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Original Research Article

Study of PCNL in a Single Centre –An Outcomes and Complications

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Abstract: PCNL is a gold standard 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 40 cases of PCNL performed from 2013-2015 and have graded the outcomes and complications. In our study there were 28 male and 12 female patients. 75% are of age 20-45 years. 90% had renal calculus of average size 2.25 cm. PCNL alone was done in 40 patients. Outcome and complications analysis showed that 10 patient had post op fever and 8 patient had post operative paralytic illeus, 5 patient underwent second sitting PCNL for complete stone clearance. PCNL is a safe procedure for renal and upper ureteric stones. Large renal stones can also be managed by PCNL.
Keywords: Percutaneous nephrolithotomy, Stone free rate.

INTRODUCTION

Percutaneous nephrolithotomy (PCNL) is the commonest procedure for large renal calculus and upper ureteric stones. Outcome of the procedure varies depends on many factor such as stone features, renal anatomy, and patient characteristics etc. PCNL can be performed with acceptable morbidity and is recommended for the treatment of renal pelvic and upper calyceal stones >2 cm and lower pole stones >1.5 cm. Flouroscopic guidance needle positioning in PCNL help surgeon for kidney access and enhance stone clearance and minimize operative time. Here we present our experience in PCNL and the outcome analysis [1-4].

MATERIALS AND METHODS

This is a prospective study done in a single institution from August 2013 to July 2015. Sample size was 40.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. Intraoperative and postoperative complications were analysed.

RESULTS:

This is a single centre study which contributed 40 patients who had 40 PCNL procedures of which 28 were male and 12 were female(fig5/6). Comorbid conditions were recorded. One patient was diabetic and one were hypertensive and one had single functioning kidney. Stone size was varying from 1.5 to 3 cms with a mean size of 2.25 cms [5, 6].

The data on stone location was available for all the procedures of which 30 % were pelvic and 55 % were calyceal calculus, 7 % were staghorn calculus, 5 % were upper ureteric calculus and 5 % were pelvi-calyceal calculus(Fig. 2/4). Stones were multiple and bilateral in 10 % of cases. All the case was done in prone position only. The average operating time was 100 minutes [7-12].

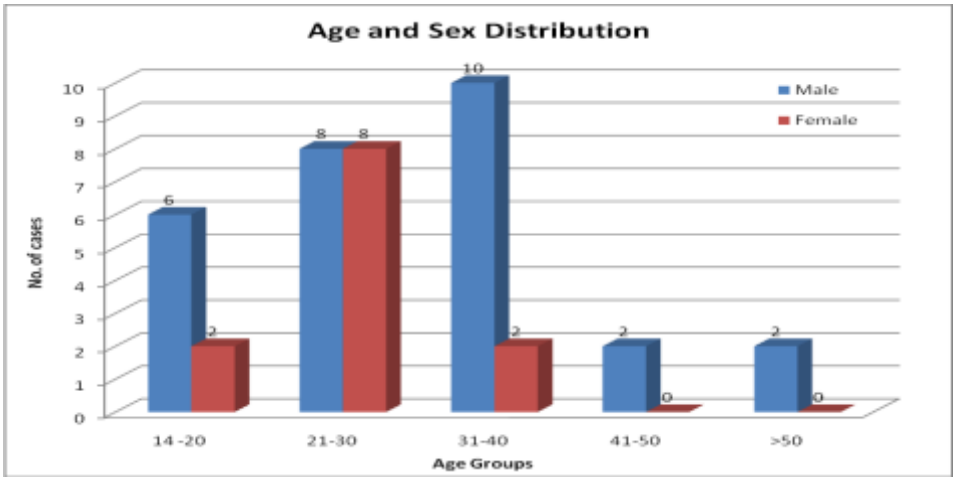

Fig. 1: Age and Sex Distribution

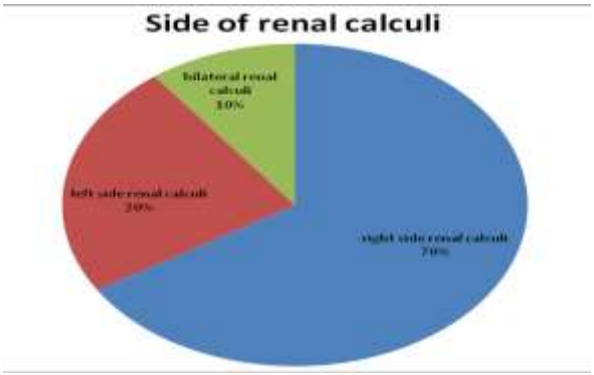

Fig. 2: Side of renal calculi

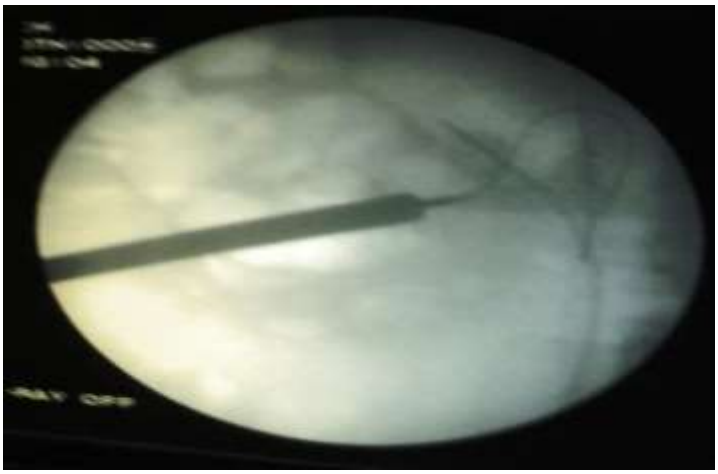

Fig. 3: Image of Tract Dilatation

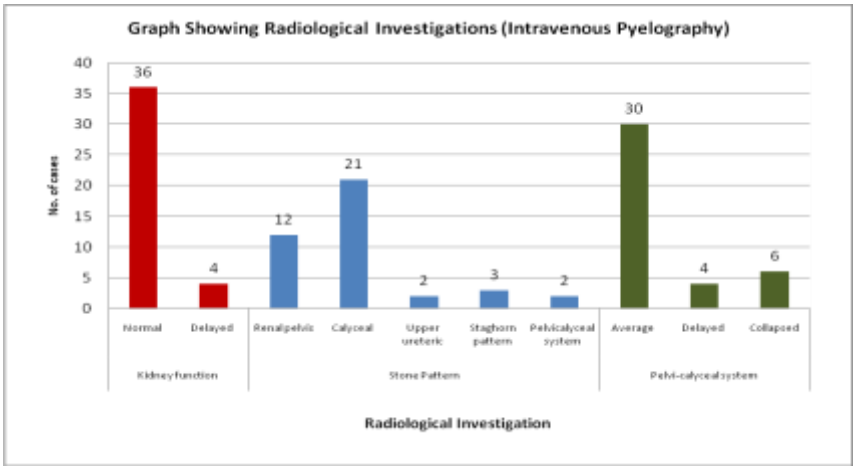

Fig. 4: Radilogical investigation

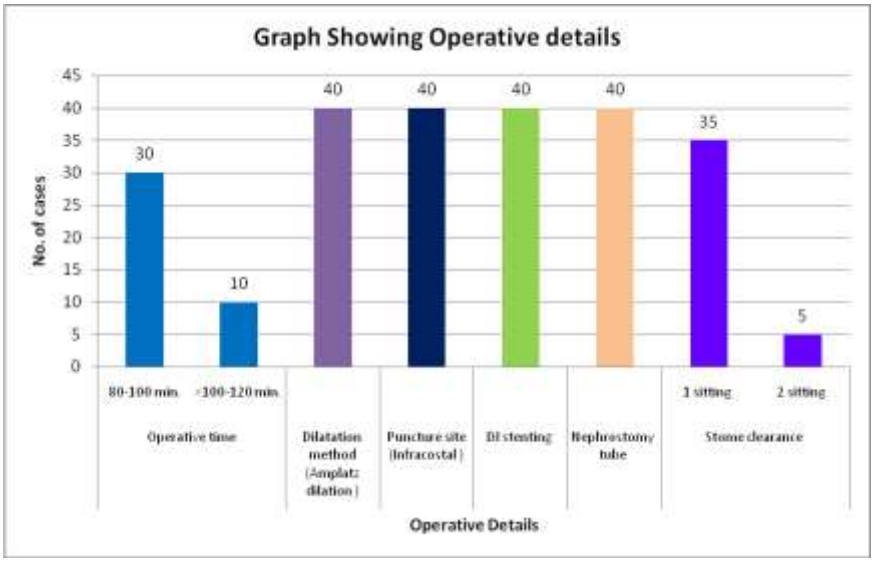

Fig. 5: Operative details

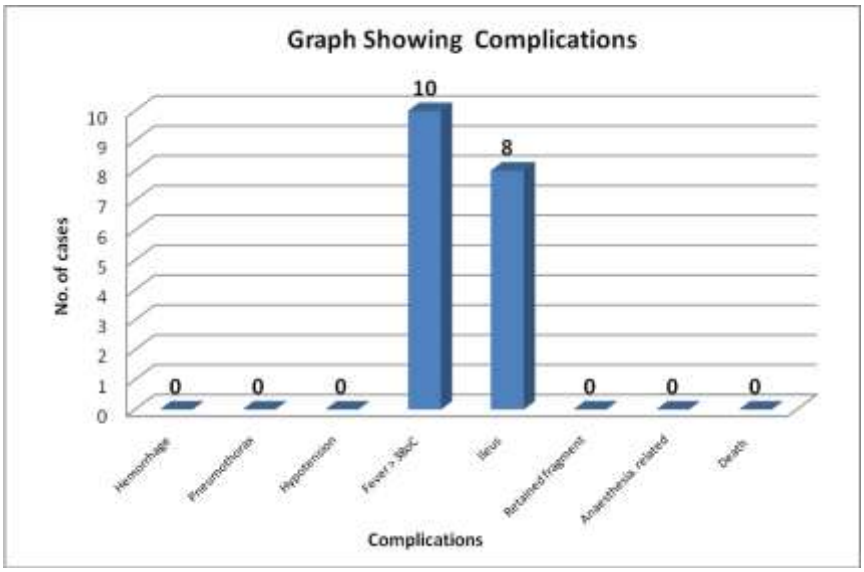

Fig. 6: Complications

Percutaneous access was obtained only by single operating surgeon in all the cases and in all the cases tracts were dilated using metallic dilators of size 27 fr. in all cases calyceal puncture were infracostal (100%) (Table 1). [7, 8, 11]. After procedure Nephrostomy placed in 100% of cases. DJ stenting was done in all the cases. No any patient need Blood transfusion and no any patient had recorded other intraoperative complications like pneumothorax, perforation of bowel, hypothermia. As shown in fig [6, 12- 16]. Duration of mean hospital stay was 6.17 days

Table 1: Demographics in 40 patients

Sex	
Male	28
Female	12
Side	
Right side	28
Left side	8
Bilateral	4
Stone pattern	
Pelvis	12 cases (30 %)
Calyceal	21 cases (55%)
Pelvi-calyceal	2 cases (5%)
Upper ureteric	2 cases (5%)
Staghorn	3 cases (7%)
Average stone size	2.25 cm
Position of patient	Prone in 40 cases
Calyceal puncture	Infracostal in 40 cases
Average operative time	100 minutes
Dilatation method	Metallic dilatation in 40 cases
Second sitting PCNL	5 cases(achieve 100 % stone clearance)
Mean hospital stay	6.17 days
Complications	
Hemorrhage	0 case
Pneumothorax	0 case
Hypotension	0 case
Fever > 38^0 c	10 cases (25 %)
Ileus	8 cases (20%)
Retained fragment	5 cases (underwent 2^{nd} sitting PCNL for complete stone clearance)
Anaesthesia related	0 case
Death	0 case

DISCUSSION

This study was carried out while introducing the technique of PCNL for the first time in this institute from 2013. Study was conducted under single operating surgeon. Out of the 40 patients included in this study. We encouraged participation of patients who were of medium frame and average built.

Even though the study number is less compared to other studies a general comparision was done in comparision with Seral kannan D *et al* .;2013they conduct study on 108 cases in 3 years of study course they reported complication like bleeding in 8 % cases and post operative fever in 30% cases ,death in one patient but in our study we did not needed any blood transfusion in patient and no death was reported.there stone clearance was 90%,in the study we had also more than 90% stone clearance [6]. Agrawal M.S, Agrawal. M 2010 their study of total 202 patients, tubeless PCNL group A 101 patients was found to have significant advantages over standard tube PCNL group B 101 patients in terms of postoperative pain, morbidity, hospital stay, and period of convalescence. The incidence of urinary leakage from the nephrostomy site was significantly less for the tubeless group (0/101) but in our study we use nephrostomy in all patient and did not report so much complication as mentioned in there study [17].

CONCLUSION

More than 95% of patients had complete stone clearance with PCNL alone. PCNL is effective and safe procedure for calculus of more than 1.5 cm if kidney is properly accessed and calyceal system is assessed

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