

Percutaneous Cystolithotripsy; Is it Safe and Successful in All Age Groups?

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ABSTRACT

Objective: To evaluate the success and safety of percutaneous cystolithotripsy in all age groups. **Study Design:** Prospective descriptive. **Setting:** Department of Urology & Renal Transplantation Punjab Medical College, Allied Hospital Faisalabad. **Period:** from January 2016 to October 2016. **Methodology:** 19 patients were included in the study, all were male. All patients were submitted for percutaneous suprapubic cystolithotripsy. Procedure was done under general anesthesia in pediatric age group and under spinal anesthesia in adults. Nephroscope and pneumatic lithoclast was used for stone fragmentation. **Results:** Good results were achieved with total stone clearance in all the cases. There was 100% stone clearance in 100% patients. Minor complications were observed including suprapubic leakage, pre-vesical extravasation, minor hematuria and post-operative infection. Procedure was cost effective regarding procedure time and post-operative hospital stay. Post-operative per-urethral catheter was kept for three days. **Conclusion:** Percutaneous suprapubic cystolithotripsy can be used safely with good results and minimal complications in all age groups.

Keywords: Bladder stone, Percutaneous cystolithotripsy, Nephroscope, Three prongs forceps, Pneumatic lithoclast.

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INTRODUCTION

Urinary bladder stones are common in developing and under developed countries. History dates back to pre-historic time.^{1,2} Stones may be due to deficiency of proteins and vitamin-A in children but idiopathic stones are also found. Vesical calculi can be secondary due to bladder outlet obstruction or they may fall from upper tract in adults. There are different treatment modalities for vesical calculi including open surgery and ESWL. Some newer techniques have been introduced in near past including transurethral stone fragmentation³⁻⁵ by intra-corporeal cystolithotripsy, vesicolitholapaxy and percutaneous cystolithotripsy.⁶⁻⁹ All newer methods are less time consuming and cost effective regarding hospital stay and post-operative recovery time. We planned and conducted above mentioned study to evaluate its success and safety of procedure in our department.

METHODOLOGY

Study Design: Prospective and descriptive study.

Settings: Department of Urology and Renal Transplantation, Allied Hospital, Faisalabad.

Period: From January 2016 to October 2016

Inclusion Criteria: 19 patients were included in the study. Their age ranged from 3½ to 90 years. Stone size was 1 to 3cm in children and 2 to 5cm in adults.

Exclusion Criteria: Stone size more than 3cm in children and stone size more than 5cm in adults.

Methods: Diagnosis was made on the basis of ultrasonography KUB followed by X-ray pelvis.¹⁰ All baseline reports were performed to evaluate the fitness of patients. Procedure was done under general anesthesia in pediatric age group and under spinal anesthesia in adults. Urinary bladder was partially distended with normal saline by putting feeding tube in children and nelton drain in adults. Percutaneous suprapubic puncture was made in the urinary bladder under ultrasound guidance by using lumbar puncture needle no. 16. Guidewire was inserted through lumbar puncture needle and track was dilated by using silicone dilators. Amplatz sheath No. 28 was inserted on silicon dilators into the urinary bladder. Stone was broken with nephroscope and pneumatic lithoclast. Stone fragments were removed by three prongs forceps and bladder was washed with normal saline. Per-

urethral foley catheter was passed after the procedure and kept for three days.

RESULTS

19 patients were included in the study, all were male. Stone size was 1 to 3 cm in children. Average stone size was 1.8cm and 2 to 5cm in adults. Average stone size was 3.2cm. Complete stone clearance was seen in all cases. (Table 1) Post-operative catheter was kept for three days. Suprapubic urine leakage was found in 1 (5.26%) case. One (5.26%) patient developed pre-vesical extravasation which was managed conservatively. Two (10.52%) patients developed minor hematuria which was insignificant. Infection was seen in two (10.52%) patients which was managed by antibiotics. (Table 2) No major complication was noted including bladder rupture, intra-peritoneal leakage or conversion to open stone surgery. No patient required suprapubic drain or catheter insertion. Suprapubic scar was negligible after single stitch removal.

Table 1: Outcome of the cystolithotripsy

Sr. No.	Parameter	Range
1.	Age (Children)	3 ½ to 12 years
2.	Age (Adults)	15 to 90 years
3.	Stone size (Children)	1 to 3cm
4.	Stone size (Adults)	2 to 5cm
5.	Associated bladder outlet obstruction (Adults)	6
6.	Stone Clearance	100%
7.	Post-Operative Hospital stay	3 days
8.	Post-Operative catheterization	3 days

Table 2: Complications of cystolithotripsy

Sr. No.	Complication	Number of patients	%age
1.	Suprapubic urinary leakage	1	5.26%
2.	Pre-vesical extravasation	1	5.26%
3.	Hematuria	2	10.52%
4.	Infection	2	10.52%

DISCUSSION

Open cystolithotomy had been first choice for bigger vesical stones for long period of time.¹¹ There are

multiple problems of open vesicolithotomy. They include prolonged hospital stay, increased risk of infection due to catheterization for one week. Currently different surgical approaches from urethra are being used including vesicolitholapaxy vesicolithotripsy. They are safe and successful but have limitations.^{12,13} Percutaneous cystolithotripsy was selected for bigger vesical calculi in our department. Similar study was conducted by Demire et al.¹⁴

We included children and adults all ages in our study similar to the Maheshwari et al. We used rigid nephroscope and pneumatic lithoclast for stone fragmentation as used by Maheshwari et al.¹⁵

100% stone clearance was noted by us it is similar as noted by many operations.¹⁴

There was no significant post-operative complication seen in our study¹⁵ some minor complications were observed in our study like hematuria, urinary leakage, pre-vesical extravasation and infection. Hematuria occurred in 2(10.32%) patients. Sahito and Co-workers noted in 2 patients, Obaid et al. noted hematuria in 5% of the patients which resolved spontaneously within 24 hours. Similar has been noted by different centers.¹⁶

Nazeer, Rafiq Ahmad Sahito and Sharif et al used trochar and cannula to enter the bladder¹⁶ while we used percutaneous technique under ultrasound guidance and serial dilatation by dilators then Amplantz sheath for this purpose. Similarly they fragmented stone with stone punch. Stone punch has the limitations. It can fragment the stones up to 2cm only. We fragmented stone with pneumatic lithoclast

Samiullah et al compared open and transurethral vesicolitholapaxy which is in contrast to our study.¹⁸ Nazar Ali Memon used stone punch for stone fragmentation while performing percutaneous cystolithotomy but nephroscope and pneumatic lithoclast was used by our department.¹⁹

CONCLUSION





Percutaneous cystolithotomy is safe and successful with 100% stone clearance in all age groups. It has minimal complications. It is cost effective regarding procedure time and post-operative hospital stay. So it can be used safely and successfully for all stone sizes (up to 5cm) in all age groups.

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