



**Research Article**

**THE IMPACT OF OBESITY ON PERCUTANEOUS NEPHROLITHOTRIPSY (PCNL) – A SINGLE CENTRE STUDY AND OUTCOME**

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**ABSTRACT**

Percutaneous nephrolithotripsy (PCNL) is the gold standard treatment for large renal stones at present. Patient's body habitus plays a large role in planning the procedure itself and positioning during surgery. This study is a single centre, single surgeon based study to evaluate the effect of obesity on the outcomes of surgery i.e the stone free state, post operative morbidities, length of stay in hospital post operatively etc.

**Key words:**

PCNL, Percutaneous lithotripsy, Obesity, Guy's stone score

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**INTRODUCTION**

Percutaneous nephrolithotripsy (PCNL) in obese patients present a unique technical challenge. Even when the cases are rare in our demography the technical difficulties are always to be considered in the pre operative management/planning. This study aims to evaluate the effect of obesity on outcomes of PCNL.

**METHODS**

Patients who underwent primary PCNL in our institution from 1st Januray 2016 to 31st December 2017 (2 years) were retrospectively reviewed. All the procedure was performed by a single consultant surgeon following basic PCNL guidelines. The whole group of patients were divided into four according to their body mass index (BMIs.)

Modified clavien classification (for post operative complication), length of hospitalization, operating time, Guy's stone score and stone free rate (on post operative xrays) were analysed.

**RESULTS**

134 patients who underwent PCNL were included in the study (mean age 57.23 +/- 10.85; 70.1% male). Mean BMI in the study sample was 26.23+/-4.94 (range 14.98-43.587); 7 (5.2%) were morbidly obese; 16 were (11.9%) obese; 51 (38.1%) overweight and 60 (44.8%) were within or below their ideal body weight (IBW).

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Overall stone clearance rate was 73(54.5%) with 4 (57.1%) in morbidly obese, 10 (62.5%) in obese, 30 (58.8%) in overweight and 29 (48.3%) in IBW (ideal body weight) patients. Mean length of hospitalisation was 3.75 days for all patients and statistically insignificant across all groups. Mean operating time was 136.43 minutes for morbidly obese, 143.56 for obese and 135.12 for overweight patients. Mean Clavien score was 1.0 for morbidly obese, 0.38 for obese, 0.55 for overweight and 0.78 for IBW (ideal body weight) patients.

Guy's stone score was 2.71, 2.38, 2.73 and 2.85 for morbidly obese, obese, overweight and IBW patients respectively and was statistically comparable.

**DISCUSSION**

Obesity is a common health issue and central/truncal obesity is rampant in our local population. It is a known progenitor for metabolic syndrome and also has a role in formation of urinary stones. Percutaneous nephrolithotomy (PCNL) is the standard treatment modality for stones >2 cm, complex stones, and staghorn stones. Modified Clavien classification (Table 1) was used to assess post operative complication.

The Guy's stone score was developed through a combination of expert opinion and published data review. It comprises 4 grades: grade I, solitary stone in mid/lower pole or solitary stone in the pelvis with simple anatomy; grade II, solitary stone in upper pole or multiple stones in a patient with simple anatomy or a solitary stone in a patient with abnormal anatomy; grade III, multiple stones in a patient with abnormal anatomy or stones in a caliceal diverticulum or partial staghorn calculus; grade IV, staghorn calculus or any stone in a patient with spina bifida or spinal injury.

Grade	Description
I	Any deviation from the normal postoperative course without the need for pharmacologic treatment or surgical, endoscopic, and radiologic interventions
II	Requiring pharmacologic treatment with drugs other than such allowed for grade I complications (including blood transfusions and total parenteral nutrition)
III	Requiring surgical, endoscopic, or radiologic intervention
IIIa	Intervention not under general anesthesia
IIIb	Intervention under general anesthesia
IV	Life-threatening complication requiring intensive care unit management
V	Death of a patient

Obesity including positioning of the patient and access does pose a challenge in morbidly obese patients but in our study there was no significant differences among various body compositions in the outcome of the PCNL based on above criteria.

## CONCLUSION

Patients' BMI didn't affect the outcome of PCNL in our study. A large prospective study is needed to further elucidate the impact of obesity on the outcome of PCNL. Also assessing residual stones with NCCT (non contrast CT scan) might have given a more accurate result for the success of PCNL.

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