

## Effect of percutaneous nephrostomy in late stage cervical cancer's survival with impaired renal function

Imam Rasjidi<sup>1</sup>, Ali Gunawan<sup>2</sup>, Christine Susanto<sup>2</sup>

<sup>1</sup>MRCCC Siloam Hospital Semanggi/ Faculty of Medicine University of Pelita Harapan, Jakarta

<sup>2</sup>Faculty of Medicine University of Pelita Harapan, Jakarta

### ABSTRAK

**Tujuan:** mengeksplorasi hubungan antara nefrostomi perkutan dan kelangsungan hidup pasien kanker serviks stadium lanjut disertai dengan gangguan ginjal.

**Bahan dan Metode:** Kohort retrospektif, dengan 70 sampel yang diambil dengan consecutive sampling. Populasi adalah semua penderita kanker serviks stadium lanjut dengan gangguan fungsi ginjal (IIIB, IVA, IVB, rekuren) yang dirawat di RSUPNKM sejak 1 Januari 1998. Besar sampel masing-masing 19 orang untuk kelompok nefrostomi perkutan dan konservatif. Kesintasan diukur dari data rekam medis penderita kanker serviks stadium lanjut dengan gangguan fungsi ginjal yang dirawat di RSUPNKM sejak 1 Januari 1998 sampai 31 Desember 2003. Nefrostomi perkutan diukur dari data rekam medis penderita kanker serviks stadium lanjut dengan gangguan fungsi ginjal yang dirawat di RSUPNKM sejak 1 Januari 1998 sampai 31 Desember 2003.

**Hasil:** Median kesintasan dari 44 responden yang menjalani nefrostomi perkutan adalah 203 hari dengan probabilitas kesintasan pada bulan ke-6 sebesar 56,9% dan pada bulan ke-12 sebesar 31,1%. Median kesintasan dari 26 responden yang tidak menjalani nefrostomi perkutan adalah 75 hari dengan peluang kesintasan pada bulan ke-6 sebesar 26,6% dan pada bulan ke 12 sebesar 10%. Terdapat perbedaan bermakna antara kelompok responden yang menjalani nefrostomi perkutan dengan yang tidak ( $p=0,0470$ ,  $=0,05$ ).

**Simpulan:** hubungan yang signifikan antara nefrostomi perkutan dan kelangsungan hidup ( $p=0,0470$ ,  $=0,05$ ).

**Kata kunci:** kanker serviks, nefrostomi perkutaneus, kesintasan, gagal ginjal

**Correspondence:** Imam Rasjidi, MRCCC Siloam Hospitals Semanggi/Faculty of Medicine, Universitas Pelita Harapan

### ABSTRACT

**Objective:** explore the association between percutaneous nephrostomy and survival of patients with advanced cervical cancer accompanied by renal impairment.

**Materials and Methods:** Retrospective cohort, with 70 samples taken with consecutive sampling. The population was all advanced cervical cancer patients with impaired renal function (IIIB, IVA, IVB, recurrent) treated in RSUPNKM since January 1, 1998. Sample size was each 19 patients for percutaneous nephrostomy and conservative groups. Survival was measured from medical records of advanced cervical cancer patients with impaired renal function who were treated at RSUPNKM since January 1, 1998 until December 31, 2003. Percutaneous nephrostomy was measured from medical records of advanced cervical cancer patients with impaired renal function treated at RSUPNKM since 1 January 1998 until December 31, 2003.

**Results:** Median survival of 44 respondents who underwent percutaneous nephrostomy was 203 days with probability of survival at 6 months 56.9% and 12 months by 31.1%. Median survival of 26 respondents who did not undergo percutaneous nephrostomy was 75 days with a chance of survival at 6 months 26.6% and 12 months 10%. There were significant differences between patients undergoing percutaneous nephrostomy and those without ( $p = 0.0470$ ,  $= 0.05$ ).

**Conclusion:** There was significant association between percutaneous nephrostomy and survival ( $p = 0.0470$ ,  $= 0.05$ ).

**Keywords:** cervical cancer, percutaneous nephrostomy, survival, kidney failure

### INTRODUCTION

Cervical cancer is an important issue in gynecologic oncology field, both in developed countries and developing countries. Cervical cancer is the fourth most common cancer in women. Number of cases estimated in 2012 was 528,000 new cases, with 266,000 deaths from cervical cancer worldwide.<sup>1</sup> Eighty-five percent of cervical cancer cases occur in developing countries such as Africa, South America, South Asia, and Southeast Asia. In Indonesia, cervical cancer ranks first in gynecological cancers.<sup>2</sup>

In Indonesia in Obstetrics and Gynecology Department RSUPN Dr. Cipto Mangunkusumo (RSUPNKM) Jakarta, cervical cancer occupied more than half of all patients with malignant disease of the reproductive

organs. Each year no less than 250 new cases of cervical cancer were found. Most patients with cervical cancer came in late stage (62% in stage II B to IV A), made the treatment became more complicated.<sup>3</sup>

According to a research in RSUPNKM by Nuranna et al. 30% of the late stage cervical cancer had renal failure due to ureteric obstruction.<sup>4</sup> According to the clinical stage of the International Federation of Gynecology and Obstetrics (FIGO), hydronephrosis and renal failure is a sign of clinical stage IIIb. Mishra et al. reported that the average 5-year survival of cervical cancer patients without urethral obstruction and normal kidney function was 47%, whereas if there is obstruction of the ureter the survival was 29%.<sup>5</sup>

Kidney failure in cervical cancer is mostly (90%) caused by high location of the obstruction in the ureter due to compression of the tumor mass. Cervical cancer can spread to surrounding structures including a lower segment of the uterus, vagina, paracervical and parametrial spaces. Distal ureter is in parametrial when the ureter passes through the pelvic wall to the bladder, and is about two centimeters from the edge of the cervix. Expansion of cervical cancer to the parametrial can cause distal ureter being wrapped by the tumor, causing hidroureteronephrosis and finally a kidney failure.<sup>6</sup>

There are several ways of handling ureteral obstruction in late stage cervical cancer with impaired renal function such as conservative, hemodialysis, percutaneous nephrostomy, retrograde ureteral stent, antegrade ureteral stent and bypass nephovesical. According to Dagi et al. (2011) and Demetriu et al. (1996), high obstruction location, ureterovesical junctions involvement, and external compression causing difficulties to free the obstruction through the installation of cystoscopy retrograde ureteral catheter from below.<sup>7,8</sup> Percutaneous nephrostomy is a process constructing a fistula that connects the kidney collecting system to the skin. This action according to Demetriu et al. (1996) and Ahmed et al. (1995) can resolve obstruction with a fairly high success rate.<sup>8,9</sup>

Until now, Obstetrics and Gynecology Department RSUPNKM have never studied the effect of percutaneous nephrostomy to the survival of late stage cervical cancer patients with impaired renal function. There are no data on what factors that influence the increasing of life expectancy of the patient. The objective of this study was to determine the relationship between percutaneous nephrostomy and late stage cervical cancer with impaired renal function survival.

**MATERIALS AND METHODS**

This study used cohort retrospective study design. The study population was all late stage cervical cancer patients with impaired renal function (IIIB, IVA, IVB, recurrent) who were treated in RSUPNKM since January 1, 1998. Based on calculation, the amount of samples assigned was 19 people each for percutaneous nephrostomy and conservative groups. Samples were taken in sequence (consecutive sampling). There were two kinds of variable examined, dependent variable (survival) and independent variables (percutaneous nephrostomy). Survival was measured by taking the data from medical records of late stage cervical cancer patients with impaired renal function who were treated at RSUPNKM since January 1st, 1998 until December 31st, 2003. Home visits were performed if the patient

did not follow the re-examination after discharge from hospital. Form of checklist was sent to the patients who reside outside Jakarta to be filled in and sent back, or contacted by phone.

Nephrostomy percutaneous measured by taking the data from the medical records of late stage cervical cancer patients with impaired renal function treated at RSUPNKM since January 1st, 1998 until December 31st, 2003. To determine the relationship between percutaneous nephrostomy with survival, life table and the Kaplan-Meier tests were used, and to see the significance log rank test and Wilcoxon at 95% confidence level were used.

**RESULTS AND DISCUSSION**

Table 1. Table of survival of late stage cervical cancer with impaired renal function and percutaneous nephrostomy versus conservative

Group	Number of Respondents	Survival Median	Probability of 6 Month Survival	Probability of 12 Month Survival
Percutaneous nephrostomy	44 people	203 days	56.9%	31.1%
Conservative	26 people	75 days	26.6%	10%

Survival median of 44 respondents who underwent percutaneous nephrostomy is 203 days with probability of survival in 6th month was 56.9% and in the 12th was 31.1%. Survival median of 26 respondents who did not undergo percutaneous nephrostomy is 75 days with a chance of survival in 6th month was 26.6% and at month 12 by 10%.

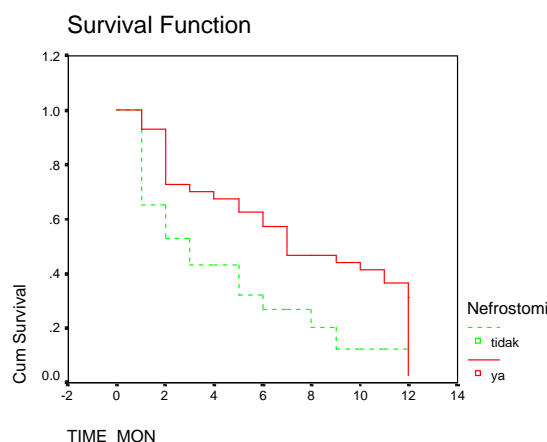


Figure 1. Graph of survival according to the intervention

Percutaneous nephrostomy, first described by Goodwin et al. in 1955, is a construction of fistula that connects the kidney collecting system to the skin. Indications of percutaneous nephrostomy were for the repair of urinary obstruction, diagnostic examinations, access to therapeutic interventions, and urinary diversion.<sup>7</sup>

There is no absolute contraindication to percutaneous nephrostomy. In patients with metabolic disorders and life-threatening electrolyte, dialysis can be performed prior to percutaneous nephrostomy. Coagulopathy should be corrected whenever possible.<sup>7</sup>

Percutaneous nephrostomy is performed with the following steps. After asepsis and antisepsis and infiltration of local anaesthetic agent, small incision is made. Inferior calix unidirectional puncture is done with a needle number 18 or 12 in the direction of calix inferior and with ultrasound guidance. If the position is right, urine will leave immediately after the stylet is released from the needle. A guide wire is inserted through the needle and placed on the kidney collecting system until pelium or proximal ureter, and then the needle is pulled out. Number 8 F nephrostomy catheter can be inserted through a guide wire and placed on kidney collecting system. The catheter is then fixed to the skin with sutures wearing non-absorbable threads and connected with urine closed container.<sup>1</sup>

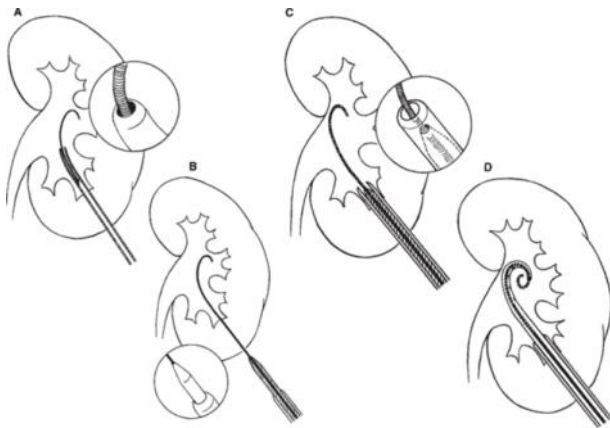


Figure 2. Insertion of a percutaneous nephrostomy catheter. (Image and caption adapted from Smith & Tanagho's General Urology, Chapter 8).

Notes: A: J guidewire inserted through the needle-sheath system and driven with the help of a plastic sheath into the renal pelvis. B: Insertion of coaxial dilator/introducer sheath system outside the guidewire. Rigid proximal portion of the Lunderquist guidewire prevent bending outside the kidney. C: Once the dilator has entered the collecting system, introducer sheath

was pushed through the ends. D: Pigtail nephrostomy catheter is inserted into the renal pelvis through the guidewire and through the introducer sheath.<sup>13</sup>

Based on the logrank test analysis, there were significant differences between the group of respondents who underwent percutaneous nephrostomy with the patients who did not. ( $p=0.0470$ ,  $=0.05$ ). The death risk value in late stage cervical cancer patients with impaired renal function (LSCCPIRF) with the conservative type of intervention or did not undergo the percutaneous nephrostomy was 1.78 times greater (95% CI 1.00 to 3.16;  $p=0.050$ ) compared with the patients whom percutaneous nephrostomy was performed, after the factors were controlled in the multivariate analysis, the risk value changed to 2.43 (95% CI 1.10; 5.39) ( $p=0.029$ ).

According to Gasparini et al. (1991), the average of survival median after percutaneous nephrostomy is 526 days, and (range 1-712 days), research on prostate cancer, the overall survival was 57% at 1 year and 29% at 2 years (median survival 21 months). Another study on prostate cancer survival rate was overall 60% at 1 year and 32% at 2 years.

Harrington et al. (1995), stated that median survival in all patients with ureteral obstruction due to malignancy was 133 days (range 7-712). Seventeen patients were still alive (40%) at 6 months and 5 (12%) at 1 year. According to Romero et al. (2005), the average survival rate after percutaneous nephrostomy in patients with cervical cancer were 49.2% at 6 months and 36.9% at 12 months.

## CONCLUSION

Based on the research, it is known that there is strong relationship between percutaneous nephrostomy with (LSCCPIRF) survival. Patients who underwent nephrostomy have better survival than patients who did not undergo nephrostomy. Further studies with an adequate amount of samples and variables that have been prepared were needed.

## REFERENCES

1. Ferlay J, et al. GLOBOCAN 2012: Estimat-ed Cancer Incidence, Mortality and Prevalence Worldwide in 2012. [In a network] Available at:[http://globocan.iarc.fr/Pages/fact\\_sheets\\_cancer.aspx](http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx). 2013. Accessed 23 February 2015.
2. Panigoro R, et al. Linear HPV Genotyping Assay Comparison Test in Cervical Cancer Patients:

- Implications for HPV Prevalence and Molecular Epidemiology in a Limited-resource areas in Bandung, Indonesia. *Asian Pacific Journal of Cancer Prevention*. 2013;14(10):5843-47.
3. Rasjidi I. Survival and Prognostic Factors in Patients with Advanced Stage Cervical Cancer with Impaired Renal Function. Faculty of Medicine, University of Indonesia. 2004.
  4. Nuranna L, et al. Management of Advanced cervical Cancer With Renal Failure. In *AOFOG*. Bali. 1995.
  5. Mishra K, et al. Role of Percutaneous Nephrostomy in Advanced Cervical Carcinoma with Obstructive uropathy: A Case Series. *Indian Journal of Palliative Care*. 2009;15(1):37-40.
  6. Janaki MG, Mukesh S, Ponni TRA and Nirmala S. Aggressive Approach in a Case of Cancer Cervix with Uremia. *Indian Journal of Palliative Care*. 2010;16(1):52-4.
  7. Dagi M and Ramchandani P. Percutaneous Nephrostomy: Technical Aspects and Indications. *Seminars in Interventional Radiology*. 2011;28(4): 424-37.
  8. Demetriu D and Sebeikat D. Percutaneous Nephrostomy in Malignant Ureteral Obstruction. *Deutsche Medizinische Wochenschrift*. 1996;121 (49):1526-30.
  9. Ahmed I, et al. Effectiveness of Percutaneous Nephrostomy Reversing Obstruction in Renal Failure. *Journal of Pakistan Medical Association*. 1995;45(1):16-8.
  10. Gasparini M, Carroll P and Stoller M. Percutaneous and Endoscopic Palliative Urinary Diversion for Malignant Ureteral Obstruction. *Urology*. 1991; 38(5):408-12.
  11. Harrington KJ, et al. Palliation of Obstructive Nephropathy due to Malignancy. *British Journal of Medical and Surgical Urology*. 1995;76(1):101-7.
  12. Romero FR, et al. Indications for Percutaneous Nephrostomy in Patients with Obstructive uropathy due to Malignant urogenital neoplasias. *International Braz J Urol*. 2005;31(2):117-24.
  13. Thüroff JW and Gillitzer R. Chapter 8. Percutaneous Endourology & Ureterorenoscopy. In JW McAninch & Lue TF, eds. *Smith and Tanagho's General Urology*. 8th Eds. New York: McGraw-Hill; 2013.