Research Article

ANALYSIS OF PCNL IN A SINGLE CENTRE –ON OUTCOMES AND COMPLICATIONS

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ABSTRACT

PCNL is a common procedure for upper renal tract stones.the outcome of procedure is based on various factors like patient general condition, stone burden,location ,number of punctures, post op complications, residual stones etc. we have analysed 108 cases of PCNL performed from 2011-2013 and have graded the outcomes and complications based on clavein classification. To analyse the outcomes and complications of all PCNL procedures done in our institute. Datas from medical records were collected for 108 patients and outcome of each patient was analysed and graded based on clavien grading system. In our study there were 70 male and 38 female patients.75% are of age 30-60 years. 90% had renal calculus of average size 2.85 cm and rest 10% was upper ureteric stone. PCNL alone was done in 98 patients whereas additional procedures like ESWL and relook PCNL were required in 10 patients. Outcome and complications analysis showed clavein I in 33%, clavien II in 7.4%, clavien IIIbin 3 patients, clavien V in one patient .PCNL is a safe procedure for renal and upper ureteric stones. Large renal stones can be managed by sandwich therapy

Key words- percutaneous nephrolithotomy, clavein-dindo grading.

INTRODUCTION

Percutaneous nephrolithotomy (PCNL) is the commonest procedure for large renal calculus.outcome of the procedure varies depends on many factor such as stone features, renal anatomy, and patient characteristics etc. PCNL carries the highest risk of morbidity and is recommended for the treatment of renal pelvic and upper calvceal stones >2 cm and lower pole stones >1.5 cm(1).newer imaging methods like three dimensional computed tomography computed reconstruction .cone-beam tomography and staghorn morphometry(3), help the surgeon to plan the surgical approach and do lesser invasive procedures like 'microperc' and 'miniperc'.modern lithotripters enhance the stone clearance rate and operative time(5).

Here we present our experience in PCNL and the oucome analysis

MATERIALS AND METHODS:

This is a retrospective study done in a single institution from june 2011 to july 2013.

Patient details and procedural data were collected for each case.Stone free rates were assessed intraoperatively, on the first postoperative day, and at outpatient review using radiography, ultrasonography, or computed tomography . intraoperative and postoperative complications and complications were analysed and classified according to the modified Clavien-Dindo classification(7).

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RESULTS:

This is a single centre study which contributed 108 patients who had 108 PCNL procedures of which 70 were male and 38 were female(fig2). Age pattern showed early peak in females(fig1). Comorbid conditions were recorded (table2).ten patients were diabetic and nine were hypertensive .3 patients had both. Stone size was varying from1.2 to 4.8 cms with a mean size of 2.85 cms(Table1).

The data on stone location wasavailable for all the procedures of which 62 % were pelvic and calyceal calculus, 15 % were staghorn calculus, 9 % were upper ureteric calculus and 1.8 % were calyceal diverticular calculus(fig4). Stones were multiple and bilateral in 12 % of cases. All the case were done in prone position only except for one which was done in supine position. The average operating time was 118.51 minutes(Table1).

Percutaneous access was obtained only by operating surgeon in all the cases and in all the cases tracts were dilated using amplatz dilators of size24fr .In few cases 26fr Sheath was used. Most of the calyceal puncture were infracostal (90.6%).(table3) 5.6% of the cases access was obtained by supracostal puncture and in 3.7% of cases it required both supra and infra costal punctures(fig3).

After procedure Nephrostomy was placed in 96% of cases .rest 4% cases were tubeless . DJ stenting was done in all the cases.

Blood transfusion was done in 4 patients.



Fig.1.Age distribution

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Fig.2.Sex distribution



Fig.3 Combined supra &infracalyceal access



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Fig.4 Stone pattern

Table 1. Demographics in 108 patients

Sex		
Male	70 (54%)	
Female	38 (46%)	
Side		
Unilateral	95 (88%)	
Bilateral	13(12%)	
Comorbity	28(26%)	
Stone pattern		
Staghorn	16(15%)	
Pelvic &calyceal calculi	67(62%)	
Calyceal diverticular calculi	2(1.8%)	
Upper ureteric calculi	10 (9%)	
Average Stone size	2.85cm	
Supine pcnl	1	
Prone pcnl	107	
Calyceal puncture		
Infracostal	97(90.6%)	
supracostal	6 (5.6%)	

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Combined 4(3.7%) **Calyceal access** 81 (75.7%) Lower calyx Mid calyx 13 (12.1%) Upper calyx 6 (5.6%) Lower and middle calyx 2 (1.9%) Lower and upper calyx 3 (2.8%) All calyces 2 (1.9%) Average operative time 118.51(60-200) **Dilatation method** Single step amplatz 24&26fr **Additional procedures** Eswl 3 7 Relook pcnl **Residual stones** Stag horn calculus 5 Pelvic calculus 2 Mean hospital stay 6.8(4-19 days) Complications 36 (33%) Clavien 1(fever, transient creatinine elevation) Clavien 2 (blood transfusion) 8 (7.4%) Clavien 3b (Nephrostomy bleeding, 3 (2.7%)

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AVfistula, retained stent)	
Clavien 5 (death on ^{3rd} pod due to MI)	1 (0.9%)

Table 2.Comorbidity

DM	10
НТ	9
DM+HT	3
CAD	1
COPD	3
hypothyroid	1
HBsAg +ve	1

Table 3. Calyceal access

Lower calyx	81 (75.7%)
Middle	13 (12.1%)
Upper	6 (5.6%)
Lower + Middle	2 (1.9%)
Lower + Upper	3 (2.8%)
Lower + Upper +Middle	2 (1.9%)

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DISCUSSION

Even though the study number is less compared to other studies a general comparison was done.

In comparison with the Clinical Research Office of the Endourological Society (CROES) outcome (10).significant bleeding was seen in 2.5% in our study and 7.8% in croes study(10). pelvis perforation is seen in 4% in our study and 3.45% in croes . Hydrothorax is not encountered in our study and in 3.45% in croes study.

Stone-free rate was 75.7%, and 84.5% of patients did not need additional treatment in croes while 89% were stone free in our study.Renal AV malformation occurred in one patient and needed angioembolisation(fig4).

Comparison of complications- No complications is 66%, Clavein 1 in 33% ,clavein II is 7.4%,clavein IIIb is 2.7%,clavein V is 0.9% in our study. No complication (79.5%), I (11.1%), II (5.3%), IIIa (2.3%), IIIb (1.3%), IVa (0.3%), IVb (0.2%), or V (0.03%) in croes study(10).

CONCLUSION

- More than 90% of patients had complete stone clearance with PCNL alone
- PCNL is effective and safe procedure for calculus of more than 2 cm if kidney is properly accessed and calyceal system is assessed

Ancillary procedures help provide complete stone clearance.

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