

Laparoscopic uretero-neocystostomy, initial experience.

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Objective: To assess the feasibility and outcome of laparoscopic ureteral reimplantation.

Materials and methods: five laparoscopic ureteral reimplantations were performed between June 2011 and December 2012 for ureteral strictures. The mean age was 45 years three patients had unilateral lower ureteric stricture, 2 patients had bilateral lower ureteric strictures. The etiology of stricture formation was bilharziasis in 2 patients, previous ureteroscopy in 2 patients, and unknown in 1 patient. 3 patients underwent laparoscopic ureteral reimplantation, 2 patients underwent modified Lich-Gregoir on the right side and simple anastomosis on the left side .

Results: mean operative time for all patients was 157 minutes (range 45-350).

Post-operative stay was 2-3 days.

Postoperative radiological imaging showed hydronephrosis in 1 patient at a follow up interval of 6 months.

Conclusions: Laparoscopic ureteral reimplantation is a feasible procedure with good medium-term results. We believe that this procedure will become an established treatment option.

Key words: uretero-neocystostomy- ureteral stricture.

Introduction

Laparoscopy is now a major domain of urological surgery. During the last decade laparoscopy has evolved from being a diagnostic tool to being applied to almost every abdominal and pelvic urological procedure.

Although many ablative laparoscopic techniques for benign and malignant pathologies are now well on their way to become established procedure,

This is mainly due .reconstructive laparoscopic procedures are still evolving .to the complexity and technical skill intensity inherent to such procedures

With the accumulation of laparoscopic experience and expertise, a new field of advanced laparoscopic reconstructive procedures has been developed in the laboratory and carried to clinical application. Patients now have the opportunity to benefit from this minimally invasive approach, with decreased postoperative morbidity, and potentially the same surgical efficacy as the open surgical approach.

In urology, open uretero-neocystostomy has been the gold standard for treatment of ureteral stricture disease. However, as the urologist's experience with laparoscopy grows, there has been a dramatic increase in the laparoscopic applications for the management of diseases of the ureter. The various conditions where laparoscopic procedures have been used for benign conditions of the ureter are primary vesicoureteral reflux, retro-caval ureter, retroperitoneal fibrosis and ureteral stricture disease.

Uretero-neocystostomy in adults is indicated in the management of distal ureteral strictures or ureteral obstruction and ureteral injury as a result of gynecological or pelvic surgery as well as management of cases of high grades vesico- ureteral reflux.

Patients and methods:

This prospective clinical study was done in Kasr Al-Aini hospital, Cairo University and Al-Shorouk hospital- Cairo from June 2011 till December 2012.

It included 5 patients; 4 females and 1 male. Age ranged from 21y to 72y with a mean age of 45y.

The etiology of stricture formation was bilharziasis in 2 patients, previous ureteroscopy in 2 patients, and unknown in 1 patient.

All patients were subjected to:

1. History taking.
2. General and local examination.
3. Laboratory investigations in the form of: urine analysis, urine culture and sensitivity when required, kidney and liver functions, complete blood picture, bleeding profile and fasting blood sugar.
4. Radiological investigations in the form of: KUB, US, IVU and CT scan.

Inclusion criteria: any patient with benign ureteral stricture.

Exclusion criteria:

- a) Malignant ureteric strictures and ureteric strictures resulting from or associated with complicated intra-abdominal surgery.
- b) Contraindication to laparoscopic surgery.

Technique:

Under general anesthesia, a 16F Foley catheter was inserted in the bladder with the patient placed in Trendelenburg position. After creation of a pneumoperitoneum (15mmHg maximum flow: 15 L/min), a 12-mm optic port was placed just above the umbilicus. Another 10-mm trocar was placed under direct vision at the level of the umbilicus along the lateral edge of the rectus muscle on the contralateral side of the stricture. Two 5-mm working trocars were placed under direct vision, with one in the midline halfway between the umbilicus and the symphysis pubis and the other at the opposite side of the 10-mm port between the umbilicus and the anterior superior iliac spine. The ureter was isolated at the bifurcation of the common iliac vessels until the stricture site could be identified. The ureter was dissected free from the intramural segment at the junction of dilation and stricture, where it was ligated and transected.

The bladder was filled with 250 ml normal saline and the peritoneum incised anteriorly, exposing the Retzius space by blunt dissection, followed by division of both medial umbilical ligaments.

Fixation of the bladder to the psoas muscle was performed with three to four interrupted sutures (vicryl 0) in all patients.

A transverse incision was made in the bladder dome in the postero-lateral surface to create a cystostomy to which the ureter was anastomosed.

The ureter is then spatulated and anastomosed to the bladder mucosa by 4-0 vicryl continuous sutures. Before completion of the anastomosis a 6F 26-cm Double-J stent was passed into the ureter and advanced to the renal pelvis over a 0.038 inch guide wire. The guide wire was inserted through a puncture needle from the skin and the distal end of the stent was placed in the bladder.

The anastomosis was tested by refilling the bladder and further sutures were placed if necessary.

A nelaton drain was then placed in the paravesical space via the 5-mm laparoscopic port, and the anastomosis was covered using perivesical fat.

The drain was removed after 2 or 3 days at which time all the patients were discharged from the hospital.

Cystography was done after 7 days to exclude urinary leakage before catheter removal.

Ureteric stents were removed after 3 weeks.

Follow up ultrasound was done after 3 and 6 months and results were tabulated.

Results

Operative time:

Mean operative time was 157 minutes (range 45-350).

Postoperative stay:

Post-operative stay was two days in two patients and three days in three patients.

Drains were removed before discharging the patients and they all were discharged with the urethral catheters and advised to follow up after one week to do cystogram.

Follow up:

An ascending cystogram was done 1 week after discharging the patients and showed no urinary extravasation and urethral catheters were removed in the outpatient clinic.

Follow up ultrasound after 3 months revealed residual backpressure changes in two patients.

Follow up ultrasound at 6 months was done and revealed only one patient who had residual backpressure changes.

Intravenous urography was done for one patient both pre and post-operative and is shown in figure (1).

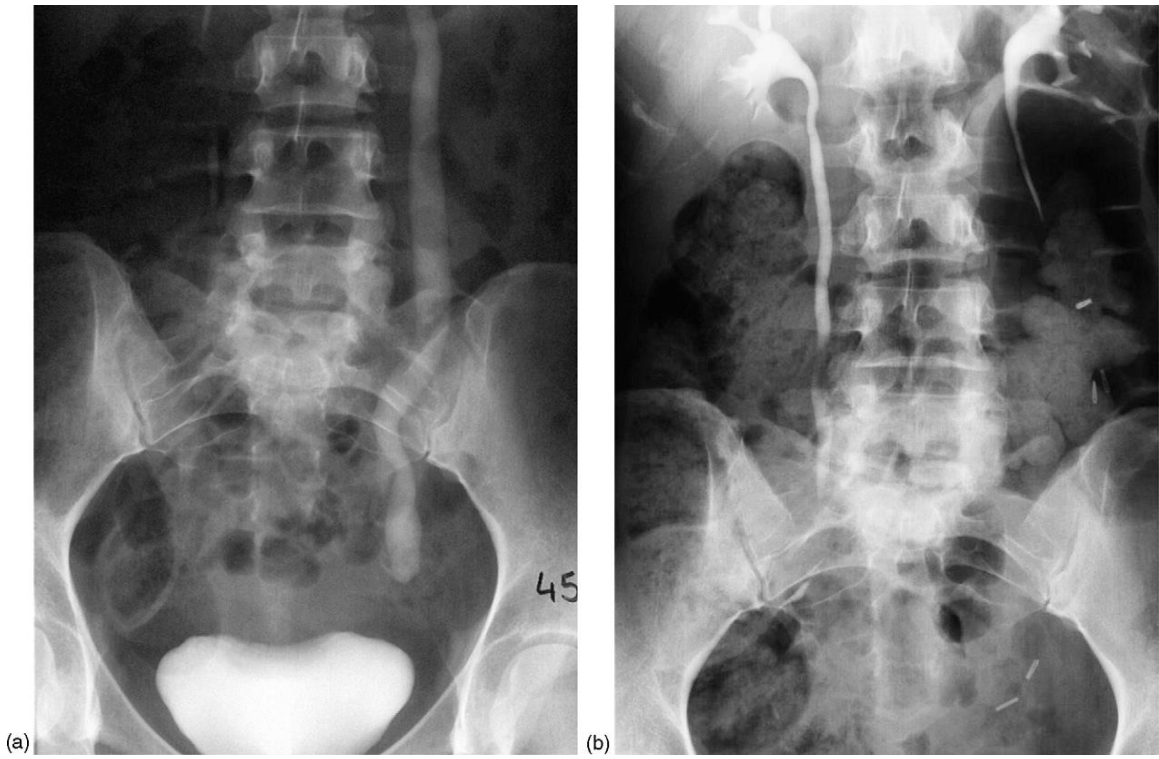


Figure 1: pre and post IVU for one patient.

Discussion

Laparoscopy has been widely used in urologic surgery, and its application is ever widening with excellent clinical results. Laparoscopic ablative surgery is now well settled in urologic practice and has clear advantages to the patient in terms of both cosmesis and decreased hospital stay.

Reconstructive urologic surgery however remains largely performed by open techniques. One of the reasons for this is the technical demands faced by the surgeon in undertaking a reconstructive procedure laparoscopically, a complexity that is reflected in the lengthy operative times reported to date. Despite the technical challenge of undertaking reconstructive techniques laparoscopically, the advantages to patients of the minimally invasive approach remain a great motivator.

The increase in surgeons' experience and practical skills in addition to technological advancement have motivated urologists to proceed to more complex reconstructive procedures such as laparoscopic uretero-neocystostomy.

Laparoscopic surgery has the advantages of less pain, early ambulation and rapid convalescence compared to open surgery, while the disadvantage is the longer operative time (1, 2).

In fact, a number of authors have published their experience with laparoscopic uretero-neocystostomy such as Rassweiler and colleagues in 2007 who compared the results of laparoscopic ureteral reimplantation with a previous series of open surgery. They compared ten patients who underwent laparoscopic uretero-neocystostomy with psoas-hitch with or without Boari-flap technique for ureteral obstructions with ten patients treated by open uretero-neocystostomy for similar pathologies.

The mean operative time was 228 minutes in the laparoscopic group and 187 in the open group, however the authors felt that the safety and efficacy of the minimally invasive laparoscopic approach compensated for the longer time taken to perform the procedure when compared to traditional open surgery (3).

The mean operative time in our series was 157 minutes with range (45-350 minutes). The operative time in our series was calculated after the pneumoperitoneum till the end of the ureteral anastomosis.

The mean operative time can be accepted regarding it is an initial experience and the series included two patients who underwent bilateral ureteral reimplantation.

One of the fundamental principles of uretero-neocystostomy is to achieve tension-free anastomosis, and so we combined the procedure with a psoas hitch in all cases to stabilize the bladder, and to gain additional ureteral length for a tension free anastomosis. Furthermore, we had to adequately mobilize the ureter, preserving the periureteral fat for the purpose of preventing ischemia, as well as adequate dissection of the bladder to allow easy approximation. Laparoscopy allowed us to easily release the bladder, both from the Retzius space and from its lateral sides. In our cases, in order to achieve greater bladder movement, it was necessary to section the contralateral superior vesical artery, which allowed us to treat strictures up to 6-7 cm in length without the need to resort to a Boari flap. It might be a good option in long strictures or in those affecting the lower lumbar ureter. Other series prefer to routinely use the laparoscopic Boari flap (2, 4).

In all our cases, we stented the anastomosis using a double J stent inserted through a percutaneous needle. Some series prefer not to place a double J stent and do not mention an increase in the appearance of urinary leakage (5,

6). In spite of this, we believe that placing a double J stent is fast and easy, which is why we perform it routinely without any complications and with no urinary fistula appearing in our series.

Conclusion

Laparoscopic ureteral reimplantation can be considered a feasible procedure for management of ureteric strictures and has the advantages of early ambulation, rapid convalescence and shorter hospital stay with good functional short-term outcomes. The creation of uretero-neocystotomy requires advanced laparoscopic skills, and a definite learning curve exists in mastering such technique. Larger series with longer follow up are still necessary to validate the results of this procedure against open surgery.

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