Original Article

Outcome of Ureteroscopy (URS) in Paediatric Age at Tertiary Care Hospital

Ureteroscopy
URS in Children

Aijaz Hussain Memon[1], Mumtaz Ali Chandio[1], Muhammad Ali Sohail[1], Naveed Ahmed Shaikh[1], Mujeeb ur Rehman[2] and Zahoor Hussain[3]

ABSTRACT

Objective: The aim is to detect the outcome of ureteroscopy in paediatric age group .
Study Design: Cross sectional study.
Place and Duration of Study: This study was conducted at the Tertiary Care Hospital of Sind PMCH Nawabshah from September 2016 to September 2018.
Materials and Methods: Total 30 patients of middle and lower uretreic stones were admitted through OPD of Urology Department for this study. They were optimized accordingly and selected for the procedure of URS. Stones were removed through URS. Stone size and stone free rate was assessed.
Results: A total of 30 patients were included in this study. There were 18(60%) males and 12(40%) females. Sex difference was found. Males were more affected than females. Age ranged from 2 to 10 years. 10 (33.33) patients had stone in middle ureter and 20(66.66%) had in lower ureter. The size of stones was different also. In middle ureter, size of single stones was found from 3 mm to 7 mm and in multiple stones, it was 8 mm to 10 mm. in lower ureter, the size of the stones were from 4mm to 14mm
Conclusion: It can be summed up that ureteroscopy is the best minimally invasive procedure for children with least complications and recurrence.
Key Words: Ureteroscopy, Ureter, Calculi, Paediatric Age.

Citation of article: Memon AH, Chando MA, Sohail MA, Shaikh NA, Rehman MU, Hassain Z. Outcome Of Ureteroscopy (URS) In Paediatric Age At Tertiary Care Hospital. Med Forum 2019;30(10):121-123.

INTRODUCTION

Paediatric urolithiasis is uncommon condition with lower incidence of 2-3%. Ureteric stones also establish the little proportion of the urological stones. Now a days, its incidence is rising and its recurrence is increased up to 50% so it is imperative to decide the mode of treatment decided that should be safe, effective and lessens recurrence rate.[1]

Ureteroscopy was first performed in 1929 by Young and Mckay. In 1970s, rigid ureteroscope was used. It was in 1982 that clinically it was introduced by Perez-Castro Ellendt and Martinez-Pineiro which with passage of time improved a lot and nowadays it is commonly used as minimally invasive procedure.[2]

The evolution of surgical procedures has revolutionized the methods of treatments. The introduction of endoscopic options has not only. facilitated the mankind but it has also written a new history in the field of urology in the world. Ureteroscopy (URS) has contributed a lot in evolution of the management of urology especially in Paediatric age groups since its first application in 1988 by Ritchey et al. [3]

Ureteroscopy is of two types that are flexible and rigid fiberoptic. In obstructed kidney, ureteral stent is placed in order to save the kidney by restoring its function by normalizing the hydrostatic pressure, swelling and infection. There are different sizes of ureteral stents varying in length from 24 to 30 cm. they have shapes of Double J or Double pigtail.[4]

A ureteroscopy is the minimal Invasive surgery to cure the stones in the ureter. An instrument called ureteroscope is used to remove the stone from the ureter. The success rate of clearing small stones upto to maximum sze of 1.5 cm is 50-80% as compared to lithotripsy. This procedure does not remove larger stones. In this procedure, a small telescope is passed through urethra and into ureter to remove stones.[5] Mostly, fragmentation is needed so that the fragment stones could be removed through grasping device. Only 10-15% requires surgical therapy. In lower ureteric stones, its successful rate is 95% and 85-90% in upper ureteric stones.[6]

The advantages of URS is the visual inspection of stones, very effective method of removing stones, stricture of ureter and injuries detections, biopsies and capturing of stones by baskets through this scope.[7]

[1.] Department of Urogoly / Anatomy[2], University of Medical and Health Sciences for Women Nawabshah,
[3.] Department of Urology, Khairpur Medical College Khairpur Mirs.

Correspondence: Dr. Aijaz Hussain Memon, Assistant Professor Urology Peoples University of Medical and Health Sciences for Women Nawabshah
Contact No: 0333 7557370
Email: Aijazmemonsba@gmail.com

Received: July, 2019
Accepted: August, 2019
Printed: October, 2019

The complications of URS includes iatrogenic perforation of Urinary Bladder , stuck up of stent, and formation of stricture after weeks or months. Re-implantation is needed when there is major perforation of ureter. Avulsion of ureter is the major complication that is repaired by replacement of ureter by intestine. The common complication is the stent pain that is among 50% of patients. A warm tingling sensation is felt along with pain. An urgency to urinate is also observed among patients with stent.[8,9]

There are certain risks of undergoing URS which includes urinary tract infection, bleeding for short period of time and burning sensation.[10]

The rationale of our study to see the benefits of Ureteroscopy apart from saving patient from the major open surgical interventions and making the patient possible to return early to home and work.

MATERIALS AND METHODS

This study was conducted at urology department of PMC Hospital Nawabshah. All the patients were admitted through Emergency/ urological Outpatient department (UOPD) in Department of Urology Peoples Medical College Hospital Nawabshah This study was conducted from September 2016 to September 2018. This is tertiary care hospital of Sindh dealing patients of not only Sindh but also other provinces of Pakistan.

A detailed history was taken from the patients regarding the pain in lumbar region, nausea/vomiting, discomfort, blood or pus in urine or any symptom or sign of renal system. Thorough clinical examination is done. Systemic examination included abdominal examination was done. Apart from routine biochemical investigations, radiological assessment was also done.

Ultrasound was also obtained to find out the size of kidney, level of obstruction, number of stones if present or any other pathology. Patients were prepared for the required procedure and Ureteroscopy was done in all patients. Most of the patients were discharged after 2 to 5 days and called on for follow up accordingly..

RESULTS

A total of 30 patients were included in this study. There were 18(60%) males and 12(40%) females. Sex difference was found. Males were more affected than females.

Table No 1: Showing The Presence Of Urolithiasis According To Site Size

S.No:	Ureter	No of stones	Size of Stones
1	Middle Ureter	Single	3mm to 7 mm
2	Middle Ureter	Multiple	8mm to 10mm
3	Lower Ureter	Single/multiple	4mm to 14 mm

Age ranged from 2 to 10 years. 10 (33.33) patients had stone in middle ureter and 20(66.66%) had in lower ureter. The size of stones was different also. In middle ureter, size of single stones was found from 3 mm to 7 mm and in multiple stones, it was 8 mm to 10 mm. in lower ureter, the size of the stones were from 4mm to 14mm.

Table No. 2: Showing Size And Site Of Stone With Location.

S.No.	No of patients	%	Site of stone	Size of Stone
1	2	6.66%	Middle Ureter	3-5 mm
2	3	10%	Middle Ureter	6-7 mm
3	5	16.6%	Middle Ureter	7-10mm
4	7	23.33%	Lower Ureter	4-6mm
5	9	30%	Lower Ureter	7mm to 10mm
6	4	13.33%	Lower Ureter	11mm to 14mm
Total	30	100%		

Ureteric stones are common in lower part. In middle ureter, 2(6.66%) patients had 3-5 mm stones, 3(10%) had 6-7 mm and 7-10mm stones were found in 5(16.6%) babies. In lower ureter, 7(23.33%) had stone size from 4mm to 6 mm, 9(30%) had size of stone from 7mm to 10 mm, 4(13.33%) had stone size from 11mm to 14 mm.

Table No 3: Complications Of Urs

S.NO:	Complication	No of Patients	percentage
1	Hematuria	2	6.66%
2	Urinary Infection	3	10%
3	Residual Stones	1	3.33
Total		6	19.99%

This has also complications that develop post operatively early or late. These were noted within 30 days and readmissions were done within 90 days if needed. Injury to urinary bladder was common in our study and it was among 6 (20%) patients. Urinary infection was observed among 11 (36.66) patients. In only 2 (6.66) patient's blood in urine was found. Not single patients had immediate surgical repair and none of the patients had complained of residual stones.

DISCUSSION

The invention of MIS not in urology but also in other surgical fields has made dramatic changes in postoperative outcomes. The unveiling of ureteroscopy has really made the urolithiasis easy with good outcomes. Generally, the endoscopic treatment is considered to be challenging and is reserved as a salvage treatment option of last resort. [11]

In symptomatic patients with ureteric stones, the first line therapy considered is Shock Wave Lithotripsy. Now there have occurred concerns about long term effects of SWL on developing kidneys including the risk of renal scaring, hyperoxaluria, hypertension and later on chronic renal failure.[12]

Paediatric Ureteroscopy requires endoscopes with small diameter along with lithotripsy. In a study of 21

patients, 90.7% achieved stone free status. In our study, only 1 (3.33%) residual stone was found within 90 days after admission. Another study revealed stone free rate of 77% and 100%. Their stones were found in lower ureter. Same is found in our study.[13]

Stent placement sometimes causes discomfort. Schuester and coworkers suggested external string stent which can be removed in OPD. They also suggested that stent should be avoided if the procedure lasts less than 90 minutes. In a study of 21 patients, 3 (14.2%) were treated with stents. Kurzrock et al used stents in 29% of his patients. Shroff and Watson did it in 4 out of 13 patients. In our study same results are found, stents are placed 4 out 30 patients.[14]

Seldom is morbidity detected with paediatric ureteroscopy. In study, ureteral perforation was found among 4.7% patients but in our study no any such case was found. Another study showed ureteral perforation in 5% of patients.[15]

URS is deemed to be the safe procedure for pediatric patients. The failure rates and complications are higher in babies aged less than 6 years. Comparison of PCNL, SWL with URS proved the efficacy of URS and announced it as the suitable for ureteric stones. This is the reason that URS is increasingly being used throughout the world nowadays. Georgescu with colleagues showed the complication rate up to 3.9% but in our study the complication rate is 29.98% only.[16]

CONCLUSION

It is concluded that ureteroscopy in paediatric age group is highly beneficial and having good outcomes. It has proved to be the procedure with least complication rate. Residual stones and recurrence was found to be negligible. In hands of expertise, this seems to be the best ever option of treatment in cases of ureteric stones..

Author's Contribution:

Concept & Design of Study:	Ajiaz Hussain Memon
Drafting:	Mumtaz Ali Chandio Muhammad Ali Sohail
Data Analysis:	Naveed Ahmed Shaikh Mujeeb ur Rehman, Zahoor Hussain
Revisiting Critically:	Ajiaz Hussain Memon Mumtaz Ali Chandio
Final Approval of version:	Hussain Memon

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Sharma AP, Filler G. Epidemiology of pediatric urolithiasis. Indian J Urol 2010;26(4):516–522.
2. Clayton DB, Pope JC. The increasing pediatric stone disease problem. Ther Adv Urol 2011; 3(1):3–12.
3. Tasian GE, Ross ME, Song L, et al. Annual incidence of nephrolithiasis among children and adults in South Carolina from 1997 to 2012. Clin J Am Soc Nephrol 2016;11(3):488–496
4. Tasian GE, Kabarriti AE, Kalmus A, Furth SL. Kidney stone recurrence among children and adolescents. J Urol 2017;197(1):246–252
5. Rukin NJ, Siddiqui ZA, Chedgy EC, et al. Trends in upper tract stone disease in England: evidence from the hospital episodes statistics database. Urol Int 2017;98(4):391–396.
6. Somani B, Aboumarzouk O, Srivastava A, et al. Flexible ureterorenoscopy: tips and tricks. Urol Ann.2013;5:1–6.
7. Proietti S, Knoll T, Giusti G. Contemporary ureteroscopic management of renal stones. Int J Surg 2016;1(36):681–687
8. Guven S, Basiri A, Varshney AK, et al. Examining pediatric cases from the clinical research office of the Endourological Society Ureteroscopy Global Study. Urol 2017;1(101):31–37.
9. Geraghty RM, Jones P, Somani BK. Worldwide trends of urinary stone disease treatment over the last two decades: a systematic review. J Endourol 31(6):547–556
10. Somani BK, Griffin S. Ureteroscopy for paediatric calculi: the twin-surgeon model. JPU 2018; 14(1):73–74.
11. Somani BK, Desai M, Traxer O, Lahme S. Stone free rate (SFR): a new proposal for defining levels of SFR. Urolithiasis 2014;42(2):95.
12. Alsagheer GA, Mohamed O, Abdel-Kader MS, et al. Extracorporeal shock wave lithotripsy (ESWL) versus flexible ureteroscopy (F-URS) for management of renal stone burden less than 2 cm in children: a randomized comparative study. Afr J Urol 2018;24(2):120–125.
13. Rob S, Jones P, Pietropaolo A, et al. Ureteroscopy for stone disease in paediatric population is safe and effective in medium-volume and high-volume centres: evidence from a systematic review. Curr Urol Rep 2017;18(12):92.
14. Guven S, Frattini A, Onal B, et al. Percutaneous nephrolithotomy in children in different age groups: data from the clinical research office of the Endourological Society (CROES) Percutaneous Nephrolithotomy Global Study. BJUI. 2013; 111(1):148–156.
15. Ellison JS, Yonekawa K. Recent advances in the evaluation, medical, and surgical management of pediatric nephrolithiasis. Curr Pediatr Rep 2018; 6(3):198–208.
16. Silay MS. Recent advances in the surgical treatment of pediatric stone disease management. Eur Urol Suppl 2017;16(8):182–188.