

A COMPARISON OF OPEN VESICOLITHOTOMY AND CYSTOLITHOLAPAXY

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ABSTRACT

Objectives: To compare Vesicolithotomy with Transurethral optical cystolitholapaxy.

Design: Comparative Observational study.

Study Period: Study was conducted at Department of Surgery, Fauji Foundation Hospital Rawalpindi, from October 2002 to April 2005.

Patients and Methods: Study comprises of 40 patients, which were divided into two equal groups of twenty each. All patients having stones less than 30 mm in size were included. Group-I patients were treated with open vesicolithotomy and Group-II patients with transurethral optical cystolitholapaxy.

Results: All 40 patients were between age of 16 -76 years (mean age 52 years and 54.5 years in Group-I and II respectively) and female to male ratio were 1:2.3. Average hospital stay was long (7.33 days) in Group-I. 2.5% patients had UTI postoperatively in both groups and transient haematuria (5%), urethral trauma (5%) and recurrent stone formation (5%) was noted in Group-II patients.

Conclusion: Transurethral optical cystolitholapaxy is a better way of managing Vesical stones because it is minimally invasive with short hospital stay. Complications noticed with this procedure are minor and can be reduced by experienced surgeon.

KEY WORDS: Bladder Stones, Comparison, Vesicolithotomy, Cystolitholapaxy.

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INTRODUCTION

Uro-lithiasis is a common clinical problem since ages. Anthropologic history provides evidence that urinary calculi existed as long as 7000 years ago and perhaps more because more than 7000 years old stone has been found in the pelvis (presumably bladder) of an Egyptian mummy.¹ The specialty of urologic surgery was even recognized by Hippocrates who in

his famous oath for physicians, stated "I will not cut, even for the stone, but leave such procedures to the practitioners of craft".² So at that time the surgical treatment of the bladder calculi was left to the wandering lithotomists for centuries. In 17th and 18th century many of them were well trained famous individuals and they started improving the technique for removal of bladder calculi.³ Sir Henry Thompson first suggested the possibility of the treatment of bladder stone by dissolution. Celsius, Franco and Cheselden had a great contribution in the development of improved lithotomy techniques in early 19th century.² About half century later the development of practical lithotripsy and litholapaxy techniques developed by Civiale and Bigelow are still in use.^{2,3} In modern era of urology, the treatment of vesical calculi comprises of Open suprapubic lithotomy, Per-cutaneous suprapubic litholapaxy, Endoscopic litholapaxy, Electro hydraulic lithotripsy, and Extra corporeal shock wave

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lithotripsy (ESWL).^{4,5} Various types of Endoscopic lithotrites (e.g. Electro hydraulic Lithotripsy, ballistic, holmium/YAG laser) can be employed to fragment the stones that are too large to be crushed with manual mechanical devices.⁶ Conventional open cystolithotomy is widely used as first line of treatment in Pakistan due to limited availability of endoscopic equipment and experience in endoscopic surgery. We have compared the two commonly use procedures i.e., Suprapubic Vesico lithotomy and Transurethral optical cystolitholapaxy in our study.

PATIENTS AND METHODS

This comparative observational study was conducted with prospective data collection in the Department of Surgery, Fauji Foundation Hospital, Rawalpindi from October 2002 to April 2005. Forty patients with bladder stones were included in the study. Patients with associated bladder tumors, very small capacity bladders, bladder diverticulae and children under fifteen years of age were excluded from the study. All the patients included in this study had stones less than 3 cm in size. Patients were selected and randomized into two groups of twenty each. In Group-I, patients had been treated with open vesicolithotomy and in Group-II, transurethral optical cystolitholapaxy was done. All patients were operated under general anesthesia and single dose of prophylactic intravenous antibiotic was given to all patients preoperatively.

In both groups, comparative data regarding hospital stay, morbidity, age and sex of all the patients, were collected carefully. All patients were followed up weekly for one month, then fortnightly for next two months and then monthly for rest of the year for the development of any complications. Patients who failed to complete follow up were excluded from the study.

RESULTS

From October 2002 to April 2005, a total of 40 patients were included in the study. Among

them 28 (70%) were male and 12 (30%) were females. Male to female ratio was 2.3:1. The age ranges from 16 years to 76 years (average age 52 years) in Group-I and from 16 years to 89 years (average age 54.3 years) in Group-II patients. Most of the patients belong to Chakwal district and Azad Kashmir. Hospital stay was from 6 days to 12 days (average 7.9 days) in Group-I and from 2 days to 6 days (average 2.9 days) in Group-II patients. Post-operative urethral catheterization was done from 5 to 11 days (average 7.33 days) in Group-I patients and from one to 5 days (average 2.2 days) in Group-II patients (Table-I).

More patients developed complications in Group-II (20%) as compared to Group-I (5%). In Group-II, one patient (5%) developed transient haematuria post operatively which settled itself in due course and one patient (5%) had fever due to lower urinary tract infection. Urine culture showed heavy E. Coli. growth. He was managed successfully with appropriate antibiotics. One patient (5%) had iatrogenic urethral trauma that was managed conservatively and another patient (5%) developed recurrent stone three months after cystolitholapaxy. Cystoscopy revealed congested hemorrhagic mucosa. Her stone was removed by litholapaxy. Histopathology of biopsy showed non-specific chronic cystitis.

Table-I: Patient/procedural data and complications

<i>Procedural</i>	<i>Group-I</i>	<i>Group-II</i>
<i>Data & Complications</i>	<i>(Open vesicolithotomy)</i>	<i>(Cystolitholapaxy)</i>
Age	16-76 years (52)	16-89 years (54.5)
Male	14	14
Female	6	6
Hospital stay	7.9 days	2.9 days
Mean stone size	2.9 cm	2.9 cm
Duration of Catheterization	7.33 days	2.2 days
Mean treatment time(minutes)	70	30
<i>Complications</i>		
Fever	1 (5%)	1 (5%)
Haematuria	–	1 (5%)
Urethral trauma	–	1 (5%)
Recurrence	–	1 (5%)

DISCUSSION

Vesical calculi are a common urological problem in Pakistan. Pakistan is included among those countries where the prevalence of this disease is higher.² The prevalence of urinary calculi is higher among those peoples who live in mountainous, desert or tropical areas.^{2,3} About 25% of the patients with urinary stones have a family history of urinary stones.⁷ About three males are affected for every female. Until twentieth century it was one of the most prevalent disorders among the poor class, and the incidence was especially high in childhood and adolescent.⁸ This decrease in incidence of bladder calculi is attributed mainly to dietary and nutritional progress especially in children.² A solitary bladder calculus is usual, although multiple stones are found in 25% of cases.⁶ Vesical calculi are either primary or secondary. Primary bladder stones develop in sterile urine, it often but not necessarily originates in the kidney and then passes to the bladder. They may be associated with nutritional deficiency and are common in children.^{2,6} Secondary bladder calculi are commonly associated with bladder outlet obstruction (BOO) and infection. Majority of the patients presented with irritative bladder symptoms. Frequency and dysuria were the most common presenting complaints.

Various studies from different parts of Pakistan showed that urinary calculi are common in men with male to female ratio from 2.6:1 to 4.7:1.^{6,9} The present study showed a male to female ratio of 2.3:1. Lowest male to female ratio of 1.5:1 is reported by Khan et al from Abbottabad.¹⁰ Long hospital stays (7.9 days) is observed in group-I (open vesicolithotomy) patients which is also reported by Bhatia and Biyani in their study.¹¹ They also reported that the duration of catheterization after cystolitholapaxy is less, which is also observed in our study. Song and Denstedt.¹² reported average duration of catheterization for four days and complication rate of 18 % including bladder trauma, broken lithotrite, haematuria and urinary retention after mechanical

cystolithotripsy. In our study complication rate after litholapaxy is 20%. The average stone size in this study was 29 mm. Smith and O'Flynn¹³ reported a recurrence rate of 12.5% with litholapaxy and 2% after Vesicolithotomy. We noticed recurrence rate of 5% with litholapaxy in our study. Cystolitholapaxy was done in this female patient along with bladder biopsy. Biopsy report was consistent with chronic non-specific cystitis. No recurrence was noted during follow up in patients after vesicolithotomy. Low recurrence in our study might be due to short follow up.

Bladder stones are managed by monotherapy or combination therapy with extracorporeal or endocorporeal lithotripsy, endoscopic extraction via a retrograde or antegrade approach, and open Vesico lithotomy.¹³ Endourology and extracorporeal shockwave lithotripsy (ESWL) are the first line of management for majority of urinary calculi. ESWL is preferably performed in children and in patients with small contracted bladder in whom endourological procedures may be difficult and hazardous.¹²⁻¹⁴ Open surgery is undoubtedly still the most appropriate treatment for large and hard bladder stones. Although optical transurethral cystolithotripsy is a safe and accurate treatment of bladder stones but injuries to bladder and urethra are common complications. Problems with visual cystolithotripsy include heavy and large instruments, unsuitability for large and hard stones, inability to be used in children, impairment of visual field by fine stone fragments and blood and a greater degree of skill required by operating surgeon.

Bladder stones in patients after augmentation intestine-cystoplasty, and in children with closed bladder neck, small caliber or surgically reconstructed urethra are difficult to manage due to limited access to the bladder. No definite treatment plan is available for this group of patients. Transurethral endocorporeal cystolithotripsy procedures have high complication rate. Percutaneous vacuum vesicolithotomy for stones less than 15 mm in this group of patients has recently been

reported.¹⁵ Large and hard stones in these patients are managed by open cystolithotomy.

CONCLUSION

Cystoscopic litholapaxy is a better way of managing vesical stones as compared to open vesicolithotomy in selected group of patients. It is minimally invasive and involves reduced hospital stay and overall cost. A wound and scar is also avoided and endoscopic removal of vesical calculi is therefore more acceptable to the patients. The incidence of minor complications like haematuria and fever is reportedly higher with endoscopy but manageable. Possibility of urethral trauma should be minimized by gentle technique.

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