

URETERAL STENTING; AFTER URETEROSCOPIC LITHOTRIPSY FOR URETERIC CALCULI

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Article Citation:

Mirza ZI, Naqvi MA. Ureteral stenting; after ureteroscopic lithotripsy for ureteric calculi. Professional Med J Dec 2009; 16(4): 499-502.

ABSTRACT....Objective: To assess the need for routine ureteral stenting after ureteroscopic lithotripsy. **Design:** Prospective interventional study. **Duration and place of study:** Study was carried out between November 2006 to march 2009 at C.M.H Peshawar and C.M.H Lahore. **Patients and methods:** A total of 100 patients were equally randomized into stented and non-stented group. All these patients under went ureteroscopy and lithotripsy. The inclusion criteria was stone 6 to 10 mm. Those patients with large stones, previous surgery or ESWL were excluded. 8.9 Fr rigid ureteroscope was used with pneumatic lithotripter and 4.7 to 6 Fr double pigtail catheter was placed in stented group for 02 weeks. No ureteral dilator was used and stones were fragmented and no extraction device was used. A complete urine analysis, x-ray KUB and USG were performed before and after operation in each patient. Pain score and lower urinary tract symptoms were recorded at the time of admission and three days after the operation. **Results:** Regarding post-operative pain no statistically significant difference was noted between the two groups ($p < 0.5$). The stone free rate was 100% with hydronephrosis resolved equally in both groups. 20 patients (40%) in stented group complained of at least two irritative bladder symptoms and only 05 patients (10%) in the non-stented group experienced bladder discomfort. There was no significant difference in patients reported Haematuria in either group. Two patients in each group developed urinary tract infection. **Conclusion:** All those patients who were with out a stent after uncomplicated ureteroscopic lithotripsy have similar renal function recovery and satisfactory pain reduction and with less irritative symptoms as compared to those with stent. We suggest that it is not necessary to place a ureteral stent in every case after ureteroscopic lithotripsy for stones smaller than 01 cm.

Key words: Ureteric calculi, JJ stent, ureteroscopy, lithotripsy.

INTRODUCTION

Ureteroscopic lithotripsy and stone removal is at present the treatment of choice especially for mid and distal ureteral calculi¹. Initially larger caliber endoscopes and ureteral dilatation for access with out much improved fibro optics usually require a stent in every case^{2,3}. In order to reduce postoperative pain, ureteral stricture formation and obstruction, most urologists place a JJ stent after the lithotripsy. In addition it was thought that stenting assist in the passage of residual stone fragments. However with the use of stents, recognized complications have been associated with reports in the literature of 10% to 85 %^{4,5}. The disadvantages of

ureteral stenting include patient discomfort, migration of stent, encrustation of forgotten stent and increased cost^{6,7}. With the development of semi rigid or flexible ureteroscope as well as safe and effective lithotripsy devices many selected cases can be done with out post operative stent placement^{8,9}. In our experience pneumatic lithotripsy remains the cost effective option in

Article received on: 11/08/2009
Accepted for Publication: 24/08/2009
Received after proof reading: 09/10/2009
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the treatment of ureteric stones¹⁰. The aim of our study was to assess the need for routine ureteral stenting after pneumatic intracorporal lithotripsy. Evaluation was done on patient characteristics, stone features, and treatment outcome among stented and non stented patients.

PATIENTS AND METHODS

This study was designed as prospective, interventional, randomized, controlled trial. A total of 100 patients were enrolled in the study initially at CMH Peshawar and later at CMH Lahore urology deptt from Oct 2006 to March 2009. Patients were equally randomized in to stented and non stented group. In group A 30 male and 20 female, 20 to 72 years of age (mean age 36.7) a JJ stent was placed after the procedure. In group B 26 male and 24 female, 23 to 69 years of age (mean age 36.82) did not undergo stent placement. Other inclusion criteria were stone size 6 to 10 mm, absence of stricture in the ureter, previous surgery or ESWL. Operation was performed under spinal/general anesthesia according to the fitness of the patient. A guide wire was passed in the ureter and then ureteroscope was passed over the guide wire under direct vision. All stones were fragmented with pneumatic lithotripsy. In group A after ureteroscopy a JJ stent 4.7 to 6 Fr was placed. All patients were evaluated on follow up and if plain x-ray revealed no residual stone, stent was removed after two weeks. The outcome measures were post operative pain, lower urinary tract symptoms and late post operative complications. Symptoms like suprapubic and flank pain were assessed on the day of operation and post operative day 3 and day 7 by questionnaire. Pain was graded as 0(no pain) to 10(worst pain) scale. Urinary frequency, urgency, dysuria and Haematuria were similarly assessed on days 1 and 7 post operatively by questionnaire. These symptoms were graded on zero to five scale(0=never, 1=occasionally, 2=less than half time, 3=half time, 4=more than half time, 5=all the time.). Residual stones, infections and Haematuria were assessed at 7 day, 1 and 2 months after surgery by urine analysis, x-ray KUB and USG.

STATISCAL ANALYSIS

Data was analyzed using SPSS software. Chi square test

for categorical variables and t test for numerical variables were applied to check the significance of the difference of the two groups.

RESULTS

The gender, location and size of stone were similar in both groups (Table-I).

	Group A Stented (50 Patients)	Group B non-Stented (50 patients)	p value
Mean age	42+/- 15	37+/-20	0.41
No. Male: female	30:20	26:24	0.63
Mean stone size (mm)	6.806+/- 1.39	7.178+/- 1.44	0.53

In table 2 we summarized our results. On 15th post operative day plain x-ray revealed 100% stone free rate in both groups. All patients were discharged after overnight stay. Mean operative time +/- standard deviation in group A was 42+/- 15 minutes and 37+/- 20 minutes in group B. thus operation time was not longer when a stent was placed. There was also no significant difference in time to fragmentation in both groups.

Results	Group A (stented)	Group B (non-stented)	p value
Stone free rate	100%	100%	0.57
Hospitalization time (hrs)	26+/-4	24+/-5	0.4
Operative time (range min)	37+/-15 (18-49)	33+/-20 (15-40)	0.11
Time to Fragmentation (min)	3.5+/- 1.0	3.8+/-0.8	0.38

Table 3 shows the mean visual analogue pain score at days 3 and 7 in the two groups. No significant differences

were reported between the two groups regarding post operative pain. Dysuria, Haematuria and frequency/urgency were more prevalent in the stented group although not statistically significant. Urinary tract infection was more common in the stented group without reaching statistically significant difference.

Table-III Post operative symptoms and complications

Parameter	Group A	Group B	p value
Mean pain score, day 3	3.4± 2.0	5.8±2.2	0.01
Mean pain score, day 7	2.8±1.7	3.4±1.5	0.08
Frequency Urgency %	28 (48)	16 (32)	0.05
Dysuria %	28 (48)	22 (44)	0.2
Haematuria %	10 (20)	8 (16)	0.12
Urinary tract infection%	2 (4)	2 (4)	1

DISCUSSION

Ureteroscopy has become a common procedure in urology practice for a number of indications. The routine placement of a ureteral stent following ureteroscopic stone removal has been widely recommended¹¹. The reason for placing a stent was to reduce pain, obstruction, stricture formation and to facilitate passage of fragments¹². However stent placement is not without complications. Early complications like perforation, malposition and ureteric trauma all have been encountered. Encrustation of stents can occur in up to 15% after 3 to 4 weeks and in up to 75% after 3 months¹³. Rare complications such as fragmentation, migration and knotting of the proximal end of the stent have been reported¹⁴. Stent placement as a routine after ureteroscopy was questioned by Hosking Et al in 1999⁸. Experimental studies have also criticized the role of stent in ureter. Ryan Et al showed in canine experiment that ureteral stent placement reduces pelvic and ureteral motility and delayed calculus transit time¹². Clinical studies have also revealed that ureteral stenting delays stone transit time¹⁵.

Urinary symptoms related to ureteral stents are also well

described. Two separate reports suggest that as many as 50% of patients experience stent related symptoms including flank pain, frequency, urgency and dysuria. Early results from a randomized trial on the necessity of stent placement after ureteroscopic lithotripsy noted that stone free rate and complication in the two groups were not statistically different, however the non stented group experienced fewer side effects¹³.

Despite the result of published prospective randomized studies, majority of urologists still use stents as a routine practice for the belief that problems are encountered much more frequently than reported^{6,7}. Chow Et al continues to advocate routine stenting, because they think it provides a measure of security¹⁶. A weakness in our study is that surgeon was aware of the randomization result, stent or no stent at the beginning of our procedure. In our study to put the patients on uniform comparison base, all procedures were performed with the same 8.9 mm wolf ureteroscope and pneumatic lithotripter. The results of the current study support the findings that ureteroscopy and lithotripsy can be performed in selective cases without routine stenting, there by saving time and operative expenses and reducing post operative patients morbidity.

CONCLUSION

In terms of stone passage, renal function recovery and pain relief there was no difference between the stented and non stented group. However there were less irritative symptoms in the non stented group. Thus our opinion is that routine stent placement is unnecessary after uncomplicated ureteroscopic lithotripsy for stones less than 1 cm.

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