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LOWER URETERIC STONES;

TO FIND OUT THE TREATMENT RESULTS & COMPLICATIONS OF REMOVAL OF LOWER URETERIC STONES WITH OR WITHOUT STENTING THE URETER.

Dr. Syed Saleem Abbas Jafri[1], Dr. Mazhar Abbas Haidry[2], Dr. Zafar Iqbal Khan Niazi[3]

1. M.B.B.S (Pb) M.S (UROLOGY)
Associate Professor of Urology,
Allama Iqbal Medical Collage,
Lahore.
2. M.B.B.S, FCPS (G. Surgery)
FCPS (UROLOGY)
Assistant Professor of Urology
Allama Iqbal Medical Collage,
Lahore.
3. MBBS, FCPS (UROLOGY)
Senior Registrar Jinnah Hospital,
Lahore.

Correspondence Address:
Dr. Syed Saleem Abbas Jafri,
339. D- III, WAPDA Town,
Phase-I, Lahore.
dr_saleem3@yahoo.com

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ABSTRACT… Aims & Objectives: Placement of a ureteral stent is routinely done followed by ureteroscopy. Recently, many researchers have questioned routine stenting after ureteroscopy for management of distal ureteric stones? We report our outcomes of a randomized study comparing ureteroscopy with and without placement of stents for management of distal ureteric stones. **Study Design:** Randomized controlled trial. **Setting:** Department of Urology, Jinnah Hospital/ Allama Iqbal Medical College, Lahore. **Period:** March 2013 to February, 2015. **Materials & methods:** Total 155 patients were prospectively divided into three groups to receive a double J stent (Group I, 54 patients), ureteral stent (Group II, 50 patients) and no stent (Group III, 51 patients), underwent ureteroscopic treatment of distal ureteric stones. Characteristics of stones, operation time, postoperative pain, lower urinary tract symptoms, and analgesia need for postoperative pain, hospitalization, stone free rate and late postoperative complications were all studied. **Results:** There were no significant differences in preoperative data. There was no statistical significant difference between three groups regarding hematuria, fever, flank pain, urinary tract infection and re-hospitalization. At 48 hours and 1 week, frequency/ urgency and dysuria were significantly less group III. When comparing Group I and Group III, patients with double J stent has statistically significant more bladder pain 0, frequency/ urgency 0, dyusuria 0 and need of analgesia 0. All patients of the three groups assessed postoperatively by imaging did not suffer any obstruction or ureteral stricture. **Conclusion:** Uncomplicated ureteroscopy without stent placement for treatment of distal ureteral stones is a safe procedure. Patients without stents have significantly fewer irritative bladder symptoms and are not at risk of complications.

Key words: Ureteric calculi, ureteroscopy, ureteral stenting.

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INTRODUCTION

Ureteric stones are commonly treated by extracorporeal shock wave lithotripsy and ureteroscopy. Ureteroscopy is popular treatment for lower ureteric stone removal.[2,3] New ureteroscopes are of better design and smaller size.[4,5] This procedure has low morbidity & improved success. Placement of ureteric stents are controversial after uncomplicated ureteroscopy. The advantage of routine stenting is associated with minimizes ureteric obstruction and colic.[6] Ureteric stenting promotes healing and reduces ureteral stricture formation.[6,7] Placement of stents leads to significant morbidity, such as pain, infection and irritative voiding.[7] Moreover, placement of ureteric stents results in additional cost and it may require additional secondary cystoscopy to remove the stent.[8] Routine insertion of stents may be avoided without affecting the outcome.[9]

AIMS & OBJECTIVES

To determine the differences between ureteric stenting and non-stenting following uncomplicated ureteroscopy for lower ureteric stones.

Design

Randomized controlled trial.

Setting

Urology, Jinnah Hospital/ Allama Iqbal Medical College, Lahore.

Period

March 2013 to February, 2015.

MATERIAL & METHODS

A total of 155 patients treated with successful ureteroscopy for distal ureteric stones and were randomized to 3 groups.

I: Group I included 54 patients where double J stent was inserted.
II: This group consisted of 50 patients where ureteral stent was inserted.
III: Included 51 patients where no stent was inserted after ureteroscpic removal of distal ureteric stone.

All patients signed the consent. Patients having stones greater than 15mm size, sepsis or renal failure, patients were also excluded from the study. Having bilateral distal ureteric stones or have solitary kidney were excluded from study. Blood complete examination, Urine routine examination, Serum Creatinine level, ultrasonography KUB and NCCT were the investigations performed preoperatively. A 0.035 inch guide wire was passed into the ureter and ureteroscope was introduced over the working guide wire with no prior ureteral dilatation. The pneumatic lithoclast was used in Group I patients to fragment the offending calculi. The stents used in our study were 6 Fr in diameter. All patients in Group I were readmitted in the ward after 4 weeks for DJ stent removal.

The ureter stent was inserted in Group II patients and left for 24 hours. All patients of three groups were monitored with close follow up.

Complete fragmentation of the stone was defined as successful ureteroscopy, evident postoperatively on radiographic imaging.

Age, Sex, stone characteristics, total operative time and hospital stay was recorded.

Postoperative pain was evaluated in the patients in all three groups on a 10 cm visual analoy scale. A precise clinical examination and a special questionnaire were used postoperatively to record flank pain, haematuria, dysuria, urgency, fever and urinary tract infection.

The need of postoperative analgesia, the rate of re-hospitalization and the formation of ureteral stricture were also recorded. The patients were followed up for 3 months duration. The follow up was carried out for 12 months.

RESULTS

155 patients having lower ureteric stones were postoperatively randomized to three groups, 54 patients in Group I (DJ-Stented), 50 patients in Group II (Ureteral Stented) and 51 patients in Group III (Non-Stented Group). Age and mean stone size were comparable in all three groups (Table I). Moreover, uretereoscopy technique, type of intracorporeal lithotripsy and method of stone removal were almost similar among all of the groups.

Mean operative time $\pm$S.D in Group I patients was 36.37$\pm$ 10.20 minutes, 33.15$\pm$ 6.15 minutes in Group II patients and 32$\pm$10.15 minutes in group III patients. The operative time was no longer when a double J- Stent or a ureteric stent was used. (Table II) Ureteroscopy was successfully performed in all the three groups. The stone free rate was 100% in all groups after 04 weeks.

Table: III shows the mean anilg pain scores after ureteroscopy and other postoperative symptoms and complications in the three groups.

The patients of non-stented Group III developed symptoms like frequency, urgency and dysuria less as compared to the Groups I and II. When comparing Group I and Group III. Patients with double J stents had more bladder pain, frequency / urgency, and dysuria need for analgesia as compared to those without stents. The difference between the three groups regarding hematuria, fever, flank pain, urinary tract infection and re hospitalization was not significant statistically.

	Group I (DJ Stent)	Group II (Ureteral Stent)	Group III	P-Value (No Stent)
Mean Age+ S.D	35.10+5	34.05+4	32.10+8 NS	
M/F	44/10	40/10	39/12 NS	
Mean stone size+ S.D	7.55+1.72	7.49+1.42	7.81+1.45 N.S	
No. stone side (%) Right Left	 27(50) 27(50)	 24(48) 26(52)	 29(57) N.S 22(43) N.S	

Table-I. Baseline characteristics of 155 patients and results.

	Group I (DJ Stent)	Group II (Ureteral Stent)	Group III (No Stent)	P-Value
Mean Operative	36.37±10.20	33.15±6.15	32±10.15	0.03
Success Rate	100%	100%	100%	

Table-II. Operative characteristics of 155 patients undergoing ureteroscopy.

Post-Operative	Group I	Group II	Group III	P- Value
Symptoms/ Complications	(DJ Stent) 54 Pt.	(Ureteral Stent) 50 Pt.	(No Stent) 51Pt.	
Mean ± pain score 48 hours	4.1± 2.4	4.2± 2.2	4.5± 1.8	0.12
1 Week Mean± S.D Bladder pain score	2.5+_1.7	2.2± 1.5	2.6±1.5	0.08
48 Hours	5.2± 2.3	4.7±1.8	2.1±1.3	0.003
1Week	4.5±2.4	2.5±1.6	1.8±1.2	0.002
Dysuria No%	14(25.95)	10(20)	6(11.76)	0.003
Haematuria No %	4(7.40)	4(8)	2(3.92)	0.55
Fuquay/ Urgency No (%)	22(40.74)	14(28)	8(15.68)	<0.001
Nead of analgesics follow up	14(25.92)	5(10)	4(7.84)	<0.001
Fever No (%)	4(7.40)	3(6)	4(7.84)	0.60
Urinary treat infection no (%)	4(7.40)	3(6)	4(7.84)	0.37
Mean ± S.D Hospital stay (Hours)	28	28	24	0.38

Table-III. Postoperative symptoms and complications in 155 patients undergoing ureteroscopy for distal ureteric stone.

Table III also shows that the lower urinary tract symptoms and need of analgesics were significantly more in Group I (Group I versus Group II; Group I versus Group III). These patients had DJ stent.

Table III also shows one patient required readmission for severe unremitting pain. No patients in Group I and Group II required readmission. All postoperative complications were easily and successfully managed by conservative means.

80.60% of Group I, 80.33% in Group II and 86.35% in group III patients had radiological follow up (non-Stented). One patient had ureteric stricture and residual stone pieces.

DISCUSSION

Stents have been used for more than 30 years for the treatment of renal and ureteric stone.[10] Ureteral stent placement is an important adjuvant to many urologic procedures such as extracorporeal lithotipsy and ureteroscopy.[11,12] Ureteral stent placement has been common. It may reduce colic caused by ureteric obstruction due to edema. It may prevent stricture formation.[11] Stent placement caused significant symptoms which require removal of stent.[12,13]

In 2003, Joshi and his associates conducted a study in which they found that ureteral stents are associated with significant symptoms such as flank pain (80%), urinary symptoms 973%) and reduced work capacity (58%) which reduce quality

of life.[5] Stents affected physical and psychosocial health and reduced functional capacity and work performance.[14]

In our study involving 155 patients, difference was found between three groups regarding flank pain, hematuria, fever and urinary tract infection.

Many other studies have identified similar problems stented and non-stented patient population. Similar results were seen such as preponderance of patients with distal ureteric stones, uncomplicated procedure and absence of ureteric dilatation in other studies.[5,6]

Ibrahim and his associated (2008) observed early postoperative complication i.e low grade fever, heamaturia and urinary tract infection in 22 patients (20%) in non-stented patients and 19 (19%) in stented ones, a difference of no significant value. They have also identified that there was no difference between the stented and non-stented groups regarding mean initial hospitalization and time to return to normal physical activity.[6]

A multi-institutional prospective randomized controlled study was conducted by Borboroglu and his associates. They were surprised to find a statistically significant lower incidence of flank pain in their non-stented patients that the stented patients.[7]

The main significant difference that was identified in our study was concerned dysuria, bladder pain, frequency and the need of analgesics after the ureteroscopy.

Nabi and his associates (2007) in their study reported that the incidence of lower urinary tract symptoms was significantly higher in patients who had a stent inserted after ureteroscopy.[8] The same results were confirmed by Ibrahim et al.6 and Borboroglu et al.[7] Who found that patients without stents had significantly less bladder pain, urinary symptoms and analgesic requirement postoperatively.

Makarov and his associates (2008) conducted a study to see the effect of ureteral stent placement on post-ureteroscopy complications.[15] and concluded that the published evidence supports the practice of omitting a ureteral stent after an uncomplicated ureterscomp.[8, 14]

A cystoscopy is needed to remove the double J stent in those patients where a DJ-Stent is placed. Richter et al. claimed that the placement of a ureteral stent is a friendly procedure with unfriendly high morbidity.[16] In our present study all 54 patients in the stented Group I required additional cystoscopy for stent removal, adding not only to overall discomfort, but also to the overall cost. Avoiding ureteral stents after uncomplicated ureteroscopy would save not only the price of the stent, but also the cost of its further removal. Routine catheter placement after ureteroscopic stone removal increased operative time and cost of procedure but they did not seen to improve patient outcome.[17]

Hollenbeck and his associates (2003) conducted a study to identify significant clinical characteristics affecting postoperative morbidity in non-stented patients. They identified that patients undergoing bilateral stent less ureteroscopy, those with recurrent urinary tract infection, and those with a history of urolithiasis are at great risk for a postoperative complication. This will help to select patients suitable for stent less procedure.[18]

One of the advantages of our present study is that the current series is the prospective and randomized comparison of three groups including patients with double j stent, ureteral stent and no stent.

There are certain shortcomings in the present study. There limitations include the absence of a validated symptoms score for proper assessment of pain and lower urinary tract symptoms. Another limitation of our study is the absence of a precise assessment of the amount of analgesia used and absence of assessment of cost.

CONCLUSSION

The ureteral stent has become an integral part

of urological armamentarium. However, stent related morbidity is a reality in the majority of patients. Now we believe that in selected patients undergoing ureteroscopy for distal ureteral stones, stents placement can safely be omitted. Patients experienced less pain, urgency and dysuria and are not at high risk of complications when not stented. It is cost effective to avoid stents.

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CORRECTION

The amendment of the Professional Vol: 23, No.01 (Prof-3110) titled: "Non-alcoholic fatty liver disease (NAFLD): Frequency in diabetes mellitus (Type II) patients and non-diabetic group at Shalamar Medical and Dental College, Lahore" on page 29 is as under;

INCORRECT

Dr. Nusrat Alvi[1], Dr. Saima Amin[2], Madiha Mumtaz[3]
1. Assistant Professor,
Department of Pathology,
Shalamar Medical & Dental College,
Lahore.
2. Associate Professor
Department of Pathology,
Shalamar Medical & Dental College,
Lahore.
3. Medical Laboratory Technologist,
Department of Pathology,
Shalamar Medical & Dental College,
Lahore.

CORRECT

Dr. Nusrat Alvi[1], Dr. Saima Amin[2], Madiha Mumtaz[3]
1. Assistant Professor,
Department of Pathology,
Shalamar Medical & Dental College,
Lahore.
2. Associate Professor
Department of Radiology,
Shalamar Medical & Dental College,
Lahore.
3. Medical Laboratory Technologist,
Department of Pathology,
Shalamar Medical & Dental College,
Lahore.

"Freedom is life."

M. Shuja Tahir

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Syed Saleem Abbas Jafri	1st Author	
2	Dr. Mazhar Abbas Haidry	2nd Author	
3	Dr. Zafar Iqbal Khan Niazi	3rd Author	