

ORIGINAL ARTICLE

Analysis of Use of Percutaneous Nephrostomy and Ureteral Stenting in Management of Ureteral Obstruction

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ABSTRACT

Introduction and objectives: The basic aim of the study is to analyze the use of percutaneous nephrostomy and ureteral stenting in management of ureteral obstruction.

Methodology of the study: This cross sectional study was conducted at Department of Urology, UCM, University of Lahore during January 2019 to October 2019. This study was done with the permission of ethical committee of hospital. There were 110 patients who selected for this study analysis. Enrollment criteria consisted of the need for unilateral or bilateral upper urinary tract diversion for at least 6 months. Either a PCN tube or an internal ureteral stent (e.g., double-J stent) was used for ureteral obstructions of various etiologies.

Results: There were 110 patients with mean age 60 years in this study. There were 66 patients with ureteral stents and 44 (40%) with PCN tubes. A smaller elevation in serum creatinine was noted in the PCN group (0.21 vs. 0.78 mg/dL, $p = 0.03$). Nine of 86 (10.4%) double-J stents were converted to PCN tubes during the study period. Residual hydronephrosis after decompression was more common in the stent group than in the PCN group (65.2% vs. 27.2%, $p = 0.01$).

Conclusion: It is concluded that Urinary diversion or decompression using PCN produced better preservation of renal function and lower incidences of complications in our study.

Key words: PCN, Hydronephrosis, Urinary, Renal, Function

INTRODUCTION

Urinary redirection is one of the approaches to oversee ureteral deterrents and is usually acted in our every day practice when the fundamental state of ureteral check can't be dispensed with in a brief period. When a metastatic injury influences a ureter, the resultant check is truly challenging to fix and ought to thusly be drained [1]. The methodology of depleting pee, the alleged urinary redirection, can be either the utilization of an inside ureteral stent (e.g., a twofold J stent) or a percutaneous nephrostomy (PCN). Albeit both the methodologies save renal capacity, they contrast in numerous aspects [2].

Ureteral deterrent is a heterogeneous clinical substance, and it is frequently trying for the clinician to decide the ideal strategy for decompression. Threatening ureteral deterrent can emerge from characteristic urologic harm like prostate or bladder disease, or outward contribution from another essential danger, most regularly of gynecologic or colorectal origin [3]. The restorative objective of urinary seepage in harmful illness is to enough deplete the upper urinary parcels for indicative alleviation with support of renal capacity, permitting the inception of foundational treatment while limiting further urologic intervention [4], hospitalization and adverse consequence on the personal satisfaction. Then again, the etiology of harmless ureteral deterrent is for the most part a result of intraluminal pathology, for example, ureteropelvic intersection block, ureteral stones or ureteral stenosis [5]. Extraluminal harmless impediment can emerge from restricted mass impact of harmless cancers like uterine leiomyomas or retroperitoneal fibrosis. Harmless ureteral check brought about by ureteropelvic intersection block is principally made do with conclusive treatment of the basic condition [6].

Background of the study: New gathering framework decompression with retrograde situation of an in-staying JJ ureteric stent or a percutaneous nephrostomy (PCN) tube is viewed as the norm of care in patients with obstructive urolithiasis and sepsis [7]. A past little randomized preliminary showed identical momentary results for every treatment strategy in patients with obstructive urolithiasis and indications of contamination; notwithstanding, the examples of utilization and relative results for JJ stent position and PCN have not been described in a contemporary series [8].

Aims and objectives: The basic aim of the study is to analyze the use of percutaneous nephrostomy and ureteral stenting in management of ureteral obstruction.

Methodology of the study: This cross sectional study was conducted at Department of Urology, UCM, University of Lahore during January 2019 to October 2019. This study was done with the permission of ethical committee of hospital. There were 110 patients who selected for this study analysis.

Data collection: There were 110 patients were remembered for this review. Enlistment standards comprised of the requirement for one-sided or respective upper urinary lot redirection for no less than a half year. Either a PCN tube or an interior ureteral stent (e.g., twofold J stent) was utilized for ureteral checks of different etiologies.

Study Design : In the stent bunch, the impeded ureters were stented with 6-Fr catheters under cystoscopy. In the PCN bunch, radiologists played out the systems under ultrasonographic direction. In all cases, 6-Fr nephrostomy catheters were set up. In our training, either PCN cylinders or twofold J stents were saved for a maximal time of 90 days, and afterward substitution was required. The

cylinders were likewise supplanted when impediments or diseases were noticed clinically. The models for intense pyelonephritis were met when fever, spinal pain, and a positive pee culture introduced together.

Exclusion criteria

1. Cases of stone-related hydronephrosis were excluded from this study.
2. Patients with coagulopathy
3. CRF patients

Statistical analysis: Statistical analysis was performed with commercial computer software (SPSS version 15; SPSS Inc., Chicago, IL, USA). Statistical significance was set at $p < 0.05$.

RESULTS

There were 110 patients with mean age 60 years in this review. There were 66 patients with ureteral stents and 44 (40%) with PCN tubes. The mean length of redirection was 16.8 ± 8.6 months in the stent bunch versus 14.1 ± 6.7 months in the PCN bunch ($p = 0.067$). Segment data shows that general age of the two gatherings varied essentially (60.8 versus 67.8 years, $p = 0.004$); more youthful patients would in general get ureteral stenting as the treatment (table 01).

Table 01: Demographic characteristics of selected patients

Variable	Ureteral stent	Percutaneous nephrostomy	p
Total (n)	66	44	
Mean age (y)	60.8	67.8	0.043
Age ≥ 65 y (n, %)	24 (36.4)	26 (59.1)	
Age < 65 y (n, %)	42 (63.6)	18 (40.9)	
Gender (n, %)			
Male	25 (37.9)	22 (50)	
Female	41 (62.1)	22 (50)	
Laterality (n, %)			0.22
Left	23 (34.8)	14 (31.8)	
Right	23 (34.8)	14 (31.8)	
Both	20 (30.4)	16 (36.4)	
Duration of diversion (mean \pm SD mo)	16.8 ± 8.6	14.1 ± 6.7	0.067
Stricture level (n)			
Upper	17	13	
Middle	5	13	
Lower	44	18	

Table 02: Causes of Obstructive Uropathy

Causes	No. of patients	%age
Stone disease	75	75.0
• Renal	40	40.0
• Ureteric	25	25.0
• Renal + Ureteric	10	10.0
Carcinomas	20	20.0
• Urinary Bladder	03	3.0
• Prostate	02	2.0
• Cervix	05	5.0
• Others	10	10.0
Pyonephrosis	03	3.0
PUJ Obstruction	02	2.0

followed by other causes i.e. carcinomas, pyonephrosis and PUJ obstruction as shown in table 02.

Figure 01: Graphical presentation of causes of Obstructive Uropathy

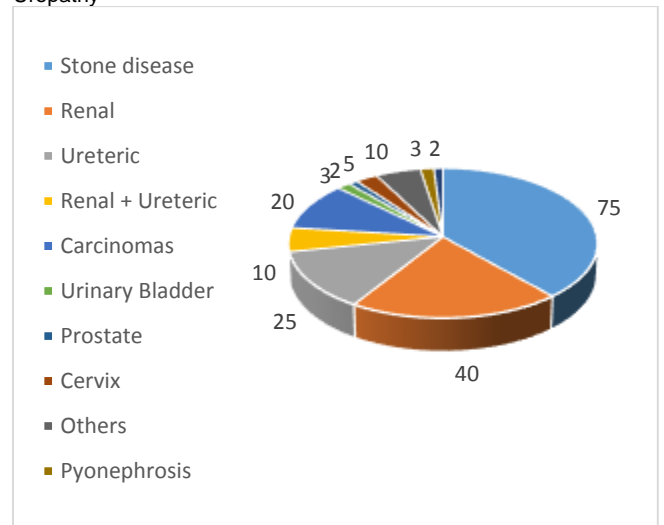


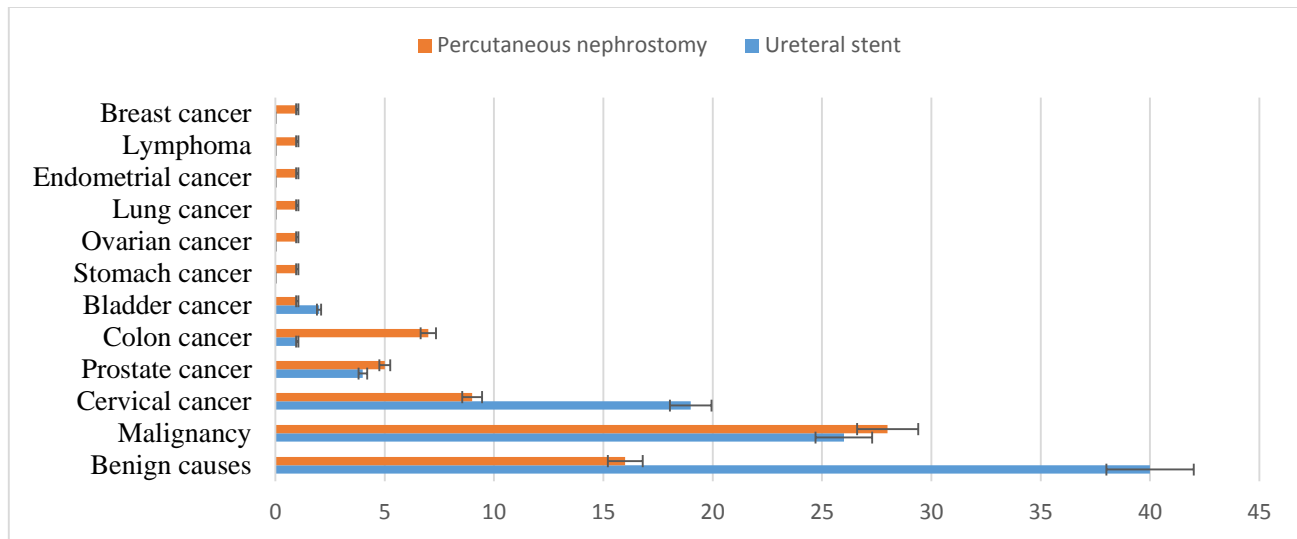
Table 03: Primary cause of ureteral obstruction.

	Ureteral stent	Percutaneous nephrostomy
Benign causes	40	16
Malignancy	26	28
Cervical cancer	19	9
Prostate cancer	4	5
Colon cancer	1	7
Bladder cancer	2	1
Stomach cancer	0	1
Ovarian cancer	0	1
Lung cancer	0	1
Endometrial cancer	0	1
Lymphoma	0	1
Breast cancer	0	1

The most common cause of obstructive uropathy was stone disease i.e. renal, ureteric or both and 75.0% patients in group A and 65.0% in group B, presented with it

Regarding the etiology, 56 cases were of benign causes and 54 were due to a malignancy. Extensive ureteral injury was the most common cause requiring urinary diversion among the benign etiologies; cervical cancer was

the most common malignancy associated with ureteral obstructions.



DISCUSSION

Three terms are utilized to depict an infection as an outcome of urinary lot deterrent: obstructive uropathy, obstructive nephropathy and hydronephrosis, yet each in various meaning. On the off chance that ureteral dilatation because of disabled progression of pee is related with renal parenchymal harm, it is depicted as obstructive uropathy [9]. It is a conceivably dangerous condition and once in a while it is alluring to give prompt transitory help of the hindrance, until conclusive treatment can be undertaken [10]. Cystoscopy with retrograde catheterization and percutaneous nephrostomy (PCN), are two fundamental alternatives for impermanent urinary redirection with their own benefits and demerits [11].

Ureteral check was profoundly manageable to endoscopic ureteral stents in instances of harmless inborn deterrent, yet the occurrence of stent disappointment was fundamentally higher in instances of extraneous pressure, as was seen with most threatening diseases [12]. Retrograde inclusion of ureteral stents at last fizzled in 16–58% of patients whose ureteral blocks were expected to a malignancy [13]. Regardless of past excitement, metallic stents were additionally answered to have extensive disappointment paces of 38–48%. These patients then, at that point required a PCN or ureterostomy to accomplish sufficient diversion [14].

Albeit the seriousness of hydronephrosis itself isn't straightforwardly related to leftover renal capacity, more extreme hydronephrosis actually infers higher intrarenal pressure that can hamper renal function [15]. In our series, level of lingering hydronephrosis after ureteral decompression was higher in patients who had gone through ureteral stenting (65.2% versus 27.2%) [16]. A little level of patients in the PCN bunch had gone through ureteral stenting at first, yet at last changed to PCN subsequent to discovering that their renal capacity had deteriorated [17].

CONCLUSION

It is concluded that Urinary diversion or decompression using PCN produced better preservation of renal function and lower incidences of complications in our study. Moreover, PCN is also proved to be a suitable modality for drainage of pyonephrosis and ureteric obstruction especially due to malignant disease of pelvic origin which can otherwise be highly fatal.

Contribution of authors: MH and SA: Conception and Design, acquisition of data, analysis and interpretation of data.

SM: Acquisition of data, drafting and final approval of the manuscript.

MH and FI: Conception and Design, acquisition of data.

MA and SM: Critical revision of the manuscript.

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