif M, Eraky I, Shaaban AA. Preservation of the internal genital organs during radical cystectomy in selected women with bladder cancer: a report on 15 cases with long term follow–up. Eur J Surg Oncol. 2013; 39: 358–364.

4. Koie T, Hatakeyama S, Yoneyama T, Hashimoto Y, Kamimura N, Ohyama C. Uterus, fallopian tube–, ovary–, and vagina–sparing cystectomy followed by U–shaped ileal neobladder construction for female bladder cancer patients: oncological and functional outcomes. Urology. 2010; 75: 1499–1503.

5. Barros R, Frota R, Stein RJ, Turna B, Gill IS, Desai MM. Simultaneous laparoscopic nephroureterectomy and cystectomy: a preliminary report. Int Braz J Urol. 2008; 34: 413–421.

6. Ou YC, Yang CR, Yang CK, Cheng CL, Hemal AK. Simultaneous robot–assisted nephroureterectomy and cystectomy in patients with uremia and multifocal urothelial carcinoma. J Endourol. 2011; 25: 979–984.

7. Hosseini A, Adding C, Nilsson A, Jonsson MN, Wiklund NP. Robotic cystectomy: surgical technique. BJU Int. 201; 108: 962–968.

8. Finley DS, Lee U, McDonough D, Raz S, deKernion J. Urinary retention after orthotopic neobladder substitution in females. J Urol. 2011; 186: 1364–1369.

9. Furukawa J, Miyake H, Hara I, Takenaka A, Fujisawa M. Clinical outcome of orthotopic neobladder replacement in patients with a solitary functioning kidney. Int J Urol. 2007; 14: 398–401.

10. Helmy Aly A, Ezzat A, Hamed A. Orthotopic neobladder reconstruction after radical cystectomy in patients with a solitary functioning kidney: clinical outcome and evaluation. J Egypt Natl Canc Inst. 2011; 23: 133–140. ■