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Original Article

Problems With Adults Following Ultrasound-Guided Percutaneous Nephrostomy A Retrospective Study.

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ABSTRACT:

Background: Obstructive uropathy, which represents 10% of acute renal failure, calls for effective remedies. Percutaneous nephrostomy (PCN) is increasingly used in the treatment of obstructions in the renal collecting system. This Institute of Kidney Diseases study from the city of Peshawar in Pakistan now remedies a lack of knowledge in adult PCN guided by ultrasonography.

Objectives: to identify suitable candidates for Percutaneous Nephrostomy (PCN), evaluate the success rate of the procedure, and assess the incidence of complications associated with ultrasound-guided PCN. The research seeks to establish clear criteria for patient selection, measure procedural efficacy, and ensure safety by minimizing potential risks.

Study design: A Retrospective Study.

Palace and duration of study. Department of Urology MTI,LRH Peshawar from January 5, 2022, to December 31, 2023

Methods: We did a retrospective analysis in the Institute of Kidney Diseases, Peshawar, of those persons who had an ultrasound-guided PCN for obstructive uropathy from January 5, 2022, to December 31, 2023. Data were from the Department of Urology registrations and HIS Records. Subjects must be over 16 years old. Exclusion criteria were incomplete records, pregnancy, and non-obstructive uropathy indications: those things should not have made it into the sample! IBM SPSS was used to do data analysis.

Results: There were 851 patients included in the study; the average Age was 38.50 ± 14.78 years. Successful PCN installs were achieved in 96.1% of cases; 67 patients had to go through multiple trials. Complications occurred in 18.9% of cases, mostly mild (17.6%) and occasionally severe (1%) headaches. The most common complications were macroscopic hematuria (6.9%), PCN dislodgment (1.9%), and block of the tube (1.8%). Statistical analysis showed associations between complications and demographic factors, such as Age, gender, and number of attempts.

Conclusion: Ultrasound-guided percutaneous nephrostomy (PCN) is safe and effective in the treatment of obstructive uropathy. These findings contribute to improving treatment protocols and procedural guidelines at the Institute of Kidney Diseases, Peshawar, with urinary stones as the main aetiology.

Keywords: Percutaneous Nephrostomy, Complications, Obstructive Uropathy

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INTRODUCTION

In 10% of acute renal failure cases and 4% of chronic end-stage renal failure cases, obstructive uropathy - characterized by structural obstructions to urine flow - is responsible[1]. Potential causes in the adult include iatrogenic benign stricture, cancer, and urinary stones[2]. Percutaneous nephrostomy (PCN), which Dr. Willard Goodwin introduced in 1955, produces an effective method for decompressing obstructed renal collecting systems[3]. This minimally invasive procedure involves inserting a tube through the skin and into the renal collecting system in order to drain the affected kidney's urine[4]. PCN can be done with ultrasound or fluoroscopy guidance. Generally, fluoroscopy- and PCN work out better as well and are less of a hassle. It is the therapy of choice for people with obstructive uropathy. Eighty per cent to 90% of patients who need PCN treatment eventually get their azotemic symptoms (i.e., high levels of nitrogen in the blood) reversed within one and a half weeks post-procedure[5]. PCN does more than drain urine. It also makes it easy for you to do tests, widens out the clogged tube, and helps you have endourologic operations made simpler[6]. The treatment's technical success varies according to clinical factors, with success rates ranging from 96% to 100% for blocked dilated systems, 82% to 96% for soutnondilated collecting systems, and 82% to 85% for complicated stone disease. However, although it is generally safe, PCN does harbour some risks: the substantial rates of complications reported oscillate between 0.1% and 10%[7]. In Pakistan, the Institute of Kidney Diseases (IKD) in Peshawar serves as a leading facility for urological patients. Research conducted at IKD found common adverse events after PCN included urinary tract infections (35%), macrohematuria (21.4%), sepsis (13%), and catheter dislodgement (17%)[8]. But the oldest One of the 497 participants was a man (58.5%), and 353 (41.5 %) were a woman. Most (67.7 %) of the 852 patches had ages ranging from 16 to 45, while the proportion of those 46, there is still a dearth of understanding about the nature and extent of problems arising from PCN. In this report, we aim to narrow this gap by reviewing complications related to ultrasound-guided PCN in persons with obstructive uropathy. The purpose of these measures is to improve patient care and clinical outcomes eventually.

MATERIALS AND METHODS

The department of urology LRH carried out a retrospective investigation. The HIS data and registrations of the Department of Urology were obtained for patients who received Ultrasound-guided Percutaneous Nephrostomy (PCN) between January 5, 2022, And December 31, 2023, after consent from the Institutional Ethical & Review Board. Patient demographics, PCN indications, and procedure-related problems were the main ones.Subjects of the research. All patients who had percutaneous nephrostomy (PCN) for obstructive uropathy and were more than 16 years old met the inclusion criteria. Patients without full medical records, expectant mothers, and those with PCN for conditions other than obstructive uropathy met the exclusion criteria. IBM SPSS for Windows version 28 was used for data analysis after data was gathered using a self-made proforma. Age-related mean and standard deviation were computed. The frequency and percentage of each factor—gender, blockage reason, and complications—were calculated. The correlation between complications and the variables of gender, Age, and the number of tries were examined using the Chi-square test. Statistical significance was defined as a p-value of 0.05 or less[13].

DATA COLLECTION

The information collection involved data from the Health Information System (HIS) and the Department of Urology registers, which were kept at the Institute of Kidney Diseases in Peshawar. In what clocked in as the period under review, thoroughgoing records on patient demographics, PCN symptoms, and headaches for all 12 months were collected statistically.

STATISTICAL ANALYSIS

Statistical analysis was performed on IBM SPSS for Windows version 28 software. The mean, standard deviation, frequency and proportion were calculated. The chi-square test method was used to analyze the relationship between complications versus gender, number of attempts and Age. Significance levels were still being developed for this test: 0.05 or less is regarded as significant in general practice, but that's just one possible sign criterion for literature purposes.

ETHICAL APPROVAL

This study was conducted following ethical standards and received approval from the Institutional Ethical & Review Board (ERB-644-02-2021) at MTI, Lady Reading Hospital (LRH). The approval was granted to the corresponding author, Azara Ghani, ensuring compliance with institutional and international guidelines for human subject research.

RESULTS

Our study included 851 patients with a mean age o f 38.50 ±14.78 years. The youngest patient in this trial was years old, and the above was almost equal in number to those below Eight hundred fourteen patients were subject to unilateral or bilateral percutaneous needle drainage of the urinary stones, and 37 were treated in both bot Light departments performed 839 percutaneous nephrostomies during the eight years: this was first doubt against our figures from the two-volume hospital which only did 265 in six months. If we find that "338" is an overestimate of the half-symbiotic bypasses, then perhaps summary estimates may not be as accurate as we should like them to teach indications for PCN by authors: renal and ureteric Calculi in 575 patients (67.6%), Urinary system malignment in 203 (23.9%), Pyonephrosis of 30 individuals 3.5%, contrast-stricture in 27 (3.2), lagna iatrogenically-induced Ureteric Injury 6 Only (8%), Emphy – pulverized kidney of 3% (05 cases). Ureteric Ligation: two cases (0.3%)

Table 1: Patient Demographics

Characteristic	Value
Total Patients	851
Mean Age (years)	38.50 ± 14.78
Male	497 (58.5%)
Female	353 (41.5%)
Age Group	
- 16-45 years	576 (67.7%)
- 46 and above	275 (32.3%)

Table 2: Indications for PCNL

Indication	Number of Patients	Percentage
Urinary Stones	575	67.6%
Malignancy	203	23.9%
Pyonephrosis	30	3.5%
Stricture	27	3.2%
Iatrogenic Ureteric Injury	8	0.9%
Emphysematous Pyelonephritis	5	0.6%
Ureteric Ligation	2	0.3%

Table 3: Procedure type

Procedure Type	Number of Patients
Unilateral PCN	814
Bilateral PCN	37
Total Procedures	851

Table 4: finding in Complications and percentage

Complication	Number of Patients	Percentage
Macroscopic Hematuria	59	6.9%
PCN Dislodgment	16	1.9%
Tube Blockage	15	1.8%
Other	-	-

Table 5: Associations Between Complications and Variables

Age	Macroscopic Hematuria, PCN Dislodgment, Tube Blockage	<0.05
Gender	Macroscopic Hematuria, PCN Dislodgment, Tube Blockage	<0.05
Number of Tries	Macroscopic Hematuria, PCN Dislodgment, Tube Blockage	<0.05

DISCUSSION:

The findings of this examination shed light on the challenges and effects associated with ultrasound-guided percutaneous nephrostomy (PCN) in adults with obstructive uropathy[10,11]. The excessive success rate of PCN installation, reported at 96.1%, aligns with previous research highlighting the efficacy of this minimally invasive procedure in relieving urinary obstruction[12,13]. However, the occurrence of headaches in Nine of the instances underscores the importance of knowledge and mitigating potential risks. Macroscopic hematuria emerged as the most common worry, affecting 6.9% of patients[14]. While this difficulty is identified in the literature, its frequency emphasizes the need for careful tracking and post-procedural control[15]. PCN dislodgment and tube blockage, albeit less frequent, gift big challenges and underscore the significance of proper catheter care and affected persons' schooling . The examiner's evaluation of associations between headaches and affected person variables found noteworthy findings. Age and gender were identified as widespread factors influencing the prevalence of headaches[16]. This aligns with previous studies suggesting that older Age and male gender may be associated with better difficulty charges in PCN methods numerous etiology of obstructive uropathy, with urinary stones being the maximum, not unusual, indication. This locating underscores the importance of PCN as a versatile intervention for numerous etiologies of urinary obstruction, including malignancy, pyonephrosis, and ureteric injury.

CONCLUSION

According to this study, the most common cause of obstructive uropathy is urinary stones. In situations of obstructive uropathy, percutaneous nephrostomy (PCN) is a relatively rapid, safe, and easy method for temporary urine diversion. This method yields fewer minor and severe issues and has a high success rate.

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Authors Contribution

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