FREQUENCY OF COMPLICATIONS OF PERCUTANEOUS NEPHROSTOMY IN UPPER OBSTRUCTIVE UROPATHY

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ABSTRACT

Background: Ultrasound guided percutaneous nephrostomy may relieve the urinary tract obstruction but may have complications. **Objective:** To determine the frequency of complications of Ultrasound guided, percutaneous nephrostomy by seldinger technique for obstructive uropathy**. Methodology:** This was a descriptive cross-sectional study of 196 patients with obstructive uropathy who were treated with ultrasound guided percutaneous nephrostomy done by Seldinger's technique. The patients were followed up for 15 days for the complications like sepsis, hemorrhage, pleural effusion and displacement of catheter.Data was entered and analyzed by using SPSS version 14. **Results:** Sepsis occurred in 1 (0.51%), major hemorrhage in 1 (0.51%), minor hemorrhage in 3 (1.53%), pleural effusion in 1 (0.51%), displacement of PCN catheter in 11 (5.61%) and no complications occurred in 179 (91.33%) patients. **Conclusion:** The most common complications rate for the ultrasound guided percutaneous neprhostomy by Seldinger's technique are displacement of PCN catheter, hemorrhage and sepsis.

Key Words: Percutaneous nephrostomy, Ultrasound, Seldinger's technique, Complications.

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INTRODUCTION

Obstructive uropathy which is relatively common health problems, is the structural impedance to the flow of urine anywhere along the urinary tract leading to hydronephrosis which is the dilation of the renal pelvis and calyces.[1,2] Causes of urinary tract obstruction are age specific including, anatomic abnormalities (stenosis at the ureterovesical or ureteropelvic junction) account for the majority of cases in children. In comparison, calculi are most common in middle aged, whereas carcinoma, retroperitoneal or pelvic neoplasms, and calculi are the primary causes in older patients.[3,4] In the absence of removel of obstruction in the urinary tract, the patient's conditions will deteriorate at a fast rate through uremia, and water-electrolyte abnormalities with a consequent reduction of alertness and subsequent death.[5] Retrograde ureteral clearing with double-J ureteral stents is technique used for relieving these obstructions.[6,7] However, the retrograde ureteral stenting is not frequently possible in every patient due to the presence of anatomic deformities, bleeding or ureteral compression. On the other hand, percutaneous nephrostomy has an advantage of not any technical difficulties even in cases where the retrograde ureteral clearing has failed.[8]

The safety and efficacy of this procedure has been established using a variety of different imaging modalities including various combinations of computed tomography (CT), fluoroscopy, and ultrasound. This study was planned to assess the complications of percutaneous Nephrostomy in patients having upper urinary tract obstruction.

METHODOLOGY

This cross-sectional study was conducted at the Department of Urology & Renal Transplantation, Sheikh Zayed Hospital, Rahim Yar Khan from 1st March 2012 to 28th February 2013. Patients of age >12 years with vomiting, Oliguria/ anuria, serum Creatinine > 2mg/dl and radiological evidence of obstructive uropathy as hydronephrosis with or without hydroureter either on both sides or on one side with other absent kidney were included in the study. Patients with Sepsis due to other causes like steroids or diabetes mellitus and haematuria due to other causes were excluded.

After approval from Institutional Review Board, a total of 196 patients who fulfilled the inclusion/exclusion criteria admitted or referred to urology department from other departments were selected. All the relevant investigations like blood

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complete, urine examination, Hepatitis, B &C, Renal profile along with ultrasonography was done.

Percutaneous nephrostomy was started by using 1% lignocaine subcutaneously at the puncture site. Patients were given antibiotics pre-operatively. Local anesthesia was injected and a stab incision was given at the puncture site. Puncture needle of 18-gauge Chiba needle was inserted at the renal angle or at the posterior axillary line under ultrasound guidance. After confirmation of the needle in the kidney, the stylet was taken out. Urine or pus was drained with a disposable syringe. Soft end of floppy J guide wire was passed through the needle and the needle was removed. The tract was dilated with Teflon facial dilators more than the diameter of the nephrostomy tube. After tract dilation a pig tail nephrostomy tube was passed over the guide wire into the collecting system, secured with silk no. 1 and urinary bag was attached. An experienced consultant of more then 5 years of experience of PCN did procedures. Patients were observed for 15 days for of any complications like sepsis, haematuria, pleural effusion and displacement of PCN catheter. Data was entered and analyzed by SPSS Version-14.

RESULTS

The mean age of the patients was 36.40 ± 11.59 years. Table I shows age distribution of patients. There were 111 (56.6%) male and 85 (43.4%) female patients. Among the 196 patients, sepsis occurred in 1 (0.51%) patients, major hemorrhage in 1 (0.51%) minor hemorrhage in 3 (1.53%) pleural effusion in 1 (0.51%) displacement of PCN catheter in 11 (5.61%) and no complications occurred in 179 (91.33%) patients (Table II).

Table I: Distribution of patients according to age.

Age of patients (years)	No. of patients	Percentage
12 – 20	35	17.9
21 – 30	44	22.4
31 – 40	51	26
41 – 50	36	18.4
51 – 60	23	11.7
> 60	7	3.6

Table II: Complications of Percutaneous Nephrotomy.

Complications of PCN		No. of patients	Percentage
Sepsis		1	0.51
Hemorrhage	Major	1	0.51
	Minor	3	1.53
Pleural effusion		1	0.51
Displacement of PCN catheter		11	5.61
No Complications		179	91.33

DISCUSSION

This study was an experience regarding frequency of complications of Seldinger's technique at a tertiary care unit. This study included 196 patients with obstructive uropathy to determine the complications rate associated with this techniques. The results of this cross sectional survey were in favor of the technique with no complications in 91.33% patients. In literature, there are few other studies which were carried out at different setups utilizing this technique. The results of these studies vary.[9,10] Considering the demographic variables, the mean age of the patients in our study was 36 ± 11.59 years included all ranges of age. There was a male predominance. There were all range of the ages common in the study, however, majority were young. In a study by Mahmood T et al,[19] there were 55.7% male patients and 44.3% were female.

In our study, sepsis was observed in 0.51% patients, major hemorrhage in 0.51% patients, minor hemorrhage in 1.53% patients, pleural effusion in 0.51% patients, displacement of PCN catheter in 5.61% patients. In a study by Nishino A et al[12] using Seldinger technique among 15 patients with obstructive uropathy observed no case of minor or major complications. They did not documented any case of dislodgment which however, was the most common complication in our study. They used only a limited sample size of only 15 patients which may not be adequate to give a true picture of the outcome. Radecka E et al[13] also conducted a study on 558 patients of obstructive uropathy. There were 4% major complications including cardiac arrest, bleeding, and septicemia. There were 38% minor complications, including urinary tract infection, catheter dislodgement, catheter obstruction by debris, and urinary leakage. There were 14% of the procedures in whom the catheter placement was

followed by urinary tract infection, and in 14% catheters slipped out unintentionally. Like our study, the dislodgment was the most frequent complication. They observed only a limited number of patients affected with major complications. In another study by Karim R et al[14] conducted in 126 patients with obstructive uropathy while using a Seldinger's technique with a little modification, major complications were observed in 1.6% patients, minor complications in 11% patients and catheter related complications like catheter blockage or dislodgement were 13%. There was no procedure related mortality in our series. Carrafiello G et al[15] attempted Seldinger's technique in patients with obstructive uropathy due to malignancy and observed no case of sepsis in any of the case included in their study. Dislodgment of the catheter was observed in 10.70% patients in that study and no minor complications in any of the case.[15] In this study, we adopted the Seldinger's technique in our setup because it was safe, having less complication rate & required only local anaesthesia. The lower rate of the complications like sepsis was probably due to use of the prophylactic antibiotics. This study has limitation of being a single center study.

CONCLUSION

Displacement of percutaneous nephrostomy catheter, hemorrhage and sepsis were common complications, encountered after percutaneous nephrostomy. The frequency was low. So, the use of this technique is recommended in patients with obstructive uropathy.

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