



## TUBELESS PER CUTANEOUS NEPHROLITHOTOMY WITH EXTERNALIZED URETERIC CATHETER AND DOUBLE J STENT- A COMPARATIVE STUDY

### Urology

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### ABSTRACT

**Aims And Objective;** To compare the outcome in terms of post operative complications between patients of tubeless PCNL with externalized ureteric catheter and Double J stent as drainage procedure. **Material And Methods;** It was a prospective comparative study conducted over 2 years. Group 1 included 41 patients in whom Double J stent was indwelled after tubeless PCNL and group 2 included 46 patients in whom externalized ureteric catheter was used. The complications were recorded and compared. Pearson Chi Square test was used to compare the data. **Results;** Stent related symptoms (24 vs 0) and urinary tract infections (6 vs 0) were significantly more in Group 1 patients as compared to group 2 patients (P-value 0.0001, and 0.0001 respectively). **Conclusion;** externalized ureteric catheter is better than double J stent in selected cases after tubeless PCNL as it avoids second procedure, decreases incidence of stent related symptoms and urinary tract infection.

### KEYWORDS

Tubeless PCNL, externalized Ureteric catheter, Double J stent

### INTRODUCTION;

Tubeless per cutaneous Nephrolithotomy (PCNL) was first introduced in 1984 by Wickham et al.<sup>[1]</sup> It has advantages over standard PCNL like lower length of hospital stay, analgesic requirement, and cost.<sup>[2]</sup> Previously it was thought that nephrostomy tube provides haemostasis along the tract, avoids urinary extravasation, and maintains adequate drainage of the kidney.<sup>[3]</sup> However, based on the concept that the purpose of the tube is only to maintain adequate drainage of the kidney, a 'tubeless' approach has been developed by placing a ureteral double J stent (DJS) or externalized ureteric catheter (EUC) to provide drainage after PCNL instead of a nephrostomy tube.<sup>[4]</sup> EUC after a tubeless PCNL is more beneficial than DJS as it reduces stent related symptoms, UTI and avoids another cystoscopic procedure and hence cost of the procedure. In near future, tubeless PCNL with EUC can be recommended as a standard of care in the management of selected cases of renal calculi.<sup>[5]</sup>

### MATERIAL AND METHODS;

It was a prospective study conducted over a period of two years where all tubeless PCNL were performed by a single surgeon. Both male and female patients between 18 and 60 years with renal calculi of size 3 cm or less were included. Patients, who required more than one percutaneous tract, having raised creatinine, staghorn calculus, solitary kidney, calculus in ectopic kidney, congenital anomalies such as horseshoe kidney, malrotated kidney, duplex moiety and who had a pelvic or calyceal injury, extravasation, bleeding during the procedure, incomplete stone clearance were excluded from the study. All patients underwent standard PCNL procedure by the subcostal approach under spinal anaesthesia. Total 86 patients were included and divided in two groups. In group 1 (41 patients) after Tubeless PCNL DJ stent was indwelled and in group 2 (45 patients) externalized Ureteric catheter was used for 18 to 24 hours and fixed with the catheter as shown in Fig.2. using 10 size stab knife to insert the ureteric catheter into Foley catheter. Both the groups were compared with respect to age, sex, operating time, intraoperative bleeding, urinary extravasation, Post operative irritative lower urinary tract symptoms (LUTS), and febrile UTI. The data was analysed by Chi Square Test using SPSS data analyzer. P-value of less than 0.05 was considered statistically significant.

### RESULTS;

Both the groups were comparable with respect to age, sex (2:1 male female ratio), operating time, intra operative bleeding and urinary extravasation (table 1). However DJ stent related LUTS (24 vs 0 patients) and febrile UTI (6 vs 0 patients) were statistically significant in group one patients as compared to group two patients (P-value 0.0001, table 1). In addition two patients among group 1 had retained stent and needed ureteroscopic removal under general anaesthesia.

Theses stents were stuck in renal parenchyma along the PCN track.

### DISCUSSION;

Tubeless PCNL was first introduced in 1984 by Wickham et al.<sup>[1]</sup> It has advantages over standard PCNL like lower length of hospital stay, analgesic requirement, and cost. Bellman et al.<sup>[6]</sup> in 1997 reported lower length of hospital stay, time to return to daily activities, analgesia requirements and cost in tubeless PCNL as compared to standard PCNL. Limb et al.<sup>[7]</sup> presented tubeless PCNL as a useful and safe method and Agarwal et al.<sup>[8]</sup> compared standard with tubeless PCNL and explained post-operative advantages of tubeless PCNL including reduced length of hospital stay, pain and urinary leakage. Putu Angga et al, in a study on Safety and Effectiveness of Externalized Ureteral Catheter in tubeless PCNL, concluded that tubeless PCNL is effective and safe in the absence of residual stones. Tubeless PCNL with EUC is associated with decreased pain, hospitalization time, and urine leakage compared with standard PCNL. However, it is only associated with decreased pain when compared with tubeless PCNL with DJ stent. They concluded that compared with DJS, EUC is also an effective alternative for patients with upper urinary stones in tubeless PCNL and could help patients by reducing stent-related discomfort and avoiding cystoscopy for DJS removal.<sup>[9]</sup> In another similar study Gonen M et al, concluded that the only statistically significant difference between the two groups was the postoperative stent-related symptoms. In DJS group 52.1% experienced some sort of stent-related symptoms out of which 16% needed anticholinergic medication. None of the patients in EUC group had stent-related symptoms (P < 0.01).<sup>[10]</sup> These results are consistent with our study where 24 patients out of 41 (58.5%) developed stent related LUTS as compared to none in group 2 patients. Goh and Wolf,<sup>[11]</sup> Lojanapiwat et al.<sup>[12]</sup> and Mouracade et al.<sup>[13]</sup> reported the placement of an external ureteric stent postoperatively in tubeless PCNL. Compared with a control group with routine placement of nephrostomy tubes, the tubeless group with ureteric catheter had significant reduction in the length of hospitalization and postoperative analgesic requirement. Karami et al.<sup>[14]</sup> reported their 5-year experience in 201 patients undergoing tubeless PCNL with only an externalized ureteral catheter, and concluded that it was a safe, effective, and economical option. Similar results were reported by Ashraf Abou-Elela et al.<sup>[15]</sup> in 128 patients and Gupta et al.<sup>[16]</sup> in a study of 69 patients. Gonen et al.<sup>[10]</sup> concluded that externalized ureteric catheter is as feasible as a DJ stent. Moreover, stent related discomfort and the need for postoperative cystoscopy to remove the DJ stent can be avoided with an externalized ureteric catheter.

### CONCLUSION;

In properly selected patients, tubeless PCNL with only an externalized ureteric catheter for 12 to 18 hours demonstrates significant advantages over tubeless PCNL with DJ stenting regarding post-

operative stent related morbidity, second operative procedure and cost of the procedure. In near future, tubeless PCNL with externalized ureteric catheter can be recommended as a standard of care in the management of selected cases of renal calculi.

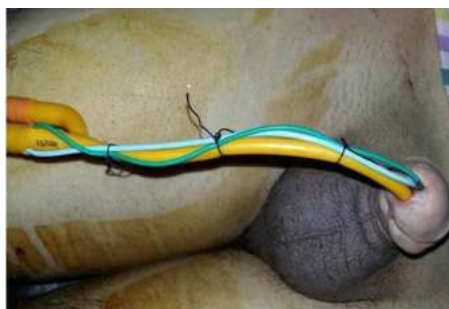
**Conflict of interest;** None

**Funding agency;** None

#### Legend To The Figures;



**Figure 1.** Showing bilateral externalized ureteric catheter after bilateral tubeless PCNL and complete clearance



**Figure 2.** Bilateral externalized ureteric catheters after bilateral tubeless PCNL and their fixation in Foley catheter using 10. NO surgical knife for stabbing the catheter

**Table; 1. Demography And Surgical Profile Of Patients**

|                          | Group 1 | Group | P-value |
|--------------------------|---------|-------|---------|
| Number of patients       | 41      | 45    | 1.000   |
| Male/female              | 2:1     | 2:1   | 1.000   |
| Leakage                  | 0       | 0     | 1.000   |
| Pleural effusion         | 0       | 0     | 1.000   |
| Bleeding/BT              | 1       | 1     | 1.000   |
| Stent related symptoms   | 24      | 0     | 0.0001  |
| UTI                      | 6       | 0     | 0.0001  |
| Hospital stay (mean-hrs) | 18      | 18    | 1.000   |
| Retained stent           | 2       | 0     | -       |

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