Laparoscopic ureterolithotomy: Own experience

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KEY WORDS

ureterolithotomy ◗ laparoscopic procedure

ABSTRACT

Introduction. Treatment of proximal ureteral calculi frequently requires several sessions. The techniques used depend on the urologist's preferences, experience, and availability of equipment. Authors present the results of laparoscopic ureterolithotomy, based on 5-years of experience.

Material and methods. Laparoscopic ureterolithotomy was performed in 40 patients, suffering from proximal ureteral calculi. All surgeries were performed with a retroperitoneal approach. Median time of surgery duration was 120 minutes; patients were discharged home most frequently after 3 days of hospitalization.

Results. Calculi were removed in all patients. No major complications were noted. In two patients conversion was made in the initial phase of the laparoscopic procedure. We found one case of ureteral stenosis at the operated site, which was successfully treated with D-J catheter; and one case of postoperative wound infection.

Conclusions. Retroperitoneoscopic ureterolithotomy is effective and safe in selected patients. It fulfills the criteria for minimally invasive surgery and enables treatment in one session.

INTRODUCTION

Proximal ureterolithiasis is quite a challenge in a urologist's everyday work. A variety of surgeries (ESWL, URSL, PCNL, laparoscopy) means that the most effective surgical technique is still to be found [1, 2].

Laparoscopy is more and more frequently used in several urological specialties – urolithiasis [2], oncology [3], reconstructive urology [4], and BPH [5]. Here, we present the results of ureterolithotomy from a retroperitoneal approach.

MATERIAL AND METHODS

In 2005-2009, 40 retroperitoneoscopic procedures; including 36 ureterolithotomies, 2 pyelolithotomies, and 2 conversions; were performed in the Urology Ward in Przeworsk. Twenty-seven males and 13 females, aged between 23 and 86 years (median: 49 years), were operated. Twenty-one calculi were operated on the left side, and 19 – on the right side.

Patients with proximal ureteral calculi, i.e. segment of ureter between renal pelvis and upper border of the sacral bone [6], were classified for laparoscopic ureterolithotomy. Pyelolithotomy was performed in 2 cases of calculi impacted in the pyelo-ureteral junction.

The size of ureteral stones was evaluated by radiologists on plain films and was 7 to 21 mm (median 12 mm).

Patients were placed in the lateral flank position with bent lumbar area. All procedures were performed retroperitoneoscopically using the Gaur technique to produce working space [7]. The first trocar covered by two middle fingers of a surgical glove was inserted into the upper lumbar triangle; an area defined by the 12th rib superiorly, the external oblique muscle anteriorly, and the border of the *latissimus dorsi* muscle posteriorly. The glove fingers were filled with up to 400 ml of warm normal saline. Gas pressure in the retroperitoneal space was maintained within 13 mm Hg. Another two trocars were inserted under visual control in the middle axillary line above the iliac ala and under the 12th rib. Next, the ureter was uncovered proximal to the stone (Fig. 1). The ureter was dissected above the calculus with a monopolar needle then scissors. After stone removal from the ureter with 10 mm Babcock forceps, its patency was controlled with a No. 8 Chr catheter inserted into the retroperitoneal space (Fig. 2). The ureter was closed with interrupted sutures using 3-0 Vicryl (Figs. 3 and 4). The procedure was ended with the insertion of a silicone drain into the operated area (Fig. 5).

RESULTS

Duration of the procedure – from intubation to extubation – was between 55 minutes and 4 hours (median: 2 hours). No major complications were noted. None of the patients required blood transfusion. In patients 2 and 3 we had to perform conversion (5.1%) to open surgery as we could not find the ureter. Removal of the protective drain and hospitalization lasted for 1 to 15 days (median: 3 days).

In case of prolonged leakage of urine (longer than 7 days) after surgery a Double J stent was inserted. In 2005, 2006, and 2007 there were 2, 3, and 2 such cases respectively. In the two consecutive years D-J catheter insertion was not needed.

One case of ureteral stenosis at the operation site was noted. It was successfully treated with D-J catheter placement for 2 weeks. Hydronephrosis and pain disappeared after that time. We encountered one case of postoperative wound infection.

DISCUSSION

To the end of the seventies of the last century an open ureterolithotomy was a standard management of urolithiasis. Breakthrough in the treatment of the proximal ureteral calculi took place in 1980 when extracorporeal lithotripsy was used in the hospital for the first time. In the eighties dynamic progress in endoscopic URSL and PNCL techniques took place [8]. The first laparoscopic nephrectomy performed by Clayman [9] resulted in a dynamic increase of interest in laparoscopic urological surgeries, including the treatment of urolithiasis [10]. Subsequent technological improvements led to the use of flexible ureterorenoscopy and laser lithotripsy.

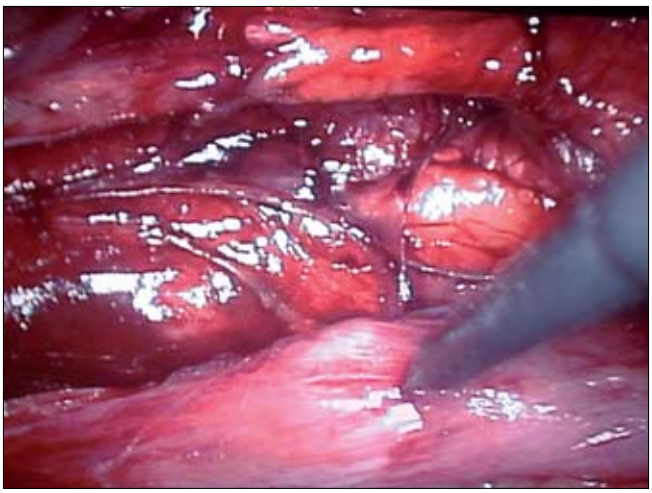

Fig. 1. Exposed ureter with impacted stone.

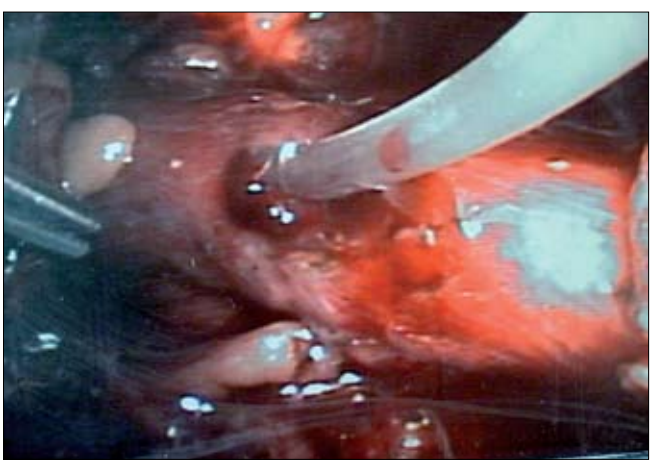

Fig. 2. Control of ureteral patency.

The most frequent indication to laparoscopy is failure of extracorporeal or ureterorenoscopic lithotripsy. Laparoscopy as a first line therapy may be used in selected patients with large or impacted stones [11]. Laparoscopic technique may be widely used in health care institutions that have no flexible ureterorenoscope or laser lithotripsy [1]. The benefit for our patients when choosing the laparoscopic type of surgery was the fact that the disease may be cured during one session.

When the first line treatment fails or complete cure is not probable, laparoscopic ureterolithotomy is a surgery of choice [12].

CONCLUSIONS

It seems that in the group of patients with proximal ureterolithiasis there is a place for laparoscopic ureterolithotomy as an alternative to open surgery [13]. Its disadvantages include the necessity of general anesthesia and problems with retroperitoneal preparation of the ureter, which in two of our patients was a cause of the conversion to open surgery in the initial stage of the laparoscopic procedure [14]. The advantage of laparoscopic surgery is undoubtedly the short duration of cure in 3 days with one hospitalization session, using a safe and minimally invasive technique.

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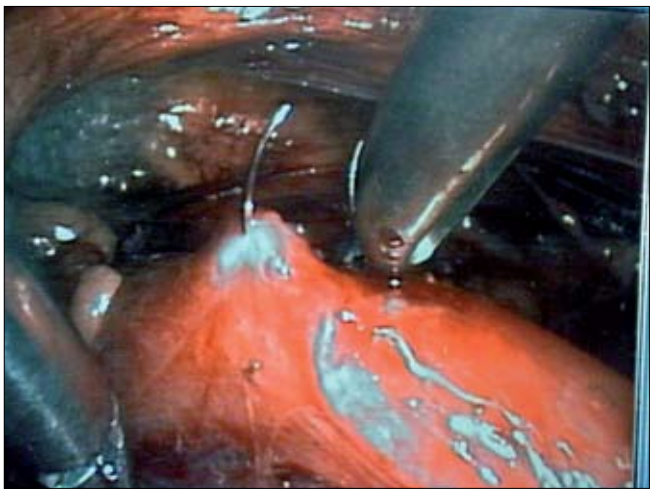

Fig. 3. Ureter suturing.

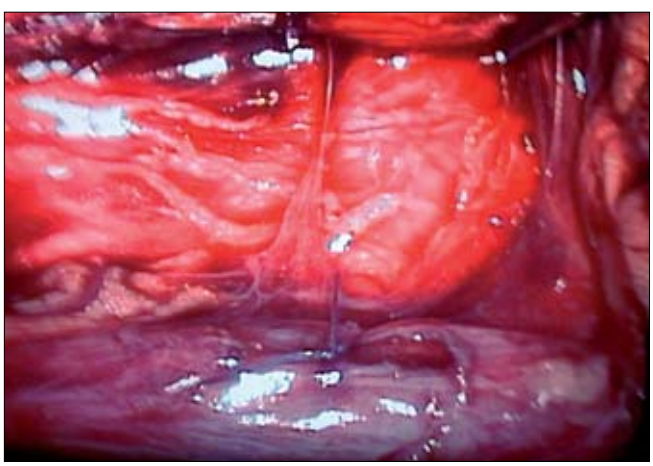

Fig. 4. Single suture on the ureter.

Fig. 5. View after surgery, drainage through lower trocar.

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