Role of Ureteral Stenting in Patients Undergoing Intra-Corporial Pneumatic Lithotropsy for Mid and Distal Ureteric Stone

SHAMS UL ISLAM, WAJID ALI, HAFIZ ABDUL MOMIN. SABEEH UBAID

ABSTRACT

Background: It has been a popular and accepted surgical tradition to place a ureteral stent after performing ureterostomy especially when performing lithotripsy for ureteral calculi. However the use of stents is accompanied by significant morbidity including pain, infection, and irritable voiding symptoms.

Aim: To compare the outcome of stented vs non stented patients after lithotripsy for ureteric stone

Study design: Randomized control trial

Setting & duration: Department of Urology / Jinnah Hospital, Lahore. Six month.

Methodology: 250 subjects were included in our study and randomly divided into 2 groups. During procedure, Storzureteroscope with pneumatic lithoclast was used to fragment stones into pieces. Operative findings were noted down. After that, in Group A, 6 Fr DJ stent was placed, while patients in group B was managed without DJ stent. Patients were followed up for 12 week. Outcome was measured in terms of postoperative pain, analgesia requirement and stone clearance.

Results: Out of 250 cases (125 in each group), mean post-operative pain score at 12 weeks was recorded as 2.56±0.55 in Group-A and 2.11±0.61 in Group-B, comparison of stone clearance in both groups shows that 118(94.4%) in Group-A and 116(92.8%) in Group-B were had no stones, p value was 0.60, comparison of additional analgesia in both groups shows that 38(30.4%) in Group-A and 13(10.4%) in Group-B had requirement of additional analgesia whereas 87(69.6%) in Group-A and 112(89.6%) in Group-B no need of additional analgesia, p value was 0.0001.

Conclusion: There was insignificant difference in frequency of stone clearance and mean post-operative pain in stented v/s non-stented patients after URS and pneumatic lithotripsi for mid & distal ureteric stones.

Keywords: Mid & distal ureteric stone, URS & pneumatic lithotropsy, DJ stent, post-operative pain, analgesia

INTRODUCTION

Urolithiasis is a great challenge for urologists and its incidence is growing day by day. It is the 3rd most common illness of urinary tract after UTI and prostatic disorders. Calcium stones are usually found in 80% cases with renal stones while struvite stones found in 10-15% cases and uric acid stones in 5-10% cases only. There are other rare stones like cysteine, xanthine, glycine etc and they are usually associated with some underline metabolic error. Obstructive uropathy is a serious condition that occurs when stone obstructs passage of urine. Obstruction can occur at various levels like at renal pelvis, upper ureter or lower ureter. This effect is usually proportional to stone size. Sudden onset of severe, intermittent colicky pain radiating to groin, associated with nausea and vomiting is a hallmark of obstructive stones.

The treatment of ureteric stones ranges from watchful waiting to ureteroscopy (URS) with intra-corporial lithotripsy, extracorporeal shock waves lithotripsy, dormia basket extraction and ureterolithotomy. Nowadays URS has become the treatment of choice for managing ureteral stones, especially for mid and distal ones. The recent improvement in the ureteroscopes regarding reduction of the size of the scope, the better optical visualization and the improvement of durability together with the introduction of flexible ureteroscopes has made it an easier, safer and more efficient mode of treatment.

The rationale of this study was to assess the need for routine ureteral stenting after uncomplicated URS & pneumatic lithotripsi for mid & distal ureteric stones and impact of DJ stenting on patient morbidity. New evidence from international studies suggest that routine placement of DJ stent should be discouraged which has more complications as compared to non-stented patients.

The objective of the study was to compare the outcome of stented vs non stented URS & pneumatic lithotripsi for mid and distal ureteric stone

METHODOLOGY

This randomized control trial was conducted in the Department of Urology / Jinnah Hospital, Lahore during a period of six months

Inclusion Criteria:

- Age group 15-55 years
- Either gender
- Middle and distal stone size (radio-opaque shadow of size 8-20mm was categorized on X-Ray KUB. The part of ureter in front of superior and inferior sacroiliac joint is mid ureter and the part of ureter below the inferior sacroiliac joint up-to urinary bladder is distal ureter)

Exclusion Criteria:

- Solitary functioning kidney determined on ultrasonography.
- Previously operated case determined on history
- Bilateral ureteric stones determined on ultrasound KUB.
- Multiple (2 or more) ureteric stones determined on ultrasound KUB.
Data collection procedure: 250 subjects fulfilling the inclusion criteria were included in our study after approval from ethical committee and an informed consent. Subjects were randomly divided into 2 groups using a computer based random allocation procedure into group A and group B. Patients were admitted in ward through OPD after investigations. Fitness for general anesthesia was taken by concerned department. During procedure, Storz ureteroscope with pneumatic lithoclast was used to fragment stones into pieces. Operative findings were noted down (Performa attached). After that, in Group A, 6 Fr DJ stent was placed, while patients in group B was managed without DJ stent. Patients stayed in ward for 24-48 hours after the procedure and then discharge. Diclofenac sodium 50mg tablet was given for one month for pain management. Subjects were followed up at 1 week, 2 week, 4 week, 8 week and 12 week interval after the procedure. Outcome was measured in terms of postoperative pain (Measured by VAS score in both groups at 12th week postoperatively. Its range is 0-10 and pain increases as score increases.), analgesia requirement (Patients were advised tab diclofenac sodium 50 mg for pain relief for one week post-operatively and followed till 12 weeks) and stone clearance (determined by digital X-ray KUB at 12th week post operatively. No radio-opaque shadow on X-ray was taken as stone clearance) at 12th week of assessment.

Analysis procedure: The data was analyzed using SPSS version 17.0. Mean±SD was calculated for quantitative variables like age, post-operative VAS score at 12th week. Frequency and percentage was calculated for variables like gender, stone clearance and additional analgesia. Independent samples t-test was used to compare both groups for mean post-operative score and chi square test was used to compare the frequency of stone clearance and need for additional analgesia in both groups. A p-value <0.05 was considered as significant.

RESULTS

Age distribution of the patients was done, it shows that 33(26.4%) in Group-A and 31(24.8%) in Group-B were between 15-30 years age whereas 92(73.6%) in Group-A and 94(75.2%) in Group-B were between 31-55 years of age, mean±sd was calculated as 36.63±8.81 years in Group-A and 37.33±8.76 years in Group-B. Gender distribution shows that 66(52.8%) in Group-A and 63(50.4%) in Group-B were male whereas 59(47.2%) in Group-A and 62(49.6%) in Group-B were females (Table 1).

Mean post-operative pain score at 12 weeks was recorded as 2.56±0.55 in Group-A and 2.11±0.61 in Group-B, p value 0.0001. Comparison of stone clearance in both groups shows that 118(94.4%) in Group-A and 116(92.8%) in Group-B were had no stones whereas rest of 7(5.6%) in Group-A and 9(7.2%) in Group-B were not cleared, p value was 0.60. Comparison of additional analgesia in both groups shows that 38(30.4%) in Group-A and 13(10.4%) in Group-B had requirement of additional analgesia whereas 87(69.6%) in Group-A and 112(89.6%) in Group-B no need of additional analgesia, p value was 0.0001 (Table 2).

DISCUSSION

In most of the cases ureteroscopy is completed without the need of stenting the ureter by a double j (DJ) catheter. In some cases it is mandatory to stent, while the question remains to be addressed if it is necessary to insert a DJ catheter after all ureteroscopic procedures. 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. However the use of stents is accompanied by significant morbidity including pain, infection, and irritative voiding symptoms.

The idea behind this study was to assess the need for routine ureteral stenting after uncomplicated URS & pneumatic lithotripsy for mid & distal ureteric stones and impact of DJ stenting on patient morbidity. New evidence from international studies suggest that routine placement of DJ stent should be discouraged which has more complications as compared to non-stented patients. No study has yet been done in our standing in light of new evidences. In our study, out of 250 cases (125 in each group), mean post-operative pain score at 12 weeks was recorded as 2.56±0.55 in Group-A and 2.11±0.61 in Group-B, comparison of stone clearance in both groups shows that 118(94.4%) in Group-A and 116(92.8%) in Group-B were had no stones, p value was 0.60, comparison of additional analgesia in both groups shows 38(30.4%) in Group-A and 13(10.4%) in Group-B had requirement of additional analgesia whereas 87(69.6%) in Group-A and 112(89.6%) in Group-B no need of additional analgesia, p value was 0.0001.

In a study by Rasool et al stone clearance at 24 hours post-operative was 67% in mid ureteric and 73%in lower ureteric stones, at one week 79% and 83%, at one month 87% and 92% among groups. The stented group had more complications and 18% patients of this group had irritative bladder symptoms. In a study by Chen et al showed that the stone-free rate was 100% in each group and preoperative hydronephrosis equally resolved in both groups. Mean pain score plus or minus standard deviation improved significantly in the non-stented (6.33 +/- 1.81 preoperatively to 2.30 +/- 1.93 postoperatively, p<0.0001) and stented (7.10 +/- 1.03 to 2.30 +/- 2.22, p < 0.0001).

Table 1: Baseline characteristics of patients (n=250)

<table>
<thead>
<tr>
<th>Age</th>
<th>Group-A (n=125)</th>
<th>Group-B (n=125)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>15-30 years</td>
<td>33</td>
<td>26.4</td>
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<tr>
<td>31-55 years</td>
<td>92</td>
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<tr>
<td>Total</td>
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</tr>
<tr>
<td>Age (years)</td>
<td>36.63±8.81</td>
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</tr>
<tr>
<td>Male</td>
<td>66</td>
<td>(52.8%)</td>
</tr>
<tr>
<td>Female</td>
<td>59</td>
<td>(47.2%)</td>
</tr>
</tbody>
</table>

Table 2: Comparison of outcome in both group at 12th week after treatment (n=250)

<table>
<thead>
<tr>
<th></th>
<th>Group-A</th>
<th>Group-B</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain score on VAS</td>
<td>2.56±0.55</td>
<td>2.11±0.61</td>
<td>0.0001</td>
</tr>
<tr>
<td>Stone clearance</td>
<td>118(94.4%)</td>
<td>116(92.8%)</td>
<td>0.60</td>
</tr>
<tr>
<td>Additional analgesia</td>
<td>38(30.4%)</td>
<td>13(10.4%)</td>
<td>0.0001</td>
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Role of Ureteral Stenting in Patients Undergoing Intra-Corporeal Pneumatic Lithotripsy

In summary, we found no significant difference between the post-operative pain score and stone clearance however additional usage of analgesia was significantly higher in stent group, we are of the view that further studies should be done by evaluating quality of life in patients undergoing ureteroscopy with stent.

CONCLUSION

We concluded that there is no significant difference in frequency of stone clearance and mean post-operative pain in stented v/s non-stented patients after URS and pneumatic lithotripsy for mid & distal ureteric stones, however, additional analgesia was used significantly higher in stented group as compared to non-stented.

REFERENCES