

ORIGINAL RESEARCH

Evaluation of the outcome of percutaneous nephrostomy in patients with carcinoma cervix with malignant obstructive uropathy in a tertiary care hospital of northeast India: A Retrospective Study

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ABSTRACT

Introduction: More than 70% cases of cervical cancer present in advanced stages of the disease, which are linked to a poor prognosis and significant fatality rates. Since many of them arrive with uremia due to obstructive uropathy, it is challenging to provide a conclusive course of treatment. Percutaneous nephrostomy (PCN) recommendations for patients with advanced cervical carcinoma are not well defined. The results of PCN are unpredictable in terms of recovery of renal function, quality of life, and benefits attained to administer the subsequent palliative care. Thus the aim of present study is to determine the outcome of PCN in cervical cancer patients presented with obstructive nephropathy secondary to malignant ureteral obstruction.

Material and methods: 72 patients of cervical cancer with obstructive uropathy and deranged renal functions were retrospectively evaluated for the role of PCN in their management conducted at Urology Unit, Department of General Surgery, Government Medical College, in collaboration with Regional cancer Centre (RCC), Agartala.

Results: PCN was done in 72 patients of advanced cervical cancer. 60 (83%) patients presented primarily with advanced cervical carcinoma and obstructive uropathy. 12 (16.6%) were already treated. Symptomatic improvement and significant fall of mean serum creatinine value from 7.7 mg% to 0.8 mg% over a period of 1-3 weeks was noted post PCN. Out of 60 patient with primary untreated advanced disease, curative treatment was possible in 12, palliative radiotherapy/chemo-therapy in 36 and only symptomatic treatment in 12 cases, after obstructive uropathy was managed with PCN insertion. PCN was done to prevent permanent kidney damage in them.

Conclusion: Despite certain unavoidable, but controllable, challenges, PCN is a straightforward and secure approach. One of the main advantages was that patients may receive either curative/palliative radiation or chemotherapy. Therefore, it is appropriate to try PCN in carefully chosen cervical cancer patients.

Keywords: Cervical cancer, Obstructive uropathy, Percutaneous nephrostomy

INTRODUCTION

Cervical cancer is the most common cancer in females. The incidence of cervical cancer in India is 32 per 100000 women. More than 85 % of these cases occur in developing countries due to lack of implementation campaigns aimed at cancer prevention, such as screening for early detection and vaccination for Human Papillomavirus (HPV) infection. In an institutional audit from India, approximately 40% of the patients present as stage III and stage IV (6%). Over 70 % of cases present in advanced stages of the disease and it is difficult to offer definitive treatment due to associated obstructive uropathy [1,2]. Advanced cervical cancer often presents with severe life-threatening complications such as renal failure, deep vein thrombosis, and hemorrhages. Urinary tract obstruction due to cervical cancer accounts for 11-44% of all complications [3]. Obstruction may progress into hydronephrosis and renal failure, both of which carry a poor prognosis in cervical cancer. Overall survival in advanced stages (III/IV) of cervical cancer with uraemia is less than 15-20% [4]. Urinary diversion in the form of percutaneous nephrostomy (PCN) is the commonly practiced procedure which improves renal function and the quality of life. There are no clear-cut guidelines for PCN in patients with cervical cancer. The results of PCN are unpredictable in terms of recovery of renal function, quality of life, and benefits attained to administer the subsequent palliative care [1]. The prevalence of cervical cancer in Tripura is 17.6 % with high mortality rate [5]. However, till date no published article has enlighten the role of PCN in cervical cancer from this part of North-Eastern state of Tripura. The present study aims to determine the outcome of PCN in cervical cancer patients presented with obstructive nephropathy secondary to malignant ureteral obstruction.

MATERIAL & METHODS

The retrospective study conducted at Urology Unit, Department of General Surgery, Government Medical College, Agartala in collaboration with the Regional Cancer Centre, Agartala from January 2015 to January 2022. Study population consist of patients with carcinoma cervix that were referred from Regional Cancer Centre, Agartala for urinary diversion in the form of percutaneous nephrostomy after considering inclusion and exclusion criteria. Ethical permission was taken from institutional ethical committee before commencement of the study. Patients who were a confirmed case of carcinoma cervix with features of both obstructive uropathy (ultrasound/CT scan findings of hydronephrosis) and deranged renal function (serum creatinine above 2 mg/dl) will be included in this study. Excluded subjects were those with deranged renal function without hydronephrosis, patients with coagulopathy, and advanced cases of carcinoma cervix with very poor performance status. Data was retrieved from the treatment register of the Urology and Regional Cancer Centre of Agartala between the time periods prescribed. A data sheet was completed with where patient's demographics, duration of symptoms, stage at presentation, laboratory parameters, imaging (USG/CT KUB and pelvis) findings, prior hemodialysis status, site of PCN (unilateral/bilateral), and post PCN complications will be recorded. Several pretreatment characteristics will be investigated and the outcome of PCN will be correlated. Data entry and analysis was performed on a computer using Statistical Package for the Social Sciences (SPSS) for Windows. Data is presented in the form of text, tables, charts, etc. The paired t-test was applied for testing the significance of the difference between different parameters before and after the PCN procedure. A p-value less than 0.05 are considered statistically significant.

RESULTS

Mean age of patients was 45.6 years (32-65 years). Patients were divided into Group A (Post-treatment) and Group B (untreated).

Twelve patients in Group A [Table 1] had previously undergone surgery or radiation therapy for their condition. Six had undergone adjuvant radiation after a radical hysterectomy. After completing therapy, she experienced bilateral hydronephrosis 4 months later. After receiving curative radiation, the other patients experienced right-sided unilateral gross hydronephrosis. There was no sign of recurring illness in either patient. To prevent irreversible kidney damage, they received PCN-treated urinary diversion therapy. After 14 days, the patient's retrograde trans-urethral ureteric D-J stenting was successful, allowing the PCN catheters to be taken out. D-J stenting was not an option for the patients, who got curative radiotherapy. They are still receiving PCN at the moment, and a permanent surgical diversion is planned for the future.

Type of treatment received and initial disease status	Number of patients	Duration between completion of treatment and obstructive uropathy (in months)	Disease status and further treatment
Curative radiotherapy Stage IIIb	6	4	No residual disease
Radical surgery followed by adjuvant radiotherapy Stage Ib2	6	4	No residual disease

Table 1- Description of patients developing obstructive uropathy after treatment of cervical cancer (Group A)

Sixty patients in Group B [Table 2] mostly had advanced carcinoma of the cervix that had not been treated, along with obstructive uropathy and abnormal renal function tests. Everybody had PCN. Following PCN, 12 patients received curative radiotherapy, 28 patients received palliative radiotherapy, and 8 patients received palliative chemotherapy. Only symptomatic treatment was administered to the final 12 patients in this group due to the disease's Stage IV state and their low performance level.

Treatment received after percutaneous nephrostomy	No. of patients	Specific treatment administered
Curative treatment	12	Curative radiotherapy
Palliative treatment	28	Palliative radiotherapy
	8	Palliative chemotherapy
Only symptomatic treatment	12	No specific treatment

Table 2- Description of untreated patients, presented primarily with advanced disease with obstructive uropathy (Group B)

In 60 patients (83.33%) there was bilateral ureteric obstruction, while in 12 patient (16.66%), there was unilateral block. In every case, the PCN approach was practical. In addition to the symptomatic improvement, it was observed that after PCN, the mean blood urea nitrogen value decreased significantly from 40.2 mg% (22-65 mg%) to 13.36 mg%(11.5-28 mg%) over a period of 1-3 weeks, and the mean serum creatinine value decreased significantly from 7.7 mg% (2.7-12.5 mg%) to 0.8 mg% (0.7-2.5 mg%). Due to the management of infection, re-insertions, diagnosis and assessment of disease state, and subsequent palliative or curative medication, the average length of hospital stay in the current study was 29 days (10-102 days).[Table 3]

Renal functions	Day-0 (mg/100ml)	Day-7 (mg/100ml)	Day-14 (mg/100ml)tt
Serum creatinine	7.7 (2.7-12.5)	1.3 (0.9-2.8)	0.8 m (0.7-2.5)
Blood urea nitrogen	40.2 (22-65)	14.25 (12-26)	13.36 (11.5-28)

Table 3-Description of renal functions parameters at various time periods

In 60 out of 72 patients' instances (83%), one or more problems were noted. Twelve (20%) individuals had unilaterally no urine output. Reinsertion was necessary in 42 (70%) of the instances. According on culture sensitivity data, infection was discovered in 12 (20%) of the cases and was appropriately treated with antibiotics. Urine leaks through the perinephric space or through the skin happened in 36 (60%) cases. Twelve (20%) patients had mild to moderate hemorrhagic urine, it was discovered. Frank pus was extracted from unilateral catheters in 6 (10%) of the patients. The majority of patients needed frequent catheter flushing to maintain patency and strict antiseptic dressings on local sites to avoid infections. Six out of twelve patients (50%) in group A (previously treated patients) were disease-free. In these patients who might be treated, PCN was done to prevent long-term renal impairment. 36 of the 60 (60%) patients in group B (the untreated group) got palliative radiation/chemotherapy. After tumour regression relieved ureteric obstruction, 12 out of 60 (20%) patients had curative treatment, followed by removal of PCN catheters.

DISCUSSION

Goodwin et al. published the initial description of PCN in 1955. [6] The degree and length of obstruction are the most crucial variables in determining the extent of renal function recovery. [7,8] Even after seven months of total obstruction in people, there have been reports of partial recovery and ceasing dialysis. [9] According to Michael Hopkins [10], Stage IIIB carcinoma of the cervix patients with hydronephrosis had a favourable prognosis. According to his research, the 5-year survival percentage for patients with normal IVP and no obstruction was 47%, whereas the rate for those with ureteric obstruction but not renal failure was 29%. In contrast, all patients with renal failure and ureteric blockage passed away within 16 months. Many cervical cancer patients in underdeveloped nations exhibit with obstructive uropathy with uremia and the possibility of impending permanent renal impairment. Since retrograde ureteric stenting is frequently not an option, percutaneous nephrostomy is very helpful in this circumstance. All 72 patients in the current trial were eligible for PCN, or 100%. Additionally, additional studies have revealed extremely low failure rates of 0-3%. [11,12] This shows that even though it's an intrusive operation, it's actually quite easy and doable. The only thing that prevents it is bleeding diathesis. In order to temporarily rectify renal function in an emergency, we chose bilateral PCN insertion over unilateral PCN or intraureteric catheterization. One-sided PCN was performed in just twelve post-radiotherapy patients with unilateral hydronephrosis. Hyppolite In his research on obstructive uropathy in gynaecological malignancies, Jean-Claude [13] discovered that bilateral nephrostomy is superior to unilateral nephrostomy and even intraureteric stenting. So much so that they advised against inserting an intraureteric catheter in cervical cancer patients since it was linked to an 86% incidence of urosepsis, which 43% of the time resulted in death. Manageable problems were detected in 83% of cases in the current study with PCN, which is nearly identical to the 62 to 83% described in prior investigations. [9,11] Literature reports showed a 29–60% reinsertion incidence. [13,14] In the current investigation, it was reported in 70% of cases. The ability to deliver tumor-specific treatment, such as curative radiotherapy in twelve cases and palliative radiotherapy/chemotherapy in thirty-six out of sixty untreated patients, was one of the most significant benefits of PCN insertion identified here. Another study also found similar benefits, though it involved fewer patients, with 32% of the patients living long enough to receive PCN followed by treatment directed at the primary tumor. In that study, PCN was found to be more beneficial for patients with cervical cancer than for those with bladder/prostate cancers and obstructive uropathy. [15] Compared to 60% of patients with advanced (Stage IIB) cancer stages, the majority of patients (93%) had this stage. 31% of the patients in Jonathan et al.'s [12] study on PCN in gynaecological malignancies were in the early stages of the disease. The increased percentage of individuals

with hydronephrosis in the early stages of the disease may result from the inclusion of gynaecological cancers other than cervical tumours. Six patients in our study had Stage IB1 and she also acquired hydronephrosis as a result of post-treatment fibrosis. Based on the availability of further definitive treatment alternatives, the decision to perform an invasive PCN in cervical cancer patients who come with abnormal renal functions as a result of obstructive uropathy should be made individually. Unquestionably, PCN serves as an emergency temporary therapy to prevent renal failure in previously treated individuals who have not experienced a recurrence. It enhances quality of life and lengthens survival in carefully chosen patients who primarily present with advanced disease by enabling tumor-specific treatment. By restoring abnormal kidney functioning, it makes palliative radiation or chemotherapy more tolerable. Even curative treatment with lengthy survival could be accomplished in a small but significant number of patients. Its function in recurrent or residual disease (when no additional tumor-directed treatment is available) appears to be debatable, nevertheless. When there is no other treatment available, it may be preferable to let the patient pass away gently from uremia rather of prolonging her misery and torment with future fistulae and neuropathic symptoms.

The majority of studies that are reported in the literature are retrospective, based on small samples, and not randomised. Therefore, in large sample based, randomised, prospective trials, the significance of PCN in management of obstructive uropathy in cervical malignancies actually needs to be characterised more correctly in terms of survival benefit or quality of life improvement.

CONCLUSION

In patients who had been treated and were expected to live a long time, PCN worked well as a temporary solution to preserve renal function until surgical diversion or retrograde stenting could be used. PCN proved successful in treating naive patients by enhancing renal function and, in many cases, enabling definitive treatment. When blockage was reduced by tumour regression, PCN could frequently be removed. The only advantage of PCN in patients with recurrence after completing final treatment and who initially presented with uremia is life extension. The function of PCN in such patients is debatable because there was no other conclusive course of treatment available even after PCN. Therefore, PCN is safe and practical and ought to be used in carefully chosen circumstances. In situations where it merely contributes to increase misery, it should be avoided. In the end, the patient's wishes must be honoured.

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