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**Original Research Article**

# A prospective comparative study of ureterorenoscopy with and without DJ stenting for the management of ureteric stones

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## ABSTRACT

**Background:** Urolithiasis is the most common urological disease. Surgical treatment of ureteral stones consists of four minimally invasive modalities including ESWL, URS, PCNL, and laparoscopic or robotic-assisted stone surgery. URS and ESWL are the most widely used techniques. However, the use of ureteral stents for the treatmentof ureteral stones is still controversial. Herein, we did a comparative study of URS with and without DJ stenting for the management of ureteric stones. Objectives of current study were to compare prevalence of post-operative complications in patients undergoing ureterorenoscopy without ureteral stenting as compared to patients undergoing stenting procedure, to study the frequency of morbidity in patients during post -operative period in both 'stent'and 'no stent' groups. Stone free-rate, operative time, complications, hospital stay and need for re-treatment in both groups will be determined.
**Methods:** 50 patients with ureteric stones admitted in our hospital-SMIMER fulfilling our inclusion and exclusion criteria were randomly divided in two groups- patients in group A (25) underwent URS without DJ stenting and group B (25) underwent URS with DJ stenting.
**Results:** URS without DJ stenting had less operative time, less postoperative complications like pain, requirement of analgesia, hematuria, UTI, dysuria, fever, less readmission rate and less hospital stay, similar stone free rate compared to URS with DJ stenting but it requires higher surgical endoscopy skills with urological expertise.
**Conclusions**: Thus, after adequate training, URS without DJ stenting can be recommended as a safe alternative procedure than URS with DJ stenting for management of ureteric stones.

**Keywords:** URS with DJ stenting, URS without DJ stenting, Ureteric Stones, Stone free rate

## INTRODUCTION

Urolithiasis is the most common urological disease with a prevalence rate of 7.8% and a recurrence rate of 50%.[1] Ureteral stones usually result in ureteric obstruction, renal colic, infection and hydronephrosis.[2] Surgical treatment of ureteral stones consists of four minimally invasive modalities including ESWL, URS, PCNL, and laparoscopic or robotic-assisted stone surgery. There appears to be an evolving paradigm shift in the surgical treatment of upper tract stones, with an increasing use of URS and a reciprocal decreasing use of ESWL for upper urinary tract stone disease. URS may be safely performed in patients with active anticoagulation or antiplatelet therapy.[3,4] URS and ESWL are the most widely used techniques to clear stones with high degree of success. The routine insertion of ureteral stents over a prolonged period reduces the risk of ureteral obstruction and renal colic.[5] The stents provide the path for drainage of stone fragments down to the bladder and improve hydronephrosis simultaneously. Moreover, long-term stent implantation promotes healing of mucosal injury

caused by surgeries and prevents the formation of ureteral stricture. However, the use of ureteral stents for the treatmentof ureteral stones is still controversial, given the stent-associated complications including irritation and discomfort in addition to inherent risks of stent migration, vesico-ureteral reflux and stent encrustation.[6,7] According to the current American urological association (AUA) guidelines, the placement of ureter stents is not required in the surgical treatment of ureteral stones. Other studies suggested that routine stenting was desirable for prophylaxis.[8]

### *Aims and objectives*

To compare prevalence of post-operative complications in patients undergoing ureterorenoscopy without ureteral stenting as compared to patients undergoing stenting procedure. Objectives of current study were to study the frequency of morbidity in patients during post-operative period in both 'stent'and 'no stent' groups. Stone free-rate, operative time, complications, hospital stay and need for re-treatment in both groups was also determined determined.

## METHODS

### *Study type, location and duration*

Current study was a prospective comparative Study conducted at department of general surgery, Surat Municipal institute of medical education and research (SMIMER), Surat, Gujarat, India from January 2020 to July 2021

### *Inclusion criteria*

Patient of age more than 18 years with consent and less than 18 years with consent from informed legitimate guardian/parent. Patient of non-obstructive uropathy/ obstructive uropathy requiring URS with intraoperative findings showing normal mucosa with no wall edema. Ureteric stones less than 15mm size including, bilateral ureteric calculi were included.

### *Exclusion criteria*

Postoperative: already operated patients for ureterolithotomy, pregnancy, pediatric age group, previous iatrogenic trauma, solitary kidneys, H/O/retroperitoneal fibrosis, PUJ stenosis, acute urinary tract infection, stone mass more than 25 mm, ureteral tumours or peri ureteral tumours. Per-operative: ureteric perforation, ureteric avulsion, long ureteric stricture, impacted ureteric calculi and extra ureteral stone migration were excluded.

### *Procedure*

50 Patients with ureteric stones admitted in our hospital-SMIMER fulfilling inclusion and exclusion criteria were randomly divided in two groups by giving them serial numbers- odd number patients were included in group A & even number patients were included in group B. All patients were evaluated prior to operation by USG KUB followed by X-ray KUB. CT-Scan KUB was done in selected cases. After giving Spinal anesthesia, lithotomy position was given. Cystoscope was passed through the anterior urethra. Once beyond the membranous urethra, the cystoscope was directed anteriorly to enter the bladder. The lower urinary tract was systematically evaluated under maximal irrigation as the scope was advanced. Once the scope was in the bladder, the mucosa was carefully inspected. Trigone of the bladder wall was identified and followed laterally upto the ureteral ridge. Once a cystoscopy had been performed and the Ureteric Orifice located, guidewire was inserted into the scope & pass it through UO to enter in ureter. Once a safety wire was in place, which often helps to keep the UO open and aids passage of the rigid ureteroscope. Then 7.5 Fr sized rigid ureteroscope was advanced in ureter, stone was visualized (Figure 2) & with help of Pneumatic Lithotripter stone was fragmented in small pieces and removed with stone forceps. The decision to place a ureteric stent after removal of the stone was made based on the peri operative variables. In all patients (Group A) with "uncomplicated ureteroscopy" a ureteric stent had not be placed; rest all patients (group B), a DJ stent of 5-6 Fr had been placed (Figure 1). Its position was confirmed by C-ARM image intraoperatively & by X-ray KUB post-operatively. Patients who were excluded intraoperatively were replaced by new patients in our study. Patients were kept in surgical department for 3-5 days. Analgesics and antibiotics were used in all cases. Patients were called after 1 week, 4 week and 6 weeks of operation. DJ stent was removed after 6 weeks.

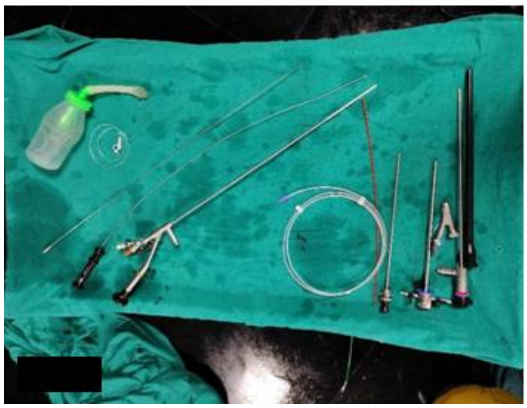

**Figure 1: URS instruments.**

### *Statistical analysis*

OpenStat software was used to analyse the data staistically. The following outcomes were extracted to compare in stenting and non-stenting group. Baseline demographic variables included: age, proportion of males and females and stone site. Perioperative and postoperative variables included: operating time, visual

analogue scale (VAS), length of hospital stay, stone-free rate and readmission and complications including pain, dysuria, urinary infection, hematuria, fever, irritative symptoms and ureteral stricture.

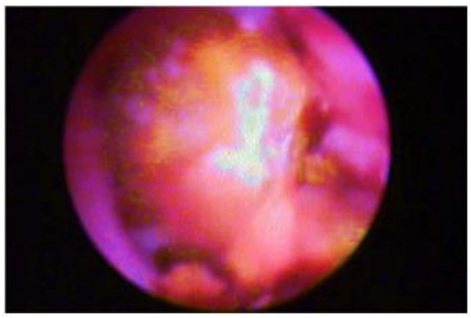

**Figure 2: Ureteric stone visualization on URS.**

## RESULTS

Mean age calculated was 34.04 in group A and 42.44 in group B (Figure 3). P value in this analysis came out 0.6507 which showed no statistically significant difference between the mean ages of the 2 groups. Gender distribution both groups were studied and analysed Chi square test (Figure 4). P value for this analysis is 0.7618 shows statistically no significant difference between the gender distribution of the 2 groups.

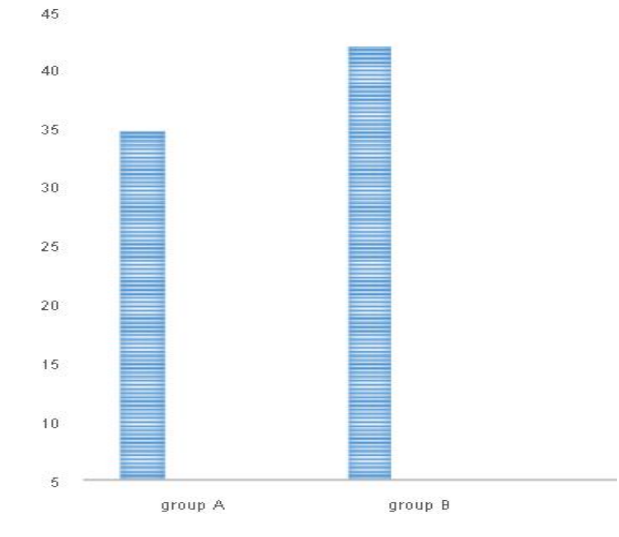


**Figure 3: Age distribution.**

### *Stone site*

Stone site like upper, middle & lower ureter was determined by x ray KUB, followed by USG KUB in all cases and CT-IVP in selected cases. Ureteric calculi site in the patients of both groups were compared and analysed which showed no significant difference. 16% of URS with DJ Stenting took <50 mins in comparison to 68% patients in which solely URS procedure was performed.These results were compared statistically using Chi-square test which showed p value of 0.0006 stating that there is a significant difference between the two groups based on operative procedure.

### *Ureteral stenosis*

On the operating table based on ureteroscopy findings (intra operative finding) for associated ureteral stenosis along with impacted/non impacted ureteral calculi, all such patients underwent URS with DJ Stenting. 48% of URS with DJ Stenting had intraoperatively diagnosed ureteral stenosis in comparison to void patients in which solely URS procedure was performed. 32% patients of URS with DJ Stenting took re admission in emergency ward/surgical OPD within 7 days due to pain/urinary retention/other urinary complaints in comparison to 4% patients in which solely URS procedure was performed. These results were compared statistically using chi-square test which showed p-value of 0.0272 stating that there is a significant difference between the two groups based on re-admission rate.

### *Post-operative pain*

On the same post-operative day after 10-12 hours (POD 0), 72% patients of URS with DJ Stenting had VAS>2 in comparison to 36% patients in which solely URS procedure was performed. On the post-operative day 1 (POD 1), 44% patients of URS with DJ Stenting had VAS>2 in comparison to 8% patients in which solely URS procedure was performed. On the post-operative day 6(POD 6), 24% patients of URS with DJ Stenting had VAS>2 in comparison to 4% patients in which solely URS procedure was performed.

### *Post-operative retention rate*

Post-operative urinary retention rate of both groups were studied and analyzed which showed no significant difference.

### *Analgesic requirement*

On the post-operative day 0-3(POD 0-3), 40% patients of URS with DJ stenting in comparison to 80% patients in which solely URS procedure was performed had routine dose of analgesic requirement (inj. paracetamol 450 mg TDS); 40% patients of URS with DJ stenting in comparison to 16% patients in which solely URS procedure was performed required supplemental dose of analgesic requirement (inj. paracetamol 150 mg OD); 20% patients of URS with DJ Stenting in comparison to 4% patients in which solely URS procedure was performed required narcotic analgesic for analgesia (inj. tramadol 100 mg TDS). These results were compared statistically using Chi-square test which showed p-value of 0.0138 stating that there is significant difference

between the two groups based on post-operative analgesic requirement.

***Dysuria rate***

On the post-operative day 2 (POD 2), 32% patients of URS with DJ stenting in comparison to 8% patients in which solely URS procedure was performed had dysuria on removing the per-urethral catheter; These results were compared statistically using chi-square test which showed p-value of 0.0771 stating that there is significant difference between the two groups based on post-operative dysuria rate.

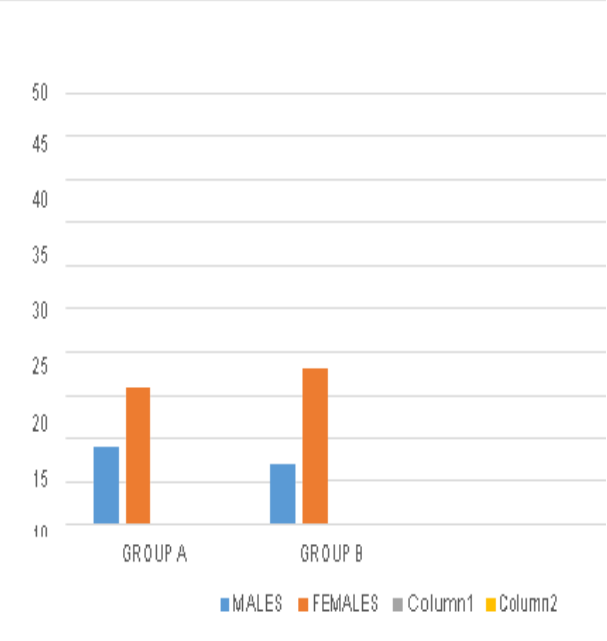


**Figure 4: Gender distribution.**

***Hematuria rate***

On the post-operative day 2 (POD 2), 36% patients of URS with DJ Stenting in comparison to 4% patients in which solely URS procedure was performed had hematuria after removing the per-urethral catheter.

These results were compared statistically using chi-square test which showed p-value of 0.0133 stating that there is significant difference between the two groups based on post-operative hematuria rate.

***Post-operative UTI***

On the post-operative day 2-4 (POD 2-4), 36% patients of URS with DJ stenting in comparison to 8% patients in which solely URS procedure was performed had urinary tract infections (based on urine routine and microscopy); these results were compared statistically using chi-square test which showed p-value of 0.0405 stating that there is significant difference between the two groups based on post-operative UTI rate.

***Post-operative fever***

On the post-operative day 2-4 (POD 2-4), 32% patients of URS with DJ stenting in comparison to 4% patients in which solely URS procedure was performed had urinary tract infections (based on urine routine and microscopy); these results were compared statistically using chi-square test which showed p value of 0.0272 stating that there is significant difference between the two groups based on post-operative fever rate. 76% patients of URS with DJ stenting in comparison to 32% patients in which solely URS procedure was performed had a hospital stay of >4 days. These results were compared statistically using chi-square test which showed p value of 0.0045 stating that there is significant difference between the two groups based on hospital stay rate.

***Long term follow up variables***

Post-operative ureteral stenosis: all patients were called for regular follow up around POD 10, and after 3 weeks and 6 weeks and both groups showed equal incidence of post-operative ureteral stenosis. All these cases were managed with DJ stenting for longer period in group B and the other group individuals were taken for DJ stent insertion. Stone free rates were 92% in patients of URS with DJ stenting in comparison to 88% in patients in which solely URS procedure was performed. These results were compared statistically using chi-square test which showed p value of 0.1615 stating that there is no significant difference between the two groups based on post-operative UTI rate.

## DISCUSSION

***Baseline parameters***

Age distribution: stone occurrence is uncommon before age 20 but it peaks in incidence in fourthto sixth decades of life. Women show a bimodal distribution of stone disease, demonstrating a second peak in incidence in sixth decade of life corresponding to onset of menopause and a fall in estrogen levels. This finding and the lower incidence of stone disease in women compared with men have been attributed to the protective effect of estrogen against stone formation in pre- menopausal women, owing to enhanced renal calcium absorption and reduced bone resorption.[9] In our study, ageof the patients involved in both study groups was compared which showed no significant difference between the mean ages of the 2 groups. Gender distribution: generally, stone disease affects adult men more commonly than adult women. Men were affected two or three times more common than women.The lifetime prevalence of kidney stone disease is estimated to be higher in women.[10] Zaki et al conducted a study on 198 patients, Mumtaz Rasool et al on 100 patents and Y-El Harrech on 117 patients. 63.1% were males and 36.84% were females.[22-26] Zaki noted 62% males and 38% females and Rasool noted 74% males and 26% females. In our study, gender distribution both groups

were studied and analysed which no significant difference.[24,25]

***Ureteric calculi site***

Lower ureteric stone was seen in 44% of patients, mid ureteric stone in 30% and upper ureteric in 26% in the study conducted by Mumtaz.[24] Stonesite was determined by x ray KUB, followed by USG KUB in all cases and CT-IVP in selected cases.

In our study, ureteric calculi site like upper, mid and lower ureteric site was compared and analysed between both groups which showed no significant difference.

***Testing parameters***

Intraoperative operative duration: Wang et al concluded that the stented group was associated with longer operation time/min (95% CI: 2.07 to 7.84; p< 0.001), and lower stone-free rate (OR: 0.55; 95% CI: 0.34 to 0.89; p= 0.01).[12]

**Table 1: Operative duration.**

| Operative duration | URS with DJ stenting (group B) | URS without DJ stenting (group A) | Total |
|---|---|---|---|
| **<50 minutes** | 04 (16%) | 17 (68%) | 21 |
| **>50 minutes** | 21 | 08 | 29 |
| **Total** | 25 | 25 | 50 |
| **Mean** | 51.44 | 39.32 | |

**Table 2: Re-admission rate.**

| Re-admission rate | URS with DJ stenting (group B) | URS without DJ stenting (group A) | Total |
|---|---|---|---|
| **Readmitted** | 08 (32%) | 01 (04%) | 09 |
| **Not readmitted** | 17 | 24 | 41 |
| **Total** | 25 | 25 | 50 |

**Table 3: Post-operative pain.**

| Parameters | Day 0 | | Day 1 | | Day 6 | |
|---|---|---|---|---|---|---|
| | VAS >2 + | VAS <2 - | VAS >2 + | VAS <2 - | VAS >2 + | VAS <2 - |
| **URS with DJ Stenting (group B) (N=25)** | 18 | 07 | 11 | 14 | 6 | 19 |
| **URS Without DJ Stenting (group A) (N=25)** | 9 | 16 | 2 | 23 | 1 | 24 |
| **Total** | 27 | 23 | 13 | 37 | 7 | 43 |

**Table 4: Post-operative fever.**

| Post-operative fever (day 2-4) | URS with DJ stenting (group B) | URS without DJ stenting (group A) | Total |
|---|---|---|---|
| **Yes** | 8 (32%) | 01 (04%) | 15 |
| **No** | 17 | 24 | 35 |
| **Total** | 25 | 25 | 50 |

**Table 5: Hospital stay.**

| Hospital stay (days) | URS with DJ stenting (group B) | URS without DJ stenting (group A) | Total |
|---|---|---|---|
| **>4** | 19 (76%) | 08 (32%) | 27 |
| **<4** | 06 | 17 | 23 |
| **Total** | 25 | 25 | 50 |

**Table 6: Stone free rate.**

| Stone free rate (days) | URS with DJ stenting (group B) | URS without DJ stenting (group A) | Total |
|---|---|---|---|
| **Yes** | 21 (84%) | 24 (96%) | 45 |
| **No** | 04 | 01 | 05 |
| **Total** | 25 | 25 | 50 |

Ghosh et al concluded the mean operating time duration for day case (DC)-URS patients were 46 min and without stening was 42 min respectively. Post-operatively, the

mean stone-free rate(SFR), unplanned re-admissions and complications for DC-URS patients were 95, 4 and 4%, respectively. A higher failure of DC-URS was related to patient's age (p=0.003), positive pre- operative urine culture (p<0.001), elevated pre-operative serum creatinine (p<0.001) and higher mean operating time (p<0.02).[13] In our study, 16% patients of URS with DJ Stenting took <50 minutes in comparisonto 68% patients in which solely URS procedure was performed; chi-square test showed p value of 0.0006 stating that there is a significant difference between the two groups based on operative procedure.

***Intra-operative ureteral stenosis***

It was observed that few patients of both groups A and B, showed intra operative finding of ureteral stenosis in accordance to the same site with impacted ureteral stones. On the operating table based on ureteroscopy findings for associated ureteral stenosis along with impacted/non impacted ureteral calculi, all such patients underwent URS with DJ Stenting. In our study 48% of URS with DJ Stenting had intraoperatively diagnosed ureteral stenosis in comparison to void patients in which solely URS procedure was performed.

Immediate postoperative complication: 2 variables were studied: postoperative pain**;** the overall incidences of acute postoperative pain and postoperative complications were 14.6% and 9.6%, respectively. All patients who experienced postoperative complications also experienced acutepostoperative pain.[14] Cheung et al asserted that pain and complications increased when surgery time is greater than 60 minutes, and that pain and complications were increased in patients who received ureteral stents in 329 cases of URS conducted on outpatients.[15,16]

In another study, el- Faqih et al reported that dysuria and pain were associated with ureteral stenting in 79% and 29% of patients, respectively. This study suggested that long surgery time was associatedwith early postoperative pain, but ureteral stenting was not. In our study, On the same post-operative day after 4 hours (POD 0),72% patients of URS with DJ stenting had VAS>2 in comparison to 36% patients in which solely URS procedure was performed; these results were compared statistically using Chi-square test which showed p value of 0.0232 stating that there is a significant difference. On the post-operative day 1(POD 1), 44% patients of URS with DJ Stenting had VAS>2 in comparison to 8% patients in which solely URS procedure was performed; these results were compared statistically using chi-square test which showed p value of 0.0099 stating that there is a significant difference. On the post-operative day 6 (POD 6), there were no significant difference between the two groups.

***Post-operative hematuria***

A urinary bladder catheter will do monitoring of haematuria and reduces the risk ofurine drainage block by clots. Scarce haematuria occurred in 40% of URS procedures, carried out for urolithiasis of the upper urinary tract. In turn, Tanriverdi and Geavlete reported 0.1% to 3.2% of medium degree haematuria cases.[17,23] Zaki et al noted hematuria in 8.08% of non-stented group and 10.11% of stented group.[23-25] Rasool observed hematuria in 2% of non-stented group and 3% in stented group. Y-El Harrech observed hematuria in 5.2% of non-stented group and 7.1% of stented group.[24,26] In our study, On the post-operative day 2 (POD 2), 36% patients of URS with DJ stenting in comparison to 4% patients in which solely URS procedure was performed had hematuria after removing the per-urethral catheter. These results were compared statistically using chi-square test which showed p-value of 0.0133 stating that there is significant difference between the two groups based on post-operative hematuria rate.

***Early postoperative complications***

5 variables were studied: postoperative urinary retention (>30ml)**:** acute urinary retention (AUR) is a complication of anaesthesia so we do foleys catheterization to avoid it. The percent of post-operative urinary retention varies from 2.1 to 2.52% for all types of surgery, while for surgical procedures under spinal anaesthesia it is 0-79%.[18,19] The volume of urine, retained after micturition was determined by transabdominal ultrasound on the day of discharge from the ward.

Post-operative retention was considered when post void residual urine was more than 30ml on USG-KUB. In our study there is no significant difference between the two groupsbased on post-operative retention rate. It concluded that post-operative retention is related to bladder contractility and autonomic function to the bladder than in relation to our procedure.

***Post-operative urinary tract infections***

On the post-operative day 2-4 (POD 2-4), 36% patients of URS with DJ stenting in comparison to 8% patients in which solely URS procedure was performed had urinary tract infections(based on urine routine and microscopy); These results were compared statistically using chi-square test which showed p value of 0.0405 stating that there is significant difference.

***Post-operative fever***

Fever was noted in 7.60% patients with DJ insertion and 3.06% without DJ insertion. Fever was noted in 12.13% of non-stented group and 11.12% of stented group by Zaki et al.[25] Fever was observed in 7.8% of non-stented group and 7.1% of stented group by Y El Harrech and Akmal et al.[11,26] Fever was noted in 3 (3.06%) Patients in non-stented group and 7 (7.60%) of patients in group B p value was 0.161. In our study, on the post-operative day 2-4(POD 2-4), 32% patients of URS with DJ Stenting in comparison to 4% patients in which solely URSprocedure was performed had fever; these results were compared statistically using chi-square test which showed p- value of 0.0272 stating that there is significant difference between the two groups based on post-operative fever rate.

***Post-operative dysuria***

In our study, On the post-operative day 2 (POD 2), 32% patients of URS with DJ stenting in comparison to 8% patients in which solely URS procedure was performed had dysuria on removing the per- urethral catheter; These results were compared statistically using chi-square test which showed p value of 0.0771 stating that there is significant difference between the two groups based on post-operative dysuria rate. Akmal et al dysuria was seen in 20 (20.40%) cases in group A and 31 (33.36%) in group B p value was 0.039.[11]

***Post-operative urinary irritative symptoms***

In our study, post-operative urinary irritative symptoms like frequency, urgency, hesitancy, incontinence were analyzed and compared which showed no significant difference between the 2 groups.

***Morbidity assessment***

Analgesic requirement**:** On the post-operative day 0-3(POD 0-3),40% patients of URS with DJ Stenting in comparison to 80% patients in which solely URS procedure was performed had routine dose of analgesic requirement (inj. paracetamol 450 mg TDS); 40% patients of URS with DJ Stenting in comparison to 16% patients in which solely URS procedure was performed required supplemental dose of analgesic requirement (inj. paracetamol 150 mg OD); 20% patients of URS with DJ Stenting in comparison to 4% patients in which solely URS procedure was performed required narcotic analgesic for analgesia (inj. tramadol 100 mg TDS). These results were compared statistically using chi-square test which showed p-value of 0.0138 stating that there is significant difference between the two groups based on post-operative analgesic requirement.

***Readmission rate***

Ghosh et al studied A total of 544 consecutive adult ureteroscopy for stone disease were conducted over the study period with a day-case rate of 77.7% There were 20 (4%) re- admissions from patients discharged within 24 h. Seventeen of 423 (4%) patients who were day cases were re-admitted whilst the three re-admissions were those discharged within 24 h. The most common reason accounting for re-admission was post-operative pain or stent-related pain, none of who required more than overnight stay. In these cases, early stent removal was arranged.[13] Re-admission rate of the 2 groups was analyzed statistically using chi-square test. 32% patients of URS with DJ stenting took re admission within 7 days due to pain/urinary retention/other urinary complaints in comparison to 4% patients in which solely URS procedure was performed. These results were compared statistically using chi-square test which showed p-value of 0.0272 stating that there is a significant difference between the two groups.

***Duration of hospital stay***

Crisci et al collected prospective data for 1 year on consecutive patients with ureteric or renal stones treated with URS at 114 centres around the world.[20] Patients that had had preoperative JJ stent placement were compared with those that did not. Mean (SD) LOHS (length Of hospital stay), days 3.6 (21.9); n=10353.2 (23.0); n=7 115. The present study also found that operative durations were longer in patients with ureteric or renal stones treated with a preoperative JJ stent, although the eventual LOHS was shortened in patients treated for ureteric stones. Previous studies by Netsch et al and Lumma et al also reported longer operative durations in stented patients.[21,22] A shorter total LOHS after the procedure in stented patients is a new finding that has not been described previously. In conclusion, the use of a DJ stent in ureteric stone treatment did not result in higher SFRs or lower complications and the operative duration was longer, but the LOHS was shorter. In our study, 76% patientsof URS with DJ Stenting in comparison to 32% patients in which solely URS procedure was performed had a hospital stay of >4 days; These results were compared statistically using chi- square test which showed p-value of 0.0045 stating that there is significant difference betweenthe two groups

***Delayed postoperative complications***

Ureteral stenosis (at 6 weeks): In our study, all patients were called for regular follow up around POD 10, and

after 3 weeks and 6 weeks. Both groups showed equal incidence of post-operative ureteral stenosis. All these cases were managed with DJ stenting for longer period in group B and the other group individuals were taken for DJ stent insertion. DJ stent related complications (encrustation/breakage/migration) (at 6 weeks): Akmal et al had 5 (5.10%) patients were unable to pass stone in group A and 2 (2.17%) in group B; p value was 0.284 and these 7 cases required repeat procedure.[11] There was DJ encrustation in 2 (2.17%) group B p value was 0.142. No DJ was broken and there was no forgotten DJ. In our study, no patient in group B( URS with DJ stenting) presented with any stent related complications (encrustation/migration/breakage) as stent removal was done in 6 weeks. Stone free rate (at 6 weeks): Crisci et al collected prospective data for 1 year on consecutive patients with ureteric or renal stones treated with URS at 114 centres around the world.[20] Patients that had had preoperative JJ stent placement were compared with those that did not. The use of a JJ stent in ureteric stone treatment did not result in higher SFRs or lower complications and the operative duration was longer, but the LOHS was shorter. Ghosh et al studied A total of 544 consecutive adult ureteroscopy for stone disease were conducted over the study period with a day-case rate of 77.7% overall SFR of 94.2% after URS treatment at follow-up, a rate similar to previous studies[13] and a day-case SFR of 95.4%. In our study Stone free rates were 92% in patients of URS with DJ Stenting in comparison to 88% in patients in which solely URS procedure was performed; These results were compared statistically using chi-square test which showed p value of 1.000 stating that there is no significant difference between the two groups.

### *Limitations*

Limitations of current study were; long term results of both groups were not analyzed as our study had postoperative follow up period upto 6 weeks only.

## CONCLUSION

In current study, we compared URS with and without DJ stenting in management of ureteric stones in 50 patients. URS without DJ stenting had less operative time, less postoperative complications like pain, requirement of analgesia, hematuria, UTI, dysuria, fever, less readmission rate & less hospital stay, same stone free rate compared to URS with DJ stenting but it requires higher surgical endoscopy skills with urological expertise. Thus, after adequate training, URS without DJ stenting can be recommended as a safe alternative procedure than URS with DJ stenting for management of ureteric stones.

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