

Tips and Tricks in Laparoscopic ureterolithotomy for Large Ureteric stones: about 8 cases

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Abstract:-

Introduction:

Enjoying failures of lithotripsy extracorporeal and ureteroscopy, the laparoscopic ureterolithotomy keep a place in the first-line treatment of ureteric stones.

Instead of laparoscopic surgery in the therapeutic arsenal of ureteral stones is not yet defined, this technique seems useful in large ureteral stones and requires experienced surgeons in laparoscopic arsenal and technical facilities. The main objective of our study is to assess results of laparoscopic ureterolithotomy from 08 cases after failure of extracorporeal lithotripsy for 03 cases in order to demonstrate the effectiveness and safety of Laparoscopic ureterolithotomy in the treatment of ureteral stones and to identify predictors of failure.

Material and methods :

Between March 2012 and May 2016, 08 patients: (06 men, 02 women) with a mean age of 59.5 years (range 47-72 years), underwent 08 laparoscopic ureterolithotomy.

The main indication was a large ureteral stone impacted and obstructive. All of these patients would have justified a laparoscopic ureterolithotomy because lithotripsy extracorporeal and ureteroscopy were not considered reasonable treatment options thought the location and size of the stone.

Results:

08 laparoscopic procedures were performed, the average size of the stone was 2.4 cm (1,8-4cm). Complete success "Stone Free" was noted in all patients. Five patients were treated first-line with this technique and three patients after failure of lithotripsy extracorporeal. The average operative time was 95min (40-150min). The average hospital stay was 03 days (2-4days). No postoperative complication was noted.

Conclusion:

Drawing on the results of our service,

The high success rate judged by the complete absence of residual fragments, and very low morbidity allow the laparoscopic ureterolithotomy to establish itself as an effective competitor therapeutic alternative to other procedures in the first intention.

I. INTRODUCTION

Surgical specialties are currently experiencing numerous technological upheavals; these upheavals also concern urology which, with endourology and laparoscopy, is being transformed day by day thanks to the various technological innovations that we are witnessing.

The development of techniques for treating urolithiasis for more than 20 years justifies specifying the indications for each of them for the urological management of ureteral stones in adults.

The Lithiasis Committee of the Association Française d'Urologie, relied on European and American recommendations, on the literature published in the last five years, and on the experience of its members to establish a practical summary of the treatment of stones. urinary.

The nature, topography (located at the level of the ureter), and size (measurement) of the stone are the initial descriptive criteria for the choice of treatments.

The success of the treatment is defined by the absence of residual fragments. Open surgery and laparoscopy have indications limited to less than 1% of cases. The place of laparoscopic surgery in the therapeutic arsenal of ureteral stones has not yet been defined. This technique seems useful in large ureteral stones and requires surgeons experienced in the laparoscopic arsenal.

II. MATERIAL AND METHODS

This is a retrospective study of 08 cases of ureteral lithiasis in 08 patients hospitalized during the period from March 2012 to May 2015 at the Urology Department of the C.H.U. HASSAN II of Fez.

The parameters that were the subject of our study are as follows:

Age, sex, history, clinical data: Time to consultation, Reason for consultation and paraclinical data: biological: Renal function, ECBU, Metabolic report, Blood assays: calcium, phosphate, uric acid, ionogram, glycemia Urinary assays: calcium, phosphate, uric acid, ionogram, blood sugar. And radiological: Imaging: AUSP, UIV, Echography, UroTDM; Appearance of the stones: morphology, color, size, chemical nature, radiopacity.

All patients for whom clinical examination and radiological explorations revealed one or more large (> 2.5cm) impacted and obstructive radiopaque ureteral stones. All of these patients would have justified a laparoscopic ureterolithotomy, as CEW and ureteroscopy were not considered reasonable treatment options given the situation and the size of the stone.

All subjects with ureteral stones accessible to ureteroscopy or ESL were excluded from our study.

III. RESULTS

Between March 2011 and May 2015, we carried out 08 laparoscopic ureterolithotomy for 08 patients with lithiasis of the lumbar ureter (02 cases), iliac (04 cases), and pelvic (02 cases).

In our series, of the 08 patients who benefited from Laparoscopic ureterolithotomy, there were 06 men, i.e. 75%, and 2 women, or 25%, resulting in a sex ratio of 3.

The average age of our patients is 59.5 years [47-72].

The age group (50-63 years) is the most affected with a clear predominance of men.

A history of urinary lithiasis was noted in 5 of our patients:

0 cases of renal lithiasis.

2 cases of pelvic ureteral lithiasis were treated with extracorporeal lithotripsy.

1 case of the calculus of the lumbar ureter treated with extracorporeal lithotripsy.

All these patients systematically benefited from a biological assessment comprising: a blood count and blood count, a blood ionogram, a hemostasis assessment, uremia, serum creatinine. A phospho-calcium assessment was carried out in these patients, it was always normal.

The Cytobacteriological Urine Examination was sterile in 6 cases and infected in 02 cases who were put on antibiotic therapy.

No patient presented with renal failure.

PSA and ultrasound were performed in all patients.

The IVU was performed in 02 patients, for a morphological study of the excretory pathway and to get an idea of the functional aspect of the kidney.

The CT-scanner was done in 01 patient (hematuria).

These examinations made it possible to locate the stone, assess its impact, assess its size and search for other lithiasis locations.

The size of the stones, estimated on data from the Abdomen Without Preparation ASP and IVU Intravenous Urography, was between 18 mm and 40 mm with an average of 24 mm.

The stones were radiopaque in 100% of the cases. Varies between 1 and 2 calculations.

Ureterohydronephrosis was found in 02 patients.

All of our patients have benefited from a Laparoscopic ureterolithotomy:

In 03 patients, the use of ULE was decided after the failure of therapy with ECL.

The remaining 5 benefited directly from ULE.

For these 03 patients who benefited from the ECL, the failure was noted:

After 1 session with a man and 03 sessions with another.

After 8 sessions with a woman.

All our patients were operated on by laparoscopic route, in lateral decubitus.

The different trocars were inserted under visual control. We used four trocars in 05 cases and three trocars in 03 cases.

In all the cases the calculation was extracted intact.

The suture, as well as the drainage of the ureter, were done by urethrorraphy with the placement of a redon.

All the patients progressed well with radiological control of decompression of the upper urinary tract without stenosis.

The Laparoscopic ureterolithotomy proceeded without incident or intraoperative difficulties, the consequences were generally simple.

All the patients were systematically reviewed in consultation one month after the operation for follow-up. No patient presented with complications.

It is on average 03 days with a minimum of 2 days and a maximum of 4 days.

IV. DISCUSSION

Ureteral stones are symptomatic in more than 95% of cases [1], with low back pain in 94% of patients [2].

Nephritic colic is the most frequent clinical manifestation of lithiasis; it is responsible for 1 to 2% of visits to reception and emergency services in France [3]. These data are perfectly correlated with the results of a study carried out in 2001 at the military hospital in Rabat by E.H. Kasmaoui et al. [4] that the telltale signs of the stones were renal colic in 100% of the patients.

lithiasis is the second leading cause of acute renal failure [2] as the stone can remain insidious and trigger a complication.

Lithiasis is the most common cause of chronic pyelonephritis and accounts for 30% of the causes of chronic renal failure, due to interstitial nephritis according to Grünfeld JL. [5] 2% of lithiasis patients develop chronic renal failure according to Daudon M. et al. [6]

Nevertheless, according to Glowacki L.S. [7], patients with stones may remain asymptomatic in 7-8% of cases, and the risk of an asymptomatic stone becoming symptomatic is 50% at 5 years.

In our series, the revealing symptomatology was rich and diverse represented by chronic low back pain in 65.1% of cases, recurrent renal colic in 41.8% of cases, and hematuria in 29.4% of cases, but often the clinical picture was made of the assembly of 2 or more clinical signs.

The ASP and Ultrasound are systematic before any Laparoscopic ureterolithotomy. An ASP the day before or the morning of the operation makes it possible to verify the location of the stone. [8]

Urine must be sterile (ECBU less than a week old) or disinfected for at least 7 days.

In our series, the ultrasound and the PSA were systematic, the IVU was performed in 02 patients, and the uro-CT in 01 patient.

These examinations made it possible to locate the stone, assess its impact, assess its size and search for other lithiasis locations. The size of the calculus is the main parameter that determines the probability of its spontaneous elimination.

To summarize the data in the literature, the recommendations of the AUA (American Urological Association) indicate that distal ureteral stones of less than 5 mm resolve spontaneously with a rate of 71 to 100%, while stones of 5 to 10 mm increase at a rate of 25 to 46% [9].

There is therefore a linear relationship between the size of the stone and the probability of its spontaneous elimination with an elimination rate according to study reports of 87%, 72%, 47%, and 27% for calculations of 1, 4, 7, and 10 mm, respectively on the scanner [10]. Note that the tomogram corresponds to the tomography: multidimensional imaging scanner.

For the moment, there is little data on the association between the size of the stone and the effectiveness of medical expulsion therapy, on the other hand, it is a major determinant of the success of interventions: Ureteroscopy and extracorporeal lithotripsy or Laparoscopic ureterolithotomy.

With the endourological arsenal that we currently want to achieve, the operative ureteroscope only has a place when the stone cannot be reached by the ureteroscope or cannot be fragmented by the ECL in a reasonable number of times. The American Urological Association, in its recommendations for the treatment of ureteral stones published in 1997 [11], recommended ECL for lumbar ureteral stones up to 1 cm in size. Stones of the distal ureter are accessible by ureteroscope and are therefore easily amenable to endoscopic treatment. There are therefore only a few stones left that are in the field of ureterolithotomy: those of large size, impacted, and located at the level of the proximal ureter [12]. The fact that these stones are impacted at the level of the ureter makes it difficult to attempt rinsing with a view to treatment by extracorporeal lithotripsy or percutaneously.

The average duration of the intervention varies from 60 to 80 minutes depending on the series. It depends on the learning curve. Moreover, according to Rassweiler et al. [13], the threshold beyond improving performance is 50 procedures. The average postoperative hospital stay varies from 2.4 to 3.8 days and the success rate varies from 92 to

100%. In our series, the average duration of the intervention If we only take into account the last 20 interventions, we find operating and hospitalization times comparable to those in the literature.

The major complication of ULE is ureteral stricture, which has been reported in 2.5 to 20% of cases [13].

The etiologies of strictures are not well studied in the literature. In the series by Keeley et al [14], the two patients who developed strictures were those who had had ureteral sutures. Very tight sutures would have been at the origin of these structures and it is for this reason that we believe that the purpose of the sutures is to confront the ureteral edges and not to ensure impermeable sutures. Harewood et al [15]. used a hook electrode to open the ureter in 6 patients. Although these authors did not report ureteral strictures in this series, we believe that thermal burning of the ureter during ureterotomy may be a predisposing factor for ureteral stricture and it is for this reason that we use a cold blade for ureterotomy in our practice.

Intraoperative surgical incidents during Laparoscopic ureterolithotomy are rare. Gaur et al. [16] report incidents in 5% of cases. A case of vascular injury is reported by Goel et al. [17], during treatment of a left ureteral stone in a patient with calcified vessels. Atheromatous plaque on the external iliac artery was mistaken for a stone in the ureter. The incision only protruded 2mm beyond the plate, limiting the bleeding. A rapid conversion was performed, allowing repair of the external iliac artery and ureterolithotomy. This type of complication is exceptional. Perfect recognition of anatomical landmarks and progressive learning of laparoscopic surgery help to avoid these complications.

A case of ureteropyelic disinsertion during the treatment of an immediately subjunctional stone. The ureterotomy was very economical for the sake of incising the pyelo-ureteral junction. Extraction of the stone was laborious and complicated by ureteropyelic disinsertion, favored by very intense peri-ureteritis. The ureterotomy had to be extended downwards, avoiding the junction and removing the stone more easily. Similar cases of pyelo-ureteral disinsertion are little reported by the authors, as are intraoperative lithiasis migrations.

The conversion to open surgery is often motivated by the occurrence of operative incidents or more rarely by operative difficulties. In the series by Gaur et al. [16], the conversion rate is 7.9%.

Prolonged urine leakage after Laparoscopic ureterolithotomy is the most reported specific postoperative complication. It affected 6 to 20% of cases depending on the series [16, 18]. This is a non-serious event since the urine remains retroperitoneal and is exteriorized through the drain. The fistula in question may be related to a defect in the burial of the ureteral mucosa or the existence of intense peri-ureteritis. Some authors have reported a lower risk of urinary fistula when internal ureteral drainage was consistently associated with ureter closure [16]. Vallee et al.

[18] have not identified any fistula in patients systematically drained by a ureteral catheter. Currently, most authors recommend systematic drainage of the ureter by a double J catheter in cases of intense peri-ureteritis. It would also be prudent to drain the ureter systematically at the start of training. This drainage can be done at the start or the end of the procedure. However, to avoid the migration of the stone to the kidney, it would be preferable to mount the double J probe under fluoroscopic control at the end of the operation.

Another early complication that can cause postoperative wall pain is subcutaneous emphysema. The best way to prevent it is to avoid layer-by-layer dissection of the lumbar wall when placing trocars [16]. The other early complications are mostly infectious. Harewood et al. [19] and Gaur et al. [16] reported one and two cases of postoperative fever with no obvious cause, respectively.

At a distance, ureteral strictures are formidable complications of ULE. Their etiologies are not well understood. Nevertheless, the ureteral incision with an electrode, as well as very tight sutures, would be the cause of these strictures. Roberts et al. [82] noted that the incidence of these strictures can be up to 24% of cases when the stone is encrusted.

In our series at CHU Hassan II, no complications were reported and all of our patients progressed very well.

The length of hospital stay at ULE is much less than open surgery. And taking into account the cost of purchasing and maintaining the equipment, and the number of sessions, and patient compliance during extracorporeal lithotripsy, Laparoscopic ureterolithotomy is very advantageous than extracorporeal lithotripsy.

In our series, the hospital stay was on average 3 days with a minimum of 2 days and a maximum of 4 days.

V. CONCLUSION

Laparoscopy allows ureterolithotomies to be performed trans- or retroperitoneally. The indications for laparoscopy for ureteral stones are few and generally less than 10% of all indications for surgical treatment for ureteral stones. These indications are the same as those for open surgery, which it advantageously replaces by allowing less to be mentioned, less postoperative pain, shorter stay, and convalescence.

Our study confirms that laparoscopic ureterolithotomy is a reliable therapeutic alternative for ureteral stones, due to its minimally invasive nature and should replace open ureterolithotomy in all of its current indications.

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