

A randomised controlled study comparing standard size tubeless PNCL and tubeless mini-PCNL for renal stones between 2-3 cm

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Introduction & Objectives: PCNL has been a standard minimally invasive treatment for renal stones. Tubeless PCNL is said to be associated with less morbidity. Miniaturization of instruments has further decreased the possible morbidity of procedure. We wanted to compare standard tubeless PCNL to Mini tubeless PCNL for complications and stone free rates based on GUYS 1-2 score stratification.

Materials & Methods: Our study included 60 patients in group 1 (tubeless mini PCNL) & 60 patients in group 2 (standard size tubeless PCNL), with cumulative renal stone size between 2 cm-3cm (GUYS 1-2 score). Patients with prior history of renal stone surgery on same side, solitary function kidney, horseshoe or ectopic kidney and urinary tract infections were excluded. Tract was dilated upto 24-30Fr in group 1 & up to 18Fr in group 2. Absence of extravasation preoperatively, lack of bleeding and significant residual stone fragments were the prerequisites for the tubeless procedure (No percutaneous nephrostomy tube was kept). Additional analgesia in form of opioid analgesics was given if needed. Hemoglobin was measured pre operatively & on first post-operative day. Stone clearance was checked preoperatively with help of fluoroscopy direct vision and then with ultrasonography & X-Ray KUB (kidney-ureter-bladder) after one week and one month. Total Operative time, pain score, hospital stay, analgesic requirements, hemoglobin drop, complications such as fever, urinary leak, urosepsis, perinephric collection and pneumothorax. Stone free rates were compared as well.

Results: It was noted in the study that operative time was prolonged in the miniperc as compared to the standard size tubeless PCNL (96±16 vs 85±13 minutes. P<0.01). Mean pain score recorded at 6 hours and 24 hours was less in group 1 as compared to group 2 (5.6±1.4 VS 6.1±1.7, P<0.02 and 2.7±1.2 vs 3.6±1.2, P<0.01). post operative hemoglobin drop was less in group 1 than in group 2 (1.1±0.4 VS 1.4±0.2, P<0.03). Stone clearance in group 1 was 96.6% while in group 2 it was 98.3%. There was no significant difference in complications between these two groups.

Conclusions: Both the tubeless Mini PCNL and Standard size tubeless PCNL were effective for renal stone clearance of size 2-3 cm based on GUYS score 1-2. Operative time was more in tubeless Mini PCNL procedure while the additional opioids analgesics requirement and the drop in hemoglobin are more in the standard size.