

Original Research Article

Role of Urinary Diversion in Optimization of Patients of Advanced Cervical Cancer with Obstructive Uropathy

Dr Sunirmal Choudhury¹, Dr Pritesh Jain², Dr Dilip Kumar Pal³

¹Assistant Professor, Department of Urology N R S Medical College, Kolkata-700014, India.

²Post doctoral trainee, Department of Urology Institute of Post Graduate Medical Education & Research, Kolkata-700020, India.

³Professor and Head, Institute of Post Graduate Medical Education & Research, Kolkata-700020, India.

***Corresponding author**

Dr Dilip Kumar Pal

Email: drdkpal@yahoo.co.in

Abstract: Ureteral obstruction in advanced cervical carcinoma can result in renal dysfunction or urosepsis which can restrict patients from receiving proper treatment. Objective of our study is to assess the efficacy of urinary diversion (internal or external) in the management of ureteral obstruction secondary to carcinoma cervix and its effect on patient's quality of life (QOL) after diversion. We retrospectively reviewed the data of the patients with advanced cervical carcinoma who had undergone some urinary diversion procedure for cervical cancer related obstructive uropathy. Improvement of renal function and quality of life was assessed. This study was done in department of urology from January 2011 to February 2017. Out of 54 such patients, urinary diversion was tried initially using double J (DJ) stenting in 47 patients and initial percutaneous nephrostomy (PCN) in 7 patients who had urosepsis. Among 47, placement of stent was successful only in 19 (40.4%) patients. In remaining 28 patients with failed stent placement, PCN was done. Among 19 patients with properly placed stent, functional failure occurred in 6 (31.6%) patients. In our study renal function improvement was evidenced by fall in serum creatinine level from an average of 4.98 mg/dl to 2.33 mg/dl. QOL improvement was seen in 68% of cases. Thus, palliative urinary diversion is effective in patients with obstructive uropathy complicated by advanced cervical malignancy as it results in significant improvement of renal function as well as QOL.

Keywords: carcinoma cervix, obstructive uropathy, double J stenting, percutaneous nephrostomy, quality of life.

INTRODUCTION

Ureteral obstruction in patients with advanced cervical carcinoma may result from direct tumour invasion, extrinsic compression by tumour or encasement of ureter by lymphadenopathy and rarely by direct metastasis [1-5]. Chemoradiotherapy associated retroperitoneal fibrosis may also be responsible for such uropathy[1]. Apart from aggravating the compromised state, it adds to the misery of patients with advanced cervical malignancy. Obstructive uropathy as a result of malignant ureteric obstruction is a common occurrence in advanced cervical carcinoma patients, which, if left untreated, is quickly a terminal event. Ureteral obstruction may lead to urosepsis and renal dysfunction, which compromises the oncologist's ability to prescribe appropriate chemotherapeutic drugs. Median survival rate of patients with malignant ureteral obstruction have

been found to be in range of 3.7 to 15.3 months [6]. Urinary diversion bypasses this obstruction, provides symptomatic relief, improves renal function thus allowing administration of suitable drugs ensuring prolong survival.

MATERIAL AND METHODS

Our study is a retrospective compilation and assessment of data of patients who had undergone urinary diversion procedure for obstructive uropathy in advanced cervical malignancy. This study was carried out in department of urology from January 2011 to February 2017. Patients of advanced cervical carcinoma which were referred to us with deranged renal function or which had symptoms associated with ureteric obstruction like flank pain, urosepsis were included. Initial urinary decompression was attempted by

retrograde double J stenting or ultrasound guided PCN placement. Success of ureteral decompression was defined by improvement in anatomical or biochemical parameters or symptomatic relief. Stents and PCN were replaced at regular intervals. Clinical history, mode of presentation, pre and post urinary diversion biochemical parameters, intervention related complications and improvement in QOL was assessed in all the patients. Quality of life was measured using four criteria as described by Grabstald and McPhee including (i) little or no pain; (ii) full mental capacity; (iii) few complications relating to urinary diversion; and (iv) the ability to return home for at least 2 months prior to death [7].

RESULTS

A total of 54 cases with advanced cervical carcinoma who had undergone urinary diversion during our study period, were evaluated. Bilateral urinary diversion was done in 36 cases whereas 18 patients required unilateral diversion. Out of 54 patients, 6 (11.1%) presented with urosepsis, 22 (40.7%) had asymptomatic rise of creatinine levels, while 26 (48.1%) patients had combination of various symptoms along with deranged renal function parameters [Table-1]. We initially attempted internal ureteral stenting in all patients except in seven patients (12.9%) with urosepsis, in whom PCN was done. Out of 47 patients in whom urosepsis was absent, internal stenting was

attempted, which was successful in 19 (40.4%) patients and in remaining 28 (59.6%) cases PCN tube placement was done (Figure 1). Out of 19 patients with successful stent placement, functional failure occurred in 6 (31.6%) patients. In these cases stent was removed and PCN was done. Table -2 depicts various variables along with pre and post diversion serum creatinine value. There was significant improvement in renal function in most of the patients ranging from an average creatinine value of 4.98 (Range 1.1-16) to 2.28 (Range 0.7-4.5). Patients with urosepsis responded quickly to PCN placement. Normalisation of renal function was seen in 44 (81.5%) patients who allowed oncologists to give chemotherapeutic drugs. The most common complication which was encountered after stent placement was urinary tract infection (UTI) followed by stent related symptom. Stent migration was encountered in three patients who was repositioned. Stents and PCN were regularly changed at an interval of 4-6 weeks. PCN was successfully contemplated in cases where it was required. Various complications encountered due to PCN were haematuria (8 patients), UTI (5 patients) and PCN dislodgement (2 patients). On assessment of quality of life, 68% satisfied the criteria for "useful life." In our series, regardless of the stage of cancer, quality of life was well-maintained in majority of the patients with urinary diversion.

Table-1: Presentation of patients with Obstructive Uropathy in advanced cervical malignancy.

Clinical Presentation	Number of Cases (%)
Urosepsis	6 (11.1)
Asymptomatic rise of creatinine	22 (40.7)
Deranged renal function with other symptoms*	26 (48.1)
	54

*Other complications include flank pain, persistent UTI and uremic symptoms.

Table-2: Representation of various variables of patients.

Variable	Mean (SD, Range)
Age (in years)	52.48 (6.97, 41-76)
Pre diversion creatinine value (in mg/dl)	4.98 (2.53,1.1-16)
Post diversion creatinine value	2.28 (2.72,0.7-4.5)

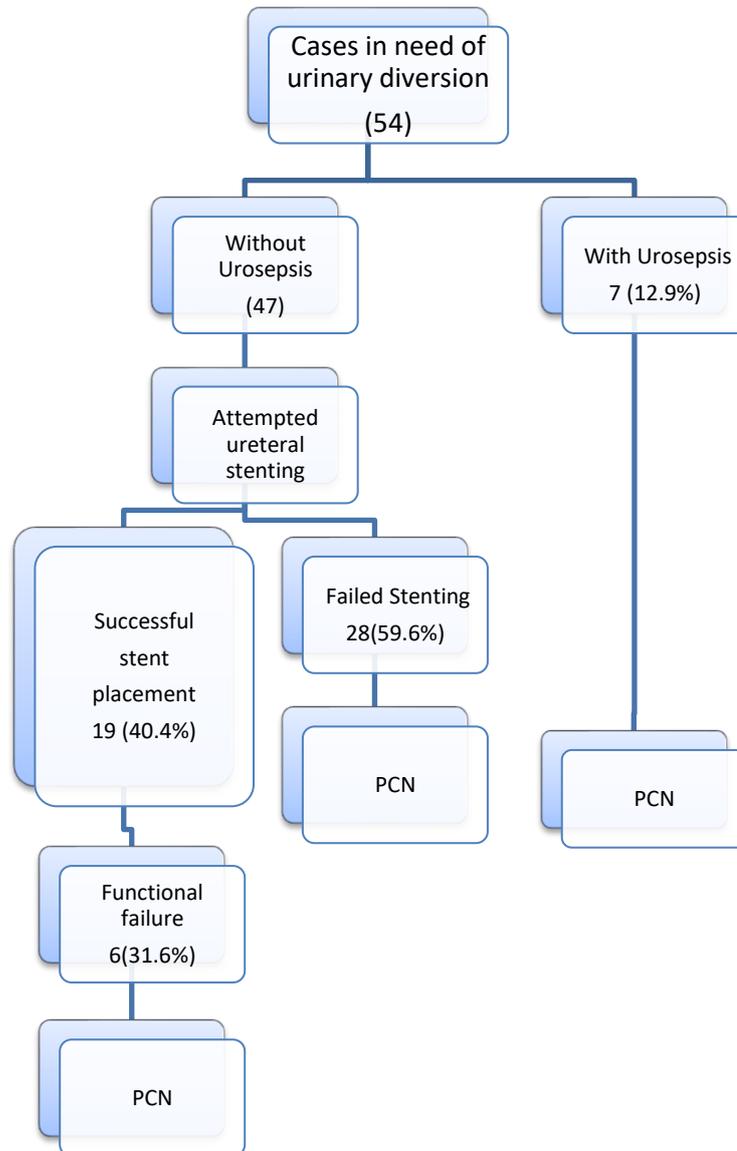


Fig-1: Urinary diversion in patients with advanced cervical malignancy.

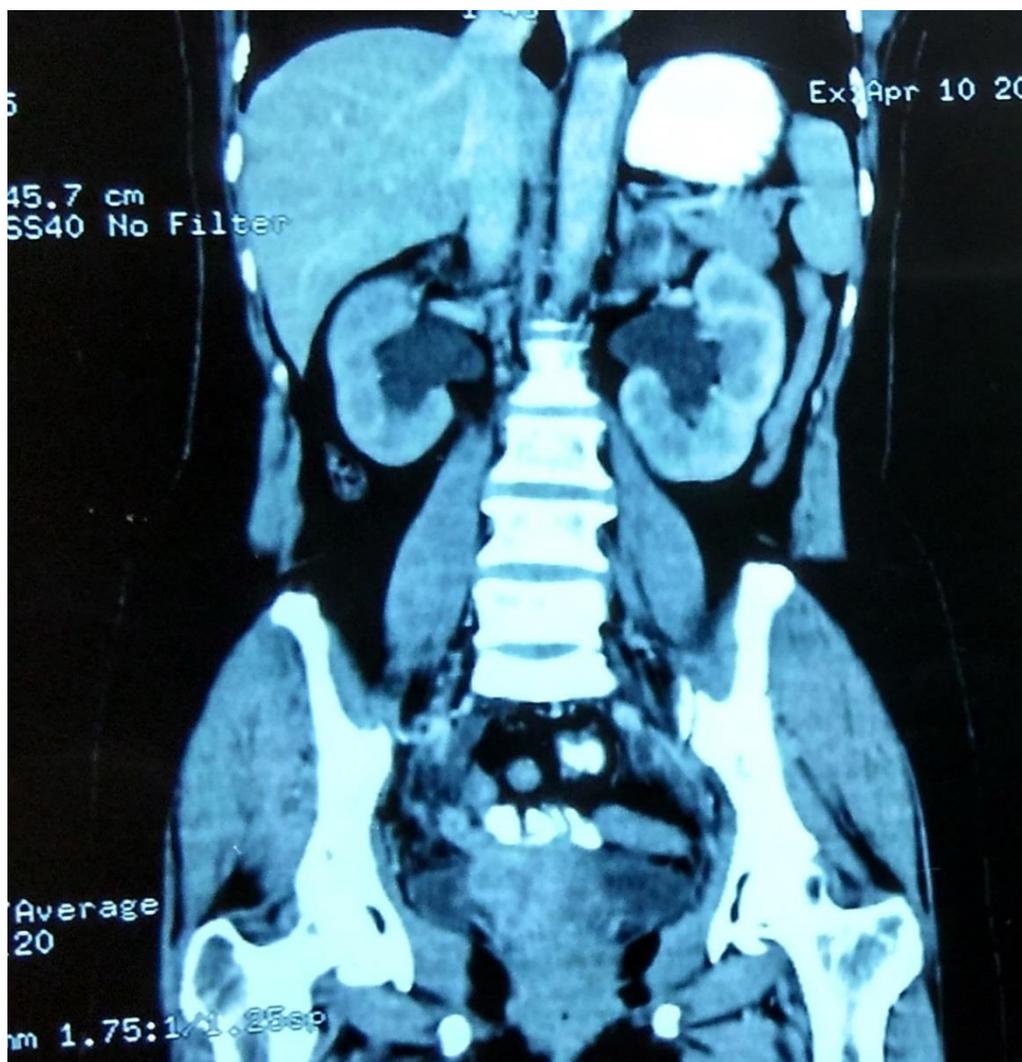


Fig-2: NCCT scan image of a 51 year old female depicting bilateral hydronephrosis with irregular soft tissue lesion in uterine area (Post hysterectomy cervical stump carcinoma).

DISCUSSION

Cervical cancer is a major cause of death specially in developing countries and is a public health concern worldwide [8,9]. It is the third most common cancer in women, with more than 85% of the global burden in developing countries, where it accounts for 13% of all female cancers [10]. Over the past few decades in the United States incidence of invasive cervical cancer has declined steadily however, it remains at high levels in many developing countries including India [11]. Among various complications associated with cervical malignancy, obstructive uropathy leads to further worsening of the condition. Various mechanisms that can lead to ureteral

obstruction in advanced cervical cancer patients includes direct compression of ureter by tumour, direct tumour invasion, retroperitoneal and pelvic lymphadenopathy etc. [1-3]. If the renal functional parameters are within normal limits abdominal contrast enhanced computed tomography, as a single modality, serves valuable in defining any extra ureteral pathology that may account for the obstruction in addition to functional assessment of the involved kidney (Figure 2). Presentation of patients with malignant ureteric obstruction is variable ranging from asymptomatic, flank pain, features of urosepsis to severe azotaemia. Obstructive uropathy leading to dyselectrolytemia and features of uraemia leads to rapid clinical and

biochemical deterioration in absence of decompression of system.

According to TNM staging, stage T3b and according to FIGO, 3b stage includes extension of tumour into pelvic wall and/or causes hydronephrosis or non-functioning kidney [12]. Palliative decompression of the obstructed urinary system includes antegrade and retrograde methods like internal ureteral stenting and PCN placement. These both methods are well recognised in improving renal function, with presumed low morbidity, and improve quality of life. A multidisciplinary approach is required for the treatment of advanced cervical carcinoma. Treatment option in advanced cancer stage (IB2, IIB–IV) usually includes combination Chemotherapy/ radiotherapy[13]. In patients with disseminated disease, chemotherapy or radiotherapy serves as palliation. Renal function is an important determinant in deciding treatment protocol. Others factors like performance status of the patient, the site of recurrence and/or metastases, the extent of metastatic disease, and prior treatment are also taken into account. In advanced stages purpose of receiving cancer treatment is mostly palliative, to achieve local control of the symptoms or to improve patient survival. The prognosis in patients with cervical cancer depends on the disease stage. In general, the 5-year survival rates are approximately 57 % when the cancer has regional spread, whereas 17% when cancer has distant spread [14]. The presence of ureteral obstruction and consequent renal failure has a significant adverse effect on survival in cervical carcinoma patients.

Major complications with ureteral stents are recurrent infection, displacement and blockage by encrustation. Other complications can include storage urinary symptoms like increased urgency and frequency of urination, haematuria, and discomfort in flank, suprapubic and groin region. In our study wherever cystoscopic placement of a ureteral stent was unsuccessful, or stent failed to functionally improve symptoms, antegrade placement of PCN catheter was performed. Goodwin first described this procedure in 1955 [15]. This procedure has success rate of more than 95% if proper technique is used. We were successful in placing PCN catheter in all the patients. In infected systems specially, PCN enjoys advantages like permitting sample collection and providing route for antibiotic instillation, thus it is preferred over stenting. In our study, seven patients with urosepsis were originally managed with PCN instead of stenting. Contraindications for percutaneous nephrostomy

include bleeding diathesis, severe hyperkalaemia and that should be corrected before the procedure [16]. PCN placement can be carried out under ultrasound, or conventional fluoroscopy or Computed tomography scan. For obvious reasons like feasibility and no radiation exposure, ultrasonography is preferred and also found to be comparable to fluoroscopy. In our study all PCN procedures were accomplished under USG guidance with 100% success. Major complications associated with PCN catheter placement include bleeding, UTI and injury to adjacent organs. Other complications include pain, extravasation of urine, catheter dislodgement etc [16]. Dislodgement of the nephrostomy tube is one of the avoidable complications by ensuring proper care of PCN tube.

Urinary drainage procedures, PCN or DJ stent are desirable, evidenced by symptomatic relief and enhancement of renal function as well as improvement in overall performance status of the patient. Since these procedures may be associated with unavoidable complications, they should be applied after weighing their risk of acquiring additional afflictions against the benefit of enduring chemotherapy or radiotherapy. Such decompression procedures should be avoided in terminally ill patients of advanced cancer. Clinician's responsibility remains in the form of enumerating possible benefits, associated complications, their impact on improving longevity of the patient, answering queries and providing potential treatment options. Ultimately, the burden of decision making remains on the patient and her family. Hence, our study may serve *sin qua non* in solving dilemma associated with decompression procedures. However, the prognosis generally remains poor even after decompression effort. As with all retrospective studies, our study too has its own limitations and thus findings should be interpreted with circumspection.

CONCLUSION

In advanced cases of cervical carcinoma with malignant ureteric obstruction, palliative urinary diversion may be performed and is effective in improving renal function and QOL in majority of the patients. But, it should be borne in mind that quality of life might be suboptimal besides long-term survival may remain limited even after decompression. Thus, it should be performed only after consent of the patient and care givers and after formulating and individualising proper management.

ACKNOWLEDGEMENT No conflict of interest relevant to this article was reported.

REFERENCES

1. Russo P. Urologic emergencies. In: DeVita VT Jr, Hellman S, Rosenberg SA, eds. Cancer: principles and practice of oncology. 4th ed. Philadelphia: JB Lippincott, 1992: 2161-63.
2. Montana GS, Fowler WC. Carcinoma of the cervix: analysis of bladder and rectal radiation dose and complications. *Int J Radiat Oncol Biol Phys* 1989;16:95-100.
3. Zadra JA, Jewett MA, Keresteci AG, Rankin JT, St Louis E, Grey RR et al. Nonoperativ urinary diversion for malignant ureteral obstruction. *Cancer* 1987;60:1353-57.
4. Holden S, McPhee M, Grabstald H. The rationale of urinary diversion in cancer patients. *J Urol* 1979;121:19-21.
5. Brin EN, Schiff M, Weiss RM. Palliative urinary diversion for pelvic malignancy. *J Urol* 1979; 113:619-22.
6. Yu SH, Ryu JG, Jeong SH, Hwang EC, Jang WS, Hwang IS, et al. Predicting factors for stent failure-free survival in patients with a malignant ureteral obstruction managed with ureteral stents. *Korean J Urol* 2013; 54:316e21.
7. Grabstald H, McPhee M: Nephrostomy and the cancer patient. *South Med J* 1973; 66:217–20.
8. Flores-Luna L, Salazar-Martinez E, Escudero-De los Rios P, Gonzalez-Lira G, Zamora-Munoz S, Lazcano-Ponce E. Prognostic factors related to cervical cancer survival in Mexican women. *Int J Gynaecol Obstet* 2001; 75: 33–42.
9. Franco EL, Duarte-Franco E, Ferenczy A. Cervical cancer: Epidemiology, prevention and the role of human papillomavirus infection. *CMAJ* 2001; 164: 1017–25.
10. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008, cancer incidence and mortality worldwide: IARC CancerBase No. 10 [Internet]. Lyon, France: International Agency for Research on Cancer. 2010 Jun; 2.
11. Solomon D, Breen N, McNeel T. Cervical cancer screening rates in the United States and the potential impact of implementation of screening guidelines. *CA Cancer J Clin.* 2007 Mar-Apr. 57(2):105-11.
12. Pecorelli S, Zigliani L, Odicino F. Revised FIGO staging for carcinoma of the cervix. *Int J Gynaecol Obstet.* 2009 May. 105(2):107-8.
13. National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology (NCCN guidelines): cervical cancer. Version 1.2016.
14. American Cancer Society: Cancer Facts and Figures 2017. Atlanta, Ga: American Cancer Society, 2017. Available online. Last accessed May 25, 2017.
15. Goodwin WE, Casey WC, Woolf W. Percutaneous trocar (needle) nephrostomy in hydronephrosis. *JAMA.* 1955. 157:891.
16. Hausegger KA, Portugaller HR. Percutaneous nephrostomy and antegrade ureteral stenting: technique-indications-complications. *Eur Radiol.* 2006 Sep. 16(9):2016-30.