Laparoscopic pyeloureteral lithiasis management at the Hospital General “Dr. Manuel Gea González”


ABSTRACT

Introduction: Laparoscopic pyeloureteral lithiasis management is among the established options after management failure with minimally invasive options. The purpose of this study was to describe results obtained through laparoscopic management of pyeloureteral lithiasis.

Methods: A retrospective study was carried out on patients that underwent laparoscopic pyeloureteral lithiasis management within the time frame of January 1, 2010 to August 30, 2011 at the Urology Department of the Hospital General “Dr. Manuel Gea González”.

Results: A total of one hundred and fifty-four patients with lithiasis were included in the study. Of that total, one hundred and fourteen patients (74.02%) presented with stones in the renal pelvis and ureter and twenty-four patients (21.05%) were managed through laparoscopy. Twelve of those patients were men and twelve were women. Mean age was forty-four years, mean procedure duration was two hours and forty-five minutes, and mean blood loss was 177.5 mL. Four procedures (16.66%) were converted to open surgery and only one patient (4.16%) presented with complications (wall hematoma). There was complete lithiasis resolution in twenty patients.

RESUMEN

Introducción: El manejo de la litiasis pieloureteral por vía laparoscópica se encuentra dentro de las opciones establecidas posterior al fallo de manejo con opciones de mínima invasión. El objetivo del trabajo, fue describir los resultados obtenidos en el manejo de litiasis pieloureteral por vía laparoscópica.

Material y métodos: Estudio retrospectivo en el cual se incluyeron a pacientes con litiasis pieloureteral, manejados por vía laparoscópica, del 01 de Enero del 2010 hasta el 30 de Agosto del 2011, en el servicio de urología del Hospital General “Dr. Manuel Gea González”.

Resultados: Ciento cincuenta y cuatro pacientes con litiasis, de los cuales 114 (74.02%) fueron de pelvis renal y uréter, 24 (21.05%) fueron manejados por vía laparoscópica. Doce hombres y 12 mujeres con una edad promedio de 44 años, con duración promedio de procedimiento de dos horas y 45 minutos, sangrado de 177.5 mL. Cuatro (16.66%) fueron convertidos a cirugía abierta y sólo un paciente (4.16%) presentó complicaciones (hematoma de pared). Veinte pacientes (83.33%) tuvieron resolución completa de la litiasis. Se encontraron buenos resultados para resolución de litiasis por vía laparoscópica, con un bajo porcentaje de complicaciones.
(83.33%). Laparoscopy provided good lithiasis resolution results and a low percentage of complications.

**Conclusions:** Laparoscopic management of pyeloureteral stones is a viable option for institutions that do not have the resources for other types of minimally invasive procedures.

**Keywords:** Laparoscopy, pyeloureteral lithiasis, extracorporeal lithotripsy, percutaneous nephrolithotomy, Mexico.

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**INTRODUCTION**

Urolithiasis has long affected mankind and there is registered data from as far back as 4800 BCE in the Egyptian mummies. Sushruta performed the first perineal lithotomy in the twelfth century. The modern armamentarium available to the urologist for lithiasis management includes extracorporeal shockwave lithotripsy (ESWL), percutaneous nephrolithotomy (PNL), ureteroscopic lithotripsy (rigid or flexible), and open surgery. Various energy sources are also available. 1-5

Even when stones are managed with some of the minimally invasive options mentioned above, it is not unusual for more complex and demanding situations to arise. Open surgery may be necessary in such cases due to stone or patient factors or to associated abnormalities that require simultaneous surgical correction. Laparoscopy can also be a useful alternative in these cases. 6-8

Since the initial report by Clayman et al. in 1991, laparoscopic surgery has become an integral part of the urologist’s armamentarium. In a relatively short period of time, the effectiveness and nature of laparoscopic surgery’s minimal invasion has been demonstrated. Wickham was the first to describe an attempt to remove a ureteral stone with a laparoscope in the retroperitoneum. However, retroperitoneoscopy was not formally adopted until Guar et al. demonstrated the concept of the retroperitoneal dilating balloon. Since then, various studies have been reported that have shown laparoscopy’s management viability. 9-14

The objective of the present work was to describe the results obtained in patients with kidney and ureteral lithiasis that were managed by means of laparoscopy at the Hospital General “Dr. Manuel Gea González”.

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**METHODS**

An observational, retrospective, cross-sectional study was carried out that took into account all patients with pyeloureteral lithiasis managed with laparoscopy within the time frame of January 1, 2010 to August 30, 2011 at the Department of Urology of the Hospital General “Dr. Manuel Gea González”. All patients with incomplete case records were excluded from the study.

The variables analyzed were sex, age, stone location, stone size, Hounsfield Units (HU), presence or absence of obstruction, management prior to surgery, surgery duration, blood loss during procedure, hospital stay, and complications.

All procedures followed that stipulated in the General Health Law Guidelines in relation to Health Research (Second Title, Chapter 1, Article 17, Section I, no-risk research does not require informed consent).

The study was accepted by the Ethics Committee of the authors’ institution.

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**Figure 1. Approaches performed.**
in the middle third, 2 in the lower third (Figure 3), and 18 were obstructive. Double-J catheter was placed in 11 patients before surgery, stone HU ranged from 917-1548, mean surgery duration was 2 hours and 45 minutes (1-6 hour range), and mean blood loss was 177.5 cc per procedure (10-700 cc range). Four procedures (16.66%) were converted to open surgery, 3 because of stone migration to the renal cavities and 1 due to detachment of the ureter. Only 1 patient (4.16%) presented with complications (wall hematoma) and was managed conservatively. Lithiasis was completely resolved in 20 patients (83.33%). The remaining 4 patients required a second procedure due to residual lithiasis; 2 with ESWL, 1 with laser ureterolithotripsy, and 1 with combined ureterolithotripsy and ESWL (Figure 4).

**DISCUSSION**

In the last 30 years, minimally invasive management of urinary lithiasis, such as ESWL, PNL, and ureteroscopy,

has played an important role in its treatment. However, these modalities have not managed to completely replace open surgery. Laparoscopic surgery is an option to open surgery in well-selected patients that offers encouraging results. Lithiasis management referral centers report laparoscopic approach in only 1-5% of cases because they have access to different treatment options. During the time the present study was carried out, the authors’ institution had no other permanent management alternative (laser, ESWL, and PNL), which is why the percentage of pyeloureteral lithiasis patients managed with laparoscopy was 21.05%. Pathology was resolved in all patients and their progress was satisfactory.

**CONCLUSIONS**

Laparoscopic management of pyeloureteral stones is a viable option for institutions that do not have the other management resources. In the present evaluation of patients managed with this approach, results were good in relation to pathology resolution, there was a low percentage of necessary conversion to open surgery, and there was a minimum of complications. The present authors believe this approach affords the best result in 1.5-2 cm impacted stones (Figures 5 and 6).

**REFERENCES**