RESULTS

This study was conducted on thirty patients submitted for percutaneous nephrostomy. Ninteen patients were males and eleven were females with the age ranging from 20 to 70 years. (Table 1).

Table (1)

Age	No.
20-30	3
31-40	10
41-50	5
51-60	11
61-70	1

Percutaneous nephrostomy placement was unsuccessful in two of our thirty cases referred for percutaneous removal of renal stones. In one case improper tract was done, and the catheter was dislodged in the other one. (Table 2).

Table (2)

Results	No.	Percentage
Successful puncture	28	93.3%
Unsuccessful puncture	2	6.7%

All the thirty patients had a radio-opaque calculi and all but 9 had a nondilated pelvicalyceal system. The calculi were on the right side in 14 patients and on the left side in 16 patients.

Eight patients had a previous operation on the side containing the calculi, one had a solitary kidney, 3 with a malrotated kidney, one with a horseshoe kidney and the remainder patients were with normal pelvicalyceal system.

In 28 cases the opacification of the kidney was done by retrograde pyelography and in the remainder two cases by intravenous injection of contrast medium in one case and by injection of contrast medium through a chiba needle passed directly over the stone in the other.

The actual localization of the stones within the pelvicalyceal system were reviewed. The results were : 17 patients had stone pelvis, 4 patients had a stone lower calyx, 2 had a stone middle calyx, one had a stone upper calyx and 6 patients had multiple pelvicalyceal stones.(Table 3).

Table (3)

Location of Stone

	Pelvis	Lower calyx	Middle calyx	Upper calyx	Multiple
Rt. kidney	9	1	2	-	2
Lt. kidney	8	3	-	1	4
Total	17	4	2	1	6

The location of the created tract is presented in Table (4). It was located through the lower calyx in 26 cases, through the middle calyx in 3 cases, and through the upper calyx in one case.

Table (4)

Tract location	
Through lower calyx	26
Through middle calyx	3
Through upper calyx	1
Total	30

In all cases we created a single tract except in one case where there were multiple stones and through the tract only one stone was exctracted and the other stones were not along the tract and left for another puncture.

In all of our successful cases percutaneous nephrolithotomy were done by the two stage procedure except one was done by the one stage procedure.

Bleeding during the procedure has never been a major problem. As all procedures were performed using garamycin or ampicillin, we had no problems of sepsis.

The main duration of the procedures was 55 minutes (range 10-150 minutes). Patients remained in the hospital for an average of 5 days (4-12 days) and most of them resumed their normal duties 10-15 days after their discharge from the hospital.

Fig. (1)

Stone renal pelvis with a catheter directed through a posterior lower calyx up to the pelvis and upper calyx. This represent the ideal anatomical puncture passing through the posterior inferior calyx.

Fig. (2,a)

Ultrasonogram of left kidney showing a large stone at the lower calyceal group.

Fig. (2,b)

Retrograde of the same case showing the stone impacted at the lower calyces and extending into the renal pelvis.

Fig. (2,c)

The guide wire passing through the lower calyx up to the upper calyx .

Fig. (2,d)

12 F. dilator over the guide wire.

Fig. (2,e)

10 F. catheter inserted at the end of the procedure.

Fig. (2,f)

UTP of the same case after nephrolithotomy, no residual stones.

Fig. (2,g)

Left antegrade showing decompressed lower calyces with no evidence of extravasation.

Fig. (3,a)

Stone renal pelvis with the puncture needle directed to the lower calyx.

Fig. (3,b)

After insertion of the catheter.

Figure (4,a)

IVU showing a solitary right kidney with a stone pelvis.

Fig. (4,b)

Right antegrade after percutaneous nephrostomy. The catheter directed into the renal pelvis throught the lower calyx.

Fig. (5,a)

Plain film showing a stone left renal pelvis and two stones lower calyx. The ureteric catheter is noted.

Fig. (5,b)

After percutaneous nephrostomy of the same case. The catheter is directed through the lower calyx.

Fig. (6,a)

Stone middle calyx, a small stone lower calyx, and a ureteric catheter are noted.

Fig. (6,b)

The nephrostomy catheter is directed through the middle calyx.

Fig. (7,a)

Stone left upper calyx.

Fig. (7,b)

Left antegrade of the same case. The catheter is inserted directly over the stone.

Fig. (8,a)

Multiple stones right kidney

Fig. (8,b)

The right pelvicalyceal system is opacified via the ureteric catheter 12F. dilator is seen over a guide wire passing into the ureter.
In this case only one stone was along the tract, while the other stones were not. Another puncture was performed.

Fig. (9,a)

Horseshoe kidney with a stone at the right renal pelvis.

Fig. (9,b)

Right antegrade of the same case after percutaneous puncture through the middle calyx.

Fig. 10

Stone renal pelvis of a malrotated kidney. The catheter is directed into the pelvis through the lower calyx.

Fig. 11

Another case of a malrotated kidney with stone renal pelvis. The catheter is directed into the pelvis through the middle calyx.

Fig. (12,a)

Faint opacification of the right pelvicalyceal system by I.V. injection of the contrast medium.

Fig. (12-b)

Right antegrade of the same case showing the catheter directed into the renal pelvic stone via the lower calyx.

Fig. 13

A guid wire is directed over multiple stones lower calyx into the upper ureter for one stage percutaneous nephrolithotomy.
The puncture was done directly over the stones.

Fig. 14

A case of failed percutaneous nephrostomy for removal of a stone renal pelvis.
The catheter was inserted into the lower calyx (short tract), so it was dislodged

Fig. 15

Another case of failed percutaneous nephrostomy for removal of a stone renal pelvis.
The catheter was inserted into a lower anterior calyx (improper tract).