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Introduction & Objectives: To analyze the factors responsible for incomplete stone clearance after PCNL for renal calculi.

Materials & Methods: A total of 256 patients who underwent single tract standard PCNL or Mini-PCNL in our hospital from March 2017 to March 2019 were retrospectively analyzed. All patients who underwent imaging studies at the time of first follow up in clinic were enrolled. Impact of factors like previous renal surgical intervention, number of stones, guys stone score, type of pelvicalyceal system according to sampao classification and surgeon's experience on stone free rates were analyzed.

Results: 38 (14.8%) patients had partial clearance of stone. Mean age of patients was 37.54 ± 14.17 years. There was male predominance with 167 (65.2%) male population. We found significant association of number of stones (odds ratio 5.36 (2.54-10.84), p-value <0.001), previous surgery (odds ratio 241 (30.57-1901), p-value <0.001), pre-op Guy's score >4 (odds ratio 32.9 (32.99-50.0), p-value <0.001) with incomplete clearance of stone. While AI, BII PCS types were associated with higher stone free rate PCNL (p-value <0.001). Mean size of residual stones was 0.15 ± 0.42 cm. Interestingly we found lower rate of residual stones in surgeons having shorter experience, partial clearance was 21.1 % among surgeons having experience 1-2 years and partial clearance was 60.5% among patients having experience ≥ 3 years (odds ratio 4.76 (2.09-10.86), p-value <0.001).

Conclusions: The main factors concerned with residual stones after PCNL were found to be multiple number of stone, history of previous renal surgery and higher Guy's stone score. In complex cases stone free rates are lower even in experienced hands. However type AI and BII Pelvicalyceal System were associated with higher stone free rates.