Original Article

Suprapubic Cystolitholapaxy: A variable option for Paediatric Bladder Stones

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ABSTRACT

Objective: To assess the complications of suprapubic cystolitholapaxy as an alternative procedure for bladder stones in pediatric age group.

Study Design: Prospective analytical study.

Place and Duration of Study: This study was carried out in Department of Urology, University of Medical & health sciences Jamshoro from May 2006 to December 2010.

Materials and Methods: This study consisted of 148 patients admitted through the outpatient department of Liaquat University Hospital Jamshoro/Hyderabad. All patients underwent base line and specific investigations especially ultrasound of abdomen and pelvis as diagnostic modality for assessment of bladder stones . Inclusion criteria were all these patients who after counseling for this study and gave written consent parents. Irrespective of their sex and age < 12 years of age presented with bladder stone of <3 cm. Exclusion criteria included were patients having history of previous surgery, posterior urethral valves, stricture urethra and stone > 3 cm were excluded from the study. Results were prepared with help of tables and graphs. Data was analyzed through SPSS software.

Results:148 patients, 124 (83.78%) were boys and 24 (16.21%) were girls with ratio 5.1:1 respectively. Mean age of the patients was 5.3 years with range from 1 to 11 years. Twelve (8.1%)patients presented with retention of urine due to impacted stone at bladder neck or prostatic urethra while 16 (10.81%)patients had coexisting renal stones. The mean size of the stones was 1.9 cm with range from 1.1 to 2.8cm. Total operative time ranged from 25 to 40 minutes.Patients were discharged after observing first void on 2nd post-operative day 136 (91.89%) while twelve (8.11%) patients required further stay due to either suprapubic urinary leakage in 5(3.37%) or urinary retention in 7(4.72%) patients.

Conclusion: Percutaneous suprapubic cystolitholapaxy is safe and cost-effective alternative to open surgery in children with ≤ 3 cm vesical calculi.

Key Words: Vesical calculus, Children, Suprapubic Cystolitholapaxy.

INTRODUCTION

The incidence of urinary bladder calculi in the United States and the Western Europe has been steadily and significantly declining since 19th century, because of improved diet, nutrition and infection control[1]. Bladder calculi remain common in developing and under developed countries. Among children this disease is far more common in boys than in girls[2].

Unfortunately, no definite world wide data accurately reflects the frequency of bladder calculi[3]. Open surgery has the inherent problem of long scar, extended hospital stay and risk of infection. Optimization of available resources has been the need for our times[2]. There are different surgical treatment options including cystolithoclast, cystolithotomy etc. For relatively bigger vesical stones, cystolithoclast is not a feasible option. In this context percutaneous suprapubic cystolitholapaxy has gaining popularity. This study was carried out to assess the safety and feasibility of this procedure.

MATERIALS AND METHODS

This study was conducted at department of urology, Liaquat University of Medical & Health Sciences, Jamshoro from May 2006 to December 2010. All patients including boys and girls who were ≤ 12 years of age presented with bladder stone of ≤3 cm included in the study. Patients having history of previous surgery, posterior urethral valves, stricture urethra and stone > 3 cm were excluded from the study. The diagnosis and size of the stone was based on X-ray abdomen KUB and ultrasound pevlis. All interventions were done under general anesthesia after standard preoperative workup. Data was analyzed through SPSS software.

Procedure Details: After identification of stone in bladder (Figure no. 1) and assembling of instruments, patient was positioned in lithotomy position & routine cystoscopy with 10 fr straight channel cystoscope was done. Bladder was filled with normal saline through cystoscope till it became palpable. A stab was made

1cm above the pubic symphysis and trocar with cannula (26 fr) introduced with rotatory movement at wrist and its position was monitored with cystoscope. As soon as the trocar and cannula entered into the urinary bladder, cystoscope was withdrawn keeping the sheath of trocar inside. Maurmyers stone punch (25fr) was introduced via sheath in to the urinary bladder for removing the stone (Figure no.2), small stones were taken out in toto while larger one broken into small pieces. All fragments were removed and after ensuring complete bladder clearance of the stone fragments. Sheath was with drawn and single stitch of prolene 2/0 was applied. Foley's catheter 10 Fr was retained for 48 hours. Infiltration of bupivacane (local anesthetic agent) was done into subcutaneous area. A small dressing was applied.

RESULTS

Out of total 148 patients, 124 (83.78%) were boys and 24 (16.21%) were girls. Mean age of the patients was 5.3 years with range from 1 to 11 years (Chat-I). Twelve (8.1%) patients presented with retention of urine due to impacted stone at bladder neck or prostatic urethra while 16 (10.81%) patients had coexisting renal stones. The mean size of the stones was 1.9 cm with range from 1.1 to 2.8cm. Measurements and diagnosis of stones were based on X-Ray and ultrasound KUB. (Figure I). Total operative time ranged from 25 to 40 minutes. All patients became stone free at the end of the procedure on the basis of cystoscopy. Indwelling catheter retained for 48 hours as per protocol of the procedure in all patients. Out of 148 patients, 136 (91.89%) were discharged after observing first void on 2nd post-operative day while twelve (8.11%) patients required further stay due to either suprapubic urinary leakage in 5(3.37%) or urinary retention in 7(4.72%) patients respectively. All these patients were treated successfully with recatheterization and antibiotic cover with third generation cephalosporin for 5-7 days. (Chart. II).

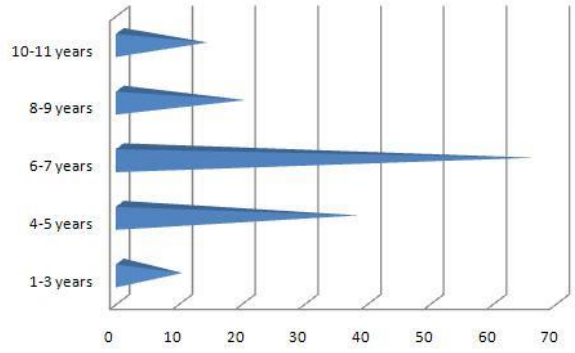

Chart No.1: Age Range

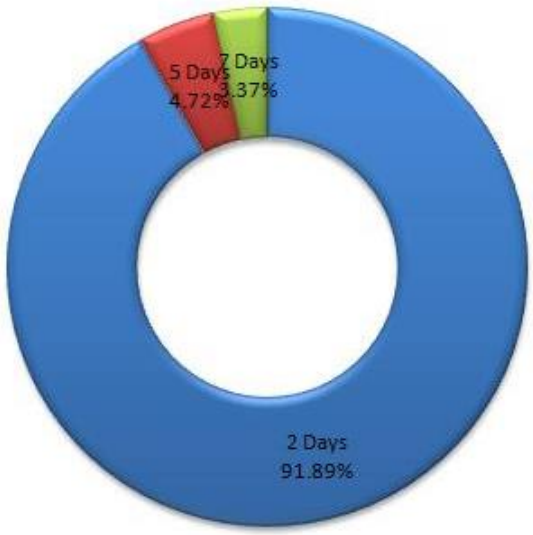

Chart No.2: Hospital Stay

Figure No.1: Pre-operative X-ray KUB

Figure No.2: Video endoscopic view of percutaneous suprapubic cystolitholapaxy

DISCUSSION

Open surgery is undoubtedly still the most appropriate treatment for large and hard bladder stones[4]. There are various methods have been used successfully for the

treatment of bladder stones including endoscopic methods[5,6,7]. Safety and success of transurethral approach has been established in adults[8]. There are special problems using transurethral approach in children because of the delicate and small caliber of urethra and lack of proper pediatric instruments[9]. In keeping with the trend towards minimally invasive surgery, suprapubic cystolitholapaxy is studied as an alternative procedure[9, 10]. Similar approach has been adopted in various centers with minor differences in technique[5,6,7,8]. The youngest child in our study was 1 years old, where as in another study youngest child was of 2 $^1/_2$ years [6, 7].

Minimum time taken for the procedure in our study was 25 minutes as compare to Noorani et al[6] where it was 15 minutes. Majority (91.89%) of our patients discharged after 48 hours. In a comparative study[5] with transvesical cystolithotomy patients took average 7.33 days in hospital postoperatively. There operative time was 70 minutes on average. In our study, the stones were disintegrated and retrieved successfully in all cases. Complications rate remained 8.11% in our study. In another series[8,11,12] with transvesical approach it was 20% and with transurethral cystolitholapaxy it was 5%. Comparable results have been documented from many distinguished centre of the world[13,14,15,16,17]

CONCLUSION

Suprapubic percutaneous cystolitholapaxy is safe and cost effective alternate to open surgery in children with less then 3cm vesical calculi. It reduces morbidity, hospital stay & cost of treatment.

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