MEDICAL TREATMENT OF BENIGN PROSTATIC HYPERPLASIA AFTER CYSTOLITHOTRIPSY

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ABSTRACT

Background: Benign prostatic hyperplasia (BPH) is a noncancerous increase of the size of the prostate gland. The two main medication classes for BPH management are alpha blockers and 5α - reductase inhibitors .Urinary bladder stones account for 5% of all urinary stone disease. Lithotripsy with the holmium: YAG laser started with making small perforations on the stone surface. the laser fiber should be moved over the surface of the stone vaporizing the stone rather than fragmenting it till fragments become small enough to pass spontaneously or can be safely retrieved.

The aim: This study was conducted to investigate the outcomes of Cystolithotripsy with medical Treatment for Benign Prostatic Hyperplasia as an option for treatment of Patients with Bladder Stone and Benign Prostatic Hyperplasia.

Methods: prospective short term cohort study. 44 Patients with urinary bladder stone and benign prostatic hyperplasia BPH who are programmed for endoscopic removal of bladder stone with subsequent medical management of BPH, including alpha-blocker (Silodosin 8mg).from January 2017 – June 2017. All laboratory investigation within normal level no renal Hydronephrosis detected by radiological imaging and no malignancy in urinary bladder.

Results: In our study shows significant improvement in IPSS which started 17.89±2.35 preoperative to 8.48±0.84 after six months, also significant improvement in PVR which started 90.62±.13.30 Before operation to become 27.27±14.3 After operation and lastly significant improvement in Q-max which started 11.93±1.64 Before operation to become 16.46±0.77 after six month.

Conclusion: Medical treatment of benign prostatic hyperplasia after endoscopic removal of bladder stone is an appropriate option for managing patients with bladder stone and benign prostatic hyperplasia. Lithotripsy with Holmium: YAG laser is an appropriate line in management of bladder stone associated with Benign prostatic hyperplasia.

Key words. Holmium YAG laser, cystolithotripsy, Benign prostatic hyperplasia, alpha- blocker.

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INTRODUCTION

The main cause of urinary bladder stone is bladder outlet obstruction due to benign prostatic hyperplasia (BPH)**(1).** In addition, about 2 % of almost all patients who underwent surgical removal of prostate for BPH are discovered as bladder calculi **(2).** Enhanced medical treatment for the management of BPH has significantly decline the rate of surgical intervention of BPH. Medical treatments had become the first line management options because they are noninvasive, reversible, lead to minimum side effect, and significantly patients symptoms were improved **(3).** The number of males underwent TURP had decline more than 50% in the past decade, mainly due to the availability of medical treatment for lower urinary tract symptoms (LUTS)**(4).** It is usually assumed that bladder stone formed in man with BPH due to poor bladder emptying , associated with urine stasis. However, that another undefined factor must play a role, because many patients with large post voiding residual urine (PVR) volume, no stones formed within their urinary bladder. The PVR urine volume decreased significantly among males that medically treated after removal of urinary bladder stone **(5).**

PATIENTS AND METHODS

This work is a prospective short term cohort study. this study had been approved at the

urology department in hospital of Zagazig university (January 2017 – June 2017). Inclusion criteria: Patients with urinary bladder stone and benign prostatic hyperplasia BPH who are programmed for endoscopic removal of bladder stone with subsequent medical management of BPH, including alpha-blocker (silodosin 8mg). stone size less than 4 cm (first time). age more than 50 years. PVR ≤ 100. Exclusion criteria: Refractory urine retention. Recurrent attack of hematuria. Bladder diverticulum with narrow mouth. Recurrent bladder stone more than 1 time. Impaired of renal function. Recurrent UTI. Suspension of malignancy. Uncorrected coagulopathy, sever cardiopulmonary decompensation .

WORK UP : 1)Patient evaluation, Full history from patients and full examination done, DRE, Urine analysis and culture & sensitivity, KUB , pelvi-abdominal U/S & CT , serum PSA. Routine pre-op lab [CBC, PT, PTT, INR, LFT, KFT]. IPSS and QoL. Q-max and PVR. 2) Endoscopic instrument: Rigid cystoscope 24 Fr sheath with 30 degree lens, semi-rigid ureteroscope, Endocamera and video-endoscopy equipment, Holmium: YAG-laser, Elik evacuator, Grasping forceps.

3) Operational technique**:** Position of patients in the lithotomy position, urethrocystoscopy was performed using the cystoscope with monitors. 4) In urethroscopy: Inspection and assessment of all parts of the urethra, Evaluation of mucosa .The External urethral sphincter was passed with gentle pressure. The Prostatic urethra was inspected for evaluation of the verumontanum, side lobes of the prostate and the bladder neck. 5) In cystoscopy: Visualized bladder stone size and mobility. Inspection of the trigone of urinary bladder and evaluations of the all walls of urinary bladder (base, lateral walls, posterior wall and dome of the bladder ,bladder outlet and ureteric orifice). holmium YAG laser for fragmentation of bladder stones. The Elik evacuator was used intermittently for irrigation and clearance of stone fragments. Urethral Foley catheter was fixed in all patients after operation . Postoperative care: Monitoring of vital signs: blood pressure, respiratory rate, pulse and temperature. KUB & U/S on the 1st day postoperatively. Urethral catheter removed after maximal 48 hours . Medical treatment: alpha-blocker (Silodosin 8mg).

Follow up : IPSS , QoL, Q max , PVR, Urine analysis & C/S: after 1st , 3rd and 6th month .

STATISTICAL ANALYSIS:

Statistical analysis was performed using SPSS software (SPSS, Chicago, IL, USA). Data were expressed as mean ±SD for quantitative variables. For categorical variables Fisher's exact test or chi-square was used. P-value less than 0.05 was considered significant.

RESULTS

The age of the studied cases ranged from (50-70) and the mean was 58.0±7.0 year. This study shows significant improvement in IPSS which started 17.89±2.35 preoperative to 8.48±0.84 after six months, also significant improvement in PVR which started 90.62±.13.30 Before operation to become 27.27±14.3 after operation and lastly significant improvement in Q-max which started 11.93±1.64 Before operation to become 16.46±0.77 after six month.

The complications incidence either early and late. the early complications included 4 patients were complicated with minimal hematuria and no need for blood transfusion (9.1%). UTI reported in 6 patients (13.6 % of all patients), 2 patients develop both infection & hematuria (4.5 %). Where the late complications include recurrent urine retentions and failed medical treatment and TURP was done in 5 patients (11.4%) .

Table (I):show clinical presentation of all cases:

Variable	N	%
Dysuria	44	100%
Frequency	32	72.7%
Urgency	28	63.6%

Table (II): show the mean and standard deviation of age, stone size, stone density and operation time:

Variables	Mean ± sd Range (min-max)
Age	58.0±7.0 (50-70)
stone size/cm	2.72±0.81 (1.50-4.0)
stone density	617.27±242.22 (220-1200.0)
operation time/min	23.16±8.79 (5.0-40.0)

Table (III): show the mean and SD of IPSS PVR and Q-max :

Items	IPSS Mean ± sd	PVR Mean ± sd	Q-Max Mean ± sd	P – value
Preoperative	17.89±2.35	90.62±.13.30	11.93±1.64	
1 month	12.60±1.1	54.88±.25.86	14.95±0.76	**<0.001**
3 months	9.80±0.87	36.13±30.05	15.56±0.65	
6 months	8.48±0.84	27.27±14.3	16.46±0.77	

Table (IV): show early complication after operation.

Early Complications	N	%
Hematuria	4	9.1%
Infections	6	13.6%
Infection and hematuria	2	4.5%
NAD	36	81.8%

Table (V): show the late complications after operation and medical treatment.

Delayed complications	N	%
Urine retention	5	11.4%
NAD	37	88.6%

DISCUSSION

The useful medical therapy including alpha blockers , 5- alpha reductase inhibitors , and combination therapy leads to decrease the number of BPH surgery. So removal of the bladder stone only without prostatectomy will give benefit value to avoid complications of prostatectomy **(6).**

The 1st line of medical treatment of BPH which developed in the past few decades lead to decrease IPSS by 30-40 percentage **(7)** and also the risk of surgical operation in patient with BPH or attack of acute urine retention was also decreased 68-64 percentage **(8).**

In this study 49 patients underwent laser cystolithotripsy procedure for urinary bladder stones with the mean patient age was 46 years (58 ± 7 years) receiving Silodosin 8 mg once daily (5 patients were missed from our study so only 44 patients completed the study). Patients were followed in 1st , 3rd and 6th month and were evaluated regarding to IPSS score ,Qol, uroflowmetry, and PVR. Few reports have evaluated outcomes among patients who received medical treatment for BPH after bladder stone removal.

(O'Connor et al.) explained 23 cases that medically treated for BPH by combined therapy in the form of (alpha-blocker plus finasteride) after removal of bladder stone. They located decrease in IPSS in about 48.6% and improvement decrease in PVR in 49%, but there are 14 complications containing just 5 patients . Thus in this study most of the patients treated well by medical treatment after urinary bladder stone removal nearly to this study with some difference such as case number**(9).**

(Millan-Rodreguez et al.) describe 50 cases with stone bladder removal either by Extracorporeal shock wave lithotripsy in 77% and the other with surgical removal of bladder stone , in this study stone removal was done by laser cystolithotripsy . IPSS decreased after removal of bladder stone in the mean from 17.7 to 9.7 point which is similar to this study IPSS decreased from 17.89 to 8.48 point, 4 cases from 50 about (8%) failed medical treatment and need prostatic surgery due to IPSS increase to 20 point while in this study 5 cases from 44 (11.4%) needed TURP **(10)** .

(Tzortzis et al.) describe the consequences of sixteen cases which were treated by medical treatment of BPH after percutaneous suprapubic cystolithotripsy. During the period of follow up, no complications happened in all patients such as recurrent attack of bladder calculi or the need of surgery of prostate which is more better than this study because there are 5 patients developed urine retention and TURP was done to them although there is some different like stone removal **(11).**

(Takashi et al.) study comprised 34 men who underwent endoscopic bladder stone removal with subsequent conservative management of BPH, including watchful waiting and medical therapy (alpha-blocker ± dutasteride), between April 2006 and January 2014 which differ from this study by long period of follow up because this study only 6 months period of follow up. They recorded BPH-related complications after stone removal and compared IPSS, QoL scores, and PVR volume before and after treatment. Cumulative BPH related complication-free survival and the preoperative parameters associated with the occurrence of BPH-related complications were also analyzed. Twenty-six patients (76.5%) treated with conservative management had no BPH-related complications, during a mean follow-up of 52.6 ± 30.9 months. Mean IPSS fell from 13.5 ± 7.1 before treatment to 9.7 ± 6.3 after treatment (P = 0.025). One of the 34 patients (2.9%) experienced recurrent UTI, 2 (5.9%) had urinary retention, and 6 (17.6%) developed recurrent bladder stones. The cumulative BPH-related complication-free survival was 97.0% at 1 year, 81.8% at 3 years, and 70.5% at 5 years. Six of the men (17.6%) underwent invasive intervention for BPH after occurrence of these complications. Prostate volume was the only preoperative parameter associated with the occurrence of complications after stone removal (P = 0.035) which differed from this study less incidence of infections **(12).**

In this study 44 patients reported with BPH and stone bladder which underwent endoscopic laser dusting of bladder stone and received medical treatment in the form of Silodosin 8mg once daily and followed up at 1st , 3rd and 6th months that show improvement of

IPSS which started 17.89 before operation to 8.48 after 6 months follow up which is highly significant improvement (p- value = 0.001) . Also Q-max was significantly improved started 11.63 before operation to 16.46 after operation that show highly significant improvement (p-value = 0.001). Also the PVR showed highly significant improvement, decreased from 90.62 to 27.27 with (p-value = 0.001).

The incidence of infections was higher in our study in comparison with other studies, it happened in 6 cases (13.6 %) due to presence of infected stones, which are indicated in work up of patients preoperatively by alkaline urine , presence of pus cells in urine analysis and the presence of bacteria mainly proteus in urine culture. Although all these patients received specific antibiotic to treat the infections and become sterile urine, but after dusting the stone by holmium laser the spread of infection occur postoperatively. Two cases from 6 associated with hematuria and received treatment in the form of specific antibiotics after culture & sensitivity for 10 days and there are 4 cases (9.1 %) with minimal hematuria and no need for blood transfusion .

We do TURP due to recurrent urine retention and failed medical treatment after removal of urethral catheters in 5 cases (11.4 %).

CONCLUSION

Medical treatment of benign prostatic hyperplasia after endoscopic removal of bladder stone is an appropriate option for managing patients with bladder stone and benign prostatic hyperplasia .

Lithotripsy with Holmium: YAG laser is an appropriate line in management of bladder stone associated with Benign prostatic hyperplasia .

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