Outcome of Intracorporeal Cystolithotripsy in Children

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ABSTRACT

Objectives: To evaluate the success and complications of intracorporeal cystolithotripsy in children. **Design:** It was prospective and descriptive study. **Place and duration of study:** Study was conducted in Department of Urology Allied Hospital, (PMC) Faisalabad from January 2011 to December 2012. **Patients and Methods:** Total number of 40 patients with vesical stone ≤ 2.5 cm were selected and treated by intracorporeal cystolithotripsy with pneumatic lithoclast through rigid ureterorenoscope. **Results:** Children with average age of 7.23 years were included in study. Stones were completely removed in (90%) patients. Perforation occurred in 2.5% patients, 5% patients required redo intracorporeal cystolithotripsy due to stone impaction in urethra. 2.5% Patients needed open vesicolithotomy due to bleeding. **Conclusion:** Intracorporeal cystolithotripsy with pneumatic lithoclast is a safe and valid procedure for management of vesical calculi in children. **Key Words:** Children, vesical stone, Pneumatic lithoclast.

INTRODUCTION

Urinary stone disease is common in developing countries like Pakistan.[1] Vesical culculi had been noted since prehistoric time. They are most common in low socio economic group. Vesical stones are thought because of deficiency of proteins and Vitamin A. Frequency of vesical stones has decreased due to industrialization and good diet but still common in developing countries. Mostly vesical stones are found under the age of 10 years and recurrence rate is rare.[2] There are different methods of treatment for vesical calculi. Open vesicolithotomy is being practiced in many centers up till now.[3] Extracorporeal shock waves lithotripsy is not used for vesical calculi due to stone migration and poor fragments clearance. Cystolitholapexy is used in adults but not in children due to short and small caliber of urethra in this age group.[4] With the introduction of new instruments it has become possible to treat vesical stones with minimum invasive techniques. For this purpose modern instruments are available. These are pneumatic, ultrasonic, electrohydraulic and laser technique.

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Mostly these are used for ureteric stones and PCNL. We used pneumatic lithoclast for vesical stones through rigid ureterorenoscope considering small caliber of urethra in children. Their success and safety is no more in doubt. We used Swiss pneumatic lithoclast in our study. The purpose of our study was to evaluate the success and complications of this treatment modality.

PATIENTS AND METHODS

Our study was conducted at Department of Urology Allied Hospital, Faisalabad from January 2011 to December 2012. All 40 patients with vesical stones were included in this study. There age ranged from 2 to 14 years. Both males and females were included in the study. Stone size up to 2.5 cm was included in our study. Stone size more than 2.5 cm or patients with stricture urethra were excluded from the study. Screening was done with USG (KUB) and X-ray Plain abdomen. Base-line investigations were done regarding fitness for anesthesia. Ureterorenoscope rigid type was used for urethrocystoscopy. Procedure was performed under G.A in lithotomy position. Swiss pneumatic lithoclast was used for stone fragmentation. Stone fragments were removed with pediatric cystoscopic sheath and Tommy syring. Foley Catheter

was passed and kept for 24 hours. Patients were followed for one week to see residual fragments and any complication regarding bleeding urinary retention, fever or painful micturation.

RESULTS

Total 40 patients were included in our study. Among them 29 were male and 11 were female (Table-1).

Table-1
Gender

	Frequency	Percentage
Male	29	72.5
Female	11	27.5
Total	40	100

Patients from 2 to 14 years were included and there average age was 7.23 years with std deviation 3.89. Average stone size was 1.53 cm (Table-2).

Table-2
Descriptive Statistics

	n	Minimum	Maximum	Mean	Std. Deviation
Age	40	2	14	7.23	3.89
Stone size in mm	40	7	25	15.35	5.54

Stone clearance was seen in 36 (90%) patients. Urinary bladder perforation occurred in 1 (2.5%) patient. Suprapubic cystostomy was required in 2 (05%) patients due to fragments impaction in urethra and they required redo cystolithotripsy. Open vesicolithotomy was done in 1 (2.5%) patient due to bleeding from urinary bladder. All complications occurred in 04 (10%) cases (Table-3).

Table-3
Outcome

	Frequency	Percentage
Successful	36	90
Stone impaction in Urethra	2	5
Bleeding	1	2.5
Perforation	1	2.5
Total	40	100

DISCUSSION

Average age of children was 5.4 years in our study and 4.5 years in study conducted by AR Shaikh.[4] We selected stone size ≤ 2.5 cm which is similar to be selected by AR Shaikh. Open surgery has been gold standard in children since long. But it is associated with long Hospital stay, bleeding, infection, urinary leakage and high cost of operation as noted by many centers.[5] In our study stone disintegration was done with Swiss pneumatic lithoclast. Similar technique has been practiced by many centers as by Papatsoris AG and Shaikh AR.[4,6] In our study success rate was 90% . Results better than our study have been reported by many centers.[4,7,8,19] We used pneumatic lithoclast probe through ureteroscope. Similar technique was used by knispel HH, Isen K and Ali SK.[9,17,18] We faced 10% complications while AR Shaikh noted 14% complications in 2001. Shoukeir in 1994 and Mosbaih in 1995 had 100% success with no complication or failure.[10,11] Different devices were compared for cystolithotripsy in different institutions and pneumatic lithoclast was found safe and efficient.[12] Many centers recommended its safety due to no generation of heat or energy.[7,8] Bhatia V compared open surgery versus cystolithotripsy versus extracorporeal shock wave lithotripsy in 1994 and found extracorporeal shock wave lithotripsy the safe method.[13] Traditional treatment of urinary bladder stones remain open cystolithotomy which is still being performed on large scale in our country as well as in other parts of world. Recently Al-Mahron et el; (2009) have compared the results of open cystolithotomy and endourological procedures and are of the opinion that from hospital stay point of view endourological procedure is better. However open cystolithotomy is safe from complication point of view.[14] Intracorporeal lithotripsy is mostly being done by laser technique with excellent success and minimum morbidity in developed countries. Ramatvishnac PA Noted 100% success rate of intracorporeal cystolithotripsy by Holmium laser in 2003.[15] Similar results were noted by Ramakrishnan PA by laser technique for the management of Vesical calculi.[16] But laser is not used frequently in developing countries due to high cost and its non availability. That is why we used pneumatic lithoclast for this purpose with good results and minimum complications.

CONCLUSION

At the end of our study we concluded that intracroporeal cystolithotripsy with Swiss pneumatic lithoclast through ureteroscope is safe, efficient and

successful modality. Its complications are rare and manageable if do occur. This modability is comparatively cheap and affordable at every place.

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