The Journal of Medical Research

Research Article

JMR 2021; 7(3):79-82
May- June
ISSN:2395-7565

www.medicinearticle.com
Received:12-04-2021
Accepted:23-05-2021

Indications and outcomes of the percutaneous nephrostomy at Urology-Andrology Teaching Hospital of CNHU-HKM in Cotonou

Hodonou Fred[1], Chamutu Maheshe[2], Yevi Magloire[1], Agounkpe Michel Michael[3], Muhindo Valimungighe Moïse[4], Natchagande Gilles[3], Sossa Jean[3], Avakoudjo D.G Josué[5]

[1]Senior Lecturer at Urology-Andrology Teaching Hospital of CNHU-Cotonou, Abomey Calavi University, Republic of Benin

[2] Resident at Urology-Andrology Teaching Hospital of CNHU-Cotonou, Abomey Calavi University, Republic of Benin

[3] Lecturer at Urology-Andrology Teaching Hospital of CNHU-HKM in Cotonou, Abomey Calavi University, Godomey, Benin

[4] Resident in General surgery of CNHU-HKM in Cotonou, Abomey Calavi University, Republic of Benin and Faculty of Medicine in University Catholic of Graben, DRC

[5] Head, Department of Urology, Andrology Teaching Hospital /CNHU-HKM of Cotonou, Professor at Abomey Calavi, University and President, Beninese Society of Urology, Benin

Abstract

Background: The percutaneous nephrostomy constitutes a backup remedy allowing the derivation of urine and thus cancelling the emergency, while waiting for adequate etiological treatment. The objective of this study was to determine indications and outcomes of the percutaneous nephrostomy at Urology-Andrology Teaching Hospital of the National Centre Academic Hospital Hubert KOUTOUKOU MAGA (CNHU-HKM) of Cotonou. **Methods:** It was a retrospective study carried out from January 1st, 2016 to May 30, 2020. **Results:** The placement of nephrostomy tubes has been indicated in 15.26% of urine derivations for the obstruction of the upper urinary tract. The average age of patients was 54.85 years with extremes of 28 and 70 years. The two sexes are interested in the same proportion, 10 cases for each. The average consultation time is 31.4 days with the extremes of 5 and 90 days. The obstruction was bilateral in 19 cases on 20. The gynaecological cancers were majority with 9 cases follow-up of those of the colon (4 cases), of the bladder (3 cases) and of the prostate (3 cases). The drainage was unilateral in 18 cases out of 20. The mean blood creatinine rate is 145.52 mg/l with extremes of 10 and 436 mg/l. Blood creatinine rate was pathological in 19 of our patients; it has been ameliorated among patients having an elevated initial creatinine blood level but without reaching normal values in 18 out of 19 patients. The lowest rates of creatinine blood level have been reached after 10.33 days with extremes of 2 and 23 days. After the percutaneous nephrostomy, the surgical abstention has been decided in 13 cases, the dialysis had been done in 5 cases, the reimplantation + installation of the probe double J in 1 case and the chemotherapy in 1 case. The main reason of death of the patients having undergone the nephrostomy was the ionic disorders (13 cases out of 18) mainly the hyperkalemia and the hyponatremia followed of anemia (3 cases out of 18) and of the uremic coma (2 cases out of 18). The middle duration of hospitalization after the drainage was of 16.85 days, with extremes of 1 and 50 days. The death occurred at 18 out of 20 patients and the middle period of survival was 31.25 days with extremes of 1 to 60 days. **Conclusion:** The percutaneous nephrostomy remains the beneficial alternative for the derivation of the upper urinary tract instead of the double J installation. Popularization of percutaneous nephrostomy would reduce the morbidity and mortality linked to complications of obstructive syndrome of the upper urinary tract; hence the need for awareness for early urological consultation.

Keywords: Percutaneous nephrostomy (PCN), Retrospective study, Double J probe.

INTRODUCTION

A true technical revolution developed in the 1960s [1], percutaneous nephrostomy (NPC) constitutes a backup remedy allowing the derivation of urine and thus cancelling the emergency, while waiting for an adequate etiological treatment [2]. Simple gesture by well-trained hands under ultrasound control, it requires very little equipment and allows, in local anesthesia to puncture a kidney whose cavities are dilated or non-dilated [3].

Emergency percutaneous nephrostomy improves kidney function by 100% in cases of obstructive anuria [2]. It can be performed in the context of an emergency (oligoanuria, pyonephrosis, etc.), for a therapeutic purpose, but also to allow the diagnosis of a urological condition (opacification, etc.) or to provide information on the quality punctured kidney (measurement of creatinine clearance) and even in the context of palliative care [4]. The therapeutic failure of the installation of the JJ probe in our environment requires the use of a percutaneous nephrostomy for a rapid derivation of urine.

The absence of data motivates this work which will evaluate percutaneous nephrostomy through its indications as well as its outcomes and benefits in our workplace.

***Corresponding author:**
Dr. Muhindo Valimungighe Moise
Resident in General surgery of CNHU-HKM in Cotonou, Abomey Calavi University, Republic of Benin and Faculty of Medicine in University Catholic of Graben, DRC
Email: drmoisev[at]gmail.com

PATIENT AND METHODS

This was a retrospective study which took place at the Urology-Andrology Teaching Hospital of the Hubert Koutoukou Maga National teaching Hospital center (CNHU-HKM) of Cotonou during a period of 4 years and 5 months from January 1, 2016 to May 30, 2020.

Our study involved all patients who underwent a percutaneous nephrostomy under ultrasound control in first intention or after failure to climb a ureteral catheter.

The variables studied were: age, sex, etiology of the obstruction, the blood creatinine level before and after drainage, the duration of hospitalization after drainage, the type of drainage, evolution.

Patients with incomplete records and nephrostomy failures were excluded in our study.

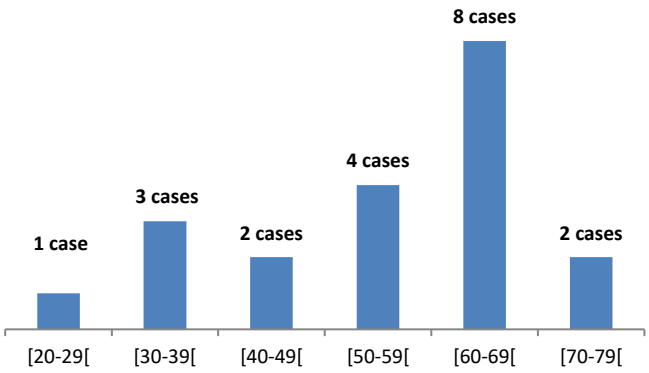
The data was collected on an individual collection form from hospital registers, medical records and the operating report.

After describing our study population, we used the mean and the percentage to interpret our results. However, to analyze the data, Epidata 3.1 software and Microsoft Excel 2013 were useful to us.

RESULTS

A total of 20 patients were included in our study. The placement of the nephrostomy tube represented 15.26% of the urine derivation unit for obstruction of the upper urinary tract performed at the Urology-Andrology Clinic (CUUA) of the Hubert Koutoukou Maga National teaching Center (CNHU-HKM) of Cotonou.

Distribution of patients by age



Graph 1: Distribution of patients by age

The average age of patients was 54.85 years with extremes of 28 and 70 years.

Distribution by gender

The two sexes are interested in the same proportion, 10 cases for each.

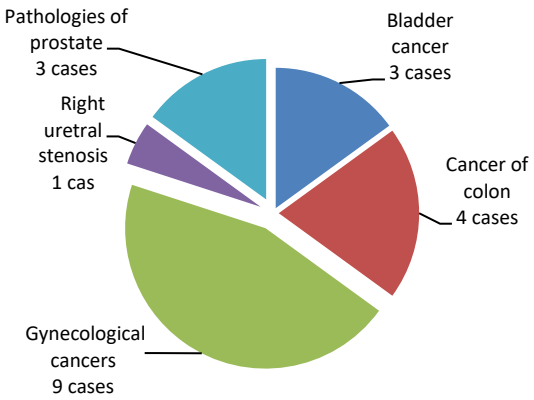
The consultation period

The average consultation time is 31.4 days with the extremes of 5 and 90 days.

The type of obstructive syndrome

The obstruction was bilateral in 19 out of 20 cases.

Percutaneous nephrostomy and etiologies



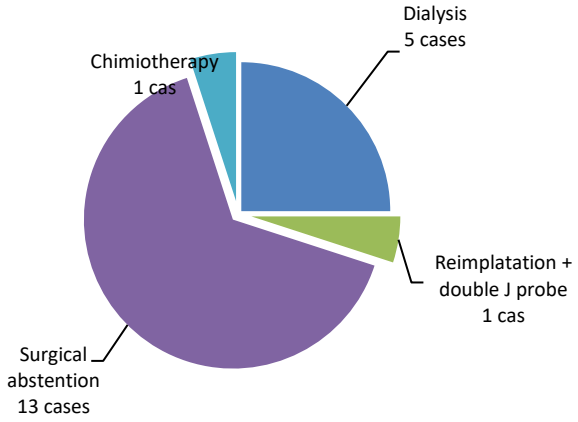
Graph 2: Distribution of patients by etiology

Gynecological cancers were the majority with 9 cases followed by those of the colon (4 cases), of the bladder (3 cases) and of the prostate (3 cases).

The type of drainage of the nephrostomy

Drainage was unilateral in 18 out of 20 cases.

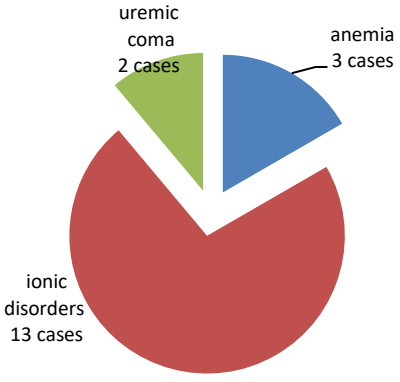
Treatment after nephrostomy



Graph 3: Treatment after percutaneous nephrostomy

After percutaneous nephrostomy, surgical abstention was decided in 13 cases, dialysis was done in 5 cases, reimplantation + installation of the double J probe in 1 case and chemotherapy in 1 case.

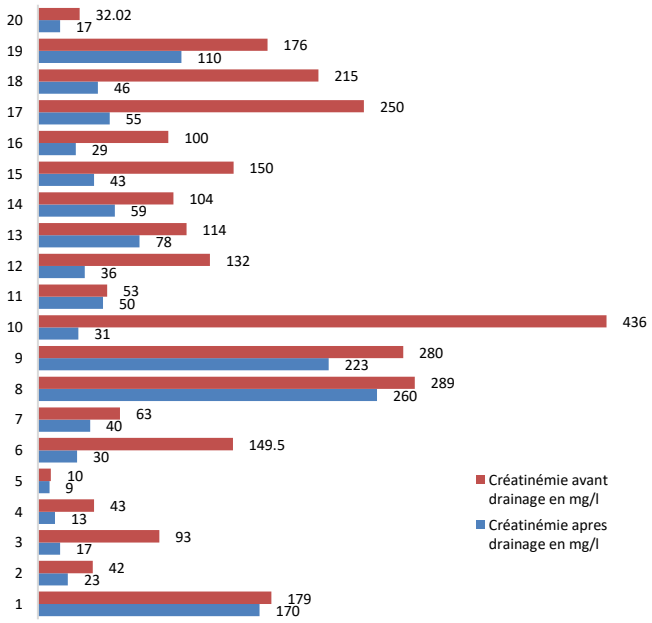
Percutaneous nephrostomy and cause of death



Graph 4: Treatment after percutaneous nephrostomy

The main cause of death in nephrostomy patients was ionic disorders (13 cases out of 18) mainly hyperkalemia and hyponatremia followed by anemia (3 cases out of 18) and coma uremic (2 cases out of 18).

The mean blood creatinine rate is 145.52 mg / l with extremes of 10 and 436 mg / l. Blood creatinine was pathological in 19 of our patients, it was ameliorated in all patients with high initial blood creatinine but without reaching normal values in 18 out of 19 patients. The lowest blood creatinine levels were reached after 10.33 days with extremes of 2 and 23 days.



Graph 5: Distribution of patients according to the creatinine level before and after the nephrostomy

Average duration of hospitalization

The average duration of hospitalization after drainage was 16.85 days, with extremes of 1 and 50 days.

Death occurred in 18 out of 20 patients and the average survival period was 31.25 days with extremes of 1 to 60 days.

DISCUSSION

The placement of the nephrostomy tube represented 15.26% of the urinary derivation set for obstruction of the upper urinary tract.

The average age of our patients was 54.85 years [28 and 70 years]. These results are similar to those of CARTER and al [5] who found an average age of 53.5 years [30 and 80 years]. The high prevalence at this age could be explained by the fact that it is the age of predilection for neoplastic pathologies and which are the first causes of obstruction of the upper urinary tract. In contrast, BAH and colleagues in their study [6], the average age of the patients was 25.2 years [14 months and 48 years]. This difference would be due to the fact that in the Guinean study the first causes were congenital obstructive malformations found mainly in young patients while in ours the main causes were tumors found more in adults

In our series, both sexes were interested in the same proportion. These results are congruent with those of WILSON and colleagues [7] but also of MALIK and colleagues [8] who all carried out studies on the role of nephrostomy in malignant ureteral obstruction, in which both sexes were represented in the same proportion. In contrast, the study done by DASSOULI and colleagues [2] found that men were the majority (61.90%). This difference would be due to the fact that in this Moroccan study the lithiasic cause was more frequent whereas in ours the tumor cause was the more found.

The average time before consultation, that means from the onset of symptoms to the realization of the nephrostomy was 31.4 days [5 and 90 days]. These results are superior to those of RAKOTOTIANA and colleagues [9] where the delay was 4.4 days. This could be explained by the fact that in our series the first causes were neoplastic and would cause progressive compression of the upper urinary tract and thus evolving slowly. On the other hand in the series of RAKOTOTIANA and all [9] where the main cause was lithiasis which evolves in a brutal and acute mode with nephritic colic.

Regarding the main indications for nephrostomy, gynaecological cancers were predominant, followed by those of the colon, bladder and prostate. These data are almost similar to those of MABROUK and colleagues [10] in which gynaecological cancers (39.24%), bladder cancer (37.97%), prostate cancer (19%).

It is the same reality for the study conducted by COLOMBEAU and colleagues [11] in which gynaecological cancers (35%) were mainly represented, followed by prostate cancer (25%), bladder cancer (23%) and digestive cancers (15%). This predominance of gynaecological tumors in the occurrence of upper urinary tract obstruction is linked to the difficulties of monitoring patients with gynaecological cancers. These difficulties would be due to the poor accessibility to care, whether financial or geographic.

On the other hand, our results are different with those of WILSON and colleagues [7], where the first cause was prostate cancer (28.12%), followed by bladder cancer (25%) and then cancers gynaecological (21.87%).

Also, our results are not comparable to those of RICHARD and colleagues [12] but also of TAZI and colleagues [13] in which the lithiasis represented respectively 59.36% and 58%, followed by the neoplasias 21.26% and 23, 25%.

This difference could be explained by the fact that in their study environments, the management of potentially obstructive tumor pathologies would benefit from prompt urological management (installation of preventive JJ probe) due to the accessibility to care in contrast to our country.

After percutaneous nephrostomy, surgical abstention was decided in 13 cases, dialysis was done in 5 cases, reimplantation + installation of the double J probe in 1 case and chemotherapy in 1 case.

These results are contrary to those found by BAH and colleagues [6] where after percutaneous nephrostomy, the use of the junction plasty was performed in 40% of cases, nephrectomy in 30%, uretero-vesical reimplantation in 10%, abstention from surgery in 10% and pyelolithotomy in 10%.

This would be due to the fact that in our study the patients arrive at the end stage of the disease, where the renal failure had already passed to chronicity.

Drainage was mostly unilateral. This result can be compared with the one of CARTER and colleagues [5] who found unilateral drainage in 71% of cases. This could be linked to poor financial means, discomfort and septic risk in the management of two catheters.

But these results are contrary to those of WILSON and colleagues [7], who found a unilateral derivation in 37.5% of cases.

The average duration of hospitalization after drainage was 16.85 days, with extremes of 1 and 50 days. This is lower than the results of KAMLESH and colleagues [14] and CARTER and colleagues [5] who found 31 days [10-102 days] and 44.3 days [4-206 days] respectively. This could be explained by the fact that in our series after percutaneous nephrostomy patients were referred to the palliative care service. However, the prolonged stay in the series of KAMLESH and all [14] and

of CARTER and colleagues [5] could be due to the fact that they would follow chemotherapy in the same department.

The average creatinine blood level was 145.52 mg / l with extremes of 10 and 436 mg / l in our study. These results are close to the series of MABROUK and colleagues [10] which found a rate of 139.04 mg / l. But our results are superior to those of COULIBALY and colleagues [15], which were 66.21 mg / l [25.18 and 308.9 mg / l]. This could be explained by the lack of routine medical check-ups following due to financial limitation and late referrals.

Creatinine was pathological in 19 cases before percutaneous nephrostomy. It was ameliorated in all patients after 10.33 days [2 and 23 days] but without reaching normal values in 18 cases out of 19. These results have the same direction with those of WILSON and colleagues [7], where the 16.8 days [1 and 76 days]. This trend could be explained by the fact that 19 cases in our series had neoplastic pathologies whose renal failure progressed at very slowly and whose renal parenchyma was well altered.

The death rate is 18 out of 20 cases, over an average period of 31.25 days [1 to 60 days]. All died as a result of complications from kidney failure, including ion disorders, anemia and uremic coma. This rate is higher than that of the COULIBALY and colleagues series [15] which found a death rate of 29.23% as a result of renal failure. This could be explained by the fact that in our study, the average creatinine blood level before drainage was 145.2 mg / l whereas in COULIBALY and colleagues [15] it was 66.21 mg / l. This would explain the state of deterioration of kidney function in our series.

The average survival period was 174 days with the extremes of 14 and 602 days in the series by LIENERT and colleagues [16]. This could be explained by the fact that in our series the drainage was bilateral in 2 out of 20 cases whereas in the LIENERT series [16], it was bilateral at 46%.

CONCLUSION

Percutaneous nephrostomy remains the beneficial alternative for the derivation of the upper urinary tract instead of the double J installation. Popularization of percutaneous nephrostomy would reduce the morbidity and mortality linked to complications of obstructive syndrome of the upper urinary tract; hence the need for awareness for early urological consultation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

Author's Contribution

CM: conception of the subject, data collection, analyzing and writing of the manuscript ; HF: supervision of the study and reading of the manuscript ; AMM, YMI, SJ, NG: Analysis and reading manuscript; MVM: writing and reading of the manuscript; ADGJ: writing of the manuscript and validation of the study.

REFERENCES

1. Goodwin WE, Casey WC, Woolf W. Percutaneous trocar (needle) nephrostomy in hydronephrosis. JAMA 1955; 157: 891-4.
2. Dassouli B, Benlemlih A, Joual A, Debbagh A, Skali K, Bennani S et al. Emergency percutaneous nephrostomy. About 42 cases, Ann Urol 2001; 35: 305-8.
3. Daghi M, Ramchandani P. Percutaneous nephrostomy: Technical aspects and indications. Semin Intervent Radiol 2011; 28: 425-37.
4. Tazi K, Karmouni T, Koutani A, Ibn Attya A, Hachimi M, Lakrissa A. Percutaneous nephrostomy: use of simple inexpensive equipment in emergency conditions in precarious situations, Ann Urol 2001; 35: 203-6.
5. Carter J, Ramirez C, Waugh R, Atkinson K, Coppleson M, Elliott P et al. Percutaneous Urinary Diversion in Gynecologic Oncology, Gynecologic oncology 1991; 40: 248-52.
6. Bah OR, Barry MII, Cisse D, Diallo A, Bah I, Guirassy S et al. Percutaneous ultrasound-guided nephrostomy at the Urology Department of Conakry University Hospital, Uro'Andro 2018; 1 (9): 415-9.
7. Wilson JR, Urwin GH, Stower MJ. The role of percutaneous nephrostomy in malignant ureteric obstruction, Ann R Coll Surg Engl 2005; 87: 21–4.
8. Malik HJ, Rajib AD, Kheo RD, Ashok KO, Imran AA. Role of Percutaneous Nephrostomy (PCN) in Malignant Ureteral Obstruction, J. Pak Med Assoc, 2010, 60 (4): 280-3.
9. Rakototiana AF, Ramorasata AJC, Rakotomena SD, Rantomalala YH. Obstructive anuria: about 42 consecutive cases, Anesthesia-Resuscitation and Emergency Medicine Review 2011; 3 (1): 32-4.
10. Mabrouk K, Izem A, Amer D, Mtioui N, Elkhayatt S, Zamd M et al. Obstructive anuria in urgent hemodialysis (5-year study), J. Nephro 2015; 07:14
11. Colombeau P, Thenot P, Suberville M. Anuria and pelvic cancer. J. Urol 1989; 95: 54-6.
12. Richard A. Watson, Esposito M, Richter F, Robert J. Irwin JR, Erich KL. Percutaneous nephrostomy as adjunct management in advanced upper urinary tract infection, UROLOGY 1999; 54: 234–39.
13. Tazi K, Moudouni SM, Karmouni T, Koutani A, Ibn Attyaa AA, Hachimi M et al. Percutaneous nephrostomy: indications, techniques and results. Retrospective study of 81 cases, Annales D'urologie, 2000; 34 (6): 391-397.
14. Kamlesh M, Ava D, Patel S, Meeta M, Kalpana D. Role of Percutaneous Nephrostomy in Advanced Cervical Carcinoma with Obstructive Uropathy: A Case Series, Indian Journal of Palliative Care 2009; 15: 1.
15. Coulibaly N, Koffi DJ, Yao H, Boka MD, Kouakou A, Akassimadou N et al. Obstruction of the upper urinary tract: circumstances of diagnosis and methods of drainage, Uro'Andro 2016; 1 (5): 148-51.
16. Lienert A, Andrew I, Mark S. Prognostic factors in malignant ureteric obstruction, BJU International 2009; 104: 938–41.