



TO ACCESS THE ROLE OF PERCUTANEOUS NEPHROSTOMY IN THE MANAGEMENT OF URETERIC OBSTRUCTION

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ABSTRACT

Percutaneous nephropylotomy or nephropyloplasty, is an interventional procedure that is used mainly in the decompression of the renal collecting system.

Urinary obstruction can be caused by variety of aetiologies in any age group. Frequently, the obstructed system becomes infected, and antibiotics are unable to penetrate the kidney. In these cases, percutaneous nephrostomy is an attractive treatment alternative because it allows decompression of obstructed system.

AIMS AND OBJECTIVES:

- To assess the various indications of percutaneous nephrostomy in our institute.
- To assess the impact on renal function tests in various urological disease for which percutaneous nephrostomy is done.
- To assess complications associated with percutaneous nephrostomy.

MATERIAL AND METHODS:

The study was conducted in the post graduate department of surgery, GMC Jammu from December 2012 to November 2013.

SELECTION CRITERIA:

- Patients with supravvesical obstruction i.e. due to stone disease, tumours associated with sepsis and azotemia.
- Ureteropelvic junction obstruction
- Ureteric tumour
- Ureterovaginal fistula
- Diversion in cases of haemorrhagic cystitis
- Genitourinary tuberculosis

EXCLUSION CRITERIA:

- Patients with bleeding disorders.
- Patients on anticoagulants

Conclusion

1. Urinary stone disease is the most common etiological factor for percutaneous nephrostomy followed by carcinoma cervix and carcinoma urinary bladder.
 2. Percutaneous nephrostomy when performed properly has 100% technical success rate.
 3. Ultrasonography is usually first imaging procedure performed for the status of upper urinary tract and possible etiology.
- Percutaneous nephrostomy is very useful in normalising the deranged renal functions in case of obstructive uropathy after which definitive procedure is carried out.

KEYWORDS : azotemia, nephrostomy, percutaneous, Ultrasonography

Introduction

Percutaneous nephropylotomy or nephropyloplasty, is an interventional procedure that is used mainly in the decompression of the renal collecting system.

Urinary obstruction can be caused by variety of aetiologies in any age group. Frequently, the obstructed system becomes infected, and antibiotics are unable to penetrate the kidney. In these cases, percutaneous nephrostomy is an attractive treatment alternative because it allows decompression of obstructed system.

Percutaneous nephrostomy catheter insertion was first described by Goodwin(WE, Casey WC, Woolf W, 1955).

Subsequently, the safety and efficacy of this procedure has been established using a variety of different imaging modalities including various combinations of ultrasonography, fluoroscopy and computed tomography(CT). The scope of PCN catheter placement has been expanded and currently nonemergent clinical scenarios including relieving urinary obstructions, urinary diversion from a leak and accessing the collecting system for diagnostic and therapeutic procedures outnumber urgent indications.

Emergency percutaneous nephrostomy is most common in the clinical setting of pyonephrosis/ calcular anuria.

Pyonephrosis or procalyx most often results secondary to an

obstructing calculus in a patient with infected urine. Patients present with acute septicaemia.

In the acute case, emergency drainage of the obstructed collecting system is mandatory because any delay in establishing drainage can be fatal. In the instance of pyonephrosis, percutaneous nephrostomy drainage is associated with minimal morbidity, facilitates definitive treatment, and provides therapeutic benefit (Ng et al,2002).

In old people malignancy contributes to upper urinary tract obstruction (Sood G, Sood A, Dhiman DS et al, 2006).

Malignancy may produce ureteric obstruction. Malignant urinary obstruction can be secondary to extrinsic tumor compression, direct tumor invasion, or an intrinsic genitourinary malignancy. This obstruction may be relieved by inserting a nephrostomy tube.

In the presence of malignant ureteric obstruction, palliative percutaneous urinary diversion may be performed and is effective in improving renal function (Wilson JR, Urwin GH, Stower MJ,2005).

Percutaneous nephrostomy, with a low morbidity rate, is a safe urinary diversion technique in bladder cancer induced malignant ureteric obstruction. It relieves at least the devastating effects of uraemia and allows appropriate treatment for the malignancy(Ekzie S, Sahin A, Ozen H, 2001).

PCN can be effectively carried out under ultrasonographic guidance and should be initial procedure in acutely obstructed kidneys with pyonephrosis and poor renal functions. In malignant cases, however improvement in renal functions is possible if it is carried out at early stage (G.Sood, A. Sood, A. Jindal et al, 2006)

Large retrospective studies have shown ultrasound guided percutaneous nephrostomy insertion to be highly successful with low complication rate (Farrell and Hicks, 1997; Wah et al 2004).

With ultrascopic and angiographic technique, percutaneous nephrostomy is an easy safe and reliable method (Hirao Y, Mortin N, Yoshikawa M, et al 1985).

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OBSERVATIONS:

The study was carried out in post graduate department of surgery, Government medical College, Jammu. Observations were made from a series of 36 patients who underwent PCN during the period of study.

Stone disease with obstructive uropathy was the most common etiology for performing PCN in our study followed by carcinoma cervix in females and carcinoma urinary bladder.

In total 36 patients, the age of patients ranged from 14-70 years. Maximum number of patients were in the age group of 51 to 60 years. Mean age of patients was 44.87 years.

In the study of 36 patients, 23 males underwent PCN and 13 females underwent PCN, that means more male patients underwent PCN compared to females. So, the male to female ratio was 1.76:1.

In 36 patients studied, 50 percutaneous nephrostomies were performed. In 12 patients right sided PCN was performed, left sided PCN was performed in 10 patients and bilateral PCN was performed in 14 patients.

Out of the total 50 nephrostomies, minor complications were present in 10 patients and major complication was present in only 1 patient.

Pain and dysuria were the complaints of the majority patients.

Tenderness was present in 30 (83.33%) of the patients.

The mean serum urea before percutaneous nephrostomy was 67.5mg/dl that dropped to mean serum urea of 31.88mg/dl.

The mean serum creatinine before percutaneous nephrostomy was 2.57mg/dl that dropped to 1.13mg/dl after the procedure.

DISCUSSION

The primary indication of emergency percutaneous nephrostomy is to relieve and obstructed and infected renal collecting system (pyonephrosis). Percutaneous nephrostomy is a safe procedure with high technical success rate.

Obstructive uropathy results in pain, infection, sepsis and ultimately loss of renal function. It is potentially life threatening condition and sometimes it is desirable to provide immediate temporary relief of obstruction, until definitive treatment can be undertaken.

In our study of 36 patients, 23 (63.88%) were males and 13 (36.11%) were females. Thus in our study more PCN were carried out in male patients. R. Karim, S. Sengupta, S. Samanta et al 2010 in their study of 126 patients in whom PCN was attempted, 72 (57%) were males and 54 (43%) were females.

In our study we performed PCN in 8 patients (22.22%) with malignant ureteral obstruction. PCN in these cases was effective in improving renal functions. Wilson JR, Urwin GH, Stower MJ, 2005 showed that in the presence of malignant ureteric obstruction, palliative percutaneous urinary diversion may be performed and is effective in improving renal function.

PCN is currently one of the procedures of choice for emergency drainage of the upper urinary tract. Llopis B, Navolon P, Picureili Let al, 1989 performed 58 PCN procedures in 55 patients. PCN was indicated for complicated or uncomplicated uni or bilateral supravescical obstruction, with infection or azotemia. All the patients submitted to PCN for complicated obstruction with infection or azotemia showed a marked clinical and analytical improvement. In our study of 36 patients, marked clinical and biochemical improvement was noted and patients were taken up for definitive procedure following improvement.

In our study, we performed PCN in one patient with haemorrhagic cystitis not responding to localised traditional therapy. Haemorrhage decreased in that patient.

In our study 2 (5.55%) patients had ureteral stricture due to genitourinary tuberculosis. Naeem M, Jan MA, Ullah A et al, 2010 reported 6% incidence of renal tuberculosis leading to upper obstructive uropathy.

In our study, we had 100% success rate in performing PCN. The presence of hydronephrosis, which is common in most cases of emergent PCN catheter placement contributes to high potential technical success for the procedure.

When PCN catheters were placed emergently, the initial technical success has been reported to be 98% (Lee WJ, Patel U, Patel S et al, 1994).

Major complications following PCN include sepsis, haemorrhage, vascular injury, bowel transgression and pleural complications and are categorised by outcome including those requiring therapy, minor hospitalisation (<48 hours), those requiring therapy, unplanned increase in the level of care and prolong hospitalization (>48 hours), permanent sequelae and death.

Minor complications require no therapy or have no consequence or nominal therapy of no consequence.

We performed PCN in 36 patients under USG guidance. Success rate in our study was 100%, major complication rate was (2.77%), minor complication rate was (27.77%). There was no procedure related mortality in the study.

When PCN catheters are placed emergently, Lee et al 1994 described a major complication rate of 28%. In our study, minor complications in the form of PCN tube blockage (13.88%), PCN haematuria (8.33%) and PCN dislodgement (5.55%) occurred in 27.77% of the patients.

Major complication in the form of fever and sepsis was seen in only 1 (2.27%) patient. Mild haematuria commonly occur after PCN catheter placement and often resolves spontaneously after a few days.

CONCLUSION:

1. Urinary stone disease is the most common etiological factor for percutaneous nephrostomy followed by carcinoma cervix and carcinoma urinary bladder.
2. Percutaneous nephrostomy when performed properly has 100% technical success rate.
3. Ultrasonography is usually first imaging procedure performed for the status of upper urinary tract and possible etiology.

4. Percutaneous nephrostomy is very useful in normalising the deranged renal functions in case of obstructive uropathy after which definitive procedure is carried out.
5. Minor complications including catheter dislodgement, catheter blockage can be prevented by proper catheter care and educating the patients.
6. Fever and sepsis is the one of the major complications of percutaneous nephrostomy and can be prevented by giving preoperative injectable antibiotics and minimal manipulation of infected system.
7. Percutaneous nephrostomy is useful in relieving obstruction in patients who land up in an emergency as anuria due to calculi disease of upper urinary tract. It can be performed with minimal complications.
8. PCN is an excellent modality of urinary tract drainage due to its simplicity, ease of insertion, efficacy, low cost and satisfactory results.

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