

Laparoscopic Pyelolithotomy for A Staghorn Stone in A Patient with History of Cystectomy and Ileal Conduit

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Laparoscopic pyelolithotomy has recently been introduced for renal stones. However, the use of this technique is limited in patients with a history of extensive abdominal surgeries. We present a case of right side staghorn renal stone with history of abdominal open cystectomy who underwent laparoscopic pyelolithotomy with an uneventful outcome.

Keywords: laparoscopy; pyelolithotomy; cystectomy; ileal conduit; staghorn; urolithiasis

INTRODUCTION

Laparoscopic operations for kidney stones have recently been described and presented by several authors^(1,2). Currently, laparoscopy has been offered as an option for treating renal stones before resorting to open surgery in the most recent EAU guidelines. In recent series, equal complication rate in laparoscopic pyelolithotomy has been demonstrated in comparison with percutaneous nephrolithotomy.⁽³⁾ We have previously described our experience with laparoscopic pyelolithotomy.⁽²⁾ Here we present an interesting case of laproscopic pyelolithotomy which was performed on a patient with a previous history of cystectomy and ileal conduit.

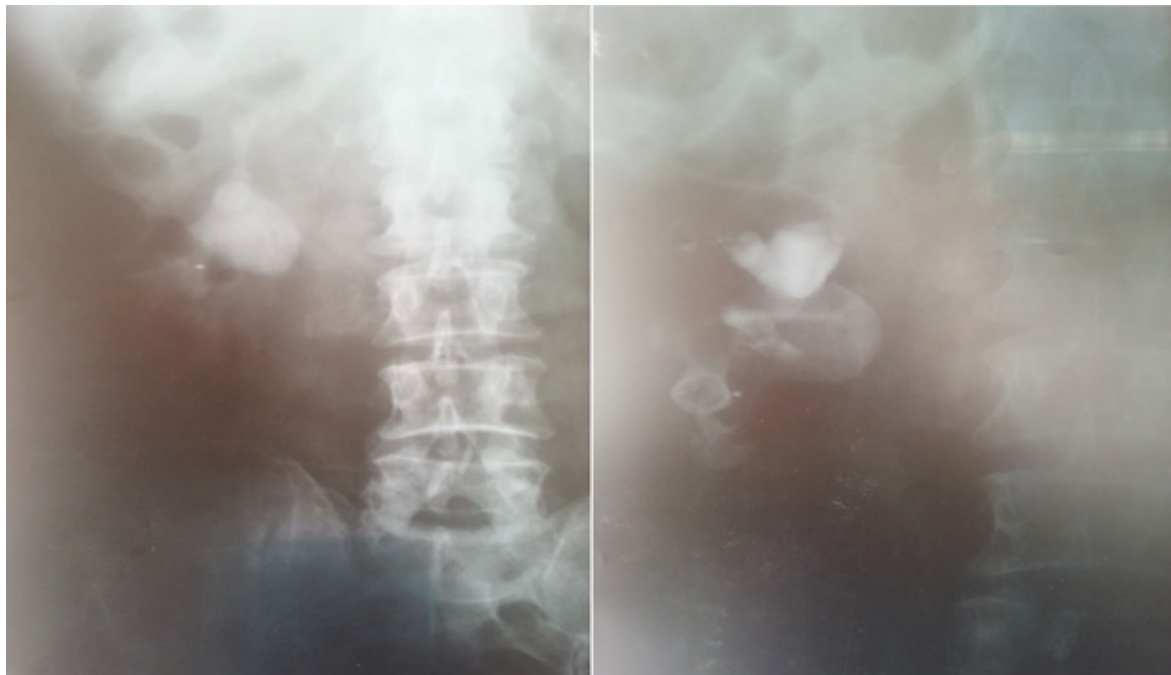


Figure 1. Intravenous pyelogram of the patients showing opaque stone in the left side plain X-ray, and filling defect in pyelogram in the right picture.

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Figure 2. The patient abdomen after completion of the operation showing trocar placement and drain placement through the lateral trocar and patient stoma on the lower abdomen.

CASE REPORT

A 65-year-old man presented with right flank pain. He had a history of refractory rectovesical fistula which was subsequently treated by cystectomy and construction of ileal conduit 5 years before referral to our clinic in another center.

Physical examination revealed a midline scar from pubis up to 5 cm above the umbilicus. The ileal conduit stoma was observed on the right lower quadrant in the pararectal area.



Figure 3. Postoperative Kidney-Ureter-Bladder X-ray

A staghorn opaque stone was observed in plain radiography. Intravenous pyelography revealed normal excretion of both kidneys with mild right hydronephrosis (**Figure 1**). Urinalysis and urine culture were unremarkable. Serum creatinine was 1.3 mg/dL.

Because of difficulty in identification of right ureteral orifice during pouchoscopy and our experience with laparoscopic pyelolithotomy, we decided to start with laparoscopy and in case of difficulty proceeding with laparoscopy to convert the operation to percutaneous nephrolithotomy. The patient was consulted regarding success and potential complications of each procedure and his informed consent was obtained.

The patient was positioned in the left lateral decubitus position. A 12 mm camera trocar was inserted in the right pararectal area lateral to umbilicus under open access technique. Pneumoperitoneum was achieved under 15 mmHg of CO₂. Surprisingly, no significant adhesion was observed in the peritoneal cavity (<https://journals.sbm.ac.ir/urology/index.php/uj/libraryFiles/download-Public/12>). Other trocars were placed under direct vision: A 10 mm trocar was placed under the ribs in the right midclavicular line and another 5 mm trocar was placed lateral to the camera port. A 5 mm trocar was placed in the right lower quadrant away from the conduit stoma. The 10 mm right midclavicular trocar was used to enable passage of a special stone grasping device which could be passed through a 10 mm trocar. After medializing ascending colon, the right ureter was identified and after pursuing its course the right ureteropelvic junction and then the right pelvis was identified. The pelvis was released from surrounding fat tissues in its anterior, superior, and inferior surfaces up to the border of renal parenchyma. A U-shaped incision was then made on the anterior surface of the renal pelvis by electrocautery. The stone was released from renal pelvis and was then removed from pelvis by grasping forceps. The stone was soft and broken when grasped tightly by forceps. Residual fragments were looked for and removed from the pelvis incision. A ureteral Dj stent was inserted and pelvis incision was sutured by 4-0 Vicryl sutures. Extracted stones were removed by the use of an endobag from the lower quadrant trocar incision. A peritoneal drain was inserted through the lateral 5mm port after the end of the operation. **Figure 2** illustrates ports placement and patient abdomen after completion of the operation.

The Kidney-Ureter-Bladder (KUB) X-ray on the first postoperative day was unremarkable showing the proper position of the Dj stent (**Figure 3**). The patient was discharged on the second postoperative day. He had an uneventful postoperative course. Followup ultrasonography obtained 2 weeks after the operation revealed only a 12 mm residual fragment in the middle calyx of the operated kidney. The Dj stent was removed by pouchoscopy and simply grasping the distal end of Dj stent within the pouch 4 weeks after the operation.

DISCUSSION

Laparoscopic pyelolithotomy has been described for the treatment of simple pelvis stones, multiple renal stones, and even staghorn renal stones and also for bilateral kidney and ureter stones⁽⁴⁾. There are reports about increased complications of laparoscopic operations on patients with a previous history of abdominal operations in the fields of general surgery.⁽⁵⁾ On the

other hand, a large series of laparoscopic urological operations in patients with previous abdominal operations has not reported increased overall complications.

⁽⁶⁾ Interestingly in the case of this patient, after entry to the abdomen via the open technique for first trocar placement, no significant intraabdominal adhesion was observed despite the history of previous cystectomy and ileal conduit. Our experience of performing laparoscopy in patients with prior history of open abdominal surgeries also denotes that in many patients despite history of prior open abdominal surgery, there is little abdominal adhesions within the abdominal cavity. Therefore, we think that laparoscopic pyelolithotomy can also be offered as an alternative modality to patients who are not best candidates for standard operations like percutaneous nephrolithotomy or retrograde intrarenal surgery despite having history of prior open abdominal operations. In such cases, entry site should be selected away from the incision line and after entry to abdomen, if release of abdominal adhesions seems likely, laparoscopy can be further preceded otherwise the surgery can be changed to alternative strategies like percutaneous nephrolithotomy, retrograde intrarenal surgery, or an open operation. In case of resorting to percutaneous nephrolithotomy, if retrograde access for percutaneous nephrolithotomy seems difficult or improbable due to technical issues in finding ureteral orifice during pouchoscopy, we can resort to ultrasound-guided percutaneous access as we have previously reported^(7,8).

Another noticeable point in this patient is the 10 mm residual fragment reported in ultrasonography after the operation. The stone we encountered in this patient during the operation was a soft stone rather than a hard one. Therefore, the stone was easily broken when we tried to extract the stone bulk in the pelvis and its branches in major and minor calices. We removed broken particles from calyces by direct vision through laparoscope and by feeling the stone bulk after introducing laparoscopic babcock into the calices. However, a 10 mm residual was not removed due to the softness of the stone and its breakage after grasping with grasping devices transforming the soft stone into several broken soft small particles hard for extraction by laparoscopic forceps. We did not have access to flexible instruments including flexible cystoscope or nephroscope at that time. We recommend the use of such instruments to further promote stone clearance after laparoscopic pyelolithotomy in case of multiple stones, easily broken stones, and suspicion of residual fragments. In case of stone recurrence as stated above, percutaneous nephrolithotomy using X-ray or ultrasonographic guidance⁽⁷⁾, retrograde intrarenal surgery, a second session of laparoscopic pyelolithotomy and open stone surgery are viable options.

CONCLUSIONS

Our report highlights the feasibility of performing laparoscopic pyelolithotomy despite history of extensive prior abdominal surgery.

VIDEO LINK

<https://journals.sbmu.ac.ir/urolj/index.php/uj/library-Files/downloadPublic/12>

REFERENCES

1. Nouralizadeh A, Kashi AH, Valipour R, Nasiri Kopae MR, Zeinali M, Sarhangnejad R. Bilateral Laparoscopic Stone Surgery for Renal Stones- A Case Series. *Urol J*. 2017;14:5043-6.
2. Nouralizadeh A, Simforoosh N, Soltani MH, et al. Laparoscopic transperitoneal pyelolithotomy for management of staghorn renal calculi. *J Laparoendosc Adv Surg Tech A*. 2012;22:61-5.
3. Li S, Liu TZ, Wang XH, et al. Randomized controlled trial comparing retroperitoneal laparoscopic pyelolithotomy versus percutaneous nephrolithotomy for the treatment of large renal pelvic calculi: a pilot study. *J Endourol*. 2014;28:946-50.
4. Simforoosh N, Radfar MH, Valipour R, Dadpour M, Kashi AH. Laparoscopic Pyelolithotomy for the Management of Large Renal Stones with Intrarenal Pelvis Anatomy. *Urol J*. 2020.
5. Karayiannakis AJ, Polychronidis A, Perente S, Botaitis S, Simopoulos C. Laparoscopic cholecystectomy in patients with previous upper or lower abdominal surgery. *Surg Endosc*. 2004;18:97-101.
6. Al-Hunayan A, Khalil M, Hassabo M, Hanafi A, Abdul-Halim H. Management of solitary renal pelvic stone: laparoscopic retroperitoneal pyelolithotomy versus percutaneous nephrolithotomy. *J Endourol*. 2011;25:975-8.
7. Basiri A, Kashi AH, Zeinali M, Nasiri M, Sarhangnejad R, Valipour R. Ultrasound - guided access during percutaneous nephrolithotomy: entering desired calyx with appropriate entry site and angle. *Int Braz J Urol*. 2016;42:1160-7.
8. Basiri A, Nouralizadeh A, Kashi AH, et al. X-Ray Free Minimally Invasive Surgery for Urolithiasis in Pregnancy. *Urol J*. 2016;13:2496-501.