

Special Personal Experience with Difficult Cases of Renal Stones in Iraq

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Abstract

PCNL has emerged as most efficient procedure among these approaches to stone removal, though not devoid of complications and requirement for skills. All complications happened in these special cases were within the expected range .

Keywords: Renal Stones; patience; Personal Experience

1. Introduction

Nephrolithiasis is a condition in which hard masses (kidney stones) form within the urinary tract. (1), Formation of kidney stones may occur when:

The urinary concentration of crystal-forming substances (e.g., calcium, oxalate, uric acid) is high(2), The urinary concentration of substances that inhibit stone formation (e.g., citrate) is low(2) , The lifetime incidence of kidney stones is approximately 13 percent for men and 7 percent for women. (3). Among adults with kidney stones, approximately 80 percent consist predominately of calcium oxalate and/or calcium phosphate stones (3)

Stones may be asymptomatic or may present with:

Abdominal and flank pain

Nausea and vomiting

Urinary tract obstruction

Infection (4)

Risk factors

Genetic factors are thought to account for about half the risk of developing kidney stones.(5)

Environmental risk factors include low fluid intake, low calcium intake, and high fructose intake.(5)

The evidence for a role for increased animal protein intake, high sodium intake, increased sucrose intake, and low magnesium intake as risk factors for kidney stones is mixed.(5)

Risk of kidney stones may be increased by medical conditions such as obesity, diabetes, primary hyperparathyroidism, gout, and anatomic abnormalities of the kidney.(5)

Stone types

1.Calcium oxalate 65%

Calcium oxalate monohydrate Whewellite,

Calcium oxalate dihydrate Wheddellite

2.Calcium phosphate 5%,

Basic calcium phosphate Apatite

Calcium hydrogen phosphate Brushite

3.Magnesium ammonium phosphate MAP Struvite 15%

4.Uric acid 5 -10%

5.Cystine 1 (6)

Patient and Methods

This is a prospective observational study of 80 consecutive patients who underwent PCNL surgery in AL Yarmouk Hospital in Baghdad between October 2019 & April 2022.

These selected difficult cases of renal stones involved in this study, divided accordingly into:

1-obese patient 23 with BMI >50

2-patient comorbidity 21

3-pregnancy with renal stone 8

4-single kidney with complex stone 15

5-pediatric patients with renal stone 6

6-congenital abnormality:

Malrotated kidney 1

Horseshoe kidney 3

Ectopic kidney 3

We collected data of the patients(age 4-60), all these cases send for complete investigation including Ct-scan and renal function and some sent for IVU to fully assess congenital anomalies and relation between calyx and adjacent organs.

Exclusion Criteria

Age less than 4

Age more than 60

Ordinary simple cases (not from 1-6 category mentioned above)

(different pole access PCNL) surgery which was done either with the use of fluoroscopic guidance or by use of ultrasound(only 8 cases by ultrasound due to pregnancy .

All cases with prone position except 2 cases with supine postion due to scoliosis and ectopic kidney.

All cases with single tract only one obese case with 2 tracts

The anesthesia was (GA)



Image 1 (multiple tract in obese case with BMI 51)



Image 2 (operating theatre setting with C-arm fluoroscopy)



Image 3(ultrasound maneuver to select the proper tract in pregnant case)

2. Results and discussion

Table 1a: Result table contains all results data for each patient type

Blood transfusion	Multiple tracts	Hospital stay/M	Operative time/M	Stone clearance	number	Patient type
1 case	1 case	2 days	100min	88%	23	obese
2 cases	nill	4 days	60 min	87%	21	Comorbidity
Nil	nill	1day	90 min	85%	8	Pregnant
Nil	nill	2 days	85 min	90%	15	single kidney
1case	nill	1day	90min	95%	6	pediatric
		1day	90min	90%	1	Malrotated kidney
Nil	nill	1day	65min	93%	3	Horseshoe kidney
Nil	nill	1day	100min	89%	3	Ectopic kidney

Table 1b: Result table contains all results data for each patient type

sepsis	Fever T>38	infection	Urine leak	Hydrothorax pneothorax	Pleural effusion	Pulmonary edema	Patient type
nil	2cases	2 case	1 case	1case	nil	nil	obese
1case	4cases	3cases	nil	nill	nil	nil	comorbidity
nil	1case	1case	nil	nil	nill	nil	pregnant
nil	1case	nil	nil	nil	nill	nil	single kidney
nil	Nil	1case	nil	nil	nill	nil	pediatric
nil	Nil	nil	nil	nil	nill	nil	Malrotated kidney
nil	1case	nil	nil	nil	nill	nil	Horseshoe kidney
nil	Nil	nil	nil	nil	nil	nil	Ectopic kidney

Table 1c: Result table contains all results data for each patient type

Organ injury	Bowel injury	pain	Stone street	Lower UTI	AV fistula	Pulmonary embolism	Patient type
nil	nil	3cases	nil	1case	nil	1case	obese
nil	nil	4cases	nil	2case	nil	nil	comorbidity
nil	nil	1case	nil	1case	nil	nil	pregnant
nil	nil	nil	nil	nil	nil	nil	single kidney
1case	nil	nil	Nil	1case	nil	nil	pediatric
nil	nil	nil	1case	nil	nil	nil	Malrotated kidney
nil	nil	nil	nil	nil	nil	nil	Horseshoe kidney
nil	nil	1case	nil	nil	nil	nil	Ectopic kidney

After studying and analyzing the above-mentioned data in table (1a-1b-1c), we notice the following:

The stone clearance rate is ranging from 85% to 95 % which reflects that PCNL is a good option for all special cases.

The least stone clearance rate was with pregnancy, and the best stone clearance rate was with pediatric cases. The mean operative time was comparable between all case types.

The shortest time was with comorbid cases (mean=60 min) because they can not tolerate GA for long time. The longest one was with both obese & ectopic kidney cases (mean=100 min) due to entrance difficulty . The hospital stay for all cases was not exceeding 2 days , but only for cases with comorbidity ,the hospital stay was 4 days due to their medical issue.Blood transfusion was limits to 4 cases only (5% of all cases) more in cases with comorbidity due to their medical issue & pediatric age due to their limited circulating blood volume .There were no pulmonary complications or urine leak or AV fistula for all case types apart from one case with pulmonary embolism (BMI was 55) & one with hydrothorax obese patient who presented with urinoma in the next day of operation, the operative time for this case was 100 min. (long procedure always not recommended); Regarding organ & bowel injury , there was one cases only , with minor splenic injury in a child with enlarged spleen treated conservatively. Stone street happened in one case only of all cases, the case was malrotated kidney with large stone burden.(treated later by semi rigid ureteroscopy), Regarding infection ,7 cases, about 9% of all cases presented postoperatively with upper or lower UTI. About half of them where lower UTI (due to catheter). Only one case presented with sepsis (DM case with large stone burden). All cases treated with antibiotic after doing urine culture& sensitivity. Pain and fever are common complications observed in our study , pain occurred in 9 cases (11%) especially in comorbid cases due to their low pain threshold. And fever >38 happened in 9 cases (11%) due to inflammatory reaction post operation ,or upper UTI.

3. Conclusion

No need for using any other modalities for such special cases, because PCNL is a good option for all with a high stone clearance rate and short operative time and accepted complications.

Home message

Don't worry , PCNL is the gold standard technique for difficult cases

4. References

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