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Ureterorenoscopy And Lithotripsy with and Without DJ Insertion; Experience at Allied Hospital, Faisalabad

Muhammad Akmal, Ghulam Mahboob Subhani, Muhammad Irfan Munir, Moin Anwar, Safdar Hassan Javed

ABSTRACT

Objective: To evaluate the success and safety of URS and lithotripsy with and without DJ stenting. **Settings:** Department of Urology and Kidney Transplantation, Faisalabad Medical University / Allied Hospital, Faisalabad-Pakistan. **Duration:** From January 2015 to August 2018. **Methodology:** It was prospective study. Total 210 were included in the study. 190 patients completed their follow up. URS and lithotripsy was done with pneumatic lithoclast. DJ stenting was done in 92 patients and 98 patients were left without DJ insertion. **Results:** All patients were divided into two groups. Group A comprised of 105 cases and Group B comprised of 105 patients. URS and lithotripsy were done successfully in 98 cases in group A and 92 cases in group B. Group A was without DJ insertion and Group B was with DJ insertion. Data was analyzed by chi-square test and p-value was calculated. Lower urinary tract symptoms, pain, Hematuria, stone passage, AUR and fever were noted in both groups. Lower urinary tract symptoms including dysuria was seen in 20(20.40%) in non-stented patients and 31(33.36%) in stented patients. Hematuria was seen in 3(3.06%) in non-stented patients and 4(4.34%) in stented patients. Fever was noted in 3(3.06%) in non-stented patients and 7(7.60%) in stented patients' Acute urinary retention which needs catherization was found in 1(1.02%) in non-stented group and 2(2.17%) in stented group. Flank pain was seen in 22(22.44%) in non-stented patients and 18(19.56%) in group B. Five (5.10%) were unable to pass stone in group A and 2(2.17%) were unable to pass stone in group B. All these patients required repeat ureterorenoscopy and lithotripsy. There was no case of forgotten DJ or broken DJ in any group. **Conclusion:** URS and lithotripsy are procedure of choice for ureteric calculi. It can be performed safely and successfully without DJ insertion in most of the cases.

Keywords: Ureterorenoscopy, Lithotripsy, DJ Stenting

Corresponding Author
Dr. Muhammad Akmal
Assistant Professor, Urology
Faisalabad Medical University,
Faisalabad-Pakistan
Contact: +92 300-6618807
Email: aksmoruro@yahoo.com

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INTRODUCTION

Urolithiasis are very common world-wide. Renal stones may migrate from kidneys and can cause ureteric obstruction. Ureteric calculi may lead to flank pain, fever, dysuria, acute urinary retention, vomiting or even patient may present with anuria. In rare cases there is need of hemodialysis.

Ureteric stones were treated by open Ureterolithotomy in past.[1] Ureteric stones can be treated by laparoscopic ureterolithotomy.[2] There was an era of stone removal by Dormia baskets as well.[3] ESWL may be used in special circumstances.[4] Invention of ureteroscopy and lithotripsy is mercy of God. URS and lithotripsy may be used safely, successfully and without complications for all site of ureteric stones.[5,6]

URS has the limitations of its use regarding stone size up to 1.5cm, ureteric stricture and severe kinks. Lithotripsy with URS can be performed by pneumatic, electrohydraulic, ultrasonic and laser sources.

After URS DJ stent insertion is done for early stone passage but DJ stent is never without problems like flank pain, hematuria, dysuria, fever, encrustations and even stent breakage.[7,8,9,10] Forgotten stents is rare but known complication.

Aims and objectives of our study were to compare the results of URS with and without DJ insertion.

METHODOLOGY

Study Design: It was prospective, experimental and comparative study.

Settings: Department of Urology and Kidney Transplantation, Allied Hospital / Faisalabad Medical University, Faisalabad.

Duration: From January 2015 to August 2018.

Inclusion Criteria: Ureteric stone size between 6 – 20mm.

Exclusion Criteria:

Pre-operative: Already operated patients for Ureterolithotomy, Pregnancy, Bilateral ureteric calculi. Pediatric age group.

Per-operative: Ureteric perforation, Ureteric avulsion and long ureteric stricture.

Methods: Study was conducted in admitted patients only. Patients were admitted in ward trough OPD and emergency department.

All patients were evaluated by USG KUB followed by X-Ray KUB. IUV was done as a routine. CT-Scan KUB with and without contrast was done in selected cases.

DTPA renal scan was done for evaluation of renal functions if needed. All baseline reports were done for fitness. Patients were operated under spinal anesthesia and general anesthesia as well. URS was done with rigid URS size 7.5 - 8.5 Fr.

Lithotripsy was done with pneumatic lithoclast. No DJ stent was inserted in group A and DJ insertion was done in group B. Patients were kept in urology department for 3 – 5 days. Analgesics, antibiotics and α-blockers were used in all cases. Patients were called after 1 week and one month of operation. DJ stent was removed after 4 weeks.

RESULTS

210 patients were Enrolled in the study. Twenty were excluded from the study due to ureteric stricture, stone migration, ureteric perforation, ureteric avulsion and failure of follow up. Study was completed in 190 cases. 120(63.16%) were males and 70(36.84%) were females. Their age ranged from 15-60 years with mean age of 32 years.

90(47.36%) patients presented with lower ureteric Stones, 61(32.10%) with mid ureteric stones and 39(20.52%) patients with upper ureteric stones. Stone size ranged from 6mm to 20mm with average stones size = 11mm as shown in table No. 1 and 2.

Data was analyzed by chi-square test and p-value was calculated

Table 1: Patients Data

No. of Patients	190
Male	120 (63.16%)
Females	70 (36.84%)
Age	15-60y
Stone Size	6 – 20mm
Upper Ureteric Stones	39(20.52%)
Mid Ureteric Stones	61(32.10%)
Lower Ureteric Stones	90(47.36%)

Table 2: Patients Data

Site of Stone	Group A		Group B	
Upper Ureteric Stone(n=39)	Male 13 6.8%	Female 07 3.68%	Male 13 6.82%	Female 06 3.15%
Mid Ureteric Stone(n=61)	21 11.05%	11 5.78%	19 10.00%	10 5.26%
Lower Ureteric Stone(n=90)	28 14.73%	18 9.47%	26 13.68%	18 9.47%

Table 3: Results of URS

Complication	Group – A (n=98)	Group B (n=92)	P-value
Dysuria	20 (20.40%)	31 (33.36%)	0.039
Hematuria	3 (3.06%)	4 (4.34%)	0.638
Fever	3 (3.06%)	7 (7.60%)	0.161
Acute urinary retention	1 (1.02%)	2 (2.17%)	0.524
Flank pain	22 (22.44%)	18 (19.56%)	0.626
DJ Breakage	0	0	-
DJ Encrustation	0	2 (2.17%)	0.142
Forgotten DJ	0	0	-
Failure to pass Stone	5 (5.10%)	2 (2.17%)	0.284

Dysuria was seen in 20 (20.40%) cases in group A and 31 (33.36%) in group B. p-value was 0.039. Hematuria was seen in 3 (3.06%) patients in group A and 4 (4.34%) cases in group B. p-value was 0.638

Fever was noted in 3 (3.06%) Patients in non-stented group and 7 (7.60%) of patients in group B. p-value was 0.161. Flank pain was observed 22 (24.44%) cases in group A and 18 (19.56%) cases in group B. p-value was 0.626.

5 (5.10%) patients were unable to pass stone in group A and 2 (2.17%) in group B; p-value was 0.284 and these 7 cases required repeat procedure as written in table No. 3.

There was DJ encrustation in 2 (2.17%) group B. p-value was 0.142. No DJ was broken and there was no forgotten DJ.

DISCUSSION

Renal and ureteric stones are all over the world. There are different treatment modalities for ureteric calculi including watchful waiting, medical expulsion therapy, ESWL, open and laparoscopic Ureterolithotomy, Ureterorenoscopy and lithotripsy. It is the time of URS and lithotripsy now a days. We conducted this study to compare the results of URS and lithotripsy with and without DJ insertion. Our study was prospective experimental and comparative as conducted by many centers. We included 190 patients in our study, Zaki et al conducted study on 198 patients,[12] Mumtaz Rasool et al on 100 patents[11] and Y-El Harrech on 117 patients.[17] 63.1% were males and 36.84% were females. Zaki noted 62% males and 38% females[12] and Mumtaz Rasool noted 74% males and 26% females.[11] Age of the patients was between 15-60 years in our study. It was 23-70 years in study conducted by Zaki[12] and 22-72 years in study conducted by Y-El Harrech.[17] Lower ureteric stone was seen in 90 (47.36%), mid ureteric stone in 61(32.10%) and upper uretic stone in 39(20.52%). Lower ureteric stone was seen in 44% of patients, mid ureteric stone in 30% and upper ureteric in 26% in the study conducted by Mumtaz Rasool.[11] We included patients with stone size from 6mm to 20mm is it according to the protocol followed by Mumtaz Rasool and Zaki et al.[11, 12]

URS and lithotripsy were performed with rigid ureterorenoscope and pneumatic lithoclast in our department., procedure was done similarly by Zaki et al. [12] Patients with previous history of ureterolithotomy, pregnancy and bilateral ureteric stones were excluded, it is according to many studies. [11,12]

Patients with ureteric stricture, ureteric perforation during surgery and ureteric avulsion were also excluded from the study as by many centers.[11,12] DJ stent insertion was done at the end of procedure in group B, as Joshi HB and Duvdevani M liked to avoid post-operative stone impaction and pain.[8,9] DJ insertion was avoided in group A as Hosking DH and Netto NR claimed no need of DJ insertion after successful ureterorenoscopy.[13,14]

Results were compared in terms of complications and cost of procedure. Dysuria was seen in 20.40% patients of group A and 33.36% group B. 28.29 patients of the non-stented group and 30.31% stented patients presented with dysuria in the study conducted by Zaki et al[12] and 13.1% of non-stented group and

26.2% in stented group in the study conducted by Y-El Harrech.[17] Similar results were seen by other centers.[15,16] We observed hematuria in 3.06% in group A and 4.34% in group B. Zaki et al noted hematuria in 8.08% of non-stented group and 10.11% of stented group.[12] Mumtaz Rasool observed hematuria in 2% of non-stented group and 3% in stented group.[11] Y-El Harrech observed hematuria in 5.2% of non-stented group and 7.1% of stented group.[17]

Flank and suprapubic pain were seen in 22.45% of group A and 19.56% of group B in our study. Zaki et al noted flank pain in 11.1% of non-stented group and 29.2% of stented group.[12] Mumtaz Rasool noted pain in 2% of non-stented group and 6% of stented group.[11] Stone clearance was 94.90% in group A and 97.87% in group B according to the results of our study. Zaki and Y El Harrech noted no difference in both groups and stone clearance was 100%.[12,17] Mumtaz Rasool et al noted no difference in stone clearance and their clearance rate was 92%.[11] Fever was noted in 7.60% patients with DJ insertion and 3.06% without DJ insertion. Fever was noted in 12.13% of non-stented group and 11.12% of stented group by Zaki et al.[12] Fever was observed in 7.8% of non-stented group and 7.1% of stented group by Y El Harrech.[17] Over all post-operative complications were more in stented group than in non-stented group, similar results were seen in most of the studies.[17,18,19] Subhani et al in 2009 did URS in 450 patients and 78% patients were stented with DJ after fragmentation of ureteric stone with pneumatic lithoclast through URS, while in the present study DJ stent was passed in 48.42% patients. Which shows even better outcome in the management of ureteric stone with URS and lithoclast fragmentation without DJ stenting.[20]

Routine use of DJ stent also increases the cost of the procedure as it needs sperate cystoscopy for DJ removal. By avoiding DJ stenting in properly fragmented ureteric stones one can reduce the morbidity as well as expenditures of the patients.

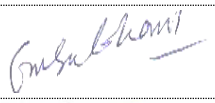
CONCLUSION

Ureterorenoscopy and lithotripsy is safe and successful procedure for most of ureteric calculi. The morbidity and expenditures of the patients with ureteric stone can be minimized by avoiding placement of DJ stents in nicely fragmented stones in the ureter through URS.

REFERENCES

1. Marberger M. Ureterolithotomy. Graham JD Jr, Glenn JF, eds. Glenn's Urological Surgery. 5th ed. Philadelphia, Pa: Lippincott-Raven; 1999:63-8.
2. Tracy CR, Raman JD, Cadeddu JA, Rane A. Laparoendoscopic single-site surgery in urology: where have we been and where are we heading? Nat Clin Pract Urol. 2008;5(10):561-8.
3. Streit B, Pósta B, Schnauzer J. Extraction of ureteral calculi with the Dormia basket. Int Urol Nephrol. 1979;11(3):185-92.
4. Seitz C, Fajkovic H, Waldert M, Tanovic E, et al. Extracorporeal Shock Wave Lithotripsy in the Treatment of Proximal Ureteral Stones: Does the Presence and Degree of Hydronephrosis Affect Success? Eur Urol. 2006;49(2):378-83.
5. Damiano R, Autorino R, Esposito C, et al. Stent positioning after ureteroscopy for urinary calculi: The question is still open. Eur Urol. 2004;46(3):381-7.
6. Turk C, Petrik A, Sarica K, Seitz C, Skolarikos A, Straub M, et al. EAU Guidelines on Interventional Treatment for Urolithiasis. Eur Urol. 2016;69(3):475-82.
7. Chew BH, Seitz C. Impact of ureteral stenting in ureteroscopy. Curr Opin Urol. 2016;26(1):76-80.
8. Joshi HB, Newns N, Stainthorpe A, MacDonagh RP, Keeley FX Jr, Timoney AG. Ureteral stent symptom questionnaire: development and validation of a multidimensional quality of life measure. J Urol. 2003;169(3):1060-4.
9. Duvdevani M, Chew BH, Denstedt JD. Minimizing symptoms in patients with ureteric stents. Curr Opin Urol. 2006;16(2):77-82.
10. Kumar S. Ureteroscopic lithotripsy - skip the stent and spare the patient. Indian J Urol. 2005;21(2):116-7.
11. Rasool M, Tabassum SA, Pansota MS, Mumtaz F, Saleem MS. Ureterorenoscopic Lithotripsy; Efficacy and Complications. Is Ureteric Stenting Necessary in Every Patient? Ann Pak Inst Med Sci. 2012;8(3):161-4.
12. Zaki MR, Salman A, Chaudhary AH, Asif K. Rehman M. Is DJ Stenting still needed after uncomplicated Ureteroscopy lithotripsy? A Randomized Controlled Trial. PJMHS. 2011;5(1):121-4.
13. Hosking DH, McColm SE, Smith WE. Is stenting following ureteroscopy for removal of distal ureteral calculi necessary? J Urol.1999;161(1):48-50.
14. Netto NR, Ikonomidis J, Zillo C. Routine ureteral stenting after ureteroscopy for ureteral lithiasis: is it really necessary. J Urol. 2001;166(4):1252-4.
15. Byrne RR, Auge BK, Kourambas J, et al. Routine ureteral stenting is not necessary after ureteroscopy and ureter pyeloscopy: a randomized trial. J Endourol. 2002;16(1):9-13.
16. Ramsay JW, Payne SR, Gosling PT, et al. The effects of double J stenting on unobstructed ureters. An experimental and clinical study. Br J Urol. 1985;57(6):630-4.
17. El Harrech Y, Abakka N, El Anzaoui J. et al, Ureteral stenting after uncomplicated ureteroscopy for distal ureteral stones: a randomized, controlled trial. Minim Invasive Surg. 2014; 2014: 892890.
18. Wang H, Man L, Li G, Huang G, Liu N, Wang J. Meta-Analysis of Stenting versus Non-Stenting for the Treatment of Ureteral Stones. PLoS One .2017; 12(1):7670-5.
19. Ordonez M, Borofsky M, Bakker CJ, Dahm P. Ureteral stent versus no ureteral stent for ureteroscopy in the management of renal and ureteral calculi. Cochrane Database Syst Rev. 2017;6: 2703-15.
20. Subhani GM, Javed SH, Iqbal Z, Akmal M, Mehmood K, Jafari AA, Ali M, Hussain M, Sohail M, Bashir MT. Outcome of Retrograde Ureteroscopy for the Management of Ureteric Calculi: Four years' experience. APMC. 2009;3(1):8-12.

AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
Dr. Muhammad Akmal Associate Professor, Urology FMU/Allied Hospital, Faisalabad	Data Collection, Editing, Composing results and Reference	
Dr. Ghulam Mahboob Subhani Associate Professor, Urology FMU/Allied Hospital, Faisalabad	Reviewing and writing references, help in data collection and composing	
Dr. Muhammad Irfan Munir Assistant Professor, Urology FMU/Allied Hospital, Faisalabad	Data collection and reviewing article	
Dr. Moin Anwar Medical Officer, Urology Allied Hospital, Faisalabad	Literature Review	
Prof. Dr. Safdar Hassan Javed Dean Nephro-Urology & Kidney Transplantation FMU/Allied Hospital, Faisalabad	Proof Reading and Supervised the study