

COMPLICATIONS OF PERCUTANEOUS NEPHROSTOMY USING PIGTAIL NEPHROSTOMY TUBE SIZE OF 8 FRENCH VS PEDIATRIC NASOGASTRIC TUBE SIZE OF 8 FRENCH IN UROLITHIASIS PATIENTS IN HASAN SADIKIN HOSPITAL BANDUNG

¹Dhika Ari Rizki, ¹Tjahjodjati.

¹Department of Urology, Faculty of Medicine/Padjadjaran University, Hasan Sadikin General Hospital, Bandung.

ABSTRACT

Objective: To compare the complications and patient-reported problems using standard pigtail nephrostomy tube versus pediatric nasogastric tube (NGT) usage as nephrostomy tube. **Material & Methods:** During 2015 period, 79 patients were referred to Urology Department in Hasan Sadikin Hospital Bandung for percutaneous nephrostomy procedure. Data were collected from Medical Record Urology Department to identify the complications and the patients-related problems using standard pigtail nephrostomy tube versus pediatric NGT usage as nephrostomy tube. **Results:** 38 patients (48%) using pigtail and 41 patients (52%) using pediatric NGT as nephrostomy tube. Overall, 12 patients using pigtail nephrostomy tube (31.5%) experienced at least 1 complication related to nephrostomy procedure, and only 7 patients using pediatric NGT (17%) experienced complications. The complications including fever (3 patients), pyuria (5 patients), infection on insertion site (1 patient, 1.2%), pain (7 patients, 8.8%) hematuria (4 patients, 5%) and detached nephrostomy tube (19 patients, 24%). **Conclusion:** The small number of complications observed in pediatric nasogastric tube patient group suggest that pediatric NGT is a safe, cheap and widely available substitute for pigtail nephrostomy tube.

Key words: Nasogastric tube, percutaneous nephrostomy, pigtail.

ABSTRAK

Tujuan: Untuk membandingkan komplikasi dan masalah yang dilaporkan oleh pasien yang menggunakan selang nefrostomi pigtail standar dengan pasien yang menggunakan selang nasogastrik pediatri sebagai selang nefrostomi. **Bahan & cara:** Selama periode 2015, 79 pasien dirujuk ke Departemen Urologi RSUP Dr. Hasan Sadikin Bandung untuk dilakukan prosedur nefrostomi perkutan. Data dihimpun dari rekam medis Departemen Urologi untuk mengidentifikasi komplikasi dan masalah pada pasien yang menggunakan selang nefrostomi pigtail standar dibandingkan dengan pasien yang menggunakan selang nasogastrik pediatri sebagai selang nefrostomi. **Hasil:** 38 pasien (48%) menggunakan pigtail dan 41 pasien (52%) menggunakan selang nasogastrik pediatri sebagai selang nefrostomi. Secara keseluruhan, 12 pasien (31.5%) dengan selang nefrostomi pigtail mengalami paling sedikit 1 komplikasi yang berhubungan dengan prosedur nefrostomi, dan hanya 7 pasien (17%) dengan selang nasogastrik pediatri yang mengalami komplikasi. Komplikasi yang terjadi meliputi demam (3 pasien), pyuria (5 pasien), infeksi tempat nefrostomi pada 1 pasien (1.2%), nyeri pada 7 pasien (8.8%), hematuria pada 4 pasien (5%) dan selang nefrostomi yang terlepas pada 19 pasien (24%). **Simpulan:** Kecilnya angka komplikasi yang diobservasi pada kelompok pasien dengan selang nasogastrik pediatri menunjukkan bahwa selang nasogastrik pediatri aman, murah, dan tersedia secara luas untuk digunakan sebagai substitusi selang nefrostomi pigtail.

Kata kunci: Selang nasogastrik, nefrostomi perkutan, pigtail.

Correspondence: Dhika Ari Rizki, c/o: Department of Urology, Faculty of Medicine/Padjadjaran University, Hasan Sadikin General Hospital, Bandung. Jl. Pasteur No. 38 Bandung. Phone: +62 22 2039141. Mobile phone: 085220050530. Email: dhika.ari.rizki@gmail.com.

INTRODUCTION

Percutaneous nephrostomy is a procedure of making a new drainage channels from renal

pelvocalyceal system percutaneously, this procedure was first introduced by Wickbom 1954 as a diagnostic method, while Casey and Goodwin in 1955 use it for the treatment of urinary track

obstruction. Since then, the percutaneous nephrostomy had developing either in the tools or the techniques.^{1,2}

Generally, the drainage purposes is decompression of the upper urinary tract due to supravescical obstruction which increased the pressure in the collecting system and eventually damage to renal parenchyma tissues.¹ The urinary tract obstruction can be caused by intrinsic or extrinsic factor is an indication of percutaneous nephrostomy in 85-90% of cases. Obstruction may be followed by infection. The main cause which responsible as the intrinsic factor of obstruction is urinary tract stones; rarely it also can caused by intrinsic tumor. Other causes include blood clots and papillary damage. Extrinsic factor of obstruction can be caused by compression of the ureter by a tumor, scar tissue, and anatomical variations such as variation in vessels. Urinary tract obstruction which caused by a malignancy should be distinguished between the malignant and the benign one. Nephrostomy is usually performed under the ultrasound or fluoroscopy. CT and MRI guidance are rarely used. Usually the patient is positioned in prone position. Percutaneous nephrostomy can be done by using double stick or single stick.¹⁻⁴

Basically, percutaneous nephrostomy is generally accepted widely and safe, but also have potential complication. According to SIR Standards of Practice Committee, the upper limit of major complications that can be accepted during percutaneous nephrostomy is 10%. Major complications are sepsis, bleeding, vascular injury, transgression of intestine, and pleural complications.⁵ Additional complications that have been reported were abscess, pyonephrosis, urinoma, pneumothorax, pleural effusion, hydrotorax, air embolism, avulsion of the ureter, and delayed urethral strictures, ureteral perforation, extravasation, pain, blocked channels, pulmonary infiltrate, and insertion of foreign objects into the collecting system. The cause of complications may be associated with techniques, tools, and material which used.⁶

Generally, the percutaneous nephrostomy procedure use a specially designed nephrostomy hose. However, in certain conditions and the era of National Health Guarantee, the nephrostomy hoses was sometimes difficult to obtain. Therefore, some alternative nephrostomy hoses need to be considered. In open nephrostomy, foley catheter can be used as an alternative to nephrostomy hose. But in percutaneous nephrostomy, foley catheter can not be

used. As an alternative, the use of a nasogastric tube with equivalent caliber used to replace the hose nephrostomy hose.

In previous studies, the use of a nasogastric tube (NGT) as nephrostomy channel provides good drainage results in up to 90% of patients. Approximately 20% of patients have persistent bleeding when using nasogastric tube, but hematuria that occurred was stop gradually after appropriate antibiotic administration. Examination of the nasogastric tube specimen showed coliform organism growth. In some patients, the nasogastric tube was removed by accident, but did not give a significant effect to the patient. In all patients there was no leakage of urine after the release of nasogastric tube and the hole was close in a relatively short of time.⁷

As an alternative, we need a research related to the use of nasogastric tube compared to pigtails as a standard tool in nephrostomy drainage, especially about the complications that occur. In this research will be discussed the comparison of percutaneous nephrostomy complication using a nasogastric tube compared to pigtail in Hasan Sadikin Hospital Bandung.

OBJECTIVE

To compare the complications and patient-reported problems using standard pigtail nephrostomy tube versus pediatric NGT usage as nephrostomy tube.

MATERIAL & METHODS

This study is using a retrospective descriptive design. The subject is the patients who underwent of percutaneous nephrostomy procedure due to the obstruction by urinary tract stones. The study conducted in Hasan Sadikin Hospital Bandung by evaluating the patient's follow-up in our medical records during January until December 2015.

Patients were categorized into two groups, the first is who use the pigtail and the second group is in whom NGT was use. The complication were recorded and analyzed.

RESULTS

From 79 patient who meet our criterias, 38 (48%) were use pigtail and 41 (52%) patient used pediatric NGT as nephrostomy tube. From the first

group (chart 3) who used pigtail, 12 (31.5%) patients experienced at least 1 complication related nephrostomy procedure, and only 7 (17%) patients in the second group (chart 4) who used pediatric NGT

experienced complications. The overall complications (chart 1) including fever, pyuria, infection on insertion site, pain, hematuria and detached nephrostomy tube were 19 patients.

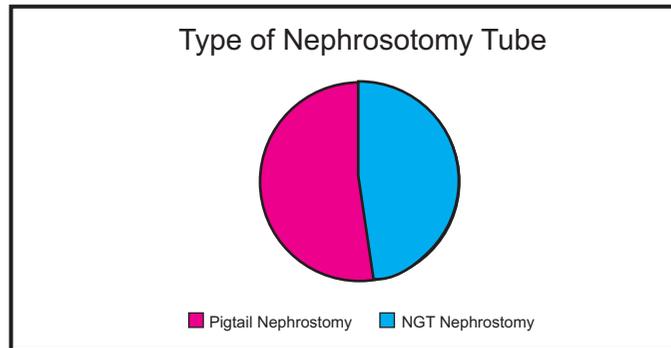


Chart 1. Distribution of patient according to types of the tube.

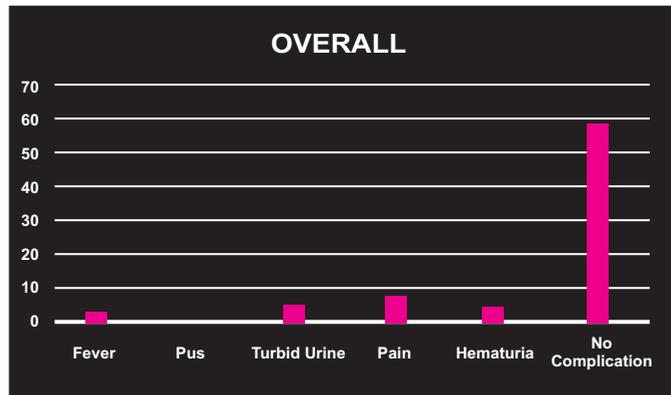


Chart 2. Overall complication.

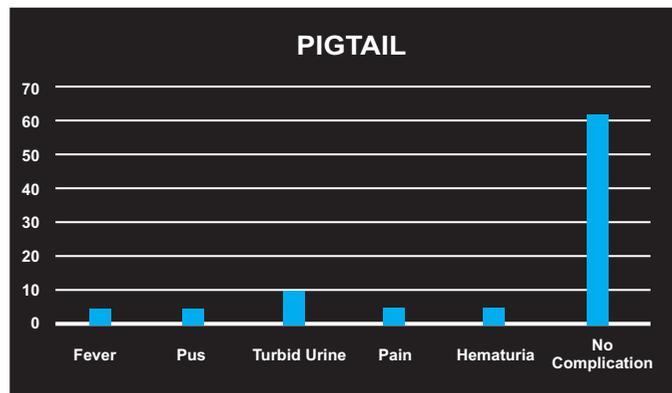


Chart 3. Pigtail nephrostomy complication.

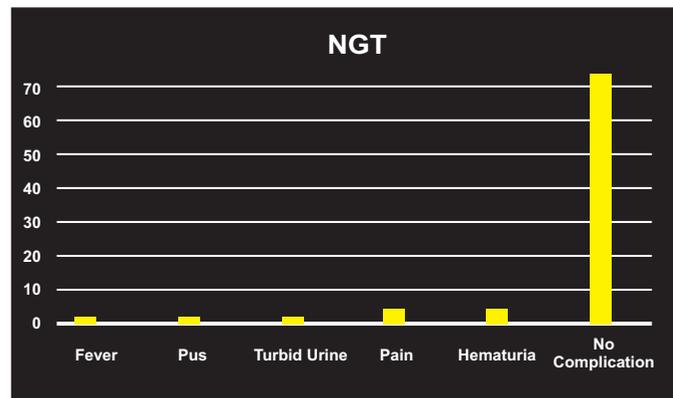


Chart 4. NGT nephrostomy complication.

DISCUSSION

Pigtail nephrostomy tube, the smallest nephrostomy tubes available (5–14 F), are excellent for simple drainage. The distal pigtail design prevents accidental dislodgement. Because of their small calibre pigtail nephrostomy tube may not be ideal if blood clots, mucus, or stone fragments are expected to pass. But in Indonesia, it is not widely available. Therefore, we use a pediatric nasogastric tube to substitute pigtail nephrostomy tube.

The use of pediatric nasogastric tube as nephrostomy tube was associated with good results in our patients. Ultrasonography also did not reveal any parenchymal loss. The majority of the patients had free drainage of urine through the nephrostomy tube with variable daily urine volume. The volume of the urine output from the nephrostomy does not reflect the effectiveness of this drainage technique. This was our experience. The effectiveness of pediatric nasogastric tube as a good material for urinary drainage has been demonstrated in this study as in various urological procedures.

However, it is undeniable that the use of a pigtail nephrostomy tube is better than pediatric nasogastric tube. We can see from some complications that occurred in the group of patients using pediatric nasogastric tube, such as fever, pyuria, infection at the insertion area, hematuria, and detached nephrostomy tube. Therefore, the use of pigtail nephrostomy tube is still preferable. However, in Indonesia, the availability of pigtail nephrostomy tube is quite limited so that the use of a nasogastric tube can also be used as an alternative to replace the pigtail nephrostomy tube.

CONCLUSION

The small number of complications observed in pediatric nasogastric tube patient group suggest that pediatric NGT is a safe, cheap and widely available substitute for pigtail nephrostomy tube.

REFERENCES

1. Karim R, Sengupta S, Samanta S, Aich R, Das U, Deb P. Percutaneous nephrostomy by direct puncture technique: An observational study. *Indian Journal of Nephrology*. 2010; 20(2): 84-88. doi:http://dx.doi.org/10.4103/0971-4065.65301
2. Hausegger KA, Portugaller HR. Percutaneous nephrostomy and antegrade ureteral stenting: Technique—indications—complications. *European Radiology*. 2006; 16(9): 2016-30. doi:http://dx.doi.org/10.1007/s00330-005-0136-7
3. Campbell MF, Wein AJ, Kavoussi LR. *Campbell-Walsh Urology*, Editor-in-chief, Alan J. Wein; Editors, Louis R. Kavoussi et al. Philadelphia: WB Saunders; 2007.
4. Li AC, Regalado SP. Emergent percutaneous nephrostomy for the diagnosis and management of pyonephrosis. *Seminars in Interventional Radiology*. 2012; 29(3): 218-25. doi:10.1055/s-0032-1326932.
5. Hart Chari Y. Complications of percutaneous nephrostomy tube placement to treat nephrolithiasis; 2002. p.43-45.
6. Lewis S. Major complications after percutaneous nephrostomy—lessons from a Department Audit *Clinical Radiology*. 2004; 59(2): 171-9.
7. Oguike TC. The use of infant feeding tube as a combined nephrostomy and stent in Anderson-Hynes pyeloplasty. *Nigerian Journal of Clinical Practice*. June 2007; 2: 166-8.