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ASSESSMENT OF SELF-CARE PRACTICES AND COMPLICATIONS AMONG PATIENTS WITH POST-OPERATIVE PCNL TUBE

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Abstract

Introduction: PNL is a safe and well-tolerated procedure for staghorn and large-volume renal calculi, upper tract calculi, difficult lower pole stones, cystine nephrolithiasis, and anatomically abnormal kidneys. The study was conducted with the aim of exploring the self-care practices and complications associated with PCNL among post-operative patients.

Methodology: A descriptive cross-sectional study was conducted in the tertiary care hospital of Peshawar, Pakistan, from October to December 2023. Data from 248 study participants was collected using a convenient sampling technique. Data was collected through a valid and reliable self-designed questionnaire that addressed self-care practices and postoperative complication. The data analysis was performed using SPSS 22, and the study was approved by the ethical review committee.

Results: The total number of participants was 248, with females being the majority at 129 (52%). The majority of patients (78.6%) perform hand washing and they remove old bandages during dressing changes. On the other side, the majority do not use gloves or anti-septic solution. However,

27% use sterile gauze, 29.8% keep bags lower, only 36.3% clean the bag and tube for urine collection, and only 29.8% empty bags after 2-3 hours. Infected wounds (40.7%), fever (46.2%), and pain (59.2%) were the most common complaints reported by the majority of the patients.

Conclusion: The study concluded that majority of the post-PCNL patient practices of were poor, while a good number of patient practices were satisfactory. Most patients reported infected wounds, fever, and pain, while little number reveals oozing, tube obstruction, transient hematuria, and dislodgement. Continuous educational programmes should be planned and offered on a regular basis for patients with PCNL.

Introduction

A widespread condition that affects people of all ages in a population is urolithiasis. Studies conducted in a variety of locations have revealed a progressive increase in upper tract stone disease incidence over the past 50 years [1-3]. Over time, nephrolithiasis incidence and prevalence have been observed to be rising in North America, Europe, and Asia. Renal stones are thought to affect 5 % to 10% of people in industrialized nations, with a 1% estimated incidence worldwide [4, 5]. Direct urine drainage from the upper urinary tract is made possible by a surgical incision called a nephrostomy, which creates a hole between the kidney and the skin when the normal flow of urine is interrupted. During a percutaneous nephrostomy, a catheter is placed into the renal collecting system with the assistance of a photograph [6]. Nephrostomy tubes are placed in the radiology or operating room to ease ureteric blockage or to provide permanent or temporary urine drainage following surgery. Irrigation of a nephrostomy tube is indicated if there is no pee in the drainage system, blood in the urine, or flank pain [7]. The first ever percutaneous nephrolithotomy (PCNL) was carried out in the early part of 1971. Worldwide, 5–15% of people suffer from the illness known as urinary stones. Historically, the primary surgical intervention was open surgery, although less invasive methods such as PCNL, ESWL, and URS (ureterorenoscopy) have taken its place[8].

PCN is a safe, minimally invasive technique when performed by a qualified professional. For the decompression of urinary obstruction, PCN is usually recommended for 85 to 90% of all nephrostomy installations. Nephrolithiasis, retroperitoneal fibrosis, pelvicalyceal cancer, and a number of urogenital and soft tissue cancers may be the cause of this illness. Nephrostomies are also required for certain diagnostic procedures, including ureteral perfusion tests and antegrade pyelography [9]. After a percutaneous nephrostomy, complications may include bleeding, Hematuria, infection, septicemia, urinoma, obstruction, catheter dislodgement, or post-obstructed diuresis. Complications requiring specialized care or extended hospital stays occur in 4-8% of PCNs [10]. The procedure's rate of complications has decreased due to advancements in technique and tools. Nevertheless, problems with percutaneous renal surgery are being described, including hemorrhage, which occurs in 1-23% of cases, intrathoracic complications, which occur in 2-12.5 % of cases, and other organ damage, which occur in fewer than 1% of instances[11]. Nephrostomy tubes with varying sizes are used to empty kidney and stop tamponade bleeding following a standard PCNL procedure[12]. In the past, a nephrostomy catheter is typically inserted for one to two days after PCNL is completed in order to facilitate urine flow, maintain homoeostasis, and promote healing at the location of the nephrostomy catheter [13]. It has been discovered that in order for patients to meet their treatment goals and make a significant contribution to the management of their condition, they must have adequate knowledge about their illness and self-care techniques [14]. Therefore the study was conducted to examine the self-care practices and complication associated with PCNL among post-operative patients.

Methodology

The study design was cross sectional descriptive which was conducted in the tertiary care hospital of Peshawar Pakistan from October to December 2023. The study population was patients that go through the procedure of PCNL and discharged from the hospital. The study sample size was

calculated through using the 6 months admission for PCNL procedure as the study population, then using 95% confidence level and 5% margin of error the sample size was 260, but 12 sample were excluded from analysis due to missing information using convenient sampling technique. Patient having age group 15 to 75 years, that go through the procedure of PCNL in one month and are willing to be the participant were the inclusion criteria, while patient plan for another procedure, mentally unstable or having serious complication after the procedure were excluded from the study.

Permission were taken from the urology department to contact discharged patients after surgery through telephone or an OPD during follow-up were approached for the data. The data collection process was completed in two steps: the first step contains the demographic data of the participants that are gender, age, marital status, employment status and duration of the PCN tube. Step 2 contains the self-care practices and complications of the patient. The self-care practices checklist and complication checklist were designed from literature and published work. A pilot study on 20 patients was conducted that reveals the kuder Richardson KR 20 (0.87), while the checklist was checked for validity from 2 expert urologist.

The self-care practices contain 9 items having dichotomous response performed or not-performed, while patient were assessed for 7 post-operative complains.

For data analysis SPSS 22 were used as descriptive and inferential statistics. The study was approved by ethical review committee, which informed consent was taken from each participants. The primary investigator assured that there is no risk for the patients, their identity will remain anonymity, and they can leave the study anytime.

Results

The total number of participants was 248, where females were 129 (52%) in gender, age group 51 and above 74 (29.8%), married 178 (71.8%), employees 141 (56.9%), and PCN tube having 1 to 3 days 104 (41.9%) were in higher numbers (see table 1).

Table 1: Demographic data of the participants				
	N-248	%		
Gender				
Male	119	48.0		
Female	129	52.0		
Age				
20 and below	19	7.7		
21 to 30 years	46	18.5		
31 to 40 years	64	25.8		
41 to 50 years	45	18.1		
51 and above	74	29.8		
Marital status				
single	70	28.2		
Married	178	71.8		
Employment status				
Employee	141	56.9		
Not_employee	107	43.1		
Duration of PCN tube				
1-3 days	104	41.9		
4 to 6 days	74	29.8		
1 week	20	8.1		
2 week	30	12.1		
3 week	20	8.1		

Self-care practices of PCNL patients

The maximum number of patients replied (78.6%) to the first step that they performed hand washing when handling PCN tubes, and in the second item, the majority of the patients (78.2%) removed old bandages during dressing changes. In the third item, a high number of patients (62.1%) responded that they do not use gloves, and the majority (80.6%) answered that they do not use anti-septic solution during dressing. A small number of patients (27%) used sterile gauze while handling the tube; a smaller number of patients (29.8%) kept the bag lower to prevent backing up urine; and only 36.3 percent of patients cleaned the bag and tube when removing the tube for urine collection. Only 29.8% of patients answered that they empty their bags after 2 to 3 hours, and a small number of patients (35.1%) use only 10 ml of normal saline for cleaning and flash. (see table 2).

Table 2: Self-care practices of patients regarding tube handling				
#	Items	Performed	Not performed	
1	I wash my hands when handling PCN tube	195 (78.6%)	53 (21.4%)	
2	I remove old bandages during dressing tube site	194 (78.2%)	54 (21.8%)	
3	I used gloves when change dressing of tube	94 (37.9%)	154 (62.1%)	
4	I used anti-septic solution for dressing	48 (19.4%)	200 (80.6%)	
5	I used sterile gauze pieces through anti-septic technique around the tube	67 (27%)	181 (73%)	
6	I keep drainage bag lower to prevent urine backing up	74 (29.8%)	174 (70.2%)	
7	I clean the tube and bag during removing it from tube to collect urine.	90 (36.3%)	158 (63.7%)	
8	I empty my bag after 2 to 3 hours	74 (29.8%)	174 (70.2%)	
9	I clean and flash the bag but not used more than 10 ml normal saline for flash	87 (35.1%)	161 (64.9%)	

Overall Self-care practices of post-PCNL patients

Figure 1 illustrates that majority of the patient practices was poor (59%), while (41%) practices was good. (See figure 1).



Complications among PCNL patients

Infected wounds (40.7%), fever (46.2%), and pain (59.2%) were the most common complaints among the majority of the patients, while oozing from the dressing site (22.2%), obstruction of the tube (16.6%), transient Hematuria (14.8%), and dislodgement (9.2%) were complaints among post-operative patients regarding the tube. (see table 3).

Table 3 Complications among post-PCNL patients				
Complication	Present	Not present		
Transient Hematuria	37 (14.8%)	211 (85.1%)		
Obstruction	40 (16.6%)	208 (83.8%)		
Dislodgement	23 (9.2%)	225 (90.7%)		
infected wound	101 (40.7%)	147 (59.2%)		
Fever	115 (46.2%)	133 (53.7%)		
Pain	147 (59.2%)	101 (40.7%)		
Oozing from dressing	55 (22.2%)	193 (77.7%)		

Discussion

The current study was conducted with the aim of evaluating the self-care practices of post-operative PCNL patients and their complications.

In the current study, the maximum number of patients performed hand washing before dressing (78.6%), while the majority of the patients (78.2%) removed old bandages during dressing. A high number of patients (62.1%) responded that they do not use gloves, and the majority (80.6%) answered that they do not use anti-septic solution during dressing. A small number of patients (27%) used sterile gauze while handling the tube; a smaller number of patients (29.8%) kept the bag lower to prevent backing up urine; and only 36.3 percent of patients cleaned the bag and tube when removing the tube for urine collection. Only 29.8% of patients answered that they empty their bags after 2 to 3 hours, and a small number of patients (35.1%) use only 10 ml of normal saline for cleaning and flash. Moreover, the majority of the patient practices were poor (59%), while 41% were good. This is due to a lack of knowledge and awareness among the participants. A study's findings were in line with our study: the majority of the patients in this study had inadequate levels of knowledge and PCN tube self-care practices, according to the study's findings. This conclusion may have been caused by the fact that a large percentage of the patients were ignorant and lived in rural areas [15]. Supporting our findings, a study conducted revealed that before the intervention, a minority of the study group (16.7% of the control group and 14.3% of the study group) had a satisfactory total knowledge score; however, the majority of the study group (78.6%) only had a satisfactory score.

Furthermore, after the intervention, the majority of the study group only had a satisfactory score of 73.8%, while the minority of the control and study groups, 19% and 21.4%, respectively, had satisfactory total self-care practices scores [16].

In the current study, infected wounds (40.7%), fever (46.2%), and pain (59.2%) were the most common complaints among the majority of the patients, while oozing from the dressing site (22.2%), obstruction of the tube (16.6%), transient hematuria (14.8%), and dislodgement (9.2%) were complaints among post-operative patients regarding the tube. A study conducted in Pakistan reveals that, as a result of the investigation, 174 (23.8%) complications in total were noted. The proportion of minor to significant difficulties was noted in accordance with this classification. A total of thirty patients (4.1%) had transfusions. Sepsis was experienced by 31/731 (4.2%) patients after PCNL [17]. Another study reported that, in total, 11.2% (26/232) of Group 1, 14% (12/86) of Group 2, and 10.2 % (5/49) of Group 3 patients in need of blood transfusion had intraoperative bleeding. Bleeding reacted to cautious actions. One patient (1.2%) in Group 2 had damage to the colon's adjacent organ on the right side; this patient died on the fifth postoperative day from acute sepsis. However, 6 (2.6%) patients in Group 1, 4 (4.7%) in Group 2 and 2 (4.1%) in Group 3 experienced pneumothorax and required chest drain installation. Patients with postoperative fever in 10.8% of Group 1, 15.1% of Group 2, and 12.2% of Group 3 were found to have pyelonephritis [18]. Retrospective research by Kumar et al. compared PCNL results across age groups. After PCNL, they noticed fever in 11.5% of their patients. While 9.76% had bleeding evident. However, 3.91 percent of patients required a blood transfusion. Of the patients, 0.98% had hydrothorax. Under local anesthesia, intercostal tube drainage was used to treat them [19]. A total of 21.5% of the 5,803

patients in an international multi-center study who underwent PNL experienced complications. The study used the modified Clavien approach for reporting problems, which was carried out by the Clinical Research of the Endourological Society (CROES). With rates of 11.1%, 5.3%, 3.6%, 0.5%, and 0.03% for grade I, II, III, IV, and V problems, respectively, the majority of complications were minor [20]. The most frequent mild complications were fever (10–30%) and nephrostomy tube leaking (15%) [20, 21–22].

The study has certain limitations and did not assess patient complications and self-care practices with respect to demographic variables. It was conducted in one tertiary care setting so its generalizability is limited. The study also does not address the severity of complications based on lived experiences or the factors that enhance the need detail unstructured interviews with patients.

Conclusion

The study concluded that the majority of the patient practices were poor, while the majority practiced hand washing and removing old bandages while handing PCN tube. Furthermore, infected wounds, fever, and pain were the most common complaints among the majority of the patients, while oozing from the dressing site, obstruction of the tube, transient Hematuria, and dislodgement were complaints among post-operative patients regarding the tube.

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