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Morbidity of Learning Curve Laparoscopic Radical Cystectomy with an Extracorporeal Ileal Conduit

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Abstract

Objectives: evaluate the incidence and cause of intra and postoperative complication, after laparoscopic radical cystectomy.

Materials and Methods: Between June 2018 and July 2020, we prospectively evaluated 27patients underwent laparoscopic radical cystectomy and extracorporeal Ileal conduit urinary diversion in South Egypt Cancer Institute Assuit University. Data were collected prospectively on patient demographics, intraoperative parameters, pathologic staging, and postoperative outcomes.

Results: The overall complication rate was 59.3% with 7.4% major. However, the majority of the patients (29.6%) had minor complications treated conservatively with no further surgical intervention needed. intraoperative complications were vascular in nature, that is, 3(11.1%) Deep Dorsal vein injury, 1(3.7%) injury to the iliac vessel vein), and 3 (11.1%) bleedings that occurred during the bladder pedicles control. 5 patients (18.5%) injury to the Obturator vein. (not counting mortalities) occurred, including 2 patients (7.4%) small rectal tears, 1 pneumonia, 1 wound infection, 4 patients (14.8%) ileus, 3 Patient s (11.1%) persistent chylous drainage, one case (1.7%) was electively converted to open surgery due to a larger tumor that precluded proper posterior dissection. 4. Days' time to resumption of oral intake. Mean days to fl atus were 3., bowel movement 3.and inpatient stay 11 (range: 7-19). and the surgical drain was removed on postoperative day 10. (range, 6-14 days).

Conclusion: Laparoscopic radical cystectomy is a safe operation with comparable morbidity rates. our parameters were acceptable and may reflect the learning curve.

Keywords: Laparoscopic radical cystectomy; Ileal conduit diversion; Complications

Introduction

Radical cystectomy is the standard treatment for recurrent high-risk superficial or invasive bladder cancer [1]. The first published laparoscopic radical cystectomy (LRC) for bladder cancer with an extracorporeal ileal conduit was reported by Sanchez de Badajoz et al. in 1995 [2]. Compared with open surgery, a laparoscopic radical cystectomy (LRC) is a safe and feasible alternative with fewer complications, reliable pathology and oncologic efficacy, and faster recoveries [3]. Extracorporeal diversion seems to be the most favorable, as it reduces the operative time and has comparable postoperative results to the intracorporeal technique [4]. The advantages of the laparoscopic approach are not reduced by the external reconstruction of a urinary diversion performed through a mini laparotomy [5]

In 1993, de Badajoz et al. performed the first laparoscopic radical cystectomy (LRC) which is thought to lead to a faster recovery, shorter hospital stays, decreased morbidity, and more rapid return to daily activities, in addition to maintaining the same functional and oncological outcomes as ORC [6]. The complication rate of ORC is in the range of 40-65% with a transfusion requirement of around 66%, while the major complication rates range between 10-12% and a mortality of 2-3%. LRC can also provide an advantage of less blood loss, analgesic requirement, reduced scarring, and less complications. Despite these advantages, LRC is a technically challenging procedure that requires a high level of laparoscopic skills and has a long learning curve [6]. Open Radical Cystectomy (ORC) has been the gold standard technique.

However, contemporary studies have shown that open radical cystectomy morbidity is higher than 50% in reference centers. Most significant complications, such as infections, paralytic ileus, operative wound dehiscence and urinary or intestinal fistulas can be life-threatening in about 10 to 20% of cases. Blood loss is relatively high in these patients on average from (range 560 ml to 3,000 ml), which leads to transfusions that can be linked to major complications. Laparoscopic Radical Cystectomy (LRC) seems to have a smaller complication rate. Some reports show that LRC compared to ORC has less blood loss and the patient has an early return to normal activities, reduction of postoperative pain and better cosmetic results. On the other hand, it is a procedure that requires minimally invasive surgery expertise, higher costs and a longer surgical time [7,8]. The use of smaller incisions potentially causes less pain, more rapid ambulation, faster convalescence, and reduced perioperative complications. Minimizing the manipulation and atmospheric exposure of bowel might expedite the return of bowel function [9].

The main objective of using these minimally invasive technologies is to reduce procedure-related morbidity [10]. The complication rate of ORC is in the range of 40-65% with a transfusion requirement of around 66%, while the major complication rates range between 10-12% and a mortality of 2-3%. LRC can also provide an advantage of less blood loss, analgesic requirement, reduced scarring, and less complications. Despite these advantages, LRC is a technically challenging procedure that requires a high level of laparoscopic skills and has a long learning curve [11].

Materials and Methods

Between June 2018 and July 2020, we prospectively evaluated 27patients underwent LRC and Ileal conduit urinary diversion in South Egypt Cancer Institute, Assiut University. All patients underwent a preoperative examination, which included routine laboratory tests, a chest radiogram, an abdominal ultrasonography (USG), and a computed tomography (CT) scan or magnetic resonance imaging (MRI). Age, gender, comorbidities, surgical history, and laboratory test results were collected. pyelogram, echocardiograph, Patients were graded according to the American Society of Anesthesiologists (ASA) system. Common comorbidities such as hypertension, coronary artery disease, chronic obstructive pulmonary disease, diabetes mellitus, and other chronic diseases were recorded.

Surgical Technique

After general anesthesia, patients were placed in a dorsal supine position with a 30° Trendelenburg position Figure 1A. Briefly, five ports were placed transperitoneally. For placement of the camera port, first 10 mm trocar was placed at superior crease of the umbilicus. The pneumoperitoneum was established after insufflation of CO2 to a pressure of 14-15 mmHg and then the second 5 mm trocar and third 12 mm trocar were placed 2 cm below the umbilicus in the midclavicular line on left and right sides, respectively. The fourth 5 mm trocar was 2-3 cm superior and medial to anterosuperior iliac spines on the right side Figure 1B. Bilateral lymphadenectomy includes all lymph nodes in the boundaries of the aortic bifurcation and common iliac vessels (proximally), the genitofemoral nerve (laterally), the circumflex iliac vein and lymph node of Cloquet (distally), the hypogastric vessels (posteriorly) including the obturator fossa, the lymph nodes around and medial to the internal iliac artery, and the presacral lymph nodes bilaterally Figure 1C & D. Bladder Resection Part In men, the procedure starts with dissection of seminal vesicles and the posterior surface of the prostate. The seminal vesicles were accessed and the posterior sheath of Denovillier's fascia was incised. The seminal vesicles and vas deferens were then mobilized en bloc with bladder specimen Figure 1E.

The ureters were identified and widely mobilized bilaterally downwards close to the bladder wall. Ureters are divided, both ureters were clipped close to the bladder and divided (evaluating the distal ureteral margin for frozen section). Denonvilliers' fascia was incised with cold-cut scissors and dissection along the anterior rectal surface was followed distally towards the prostate apex. The peritoneum at the rectovesical cul-de-sac was incised and further dissection was performed to develop a plane anterior to the rectum. Bladder ligaments and vessels are supplied with clips Figure 1F. Then, the procedure is continued with sectioning of the Retzius space, incision of pelvic fascia, dissection of the apex, and sectioning of urethra. extended anteriorly onto the undersurface of the abdominal wall to include the entire urachus close to the umbilicus.

The Retzius' space was entered, and the bladder was mobilized keeping all the extraperitoneal peri vesical fat attached to the bladder. The endopelvic fascia was incised bilaterally and the superficial dorsal vein were clipped. The dorsal vein complex was secured with LigaSure, and the urethra is divided. Proximal traction on the prostatic apex allows the final attachments of the prostate to the anterior rectal surface (rectourethralis muscle) to come into view Figure 1G. For female cystectomy, placement of a blunt instrument in the vagina aid in identification of the vaginal apex after which a vaginal incision can be extended to the pelvic floor. Infundibulopelvic suspensory ligaments containing the ovarian vessels are transected with LigasureTM (Valleylab, USA). The round ligaments of the uterus were cut around the inner ring aperture. The fallopian tubes, ovaries and broad ligaments of the uterus were dissected along the pelvic wall. The specimens can be delivered transvaginally in females Figure 1H-L. Ileal conduit urinary diversion surgery was carried out. extracorporeally through a 5-cm minilaparotomy incision Figure 1M. Ileal conduits are relatively easy and quick to create, minimizing the rate of postoperative complications. A small drain was left in the pelvis (Figure 1).

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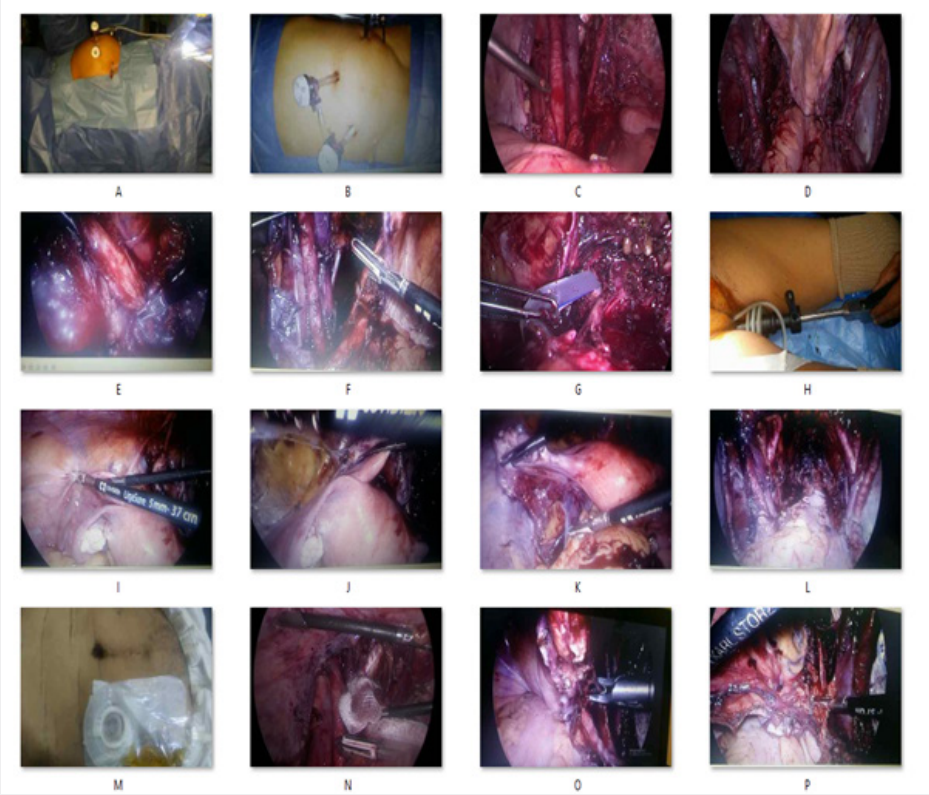

Figure 1: Operative procedure for laparoscopic radical cystectomy.

Outcome measures

All the patients were evaluated for blood loss, operating time, intraoperative organ injury (bowel, vascular, rectal and nervous) and conversion to open surgery. perioperative complication according to the Clavien grades, time to bowel movement (passage of flatus), time to ambulation, time to regular diet pain score, and analgesic requirement. The follow up was done as follows: every 3 months for the first 2 years, every 6 months for the next 3 years and then annually. Follow-up consisted of medical history, physical examination, and routine biochemical profile. Ultrasonography of the abdomen, urography, and chest X-rays were performed at 3, 6, and 12 months postoperatively, then annually unless otherwise clinically indicated. Abdominal/pelvic computed tomography scans were performed 6 months postoperatively and annually thereafter. The patient's complications were cataloged during hospitalization and in clinical attendance for 90 days after surgery.

Statistical Methods

SPSS version 25.0 was used in data management. Mean and standard deviation with median and range were used for numerical data description. Number and percentages described qualitative data.

Results

Twenty-seven patients (17 males and 10 females) with the median age were 55 years (39–79 years).

Perioperative characteristics

Median value (range) of operative time, 388.00 min (252–490). Estimated intraoperative blood loss was 750 mL (325-2000) and 16 patients (59.3%) required blood transfusion. Length of hospital stay was 11 days (7–19), time to ambulation was 3 days (1–4) and time to bowel movement was 3 days (1–6). The postoperative oral intake started on day 4 (2–7), time to flatus in day 3 (1–6), time to nasogastric tube removal in day 2 (1–4), time to liquid consumption in day 3 (1–5), time to regular diet in day 6 (4–10) , time to drainage tube removal in day 10 (6 -14) and time to return to work in day 20 (13-30). Postoperative mean analgesia requirement was 14.07milligrams of (morphine equivalents) with an average morphine requirement of 2.37 days (Table 1).

Pathologic outcomes

The commonest histology was urothelial carcinoma in 22 patients (81.5%) squamous cell carcinoma in 3 patients (11.1%) adenocarcinoma in 1 patient (3.7%). Pathologic stages were at the final specimen analysis, the pathological T stage was p T0+T1+CIS / pT2/ pT3 and pT4 in 2 (7.4 %), 9 (33.3 %), 13 (48.1 %), and 3 (11.1 %) respectively. A total of 16 (59.3 %) patients had positive lymph nodes, and the positive margin rate was 3.7 %. The average numbers of retrieved LNs were 26 (range, 9-56), Incidental prostate cancer was detected in 4 patients (14.8%) and 4 (14.8%) had concomitant carcinoma in situ (Table 2).

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Table 1: Perioperative data of patients.

	Mean	Std. Deviation	Median	Minimum	Maximum
Estimate blood loss (ml)	806.81	371.09	750.00	325	2000
Operative time (min)	390.15	66.48	388.00	252	490
Hospital stay (days)	11.00	3.29	11.00	7	19
Time to ambulation (days)	2.59	.84	3.00	1	4
Days to bowel movement	3.22	1.22	3.00	1	6
Oral intake (days)	4.00	1.44	4.00	2	7
Time to nasogastric tube removal (day)	1.89	.93	2.00	1	4
Time to flatus (days)	3.00	1.11	3.00	1	6
Time to liquid intake (day)	3.11	1.15	3.00	1	5
Time to regular diet, days	6.52	1.76	6.00	4	10
Time to drainage tube removal (days)	9.70	2.16	10.00	6	14
Time to return to work (Days)	20.07	4.16	20.00	13	30
Morphine Requirement (days)	2.37	.93	2.00	1	4
Analgesic requirement, mg (morphine equivalents)	14.07	2.25	14.00	10	18

Table 2: Pathologic Characteristics of patients.

		No	%
Histopathology	Adenocarcinoma	1	3.7
	Squamous cell carcinoma	3	11.1
	Undifferentiated carcinoma	1	3.7
	Urothelial carcinoma	22	81.5
	Total	27	100.0
T stage	T0+T1+CIS	2	7.4
	T2	9	33.3
	T3	13	48.1
	T4	3	11.1
	Total	27	100.0
Lymph node status	Negative	11	40.7
	Positive	16	59.3
	Total	27	100.0
Surgical margins	Negative	26	96.3
	Positive	1	3.7
	Total	27	100.0
Grade	High grade	14	51.9
	Low grade	13	48.1
	Total	27	100.0
Concomitant CIS	No	22	81.5
	Yes	5	18.5
	Total	27	100.0
Incidental prostate cancer	No	23	85.2
	Yes	4	14.8
	Total	27	100.0

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Complication Rates

The overall complication rate is 59.3 % (16 cases). Two patients had major complications (7.4%) and 8 cases had minor (29.6%). There were no deaths. One case (3.7 %) was electively converted to open surgery. One Patient (3.7%) had obturator nerve paresis, and three patients (11.1%) had surgical site infection. Intraoperative complications were vascular in nature, that is one patient (3.7%) had injury to the external iliac vein, 5 patients (18.5%) had injury to the obturator vein, and 3 patients (11.1%) experienced bleeding that occurred during the bladder pedicles control and 3 patients (11.1%) had deep dorsal vein injury. All intraoperative hemorrhages were managed laparoscopically either by free hand laparoscopic suturing or by the use of compersion guaze Figure 1N, or Ligasure cautery, Figure 1O&P. Two patients (7.4%) had small rectal tears, 2 patients had (7.4%) pulmonary embolism,4 patients (14.8%) had intestinal obstruction, paralytic ileus, one patient (3.7%) had pneumonia, 3 patients (11.1%) had persistent chylous drainage, two patients (7.4%) had complications linked with trocar placement, one patient (3.7%) developed ureteroinstestinal anastomosis leak, one patient (3.7%) parastomal hernia, and two Patients (7.4%) delirium (Table 3) and (figures 2 & 3).

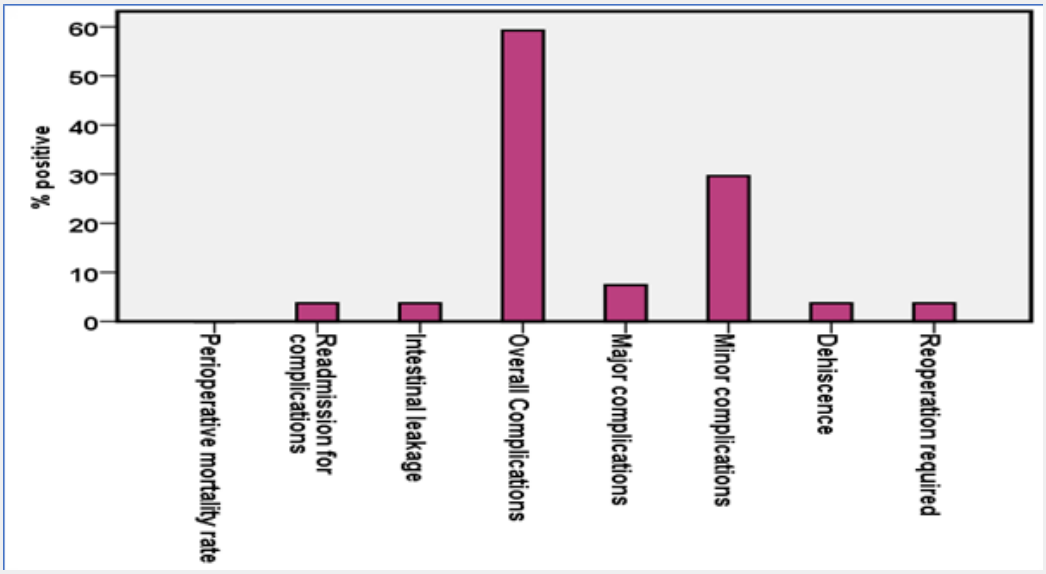

Figure 2: Overall perioperative complications.

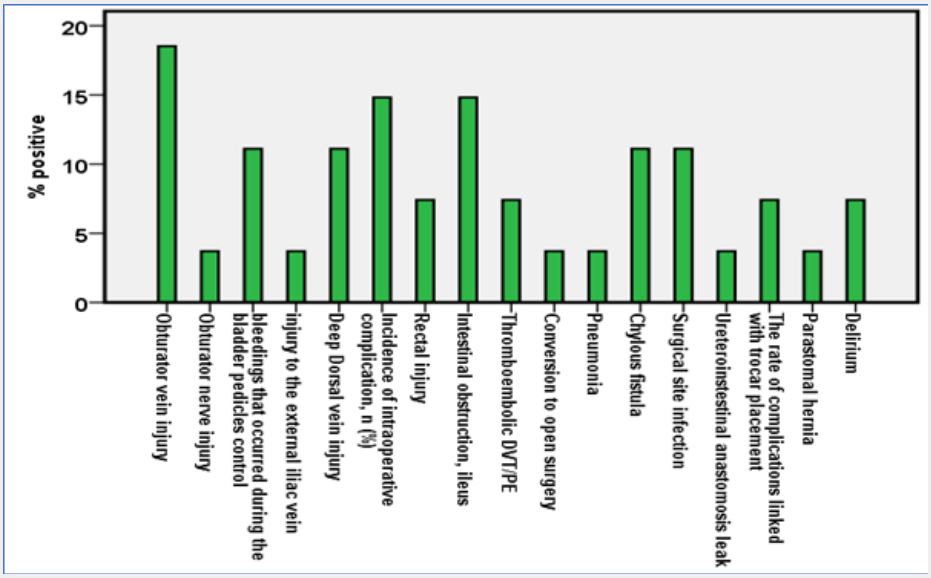

Figure 3: Postoperative morbidity.

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Table 3: Early operative and postoperative complications.

		Count	%
Obturator vein injury	No	22	81.5
	Yes	5	18.5
	Total	27	100.0
Obturator nerve injury	No	26	96.3
	Yes	1	3.7
	Total	27	100.0
Bleedings during the bladder pedicles control	No	24	88.9
	Yes	3	11.1
	Total	27	100.0
Injury to the external iliac vein	No	26	96.3
	Yes	1	3.7
	Total	27	100.0
Deep dorsal vein injury	No	24	88.9
	Yes	3	11.1
	Total	27	100.0
Intraoperative complication	No	23	85.2
	Yes	4	14.8
	Total	27	100.0
Rectal injury	No	25	92.6
	Yes	2	7.4
	Total	27	100.0
Intestinal obstruction, ileus	No	23	85.2
	Yes	4	14.8
	Total	27	100.0
Thromboembolic DVT/PE	No	25	92.6
	Yes	2	7.4
	Total	27	100.0
Conversion to open surgery	No	26	96.3
	Yes	1	3.7
	Total	27	100.0
Pneumonia	No	26	96.3
	Yes	1	3.7
	Total	27	100.0
Chylous fistula	No	24	88.9
	Yes	3	11.1
	Total	27	100.0
Surgical site infection	No	24	88.9
	Yes	3	11.1
	Total	27	100.0
Ureteroinstestinal anastomosis leak	No	26	96.3
	Yes	1	3.7
	Total	27	100.0

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Complications with trocar placement	No	25	92.6
	Yes	2	7.4
	Total	27	100.0
Parastomal hernia	No	26	96.3
	Yes	1	3.7
	Total	27	100.0
Delirium	No	25	92.6
	Yes	2	7.4
	Total	27	100.0

Discussion

LRC has many potential advantages and is attractive both to the patients and to the surgeons. The absence of a long incision is not only cosmetically appealing but also decreases the risk of wound dehiscence and incisional hernia formation. Postoperative recovery time is quicker and paralytic ileus may be reduced by the minimal handling of bowel in a moist and enclosed environment at body temperature. We believe that the decreased bowel manipulation, decreased postoperative pain, and reduction in narcotic analgesic use all combined to minimize paralytic ileus, allowing earlier resumption of bowel activity and decreased hospitalization. Because the laparoscopic vision can enable more accurate identification of tissue plane, precise dissection with less blood loss and better preservation of anatomical structures is practicable [12].

In our results 27 patients (17 males and 10 females) with the median age was 55 years (39–79 years), Urothelial carcinoma 22 (81.5%) Squamous cell carcinoma 3 (11.1%) Adenocarcinoma 1 (3.7%). Albisinni et al. reported urothelial cell carcinoma (n=495) or squamous cell carcinoma (n=5) and adenocarcinoma (n=3) of the bladder. The median age of patients was 68 years (interquartile range [IQR], 62-74) and 82% were male [13]. The median operative time was 332 minutes (interval 207-533 minutes). The median postoperative hospital stay was 9 days (interval 7-12 days) [14]. In our study median (range) Operative time was 388.00 (252–490) minutes. Mean length of hospital stay was 11 (7–19) days.

LRC series described in the literature the median number of lymph nodes removed ranges between 12 to 20 [8]. Lymph node metastases are found in 20–25% [15]. The median lymph node retrieval was 14 (IQR, 9-17), and 5.8% of patients had positive surgical margins [13]. Positive surgical margins range between 0 to 7% in the literature [8]. Incidental prostate cancer was detected in nine patients [16]. In our results he average numbers of retrieved LNs were 26 (range, 9-56). A total of 16 (59.3 %) patients had positive lymph nodes, the positive margin rate was 3.7 %. Incidental prostate cancer was detected in 4 patients (14.8%). Taylor et al. reported that at the time of writing, nearly 500 LRCs have been performed worldwide. The blood loss is ≈ 300 mL with transfusion rates of 0–30%, decreasing with increasing experience [17]. In our series, estimated intraoperative blood loss was 750 mL (325-2000) and 16 patients (59.3%) required blood transfusion.

The bowel function usually returns in 7 days so parenteral hyperalimentation is not required [18]. In our results time to bowel movement days 3 (1–6). The length of ileus is probably related to handling and the prolonged exposure of the bowel, with resultant fluid losses and tissue desiccation. Does laparoscopy reduce this morbidity? Cookson et al speculated that this might be caused by prolonged abdominal retraction and longer incision during ORC. Less postoperative pain and the decreased narcotic analgesic requirement resulted in early recovery of bowel function and ambulation [19,20]. In our study 4 patients (14.8%) Intestinal obstruction, paralytic ileus.

LRC is associated with a quicker return to daily activities [21]. In our results time to return to work (Days) 20 (13-30). Bochner et al., reported 5.1 days by Nix et al., and 18.8 days. Treiyer et al. reported mean time to NG removal was 3 days and mean time for bowel movement (flatus) 3.4 days [22]. In our results time to flatus was 3 days (1–6), time to nasogastric tube removal was 2 days (1–4). LRC could reduce analgesic consumption, and promote earlier recovery of bowel function and return to normal activity [23], lower opioid use (8). In our results postoperative mean analgesia requirement was 14.07 milligrams of (morphine equivalents) with an average morphine requirement of 2.37 days. The time to oral intake and time to ambulation were reported 5.0 days (range, 4-8 days) and 1.3 days (range, 1-3 days), respectively [24]. In our results, time to ambulation was days 3 (1–4), and t5he postoperative oral intake started on day 4 (2–7).

The overall complication rate is 12–15% with a reintervention rate of 3%. These values reflect the difficulties associated with learning the technique [17]. Sharp et al., six major (29%) and nine minor (45%) complications. Minor complications were mainly related to prolonged ileus [20]. Shabsigh et al. reported that the overall complication rate was 64% and the major complication rate was 13% [25] major surgery-related complications (Clavien grade III or greater) occurred in 11.4% of patients [26], mortality rate internationally is ≈ 2%, rectal injury 2%, conversion 1.5%

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and intestinal obstruction 4–5% [17]. In our study the overall complication rate is 59.3 % (16 cases) patients had Major complications in 2 patients (7.4%).and minor (n=8; 29.6%). There were no deaths. Injury to the rectum occurred during the final dissection of the specimen after the division of the urethra. It occurs during the separation of the prostatic apex from the rectum and may be due to the tenting up of the rectum by traction on the prostate [27]. In our results, 2 patients (7.4%) had small rectal tears. Vascular injuries are the most common intraoperative complication seen in laparoscopy [27]. In our results, one patient (3.7%) injury to the external iliac vein, 5 patients (18.5%) injury to the Obturator vein, and 3 patients (11.1%) bleedings that occurred during the bladder pedicles control, and 3 patients (11.1%) deep dorsal vein injury. All intraoperative hemorrhages were managed laparoscopically either by free hand laparoscopic suturing or by the use of compression guaze and Ligasure cautery.

Neurological injuries

Obturator nerve injuries occur in 2% of patients underwent LRP with significant variability among published series [28] in our study One Patient (3.7%) obturator nerve paresis. Lymphocele formation is commonly associated with pelvic procedures, particularly pelvic lymph node dissection (2 to 9%) [29]. In our study 3 Patient s (11.1%) persistent chylous drainage. Albisinni et al. reported re-operation rate of 12% [30]. In our study no patient needed re-operation. The suction drain was removed on postoperative day 4 when the patient was discharged home [31]. In our results time to drainage tube removal was 10 (6 -14) days.

References

1. Kijvikai K, Patcharatrakul S, Kongchareonsombat W, Dissaranan C (2005) Laparoscopic radical cystectomy with ileal conduit diversion: the first case report in Thailand. Journal-medical association of Thailand 88(12): 1947-1951.
2. Keim JL, Theodorescu D (2006) Robot-assisted radical cystectomy in the management of bladder cancer. The Scientific World Journal 6: 2560-2565.
3. Albisinni S, Oderda M, Fossion L, Varca V, Rassweiler J, et al. (2016) The morbidity of laparoscopic radical cystectomy: analysis of postoperative complications in a multicenter cohort by the European Association of Urology (EAU)-Section of Uro-Technology. World journal of urology 34(2): 149-156.
4. Aboumarzouk OM, Drewa T, Olejniczak P, Chlosta PL (2014) Laparoscopic radical cystectomy: neobladder or ileal conduit, debate still goes on. Central European journal of urology 67(1): 9-15.
5. Simonato A, Gregori A, Lissiani A, Bozzola A, Galli S, et al. (2003) Laparoscopic radical cystoprostatectomy: a technique illustrated step by step. European urology 44(1): 132-138.
6. Aboumarzouk OM, Drewa T, Olejniczak P, Chlosta PL (2012) Laparoscopic radical cystectomy: a 5-year review of a single institute's operative data and complications and a systematic review of the literature. International braz j urol 38(3): 330-340.
7. Boc A, Crisan N, Vesa SC, Coman I, Stanca VD, et al. (2018) The impact of minimal invasive surgery on early complica-tions and mortality after radical cystectomy for muscle-inva-sive urothelial bladder cancer. Transfusion (yes) 57: 46-53.
8. González ER, García JJ, Lorenzo LM (2009) Laparoscopic radical cystectomy. Clinical and Translational Oncology 11(12): 799-804.
9. Stephenson AJ, Gill IS (2008) Laparoscopic radical cystectomy for muscle-invasive bladder cancer: pathological and oncological outcomes. BJU international 102(9b): 1296-1301.
10. Park B, Jeong BC, Jeon SS, Lee HM, Choi HY, et al. (2013) Pure laparoscopic radical cystectomy with ileal conduit: a single surgeon's mid-term outcomes. Yonsei medical journal 54(4): 912-920.
11. Khan MS, Challacombe B, Elhage O, Rimington P, Coker B, Murphy D, et al. (2012) A dual-centre, cohort comparison of open, laparoscopic and robotic-assisted radical cystectomy. International journal of clinical practice 66(7): 656-662.
12. Hong Sh, Seo Si, Kim Jc, Hwang Tk (2005) Laparoscopic radical cystectomy with extracorporeal urinary diversion: Preliminary experience. International journal of urology 12(10): 869-874.
13. Albisinni S, Rassweiler J, Abbou CC, Cathelineau X, Chlosta P, et al. (2015) Long-term analysis of oncological outcomes after laparoscopic radical cystectomy in E urope: results from a multicentre study by the E uropean A ssociation of U rology (EAU) section of U ro-technology. BJU international 115(6): 937-945.
14. Cheung G, Sahai A, Billia M, Dasgupta P, Khan MS (2013) Recent advances in the diagnosis and treatment of bladder cancer. BMC medicine 11(1): 13.
15. Ghazi A, Zimmermann R, Al-Bodour A, Shefler A, Janetschek G (2010) Optimizing the approach for lymph node dissection during laparoscopic radical cystectomy. European urology 57(1): 71-78.
16. Canda AE, Balbay (2014) Robotic radical cystectomy for bladder cancer: Current perspectives. European Medical Journal Urology 1: 1014-1010.
17. Raychaudhuri B, Khan MS, Challacombe B, Rimington P, Dasgupta P (2006) Minimally invasive radical cystectomy. BJU international 98(5): 1064-1067.
18. Overstreet DL, Sims TW (2006) Care of the patient undergoing radical cystectomy with a robotic approach. Urol Nurs 26(2): 117-122.
19. Tang K, Li H, Xia D, Hu Z, Zhuang Q, et al. (2014) Laparoscopic versus open radical cystectomy in bladder cancer: a systematic review and meta-analysis of comparative studies. PLoS One 9(5): e95667.
20. Hrouda D, Adeyoju AA, Gill IS (2004) Laparoscopic radical cystectomy and urinary diversion: fad or future. BJU international 94(4): 501-505.
21. Gou X, Wang M, He WY, Liu CD, Deng YZ, et al. (2012) Laparoscopic radical cystectomy for bladder cancer with prostatic and neurovascular sparing: initial experience. International urology and nephrology 44(3): 787-792.
22. Zheng W, Li X, Song G, Zhang Z, Yu W, et al. (2012) Comparison of laparoscopic and open cystectomy for bladder cancer: a single center of 110 cases report. Translational andrology and urology 1(1): 4-8.
23. Zeng S, Zhang Z, Yu X, Song R, Wei R, Zhao J, Wang L, et al. (2014) Laparoscopic versus open radical cystectomy for elderly patients over 75-year-old: a single center comparative analysis. PLoS One 9(6): e98950.
24. Kwon SY, Kim BS, Kim TH, Yoo ES, Kwon TG (2010) Initial experiences with robot-assisted laparoscopic radical cystectomy. Korean J Urol 51(3): 178-182.
25. Takada N, Abe T, Shinohara N, Sazawa A, Maruyama S, et al. (2012) Peri-operative morbidity and mortality related to radical cystectomy: a multi-institutional retrospective study in J apan. BJU international 110(11b): E756-64.

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26. Castillo OA, Abreu SC, Mariano MB, Tefilli MV, Hoyos J, et al. (2006) Complications in laparoscopic radical cystectomy: the South American experience with 59 cases. International braz j urol 32(3): 300-305.

27. Hemal AK, Kumar R, Seth A, Gupta NP (2004) Complications of laparoscopic radical cystectomy during the initial experience. Int J Urol 11(7): 483-488.

28. Montes SF, Rodríguez IG, Ugarteburu RG, Villamil LR, Mendez BD, et al. (2015) Intraoperative laparoscopic complications for urological cancer procedures. World Journal of Clinical Cases: WJCC 3(5): 450-456.

29. Michael E, Woods MD, Rafael N Nunez MD, Erik P Castle (2008) Complications of robot assisted radical cystectomy (RARC). J Urol 179: 1313-1318.

30. Wei X, Lu J, Siddiqui KM, Li F, Zhuang Q, et al. (2018) Does previous abdominal surgery adversely affect perioperative and oncologic outcomes of laparoscopic radical cystectomy. World journal of surgical oncology 16(1): 10.

31. Abreu SC, Silveira RA, Cerqueira JB, Regadas RP, Gonzaga LF, et al. (2005) Stapleless laparoscopic assisted radical cystectomy with ileal neobladder in a male and with ileal loop in a female: initial report from Brazil. International braz j urol 31(3): 214-221.

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