

Outcome of Percutaneous Nephrolithotomy in Iraqi Patients

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Abstract

Background: the PCNL is modern era of treatment of renal stone more than 2 cm size, the adding of advance visual technology, lithotripters and localizing radiological methods increase the safety of this surgery.

Patients and methods: the study was done over twenty-six patients, from January 2021 to September 2022 in Baghdad after all radiological and chemical investigations established, cystoscope insertion of ureteral stent by fluoroscopic guidance then the dye inserted, the triangulation method for needle insertion, the dilatation up 26 f by implants dilator, the rigid nephroscope of story was used, lithalsa pneumatic lithotripter used, for unreachable calyx the flexible nephroscope with laser lithotripsy to ensure stone free.

Results: for twenty-six patient the age range (19-65), 9 females, 17 males, stone range 2-6.5cm, 22 patient single tract via post calyx, 4 patients lower in upper calyx. 20 patients presented with complete stone free, 4 patients need 2nd PCNL session, and 2 patients need post PCNL ESWL sessions. Massive hematuria in one patient needs blood transfusion, 16 patients undergo post op fever.

Conclusion: PCNL safe and effective method in large renal stone higher than 2cm.

Keywords: percutaneous nephrolithotomy; laser lithotripsy; pneumatic lithotripsy; implants dilator

Introduction

The Urinary calculi are the third most common condition of the urinary tract, following to UTI and prostate conditions [1] The ppercutaneous approach to kidney was first described in 1955 by Goodwin and colleague.2The standard PCNL procedure consists of percutaneous access to the kidney and the formation of tract connecting the skin surface with the renal collecting system to allow endoscopic stone fragmentation and removal. A temporary nephrostomy tube is usually left in place at the end of the procedure to tamponade bleeding, and allows drainage and delayed second-look nephoscopy [3].

In old time the surgical treatment to a urologist for management of larger renal stone were limited to open surgical techniques such as pyelolithotomy and nephrolithotomy. As these new techniques have been increasingly adopted and the practice perfected, there has been a much more reduction in morbidity and complications from renal stone disease [4]. PCNL needs a large percutaneous tract into the renal PCS to passage of the nephroscope, and then tract dilation is an aim, which can occur complicated cases in some cases, such as those with scar tissue from previous procedures [5-8].

Patients and methods

The study was done in Baghdad, twenty-six patients, from January 2021 to September 2022. The routine pre operation evaluation all patients with medical and anesthesia fitness. Aim of study is to fellow up outcome and complications of PCNL surgery. Inclusion criteria age > 12 y, renal stone > 2cm, casting stag horn, no bleeding problem, no UTI, no renal tumor. Exclusion criteria: age < 12 y, sever infection, cardiovascular problem, bleeding insults. All biochemical test including bleeding profile and radiological assessment was done, two unit of blood were prepared. In all patients we use triangulation methods, some patients' dilatation up 22 f and some up to 26 f.

Cystoscope is done, then ureteral stent inserted, turn the patient to prone position, inject the contrast to PCS, take two fluoroscopic views at 0 and 30 degrees. After locate the appropriate calyx, the needle inserted to it and coaxial implant dilator, some patients need other insertion by sacricostal puncture.

The nephroscope Karl Storz 27092AMA Hopkins 6° Percutaneous Nephoscopes W/ 28161FKS + 28161OK, Both pneumatic lithotripter (lithalsa), laser

lithotripsy (quanta 45 w). Flexible nephroscope was used for minor calyces unreachable by rigid nephroscope. All patients use foleys catheter which is removed day 1 post op, nephrostomy also removed day 1 post op, double jj which is removed after 21 days post-operation. Patient discharge home day 1. Statistical study is done by IBM SPSS 26, P-value <0.05 is regarded significant.

Results

The study was done retrospectively over twenty-six patients, age range (19-65), mean (42 years), fifteen patients were male (58%), nine patients were female (42%). All patients the prone position (100%). in twenty-two patients the posterior lower calyx puncture

was used alone (85%), in other four patients need to add other sacricostal puncture to middle or upper posterior calyx (15%). Stone size from 2-6.5 cm (mean=4.25 cm). In twenty patients there was complete stone free from one session (77%), in other six cases residual stone, four of them solved by post PCNL ESWL (15%), other two cases need other session of PCNL (7%). One case undergoes massive hematuria day three post-operation (4%) need blood transfusion, plasma transfusion, get better after one week. Three patients need one unit of blood due intra-operation blood loss (12%), track pain occur in all patients in first 24 hours and subsiding with time. Fever occurs in sixteen patients post operation, good response to ceftriaxone injection with antipyretic.

Table 1: outcome of PCNL

	Number	Percentage %
Total number of patients	26	100
Age range	19-65	
Female patients	9	42
Male patients	17	58
Stone size	2cm-6.5cm	
Lower post calyx	22	85
Lower with upper calyx	4	15
Stone free from first session	20	77
2 nd session PCNL	4	15
Post PCNL ESWL	2	7
Massive hematuria	1	4
Simple blood transfusion	3	12
Track pain	26	100
Fever	16	62

Discussion

The PCNL surgery is replacing the open pyelolithotomy in last decades even in staghorn stone, also used in management of some pathologies like tumors and PUJO. The technologies of laser and other types of lithotripters and visual scops advancements with further experience led to more increase in the effect of surgery.

Some of patients undergo of residual stone because either of big stone burden or difficulty of access the calyx, which are successfully treated by post operation ESWL. For those patients with hematuria due to intake anticoagulant therapy and denied any history so treated with conservative therapy. The track pain is due to cutaneous skin innervation, good response to ordinary analgesia. The fever due anesthesia reaction or infection, there is good response to antipyretic and antibiotic. In comparison with Shahzad Ali et al [9]. In

175 patients, 62.86% (n=110) were male and the mean age was 35 ± 9.56 years. One hundred and seventeen (66.85% patients were primarily stone free and 13.71% (n=24) patients needed a second look procedure, thus, a total of 80.57% (n=141) patients were stone free in the same admission. Complications included failure in 4.0% (n=7) patients, bleeding in 8.57% (n=15) patients, a small residual stone in 15.43% (n=27) patients; and puncture site pain almost in every patient. Transient fever occurred in 55.43% (n=97) patients, urinary leakage in 8.57% (n=15) patients, urinary tract infections in 5.14% (n=9) patients, ureteric colic in 3.43% (n=6) patients, colonic injury in 0.57% (n=1) patient; and nephrectomy was required in 0.57% (n=1) patient due to severe bleeding. One patient (0.57%) expired due to anaesthesia complications.

Conclusion

The PCNL surgery is safe and less destructive surgery in comparison to open surgery in treatment of stone disease even for those staghorn stone, also can be used in upper ureteral stone and to PUJ obstruction.

The procedure needs more advance technique especially in port insertion and localization of stone especially in upper kidney calyx which have complex vascular system with risk of bleeding.

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