Case Report

Laparoscopic Radical Cystectomy with Total Intracorporeal Ileal Neobladder: First Case Report in Thailand

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Background and Objective: *Radical cystectomy (RC) remains the gold standard for muscle-invasive, organ-confined urothelial carcinoma (UC) of the bladder. Recently, laparoscopic surgery has been used increasingly by urologists as a minimally invasive procedure to treat neoplasms of the pelvic organs. The present study aimed to report technical aspects of the experience of treating Thailand's first case of RC with bilateral pelvic lymphadenectomy and ileal neobladder under the totally intracorporeal laparoscopic technique.*

Case Report: *A 67-year-old Thai male patient presented with intermediate-grade muscle- invasive UC of the bladder with negative metastatic workout. Laparoscopic radical cystectomy and pelvic lymphadenectomy were performed using 5 abdominal ports. Hemostasis was performed with bipolar forceps and vascular clips. The authors performed U-shape ileal neobladder and anastomosis using the completely intracorporeal laparoscopic technique. The operative time was 10 hours, the estimated blood loss was 1,000 ml, and there were no serious complications. The ureteric stents were removed after the 7th day, the tube drain was removed after the 10th day, and the Foley catheter was removed after the 21th day. The post-operative pathologic report indicated intermediate-grade muscle-invasive UC and free resection margin.*

Conclusion: *The authors initial experience in Laparoscopic Radical cystectomy with totally intracorporeal ileal neobladder demonstrated that it was a feasible treatment modality. However, more cases are required in the future to confirm its efficacy and improve laparoscopic technical performance in the treatment of organ-confined UC.*

Keywords: *Laparoscopic radical cystectomy, Totally intracorporal ileal neobladder, First case report in Thailand*

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Radical cystectomy (RC) remains the gold standard for muscle-invasive, organ-confined urothelial carcinoma (UC) of the bladder. Recently, laparoscopic surgery has been used increasingly by urologists as a minimally-invasive treatment and may now be used to treat neoplasms of the pelvic organs. Laparoscopic radical cystectomy (LRC) has been described and proven to be feasible in many studies[1-5]. The first laparoscopic radical cystectomy (LRC) was performed by Dr. Danaiphand Akarasakul in Rajavithi Hospital in 2007 and the technique was also used in laparoscopic radical prostatectomy[6]. The techniques used in both operations have helped us to understand surgical anatomy by magnification of laparoscopic vision and to standardize LRC with ileal neobladder that can be performed completely intracorporeally by laparoscopic technique. The present study aimed to report the technical aspects of our experience of the first case in Thailand of RC with bilateral pelvic lymphadenectomy and ileal neobladder under the totally intracorporeal laparoscopic technique.

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Case Report

A 67-year-old Thai male patient presented with intermediate-grade muscle-invasive UC of the bladder. Cystoscopy showed sessile masses at both lateral walls of the urinary bladder. Whole abdomen CT scan showed sessile masses at both lateral walls of the bladder measuring 4 x 4.5 x 5 cm and 3 x 4 x 4 cm. The tumors had not invaded perivesical fat, and upper urinary tract imaging was normal, as were liver and spleen. The pelvic region showed no evidence of lymphadenopathy, and the chest x-ray showed evidence of metastasis. Laparoscopic radical cystectomy and pelvic lymphadenectomy were performed with 5 abdominal ports. Hemostasis was

performed by bipolar forceps and vascular clips. The intestinal segment resection, the U-shape ileal neobladder and anastomosis were performed under the completely intracorporeal laparoscopic technique.

Patient preparation

The patient received bowel preparation for 3 days before the surgical procedure. Antibiotic prophylaxis was administrated in the form of 2 gm of 3rd generation cephalosporin and 500 mg of metronidazole during induction of anesthesia. The patient was placed in the Trendelenberg position, a naso-gastric tube was inserted and a 16 Fr. Foley catheter was placed to drain urine in the urinary bladder.

Surgical technique

The technique of laparoscopic radical cystectomy and bilateral pelvic lymph node dissection.

Laparoscopic port access

Once the retained Foley catheter was in place, and the bladder was emptying, the first 10 mm trocar port was placed at the supra-umbilical area by closed technique and gas was insufflated to produce pneumoperitoneum. The other 4 port sites were placed in fan-shape fashion for access under laparoscopic vision. Two of the 10 mm trocar ports were placed midway between the supra-umbilical port and anterior-superior iliac spine (ASIS) on the left side of the abdomen and the other 10 mm trocar port on the right side was placed laterally one third between ASIS and supra-umbilical port. The 5 mm port access was laterally one third between the supra-umbilical port and ASIS. The short 5 mm port was placed at lower one third between supra-umbilical port and pubic symphysis as shown in Fig. 1.

Dissection of ureters

Both ureters were identified at the crossing over the common iliac artery. The ureters were dissected down to the ureterovesical junction (UVJ) to preserve vascular supply. The ureters were clipped distally close to the UVJ and the proximal clip was hung with a long suture outside the body after which the the ureters were divided. The advantage of this technique was that it was easy to identify both ureters during anastomosis of the ureters and the neobladder. The author started to divide the ureters at an early stage to prevent urine collection in the bladder that would have made it difficult to dissect the posterior aspect of the bladder.

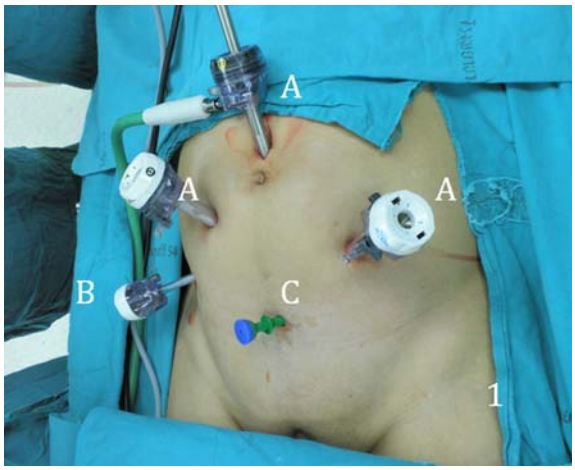

Fig. 1 Port site position, A: 10 mm trocar port, B: 5 mm trocar port, C: short 5 mm trocar port

Bilateral pelvic lymph node dissection

Bilateral pelvic lymph node dissection was performed. The limits of dissection were the pubic bone caudally, the common iliac cranially, the genito-femeral nerve laterally, and the obturator nerve medially.

Incision of peritoneum at level of the Douglas pouch

The peritoneum was incised at the level of the second fold peritoneum of cul-de-sac. The tips of the seminal vesicles were identified and dissected to expose the Denonvillier's fascia.

Incision of denonvillier's fascia and endopelvic fascia

The Denonvillier's fascia was incised in the midline to expose the perirectal fat. The fibers of the rectum were bluntly pushed posteriorly away from the prostate to the apex of the prostate. Exposure of the endopelvic fascia was performed. The fascia was incised bilaterally and the fibers of the levator muscle were carefully dissected. This maneuver greatly facilitated the identification of the lateral aspect of the vesico-prostatic pedicles.

Ligation of vesical and prostatic pedicles

The ligation was started at the obliterated umbilical ligament branching from the internal iliac artery and the superior vesicle artery. The vascular pedicle of the bladder and prostate both sides were incised using vascular clips of various sizes depending on vessel size.

Dissection of retzius space

After the posterolateral aspect of the bladder

had been completely dissected, the urachus and both medial umbilical ligaments were incised and dissected along the prevesicle plane to the symphysis pubis.

Control of the dorsal vein complex and transection of apex

The dorsal vein complex was ligated with polyglycolic acid suture No. 0 before transection. Transection of the apex and urethra were performed to complete LRC. The specimens were put into a specimen bag that could be sealed to prevent tumor spillage and was left in lateral space of abdomen. After completion of LRC, the bleeding was checked and controlled.

The performance of ileal neobladder and anastomosis by laparoscopic technique

Selection of bowel segment

The iliocaecal valve was identified. The ileal segment was distanced from ileocaecal valve by 15 cm and a 45 cm bowel segment was selected.

Urethral anastomosis

The incision was performed at mid position of the selected ileal segment. Anastomosis of the urethra and the mid position of the selected ileal segment was performed with continuous suture by 3/0 poliglecaprone suture (absorbable monofilament suture) as shown in Fig. 2. An 18 Fr. Foley catheter was inserted past the urethra into the selected ileal segment, and the balloon of the catheter was inflated 10 cc.

Transection of bowel segment

The transection of the selected ileal segment was performed by Endo-GIA staples applied on each side of the ileal segment at the antimesenteric aspect. Re-anamastosis of the proximal and distal limbs of the ileum was performed side to side with Endo-GIA staples.

Formation of U-shape ileal neobladder

Resection by anastomotic staple was performed at both limbs of the U-shape ileal segment. Both clip-hanging ureters were transected distally for tissue pathology. Both ureters underwent anastomosis with the U-shape ileal neobladder using 4/0 rapid absorb polyglycolic acid sutures. Before completing suture anastomosis, a hydrophilic guide wire was inserted in order to facilitate the insertion of a ureteric catheter No. 5 through a small abdominal skin puncture. Saline irrigation was used to test for any leakage in the urethral anastomosis.

Insertion of tube drain

The tube drains were inserted at both sides of the pelvis through trocar ports.

Removal of the specimen bag and skin closure

The specimen bag was removed through the supraumbilical port with a minimally-extended incision. The total length of the skin incision was extended by about 4 cm to remove the specimen bag. The abdominal wall was closed by polyglycolic acid No. 0 and the skin was closed by subcuticular stitches as shown in Fig. 3.

Results

LRC, pelvic lymphadenectomy and ileal

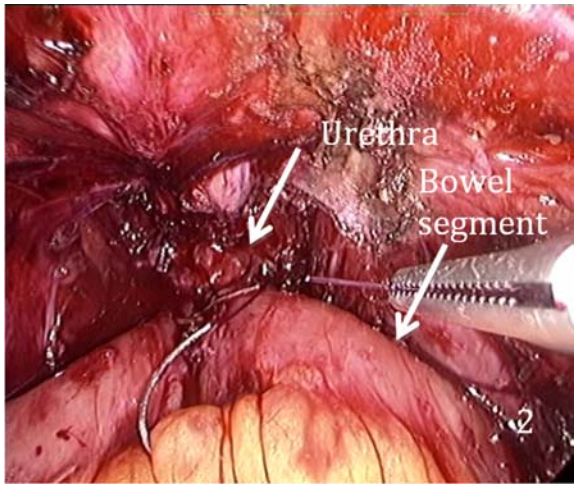

Fig. 2 Urethral anastomosis

Fig. 3 The ureteric stent were passed through small puncture skin. Tube drain were passed through trocar port. The specimen bag was removed through 5cm skin extension from supraumbilical port

neobladder were used for a total operative time of 10 hours. The estimated blood loss was 1,000 ml, and there were no serious complications. The patient was ambulant on the 2nd post-operative day. There was minimal use of analgesic injection; normal diet was resumed on the 4th post-operative day; the ureteric stents were removed after the 7th day; the tube drains were removed after the 10th day; and the Foley catheter was removed 20 days after performance of the cystogram. Post-operative pathologic report showed intermediate-grade muscle-invasive UC and free resection margin. Both distal ureter margins were negative for malignancy, as were all pelvic lymph nodes.

Discussion

Radical cystectomy (RC) remains the gold standard for muscle-invasive, organ-confined urothelial carcinoma (UC) of the bladder. Developments in minimally-invasive surgery have induced urologists to apply this treatment in many areas of urologic surgery. The first report of laparoscopic radical cystectomy for bladder cancer was described by Sanchez de Badajoz et al[7]. After the first report, many other studies concluded that this was a feasible operation[1-5]. In 2000, Gill et al[8] reported two cases where laparoscopic radical cystectomy and ileal conduit were performed entirely intra-corporeally. The operating times were 11.5 hours for the first patient and 10 hours for the second, and although the blood loss was more than 1,000 ml, there were no peri-operative complications. In 2002, Gaboardi et al[9] reported the first case of laparoscopic radical cystectomy with ileal orthotopic reconstruction. The procedure was performed extra-corporeally for urinary diversion, and the ileal loop was extracted from the abdominal cavity through the supra-umbilical incision which was necessary for the removal of the surgical specimen. The operative time was 7.5 hours, and the blood loss was 350 ml. In 2002, Gill et al[10] reported their initial experience of laparoscopic radical cystectomy and continent orthotopic ileal Studer neobladder performed completely intracorporeally. The authors used an Endo-GIA stapler both for isolating the ileal loop and for restoration of intestinal continuity by side-to-side anastomosis. Two to three transverse firings of the Endo-GIA stapler were also used to secure the two open ileal ends. The total operative time was 19 hours and the mean blood loss was 300 ml. In the present report, the author's techniques differed in some aspects from other reports and studies, and some of the results were also different. The present study, for example, performed stapleless neobladder in order to reduce the risk of stone formation. The U-shape ileal neobladder is one of the designs that uses the least anastomosis to perform neobladder. The author used this technique to reduce the risk of anastomosis leakage and reduce operative time but the neobladder formed by this method was not spherical in shape. A long-term functional and urodynamic study will follow. One advantage of this technique is that it is easy to perform urethral anastomosis because there is clear vision and no tension. The extracorporeal neobladder procedures used in previous reports, which were performed through small laparotomy incisions, may cause swelling of the bowel segment and diminish blood flow during performance of the neobladder, and this could cause a delay in the return to normal bowel function. Another advantage of this technique is that, unlike the extracorporeal neobladder technique, it does not require long dissection of the ureters which would require mini-tracheotomy incision for easy anastomosis. Long dissection of the ureters may cause ischemic ureter and ureteric anastomosis leakage. Finally, the most important advantage is that morbidity from the procedure is minor, pain is apparently minimal, and there is early convalescence because no detractors are needed and incisions are smaller than in open RC. However, more studies in Laparoscopic Radical Cystectomy with Total Intracorporeal Ileal Neobladder are needed to confirm this view.

Conclusion

The authors' initial experience with Laparoscopic Radical Cystectomy with totally intracorporeal ileal neobladder showed that it was a feasible treatment modality. However, more cases are required in the future to confirm its efficacy and improve laparoscopic performance in the treatment of organ-confined UC.

Potential conflicts of interest

None.

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รายงานการผ่าตัดมะเร็งกระเพาะปัสสาวะและการใช้ลำไส้เล็กทำกระเพาะปัสสาวะเทียมผ่านทางกล้องในช่องท้องทั้งหมด: รายงานแรกของประเทศไทย

ธเนศ ไทยดำรงค์

ภูมิหลังและวัตถุประสงค์: *การผ่าตัดมะเร็งกระเพาะปัสสาวะ โดยวิธีเปิดช่องท้องเป็นวิธีมาตรฐาน ในการรักษาผู้ป่วยมะเร็งกระเพาะปัสสาวะที่ลึกถึงชั้นกล้ามเนื้อกระเพาะปัสสาวะแต่ยังไม่แพร่กระจาย ปัจจุบันมีรายงานการพัฒนาการผ่าตัดมะเร็งกระเพาะปัสสาวะทางกล้องผ่านช่องท้องหลายฉบับทำได้สำเร็จ และไม่มีภาวะแทรกซ้อนรุนแรงดังนั้นผู้นิพนธ์จึงขอนำเสนอประสบการณ์วิธีการผ่าตัดมะเร็งกระเพาะปัสสาวะ และการใช้ลำไส้เล็กทำกระเพาะปัสสาวะเทียม ผ่านทางกล้องในช่องท้องทั้งหมดเป็นรายงานแรกของประเทศไทย*

รายงานผู้ป่วย: *ผู้ป่วยชาย อายุ 57 ปี ได้รับการวินิจฉัยมะเร็งกระเพาะปัสสาวะมีข้อบ่งชี้ในการผ่าตัดการตรวจวินิจฉัยเพิ่มเติมพบว่ามีก้อนในกระเพาะปัสสาวะ แต่ยังไม่รุกลามไปยังที่อื่นได้รับการผ่าตัดด้วยวิธีการผ่าตัดมะเร็งกระเพาะปัสสาวะ และการใช้ลำไส้เล็กทำกระเพาะปัสสาวะเทียมผ่านทางกล้องในช่องท้องทั้งหมดในผู้ป่วยรายนี้ประสบผลสำเร็จใช้ระยะเวลาการผ่าตัด 10 ชั่วโมง, ปริมาณการเสียเลือดระหว่างผ่าตัด 1,000 ซีซี ต้องการยาระงับความเจ็บปวดเพียงเล็กน้อย, ผู้ป่วยสามารถลุกจากเตียงได้หลังผ่าตัด 2 วันแรก, สามารถนำสายสวนปัสสาวะออกได้ในวันที่ 20 หลังผ่าตัด, ไม่มีภาวะแทรกซ้อนรุนแรงหลังผ่าตัด ผลตรวจทางพยาธิวิทยาเป็นมะเร็งกระเพาะปัสสาวะ*

สรุป: *การผ่าตัดมะเร็งกระเพาะปัสสาวะ และการใช้ลำไส้เล็กทำกระเพาะปัสสาวะเทียมผ่านทางกล้องในช่องท้องทั้งหมด น่าจะเป็นอีกหนึ่งทางเลือกในการรักษา ซึ่งวิธีการผ่าตัด และผลการผ่าตัดของวิธีนี้ ไม่มีอาการแทรกซ้อนรุนแรงและผลเป็นที่น่าพอใจต่อผู้ป่วย แต่อย่างไรก็ตามยังต้องการการศึกษาเพิ่มเติม ในแง่ผลการรักษาระยะยาวและการพัฒนาเทคนิคที่จะลดระยะเวลาการผ่าตัดในอนาคต*