



RESEARCH ARTICLE

LAPAROSCOPIC UROLOGICAL SURGERY - PERIOPERATIVE EXPERIENCES OF INITIAL 100 CASES

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Abstract

Objective: Retrospective review and evaluation of the perioperative experiences, complications and outcomes of initial 100 cases of different urological surgery performed by laparoscopic procedure. **Methods:** From January 2016 to July 2019, a total of 100 patients underwent different laparoscopic urological surgery and were evaluated retrospectively. All patients were assessed by demographic variables, diagnosis, surgical procedure, approach of laparoscopy, operation time, hospital stay, complications during and after surgery and conversion to open surgery as well as observations in every step of surgery and perioperative period. **RESULTS:** 72 patients were male and 28 were female. The median age (range) was 36 (12-64) years. All patients underwent transperitoneal approach. Among them most of the cases were pyeloplasty 26% (n=26) followed by ureterolithotomy 19% (n=19) and radical cystectomy 16% (n=16). Perioperatively 3 cases were converted to open procedure among them one was radical cystectomy case due to excessive bleeding from superior vesical artery and two were radical prostatectomy cases; postoperatively one case of pyeloplasty required exploration due to excessive drain output and one post radical cystectomy patient required cutaneous ureterostomy for urinary leakage due to necrosis of distal few cm of left ureter. **Conclusion:** Laparoscopic urological surgery is a safe alternative to open surgery in experienced hand. However, in the field of urooncology, oncological outcomes yet to be determined in comparison to open surgery.

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Introduction: -

First laparoscopic urological procedure was done by William Schuessler in early 90s and it was the pelvic lymphadenectomy of a patient with prostatic adenocarcinoma¹. Since then it is becoming popular day by day with advancement of technical facilities and experiences. Laparoscopic surgery has many advantages in comparison to open surgery such as much less pain and bleeding, hospitalization time and excellent cosmetic results². At present almost all urological procedures can be performed by laparoscopy. Even in the field of uro-oncolgy, oncological outcome is comparable to open procedure. In this retrospective study, we assessed and evaluated our initial 100

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cases of different laparoscopic urological surgery in terms of perioperative experiences, outcomes and complications.

Methods:-

From January 2016 to July 2019, all the medical records of 100 patients who underwent laparoscopic urological surgery in Department of urology, Dhaka Medical College Hospital and other hospitals in Dhaka, Bangladesh were assessed and evaluated retrospectively. All the procedures were done by a single surgeon through transperitoneal approach. Evaluation of the patients was done with demographic variables, diagnosis, surgical procedure, approach of laparoscopy, operation time, hospital stay, requirement of analgesia, blood transfusion, complications during and after surgery and conversion to open surgery. All patients were optimized preoperatively as our routine clinical practice. Mechanical bowel preparation was given from the day before surgery. Written informed consent was taken from every patient with permission of open conversion during the surgical procedure. All the procedures were done under general anesthesia. Upper abdominal procedures were done in 45° lateral decubitus position without flexion of the table and pelvic procedures were done in semi lithotomy with steep Trendelenburg position. Operation time was defined as the time interval between starting point of pneumoperitoneum creation and skin closure. All the patients were monitored closely during hospital stay then follow up schedules were made at 7th post-operative day, 1 month and 6 months.

For creation of pneumoperitoneum, Veress needle was used in every cases. During trocar placement pneumoperitoneal pressure was achieved 15 mmHg in upper abdominal cases and 20 mmHg in pelvic cases that were reduced to 12 mmHg and 15 mmHg respectively during the rest of the period. The employed energy sources were monopolar and bipolar diathermy with sometimes thermal (LigaSure-Covidien) for dissection. For upper abdominal cases dissection started with incision along the line of Toltd for colonic mobilization. Large size locking polymeric clips (Hem-O-Lok) were applied on renal vessels during nephrectomy and to achieve control of other pedicles. Dorsal venous complex was controlled either by knotting or LigaSure. Customized laparoscopic bag was used for organ retrieval through mini-laparotomy without morcellation.

In case of cyst decortication, retrograde pyelography was done routinely. After aspiration of cyst fluid, excised cyst wall was sent for histopathology. In case of ureterolithotomy, longitudinal ureteral incision was made by laparoscopic scissors. Incision site was closed with 5-0 vicryl suture after antegrade placement of a double J stent in every patient. In case of pyeloplasty, 5-0 vicryl suture was applied for running closure and antegrade double J stent was placed in every case.

Radical cystectomy specimen was retrieved through supra-umbilical mini-laparotomy incision. Every patient underwent ileal conduit urinary diversion extra-corporeally.

Results: -

The demographic characteristics of 100 patients are shown in Table 1. All the patients underwent transperitoneal approach. The 100 cases included 11 renal cyst decortication, 2 adrenalectomy, 4 simple nephrectomies, 8 radical nephrectomy, 3 radical nephroureterectomy, 26 pyeloplasty, 2 anterior transposition of ureter, 19 ureterolithotomy, 16 radical cystectomies, 3 VVF repair, 3 varicocelelectomy, 1 orchidopexy and 2 radical prostatectomy (Table 2). Per and post-operative data are shown in Table 3 and Table 4 respectively. There was no mortality. Total 5 patients required open conversion, among them 3 cases per-operatively and 2 cases post-operatively. Per-operative 1 case was radical cystectomy procedure due to excessive bleeding from inadvertent injury of superior vesical artery that was managed with immediate open conversion uneventfully, and another 2 cases were radical prostatectomy procedure that were converted to open due to lack of skill. Post-operatively 1 case of pyeloplasty required exploration due to excessive drain output and after exploration it was found that drain is within the PC system through suture line.

Table 1:- Demographic characteristics of the patients (n=100).

Characteristics	Number
Gender (n=100)	
Male	72
Female	28
Age, Median (range), years	36 (12-64)

After withdrawing the drain, the defect was repaired and patient recovered with uneventful post-operative period. Another post-operative case that required laparotomy was post-radical cystectomy due to urinary leakage and operative findings was avascular necrosis of distal few cm of left ureter. Patient was managed with cutaneous ureterostomy with good post-operative outcome.

Table 2:- Diagnosis, operative procedures and approach of laparoscopy.

Operative procedure	Diagnosis	Approach	Total number
Cyst decortications	Simple renal cyst	Transperitoneal	11
Adrenalectomy	Adrenal mass	Transperitoneal	02
Simple Nephrectomy	Nonfunctional kidney	Transperitoneal	04
Radical Nephrectomy	Renal tumor	Transperitoneal	08
Radical Nephroureterectomy	upper tract TCC	Transperitoneal	03
Pyeloplasty	PUJ obstruction	Transperitoneal	26
Anterior Transposition of Ureter	Retrocaval ureter	Transperitoneal	02
Ureterolithotomy	Upper ureteric stone	Transperitoneal	19
Radical Cystectomy	MIBC	Transperitoneal	16
VVF Repair	VVF	Transperitoneal	03
Varicocelectomy	Varicocele	Transperitoneal	03
Orchidopexy	Undescended testis	Transperitoneal	01
Radical Prostatectomy	Carcinoma Prostate	Transperitoneal	02

Discussion:-

In the field of urology, minimal invasive surgery is replacing the open surgical procedure. Laparoscopic surgery has many advantages in comparison to open surgical procedure². Transperitoneal approach is mainly preferred by most of the surgeons that is cited in literature^{3,4}. It has several advantages such as familiar anatomy, wide range of movements of the instruments etc. We performed all of our cases transperitoneally.

Our first laparoscopic case was simple renal cyst decortication. We performed total 11 cases uneventfully with excellent perioperative outcomes. In case of stone surgery, first laparoscopy was applied by Wickkam⁵. We performed total of 19 cases of upper ureteric stone. Our observation is that large stone and stone impacted in the mucosa is better managed by laparoscopy than push back and PCNL, however further study is needed.

Laparoscopic simple and radical nephrectomy is comparatively safe and has low complication rate than open surgery⁶. Most common complications in laparoscopic nephrectomy are hemorrhage and adjacent organ injury. We encountered no such complication in our series.

In early 90s pyeloplasty was first done by laparoscopy and now considered the most preferred method for correction of ureteropelvic junction obstruction⁷. Outcome is similar to the open surgery with better cosmetic and quality of life. It may be done by transperitoneal or retroperitoneal approach. We performed all of our cases through transperitoneal approach. Our observation is that transperitoneal approach is much comfortable due to familiar anatomy, normal position of the kidney during surgery, crossing vessel manipulation and wide range of instrumental movement.

We performed total 16 cases of radical cystectomy. Laparoscopic approach is advantageous in the view of better magnification and optimal vision deep to the perineum. The challenges are control of dorsal venous complex,

Table 3:- Perioperative data relative to types of surgery.

Surgery (n=100)	Duration (min) median (range)	Transfusion (unit)	Open conversion (n)	Complication (n)
Cyst decortication (11)	64 (50-110)	0	0	0
Adrenalectomy (2)	136 (109-175)	0	0	0
Simple nephrectomy (4)	156 (132-180)	0	0	0
Radical nephrectomy (8)	168 (150-198)	1	0	0
Radical nephroureterectomy (3)	162 (143-178)	1	0	0

Pyeloplasty (26)	166 (150-190)	0	0	0
Anterior transposition of ureter (2)	158 (147-176)	0	0	0
Ureterolithotomy (19)	102 (80-122)	0	0	0
Radical Cystectomy (16)	192 (176-202)	1	1	1 ¹
VVF repair (3)	138 (121-154)	0	0	0
Varicocelectomy (3)	58 (45-78)	0	0	0
Orchidopexy (1)	116	0	0	0
Radical Prostatectomy (2)	-	1	2	0

¹ converted to open as bleeding from superior vesical artery.

avoidance of rectal injury and preservation of blood supply of the distal ureter. We faced one case of avascular necrosis of the distal few cm of left ureter and our observation is that during dissection adequate amount of periureteric tissue should be preserved and avoidance of crushing the ureter with instruments. Ileal conduit urinary diversion was done extracorporeally in every case.

Laparoscopic radical prostatectomy has been increasingly popular day by day. With robotic assistance it is now the standard practice in many centers⁸. It has several advantages such as magnified picture and relatively easier access deep into pelvis in comparison to open procedure, small incision, less pain and faster recovery. But it is difficult procedure, and long learning curve and surgical skill is needed to perform the procedure safely.

So far as our knowledge our complications rate is comparable to other studies⁹.

Conclusion:-

Lower morbidity and better functional and cosmetic outcome should be considered in every surgical patient. With technological advantages laparoscopy is almost replacing the open surgical procedure in terms of these parameters. Oncological outcome of laparoscopic surgery in comparison to open procedure may be in debate. However,

Table 4:- Post-operative data relative to types of laparoscopic surgery.

Surgery Complication	Duration of drain (day)	Duration of catheter (day)	Hospital stay (day)	
Cyst decortication	1 (1-2)	1	2 (2-5)	0
Adrenalectomy	3 (2-5)	1	6 (5-7)	0
Simple nephrectomy	4 (2-5)	1	7 (6-8)	0
Radical nephrectomy	4 (3-6)	1	8 (6-9)	0
Radical nephroureterectomy	5 (4-7)	7 (5-8)	8 (6-9)	0
Pyeloplasty	5 (3-7)	7 (6-8)	5 (4-9)	1 ¹
Anterior transposition of ureter	5 (4-7)	6 (5-7)	5 (4-8)	0
Ureterolithotomy	4 (3-5)	5 (4-6)	4 (3-6)	0
Radical Cystectomy	8 (6-9)	-	9 (7-11)	1 ²
VVF repair	5 (3-6)	17 (13-21)	7 (5-9)	0
Varicocelectomy	2 (1-2)	1	3 (2-4)	0
Orchidopexy	2	1	6 (2-7)	0
Radical Prostatectomy	7 (5-9)	14 (10-16)	8 (7-11)	0

¹ Excessive drain output due to displacement of drain into PC system through suture line managed with open repair.

² Urinary leakages due to avascular necrosis of distal end of left ureter managed with exploration and cutaneous ureterostomy.

experiences of number of cases and surgical skill is needed to overcome the learning curve. We believe that in the field of laparoscopy our experiences will help the patients to prefer this technique and we will provide more patient satisfaction.

References:-

1. Schuessler W, Vancaillie T, Reich H, et al. Transperitoneal endosurgical lymphadenectomy in patients with localized prostate cancer. *J Urol* 1991; 145: 988-991.
2. Demir O, Ozturk B, Egriboyun S, Esen AA. Initial experience with urologic laparoscopic surgery in our clinic and the learning process. *Dokuz Eylul Universitesi Tip Fakultesi Derg* 2010; 24:105-112.
3. Chung JH, Lee SW, Lee KS, et al. Safety of en bloc ligation of the renal hilum during laparoscopic radical nephrectomy for renal cell carcinoma: a randomized controlled trial. *J Laparoscopic Adv Surg Tech A* 2013; 23:489-494.
4. Rassweiler J. Laparoscopic radical prostatectomy is also oncologically safe and effective! *BJU Int* 2013; 112:158.
5. Wickham JEA. The surgical treatment of renal lithiasis. In: *Urinary Calculus Disease*. edn. Edited by JEA W: New York, NY: Churchill-Livingstone; 1979: 145-198.
6. Daggulli M, Utangac MM, Bozkurt Y, et al. Our laparoscopic radical nephrectomy experiences. *Dicle Med J* 2014; 41:732-737.
7. Schuessler WW, Grune MT, Tecuanhuey LV, Preminger GM. Laparoscopic dismembered pyeloplasty. *J Urol* 1993; 150:1795-1799.
8. Touijer K, Eastham JA, Secin FP, Romero Otero J, Serio A, Stasi J, et al. Comprehensive prospective comparative analysis of outcomes between open and laparoscopic radical prostatectomy conducted in 2003 to 2005. *J Urol* 2008; 179:1811-17.
9. Soulie M, Seguin P. Urological complications of laparoscopic surgery: Experience with 350 procedures at a single center. *J Urol* 2002; 165:1960-1963.