Case Report

Laparoscopic Radical Cystectomy with Ileal Conduit Diversion: The First Case Report in Thailand

Kittinut Kijvikai MD*, Suthep Patcharatrakul MD**,
Wisoot Kongchareonsombat MD***, Charuspong Dissaranan MD*

** Division of Urology, Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University*
*** Division of Urology, Department of Surgery, Police General Hospital*
**** Division of Urology, Department of Surgery, Bangkok Metropolitan Administration Medical College and Vajira Hospital*

Objective: *To report the authors' first experience on a surgical technique for laparoscopic radical cystectomy with ileal conduit diversion.*
Material and Method: *A 55 year-old man, weighing 65 Kg with histology proven T 2 transitional cell carcinoma of the urinary bladder underwent laparoscopic radical cystectomy with ileal conduit diversion. The cystoprostatectomy was performed by laparoscopic technique, whereas ileal conduit and stroma were performed through a mini-laparotomy.*
Results: *The procedure was performed successfully without open conversion. The operation time was 350 min. Estimated blood loss was 1,100 ml. Only 6 mg morphine was needed for postoperative pain relief. The surgical margins were free from tumor. The hospital stay was 8 days. The patient returned to his normal activities 3 weeks after surgery.*
Conclusion: *Laparoscopic radical cystectomy with ileal conduit diversion was a feasible and safe operation for muscle invasive carcinoma of the urinary bladder. However, the procedure needed a steep learning curve and should be performed in centers having experience in laparoscopic surgery.*

Keywords: *Radical cystectomy, Ileal conduit diversion, Laparoscopy*

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Radical cystectomy is the gold standard treatment for invasive bladder cancer[1]. However, it is a major surgical procedure and may incur significant operative blood loss. Laparoscopic cystectomy has been described and it has been proven to be feasible[2,3]. Nevertheless, its role, advantages and potential complications should be defined. The technical aspects of laparoscopic cystectomy are not well standardized and most operations are performed in well equipped centers for laparoscopic surgery.

In the present report, the authors describe the technique for the first successful laparoscopic radical cystectomy and ileal conduit urinary diversion in a male patient.

Correspondence to : Kijvikai K, Division of Urology, Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, 270 Rama 6 Rd, Tungphyatai, Rajathevee, Bangkok 10400, Thailand. Phonn: 0-2201-1315, Fax: 0-22011316, E-mail: kittinutk@hotmail.com

Case Report

Case history

A 55-year-old man with no underlying disease presented with 4 months' history of painless gross hematuria. A cystoscopy revealed a multiple sessile bladder tumor, 2-3 cm in diameter, involving the anterior, posterior, left and right lateral bladder wall. A computed tomography (CT) scan of the abdomen and pelvis confirmed the presence of the lesion without any evidence of metastatic disease. A transurethral resection of the bladder tumor (TUR-BT) was performed and the pathology report was consistent with a G 2 T 2 transitional cell carcinoma of the bladder. After having been explained about the risk, benefits, and possible

complications of different therapeutic options, the patient signed consent to undergo a laparoscopic radical cystectomy with ileal conduit urinary diversion.

Technique

Patient's preparation

The patient received a standard bowel preparation with electrolytes on the day before the surgical procedure. He was given an antibiotic for prophylaxis with a second generation cephalosporin (cefoxitin 1 g x 2) at the induction of anesthesia which was continued for 24 postoperative hours. Lower extremities compressive devices were applied before starting the procedure. The patient was placed in the modified lithotomy abducted-thighs and Trendelenburg position, while a nasogastric tube was inserted and a 18 Fr. Foley catheter was placed for drainage of the urine.

Surgical technique

1. Laparoscopic access

A 5-port transperitoneal approach was used (Fig. 1). The first 12-mm trocar was placed with open technique through a mini-laparotomy just below the umbilicus. This trocar was reserved for the laparoscope. The remaining 4 (12-mm x 3, 5-mm x 1) ports were placed in a fan-shape fashion under endoscopic control after establishment of the pneumoperitoneum. The abdomen and pelvis were then carefully inspected.

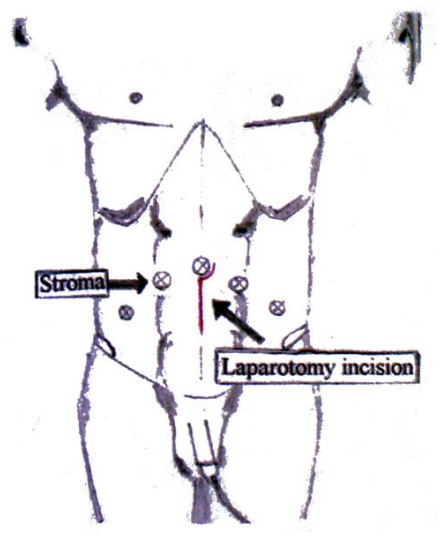

Fig. 1 A picture showing 5 ports placement in a fan-shaped fashion for cystoprostatectomy and a laparotomy incision for both specimen extraction and extracorporeal ileal conduit reconstruction. The 0 and 30 degree laparoscope was inserted through the umbilical port. The right pararectus muscle port was chosen to be the stromal site of the conduit

2. Denonvilliers' fascia incision

The peritoneum was incised at the level of the rectovesical cul-de-sac and the vas deferens were identified and divided bilaterally. Dissection was performed toward Denonvilliers' fascia and the tips of the seminal vesicles. After identification of Denonvilliers' fascia, the fascia was incised in the midline to expose the perirectal fat. The fibers of the rectum were bluntly pushed away posteriorly from the prostate by laparoscopic fan retractor. This dissection was carried down as far as possible to the apex of the prostate. The seminal vesicles and vas deferens were then mobilized en bloc with bladder specimen. Complete mobilization of the rectum was crucial in order to better define the prostatic and vesical pedicles and to prevent rectal injuries.

The ureters were dissected down to the bladder wall with care to keep their vascular supply intact and the distal ureteral margins were sent for pathologic frozen section examination.

3. Exposure of endopelvic fascia and dorsal venous complex control

Incision of the peritoneum was carried out along the external iliac artery and extended distally to the abdominal wall lateral to the umbilical ligaments, and proximally to the common iliac artery. At the level of the pubic bone, the bladder and perivesical fat were dissected freely from the pelvic wall with exposure of the endopelvic fascia. The fascia was incised closely to the prostate bilaterally and the fibers of the levator muscle was carefully dissected. The dorsal vein complex and the prostatic apex were then carefully isolated.

A 1-0 Monocryl absorbable suture was passed and encircled two rounds over the dorsal vein complex and the dorsal vein complex was then ligated.

4. Vesical and prostatic pedicles incision

At this time the assistant surgeon pulled the bladder upward and toward the right side of the pelvis by using a grasper with the left hand, while in the meantime with the right hand he pushed with the fan retractor downward the rectum in order to expose the left vesicoprostatic pedicle. With the use of LigaSure device and bipolar forceps the vesical and prostatic pedicles were progressively divided. Then, the bladder was pulled by the surgeon on the left side while the

fan retractor continued to push the rectum downward in order to divide the right vascular pedicle in the same manner as the left side.

5. Apex incision

After ligation, the dorsal vein complex was then divided and the anterior urethral wall was incised. The distal end of the catheter was ligated, transected and pulled into the abdominal cavity, maintaining the balloon inflated in the bladder to avoid intraabdominal urine contamination. The posterior wall of the urethra was divided. The rectourethralis muscle and the distal insertions of Denonvilliers' fascia were incised in order to totally release a specimen which was then entrapped in an endosac bag.

6. Bilateral pelvic lymph node dissection

A bilateral pelvic lymph node dissection was performed with the same boundaries as in an open surgery.

7. Specimen retrieval and creation of the ileal conduit

A 7-cm incision was then performed at the lower midline, starting from the umbilicus (Fig. 1). The specimen was retrieved and the suspended sutures of the ureters were exteriorized. The distal ileum was identified and brought in front of the abdominal wall. A segment of 15-cm ileum proximal to ileocecal valve was isolated with GIA stapler. The continuity of the bowel was re-established performing a functional double layer end-to-end anastomosis using 3-0 Monocryl absorbable suture. The mesentery was reapproximated using absorbable sutures and the distal ileum relocated in the abdomen. The distal ureters were brought in the operative field. The spatulated ureters were stented and anastomosed in a Bricker fashion to the ileal conduit utilizing 4-0 Monocryl sutures. The proximal end of the conduit was replaced in the abdomen. The right pararectus muscle port was chosen to be the stomal site.

Pneumoperitoneum was reestablished and the proper placement of the ileal conduit was confirmed. A small drain was left in the pelvis. The fascia of the 10 mm port site was closed under direct vision with 1-0 Vicryl absorbable suture. The pneumoperitoneum was released and the procedure was completely finished.

Results

The laparoscopic procedure was completed without intraoperative complications or need for open conversion. The total operative time was 350 min; 230 minutes for cystectomy and 120 minutes for ileal conduit diversion and bilateral Bricker ureteroileal anastomosis. The estimated blood loss was 1,100 ml, and 4 units of blood transfusion were replaced.

The patient resumed oral intake on the third postoperative day. A total of 6 mg of morphine was used for pain relief. The drain was removed on day-5. The ureteral stents were removed on postoperative day-7. He was discharged from the hospital on postoperative day-8.

Histopathology showed muscle invasive TCC of the bladder without lymph node metastasis. The surgical margins were free. The total number of pelvic lymph nodes dissection was 7 on the left side and 10 on the right side, respectively. A follow-up serum creatinine and electrolytes were within normal limits. After 3 weeks, the patient could return to his normal activities.

Discussion

Open radical cystectomy is the gold standard of treatment for muscle invasive bladder cancer[1]. This operation requires a long abdominal incision with prolonged retraction of the abdominal wall. This maneuver leads to a high level of postoperative pain, often requiring a large amount of opioid medication for several days. Consequently, the patients remain hospitalized with continuing care for a long time and need a long period of rest before returning to the normal activities. All of these may cause fear among patients and surgeons, and these can also make the patients postpone the operation, which may result in a worsening prognosis.

Several authors[4-8] have demonstrated that laparoscopic cystectomy is feasible with lower morbidity and shorter hospital stay than the open procedure. Some authors have reported a lower incidence of postoperative ileus after the laparoscopic approach when compared with the open surgery approach, principally due to less manipulation of the bowel and fewer opioids are necessary to control pain postoperatively[9,10]. Moreover, magnification of the optical instrumentation can enable more precise dissection with less blood loss and better preservation of anatomical structures[11]. Laparoscopic cystectomy with different types of urinary diversions has been reported by numerous authors[4-9,11-15].

In the present report, the authors have shown their first experience in the cystectomy step. All authors utilized a transperitoneal approach with 4 ports[5,6] ports[7,9,12-15] or 6 ports[8]. The authors have been using 5 ports in a fan-shape fashion. Lymphadenectomy was performed after cystectomy which was

the same as that of some authors[6,8] However, the others have performed before[7,9,12,14,15] or in the middle of the procedure[13]. The authors dissected the posterior part of the bladder first by following the vas deferens and seminal vesicle. The lateral and posterior vascular pedicles of the bladder and prostate are controlled with sequential firings of the Endo-GIA stapler by many authors[6-10,13-15], but in the authors' opinion multiple firings of the Endo-GIA stapler may result in increasing the costs of the operation without reduction in operative time. So, the authors have been using the LigaSure device with the help of bipolar forceps and Hem-o-lok 5 and 10 mm to provide a precise dissection and an excellent control of vascular pedicles. In some reported series[7,12-14] the vesical and prostatic fibrovascular pedicles are controlled with sequential firings of the Endo-GIA stapler without previous incision of the endopelvic fascia and ligation of dorsal vein complex. In the authors' opinion, previous incision of the endopelvic fascia and ligation of the dorsal vein complex by 1-0 Monocryl absorbable stitch intracorporial[8,9] is mandatory to provide adequate space for the fibrovascular pedicles control to ensure that the remainder of the procedure can be performed in a bloodless field. The authors' technique has provided an anatomic approach, which is familiar to most urologists, and anatomical landmarks are easy to follow. The authors' goal was to transfer the technical steps in the open technique to laparoscopic technique. The present results have shown comparable benefit of all the advantages associated with laparoscopic surgery although this was the authors' first experience. The operative blood loss of the presented case was high when compared with that of highly experienced surgeons. However, it was comparable to one report describing more than 10 cases[16]. The advantages of the laparoscopic approach are not reduced by the external reconstruction of a urinary diversion performed through a small laparotomy incision[9,13]. This technique is easily reproducible and indicated for patients affected by clinically organ-confined invasive bladder cancer. It is believed that the results should be better in the aspect of less operative time and operative blood loss.

Conclusion

Radical cystectomy remains the gold standard for muscle invasive bladder cancer. However, laparoscopic radical cystectomy described herein is a feasible and safe procedure. It has the advantages over open surgery in the aspect of less operative blood loss, less postoperative pain, more precise dissection and better preservation of anatomical structures. Laparoscopic radical cystectomy should therefore be the operation for experienced laparoscopic surgeons. But in the authors' opinion, this procedure may be practiced in every academic center. The results from the presented technique described in this report are encouraging and it is believed that a better outcome can be obtained if more experience is gained.

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การผ่าตัดกระเพาะปัสสาวะในผู้ชายแบบเรดิคัล ในผู้ป่วยมะเร็งกระเพาะปัสสาวะโดยใช้การผ่าตัดผ่านกล้อง: รายงานแรกในประเทศไทย

กิตติณัฐ กิจวิกัย, สุเทพ พัชรตระกูล, วิสูตร คงเจริญสมบัติ, จรัสพงศ์ ดิศรานันท์

รายงานการผ่าตัดกระเพาะปัสสาวะในผู้ชายแบบเรดิคัล ในผู้ป่วยมะเร็งกระเพาะปัสสาวะ โดยใช้การผ่าตัดผ่านกล้อง สำเร็จเป็นรายแรกของคณะแพทยศาสตร์โรงพยาบาลรามาธิบดี และเป็นรายงานแรกในประเทศไทย โดยมีการวิเคราะห์เกี่ยวกับเทคนิคการผ่าตัด ผลการรักษา โดยเทียบเคียงกับวารสารทางการแพทย์ของต่างประเทศที่รายงานก่อนหน้านี้
