



ISSN: 2319-6505

Available Online at <http://journalijcar.org>

International Journal of Current Advanced Research  
Vol 4, Issue 12, pp 551-553, December 2015

International Journal  
of Current Advanced  
Research

ISSN: 2319 - 6475

RESEARCH ARTICLE

URETERAL STENTING AFTER URETEROSCOPY FOR DISTAL URETERAL  
STONES: A RANDOMIZED STUDY

Dhaval Patel

Institute Name & Add. Gayatri Surgical Hospital, Opp. Bus-Station, Patan (Gujarat)

ARTICLE INFO

Article History:

Received 05<sup>th</sup> September, 2015

Received in revised form 08<sup>th</sup> October, 2015

Accepted 10<sup>th</sup> November, 2015

Published online 28<sup>st</sup> December, 2015

Keywords:

systemic enzyme therapy, diclofenac,  
osteoarthritis, zinc.

ABSTRACT

We compared outcome and complications ureteroscopic treatment of distal ureteral calculi with or without the use of ureteral stents.

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INTRODUCTION

Nowadays ureteroscopy has become the treatment of choice for managing ureteral stones, specially mid and distal ones [1]. Ureteral stent placement is a common procedure performed in daily urologic practice.

The role of stent placement after ureterorenoscopic stone treatment has been evaluated by many studies according to which routine stenting after uncomplicated ureteroscopic stone procedure is not necessary. Associated complications such as stent migration, breakage, encrustation, urinary tract infection, and obstruction were observed. Furthermore, a secondary cystoscopy was required for stone removal in many cases. Clear indications exist for postoperative stenting after ureterorenoscopy. These are among others solitary kidney, renal insufficiency, ureteral injury, stricture, or a large residual stone burden [2, 3, 4].

There is no consensus on placing a ureteral catheter after uncomplicated ureteroscopy and it is still controversial. It is a routine justified by the belief that this practice decreases ureteral stricture formation, protects the kidney, and minimizes postoperative pain [5]. However the use of stents is accompanied by significant morbidity, including pain, infection, and irritative voiding symptoms [6, 7].

MATERIALS AND METHODS

From 2012 to 2015, a total of 102 patients treated with successful ureteroscopy for distal ureteral stones were prospectively randomized to 2 groups. Group 1 included 57 patients in whom a double j stent was inserted, and group 2 included 45 patients in whom no stent was inserted after stone

removal. Informed consent was obtained from all patients. Patients were excluded from the study when stone size was greater than 2 cm. Preoperative imaging consisted of KUB and renal ultrasonography with IVP. All procedures were performed under spinal anesthesia after discussion with patients.

Ureteroscopy was done with a 7.5 Fr semirigid ureteroscope. One 0.038-inch guide wire was inserted via cystoscopy under fluoroscopic guidance. The cystoscope was removed and a semirigid ureteroscope was passed into the ureter over the working guide wire with nonprior ureteral dilation. The pneumatic lithoclast was used to fragment the offending calculus into pieces in all cases requiring lithotripsy. The stents used in the study were 6 Fr in diameter. All patients in group 1 were rehospitalized after 3 weeks for double j stent removal. All patients were closely followed up. Procedures were considered a success if either a solitary calculus was removed in its entirety or all fragments were absent on radiographic followup. Radiographic followup typically consisted of a plain radiograph and renal ultrasound 1 month after the procedure.

Age, gender, total operating time, the mean operative time, and mean hospital stay were all recorded.

We also studied, the need of analgesics in postoperative time, the rate of rehospitalisation, and the appearance of an ureteral stricture.

Patients were followed up postoperatively with a minimum of 3 months (the mean follow-up was 12 months).

## RESULTS

The 2 study groups were comparable regarding patients and stone characteristics (Table 1).

**Table 1** Patients and stone characteristics

	Double j stent 57 patients	No stent 45 patients
Age	34 (24-65)	30(20-70)
Gender M/F	32/25	30/15
Side Of Stone R/L	38/19	25/20
Stone Size	10.5	8.6
Mean Operative time	40	35
Success Rate	100	100

Overall mean stone size in the study was 10.5 mm. Moreover, the ureteroscopy technique, type of intracorporeal lithotripsy, and method of stone retrieval were not significantly different between the treatment groups. Ureteroscopy was successfully achieved in the three groups and the stone-free rate at 3 weeks was 100% in each group.

**Table 2** Patient's characteristics and results

	Double j stent 57 patients	No stent 45 patients
Dysuria	15(26.3)	10(22.2)
Hematuria	10(17.5)	9(20.0)
Frequency	21(36.8)	5(11.1)
Need Of Analgesia	25(43.8)	7(15.5)
Fever Number	6(10.5)	5(11.1)
UTI Number	15(26.3)	10(22.2)
Rehospitalization	0	0
Urethral Stricture	0	0

There was no significant difference between the three groups regarding hematuria, fever, flank pain, urinary tract infection, and rehospitalisation. No patients in both group required postoperative readmission to the hospital. All complications were easily and successfully managed by conservative measures.

Ureteroscopy was successfully achieved in the two groups and the stone-free rate at 4 weeks was 100% in each group.

## DISCUSSION

Double J-stents have been widely used for more than 2 decades, although widespread use of ureteral stents has corresponded to an increase in potential complications (eg, stent migration, encrustation, stone formation, and fragmentation). Regardless of the initial indication for stent placement, transurethral cystoscopic exchange is an effective therapy for occlusion..

oshi *et al.* identified patient morbidity associated with ureteral stents as a significant health problem and investigated it in detail [8]. They found that ureteral stents are associated with significant symptoms, such as pain affecting daily activities (80%), urinary symptoms (73%), and reduced work capacity (58%), which reduce quality of life. During the research, it became clear that stents profoundly affect physical and psychosocial health and have a negative impact on functional capacity and work performance [8, 9].

In our present study involving 102 patients, we did not find significant difference between the three groups concerning hematuria, fever, and urinary tract infection.

In the study of Ibrahim *et al.* [10], early postoperative complications, including low grade fever, hematuria, and urinary tract infection, were observed in 22 patients (20%) in nonstented patients and 19 (19%) in stented ones, a difference of no significant value.

The same results were confirmed by Ibrahim *et al.* [10] and Borboroglu *et al.* [11] who found that patients without stents had significantly less bladder pain, urinary symptoms, and narcotic use postoperatively.

## CONCLUSION

Uncomplicated ureteroscopy for distal ureteral calculi without intraoperative ureteral dilation can safely be performed without placement of a ureteral stent.

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