

# PERCUTANEOUS NEPHROSTOMY AND ANTEGRADE PYELOGRAPHY

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## SUMMARY

Between October 1986 and January 1989, 66 percutaneous nephrostomy (PCN) were performed in 47 patients in our clinic. Nine cases were children and the remainder were adults. Seven of nine children had bilateral vesico-ureteric reflux and the other two cases had idiopathic megaureter. 19 of our adult patients had bladder tumor, nine patients had cervix ca, three cases had carcinoma of the prostate, two cases had tuberculosis pyelonephrosis, two patients had stone-way, three cases had lymphoma and another two cases tumor of the ureter. Local anesthesia was used in all cases except in six children. PCN was done as an emergency procedure to relieve obstruction of the upper urinary tract (n:43). In four patients PCN was performed for temporary urinary diversion. Antegrade pyelography enabled the diagnosis of coexisting ureteric tumors in two patients with bladder tumor.

**Key Words:** Urinary obstruction, Antegrade pyelography, Percutaneous nephrostomy.

## INTRODUCTION

Percutaneous nephrostomy was originally developed as an emergency procedure to relieve urinary obstruction when retrograde drainage was either inappropriate or technically impossible and surgical nephrostomy was contraindicated (1, 2) The indications of PCN are supravascular obstruction, ureteral leaks and strictures and the first step of percutaneous stone management (2-5).

Antegrade pyelography is indicated if the intravenous pyelography is insufficient or retrograde catheterisation is impossible (2). Antegrade pyelography can also be performed in conjunction with a percutaneous pressure-perfusion study (Whitaker test) to assess pyeloureteral resistance (6).

## MATERIALS AND METHODS

Between October 1986 and January 1989 66 percutaneous nephrostomy (PCN) were performed in 47

cases in our clinic. The ages of the patients varied from 4 to 43 years and 9 patients were in the pediatric group. The indications for PCN in our series are shown in table I.

Basic haematologic parameters were obtained in all patients before the procedure. We used antibiotic prophylaxis routinely in our patients. Ultrasonic scanning was used to localise renal pelvis, the appropriate calyx for nephrostomy tract and to measure the distance from skin to renal pelvis and calyx.

The patient was in prone position with the side to be punctured elevated 45°. Local anesthesia was used in all cases except in the pediatric group. Six children in this group were given general anesthesia.

Under fluoroscopic control a 22 gauge Chiba needle was inserted into the collecting system. Aspirations were performed as the collecting system was approached because urine may not flow spontaneously through the Chiba needle. Contrast material could be injected easily after equivalent volume of urine had been withdrawn and thus renal collecting system was visualised.

After infiltrating the skin and deeper tissues with local anesthetic, the skin was incised 0.5 cm and a 18 gauge needle was advanced into a middle or lower calyx. The guide wire was inserted in the renal pelvis preferably down the ureter. The guide wire was left in place and the needle was withdrawn. The tract was dilated to 14 or 16 F and a Malecot or pig-tail nephrostomy catheter was introduced into the renal pelvis. The catheter was fixated to the skin at the end of the procedure.

## RESULTS

PCN was successful in 100% of cases in our series. The azotemia relieved in all of our patients. The

causal therapy was applied to the patients when indicated.

19 % of our patients were azothemic children with either VUR (n:7) or idiopathic megaureter (n:2). They underwent antireflux-plasty or/and ureteroneocystostomy after a temporary urinary diversion period (six months). In the adult group PCN was done as an emergency procedure to relieve urinary obstruction.

Two patients had steinstrasse after ESWL and they had septicaemia due to obstruction. An ureteral catheter could not be passed to drain the kidney and percutaneous nephrostomy tube was placed. On antimicrobial therapy the fragments were extracted with ureteroscope.

### DISCUSSION

As an emergency procedure to relieve urinary tract obstruction or for temporary diversion, PCN has a lot of advantages compared to surgical nephrostomy: PCN can be performed under local anesthesia and therefore hospitalisation is short (two days) after PCN.

Complications such as pulmonary problems,

nephrocutaneous fistula, pleural effusion, wound infection, myocardial infarction, incisional hernia did not occur after PCN.

Surgical nephrostomy requires general anesthesia and the hospital stay is long (seven days). The above mentioned complications increase the mortality rate of surgical nephrostomy (7). In a review of 1207 cases, the mortality of PCN is 0.2 % while the mortality rate of surgical nephrostomy ranges from 6 to 8 % (8).

PCN shortens the operation time and previous renal surgery do not effect PCN. PCN is relatively cheaper than the surgical nephrostomy.

In nonfunctioning kidney, antegrade pyelography provides imaging of the collecting system with about the same resolution of detail as retrograde pyelography. In two patients, who were followed up for bladder tumor and nonfunctioning kidney, associated tumor of the ureter were diagnosed by antegrade pyelography in our series.

We suppose that PCN will be the choice of drainage instead of surgical nephrostomy in the future.

TABLE I

THE INDICATIONS AND SIDE OF PCN IN OUR SERIES

CAUSE OF OBSTRUCTION	NUMBER OF PATIENTS			TOTAL
	BILATERAL	UNILATERAL		
Bladder tumor	18	8	10	26
Cervix Ca.	8	3	5	11
Prostate Ca.	3	1	2	4
Lymphoma	3	—	3	3
Tuberculous pyonephrosis	2	—	2	2
Stoneway	2	—	2	2
Vesicoureteral reflux	7	7	—	14
Idiopathic megaureter	2	—	2	2
Tumor of the ureter + bladder tumor	2	—	2	2
	47	19	28	66

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