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SINGLE CENTRE STUDY OF STONE CLEARANCE WITH URETERORENOSCOPE & LITHOCLAST FOR URETERIC CALCULI; OUR EXPERIENCE.

Qazi Adil Inam[1], Furqan Arshad[2], Nabeel Naeem Baig[3], Khadijah Abid[4]

1. MS (Urology)
   Assistant Professor
   Department of Urology
   Nawaz Sharif Medial College Gujrat.
2. FCPS, PGR Urology
   Department of Urology
   Nawaz Sharif Medial College Gujrat.
3. BDS, MPH
   Senior Executive Officer Research
   College of Physicians and Surgeons
   Pakistan.
4. MSc Statistics, BS Statistics
   Senior Statistician
   College of Physicians & Surgeons
   Pakistan.

Correspondence Address:
Dr. Qazi Adil Inam
272-B Sukh Chain Garden, Lahore.
dilurologist@gmail.com

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ABSTRACT… To decide the adequacy of ureterorenoscope by utilizing lithoclast for distal ureteric stone clearance. **Study Design:** Longitudinal study. **Setting:** Department of urology Aziz Bhatti Shaheed Teaching Hospital. **Period:** Feb 2014 to Dec 2016. **Materials and Methods:** 32 patients from medical record who underwent for stone clearance with ureteroscopy followed by lithoclast. The patients with larger upper ureteral stones were enrolled in the study though patients with stone size<1cm and co-morbidities were not included in the study. The characteristic of patients and stone, treatment modality & outcome i.e. efficacy in terms of "successful stone clearance" were determined. **Results:** The average age of 32 patients was 34.28±10.11 years. 18 (56.3%) of the patients were females whereas 14 (43.7%) were males. Ureteric stones were present on both right and left sides in 17 (54%) and 15(46%) patients. Bilateral ureteric stone was present in 2 (6.25%) patients. The efficacy was reported as 96% for the stone size of 1-1.5cm and 92% for the stone size of 1.6-3cm. **Conclusions:** We concluded that Ureterorenoscope followed by Lithoclast is the useful and safest procedure for stone clearance.

Key words: Kidneys, Lithoclast, Stone Clearance, Ureterorenoscope, Ureteric Stone Removal

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INTRODUCTION

Over the recent years progress has been observed for the surgical and therapeutic management of urolithiasis. If ureteral stones left untreated it can causes renal colic, even adverse complication may occurs such as obstructive uropathy. Expulsion of ureteral stones is very painful and causes infection or obstruction. Most of the time these stones passes spontaneously, depends upon the site and size of them.[1-3] The incidence of urinary stone disease is the common urinary disease, with prevalence of 1-10%.[4]

Ureteral stones may develop in kidneys and mobilized to ureter. When ureter stone expanded from 8mm or more, and conservation treatments have low success rate or fail then the stones need an active manipulation for its evacuation.[5-7]

For the management of ureteric calculi minimal invasive techniques have been introduced. The choice of management depends on the stone's site and characteristics, preference of patient and associated cost.[8] These techniques include ureteroscopy[9], extracorporeal shockwave lithotripsy (ESWL) and laparoscopic ureterolithotomy.[8,10,11] Among them ureterorenoscope[9] by using Lithoclast is one of the leading management solution for the removal of ureteric stone removal.[8,12,13] The objective of this research was to decide the adequacy of ureterorenoscope by utilizing lithoclast for ureteric stone clearance.

MATERIAL AND METHODS

It was a longitudinal study in which we have retrieved data of 32 patients from medical record who underwent for stone clearance with ureteroscopy using by lithoclast from Feb 2014 to Dec 2016. All the patients were dealt at Department of urology Aziz Bhatti Shaheed Teaching Hospital. The patients having larger upper ureteral stones

were enrolled in the study though patients having stone of size less than 1cm and co-morbidities were not included in the study.

All the patients were completely informed by the type of treatment techniques and its advantages & disadvantages. All the patients were treated with Ureterorenoscope by using Lithoclast. Patient's demographics, detailed medical history, type and size of stone and postoperative outcomes were noted. Postoperative evaluation included kidney, ureter, and bladder (KUB) X-ray, ultrasound for all patients, occasionally excretory urography or non-contrast helical CT until the patient is stone free. The success of treatment were assessed by being stone free on KUB after 30 days of treatment.

The data was analyzed using SPSS ver. 20. Quantitative variables were reported as mean and standard deviation. Qualitative variables were reported as frequencies and percentages.

RESULTS

The average age of the 32 patients was noted as 34.28 + 10.11 years. Eighteen (56.3%) of the patients were females whereas 14 (43.7%) were male. Among 16 patients the accessibility over stone was simple whereas it was hard to achieve success in reaching stone in two patients because of tightness of the ureter. Ureteric stones were exhibit on both right and left sides in 17 (54%) and 15(46%) patients. Two stones were present at bilateral side, for these cases one side procedure was performed and the treatments for contralateral side were excluded from the results of this study. All the stones were observed in upper part of the ureter that lies beneath sacroiliac joint. 94% of the stone free rate was achieved by using Lithoclast. Moreover the results over ureteric stone removal and procedures were given in Table-I.

Overall 94% of the stone free rate was achieved by using Lithoclast. Moreover the results over ureteric stone removal and procedures are given in Table-II.

The complications rates over URS procedures; like intraoperative, mucosal injury, ureteral perforation, significant bleeding and ureteral stricture were ranged between 0-6% collectively.

Variables	n (%)
Age (M±SD)	34.28±10.11
Gender	
Female	18(56.3%)
Male	14(43.7%)
Ureteric Stone Location	
Right	17(54%)
Left	15(46%)
Bilateral	2(6.25%)

Table-I. Baseline Data

Stone Size (cm)	Number of Procedures	Median Diameter (cm)	Stone Free Rate
1-1.5	18 (56%)	1.4	96%
1.6-3	14 (46%)	2.1	92%
Total	32	-	94%

Table-II. URS and stone size variables, aborted procedures and handling

DISCUSSION

In our study we observed 80% efficacy for initial stone free status by single procedure and 94% stone free rate for overall. We may claim an upgrading of procedures and outcomes among 6 cases of our study group. Similar findings were reported in published literature[4,14], where they calculate the stone free rates as 96% & 98% respectively. In a recent comparative study by Iqbal N et al. showed stone- free rate after single procedure was (125/200 patients) 62.5% for ESWL and (168/200 patients) 84% for URS group (p=0.001). Complications included post procedure sepsis in 3 (1.5%) patient of ESWL, while 7 (3.5%) patients of URS groups.[15]

The size and site of stone are independent factors of treatment failure. The urolithiasis[16] guidelines claimed a 97% of stone free rates for stones size up to 1cm. We observed in our study that the success rate decreased with the increase of stone size. Another published review[17] of data revealed that symptoms severity, diameter and location of stone were vital independent predictors of complete stone free first procedure. This has been achieved easily in female patients as compared to male patients. In another study by Kumar A et al. found both shockwave lithotripsy

and semirigid ureteroscopy as safe and highly efficacious for treating patients with proximal ureteral stones <20 mm. For stones <10 mm, SWL was safer, less invasive, and of comparable efficacy with URS. For stones between 10 and 20 mm, however, URS was more effective, with a lesser re-treatment rate.[18]

In our study we also reported, ureterenoscope lithotripsy as a safe and useful treatment modality. This has also been considered as safest with minimal morbidity. Similar findings were reported in literature.[19,20] The present therapy complication rate for ureteric calculi was not much high but up to 6%. Another reported trial report it as 8-12%.[21] Yi-Chang Li et al. in their study also concluded that ureteroscopic lithotripsy is a trustworthy procedure for treating ureteral calculi of different sizes at all levels, and it can be efficaciously and safely performed in expert hands.

CONCLUSION

The present study reports outcomes and complication of ureterenoscope by using lithotripsy, comparable with different published reports. We tend to observe this procedure is the safest and useful. We tend to suggest more improvements in experience's curve and aptitudes will prompt a noteworthy progress in the achievement rate and diminished complications.

REFERENCES

1. Sarkar BK, Chakraborty C, Sharma AR, Bae KJ, Sharma G, Doss GP, Dutta D, Ding S, Ganbold B, Nam JS, Lee SS. **Novel biomarker for prostate cancer diagnosis by MRS.** Front. Biosci.(Landmark Ed.). 2014 Jun 1;19(7):1186-201.

2. Preminger G. **Minimally invasive surgical techniques that significantly reduce the morbidity of stone removal are currently available.** Up-To Date J Urol. 2012; 187:1293-7.

3. Knoll T, Alken P, Michel MS. **Progress in management of ureteric stones.** EAU update series. 2005; 3(1):44-50.

4. Ramello A, Vitale C, Marangella M. **Epidemiology of nephrolithiasis.** Journal of nephrology. 2001; 13:S45-S50.

5. Mahmood A, Silbergleit A, Olson R, Cotant M. **Urolithiasis: The influence of stone size on management.** Nature Reviews Urology. 2007; 4(10):570.

6. Segura JW, Preminger GM, Assimos DG, Dretler SP, Kahn RI, Lingeman JE, et al. **Ureteral Stones Clinical Guidelines Panel summary report on the management of ureteral calculi.** The Journal of urology. 1997; 158(5):1915-21.

7. Simforoosh N, Aminsharifi A, Nouralizadeh A. D**ifficulties in laparoscopic surgery for urinary stones. InDifficult conditions in laparoscopic urologic surgery 2018** (pp. 231-244). Springer, Cham.

8. El-Qadhi M. **Outcome of ureteroscopy for the management of distal ureteric calculi: 5-years' experience.** African Journal of Urology. 2015;21(1):67-71.

9. Urschel JD, Vasan H. **A meta-analysis of randomized controlled trials that compared neoadjuvant chemoradiation and surgery to surgery alone for resectable esophageal cancer.** Am J Surg. 2003;185(6):538-43.

10. Sowter SJ, Tolley DA. **The management of ureteric colic.** Current opinion in urology. 2006;16(2):71-6.

11. Borofsky MS, Lingeman JE. **The role of open and laparoscopic stone surgery in the modern era of endourology.** Nature Reviews Urology. 2015;12:392.

12. Denstedt JD, Eberwein PM, Singh RR. **The Swiss Lithoclast: a new device for intracorporeal lithotripsy.** The Journal of urology. 1992;148(3):1088-90.

13. Matsuoka K, Iida S, Nakanami M, Koga H, Shimada A, Mihara T, et al. **Holmium: yttrium-aluminum-garnet laser for endoscopic lithotripsy.** Urology. 1995;45(6):947-52.

14. Matlaga BR, Jansen JP, Meckley LM, Byrne TW, Lingeman JE. **Treatment of ureteral and renal stones: a systematic review and meta-analysis of randomized, controlled trials.** The Journal of urology. 2012;188(1):130-7.

15. Iqbal N, Malik Y, Nadeem U, Khalid M, Pirzada A, Majeed M, et al. **Comparison of ureteroscopic pneumatic lithotripsy and extracorporeal shock wave lithotripsy for the management of proximal ureteral stones: A single center experience.** Turkish journal of urology. 2018;44(3):221-7.

16. Mugiya S. **Guidelines on urolithiasis: Update of diagnosis and treatment.** Hinyokika kiyo Acta urologica Japonica. 2012;58(12):703-6.

17. Kurahashi T, Miyake H, Oka N, Shinozaki M, Takenaka A, Hara I, et al. **Clinical outcome of ureteroscopic lithotripsy for 2,129 patients with ureteral stones.** Urological research. 2007;35(3):149-53.

18. Kumar A, Nanda B, Kumar N, Kumar R, Vasudeva P, Mohanty NK. **A prospective randomized comparison between shockwave lithotripsy and semirigid ureteroscopy for upper ureteral stones <2 cm: A single center experience.** J Endourol. 2015;29(1):47-51.

19. Rana AM, Aquil S, Khawaja AM. **Semirigid ureteroscopy and pneumatic lithotripsy as definitive management of obstructive ureteral calculi during pregnancy.** Urology. 2009;73(5):964-7.

20. Hong YK, Park DS. **Ureteroscopic lithotripsy using Swiss Lithoclast for treatment of ureteral calculi: 12-years experience.** Journal of Korean medical science. 2009;24(4):690-4.

21. Cevik I, Dillioglugil O, Akdas A, Siegel Y. **Is stent placement necessary after uncomplicated ureteroscopy for removal of impacted ureteral stones?** Journal of endourology. 2010;24(8):1263-7.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Qazi Adil Inam	Conception & design of study, Developed the methodology.	
2	Furqan Arshad	Data collection, Literature search.	
3	Nabeel Naeem Baig	Review it critically for important intellectual content and made the final changes.	
4	Khadijah Abid	Analysis is interpretation of data, wrote the manuscript.	