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**Introduction & Objectives:** Percutaneous nephrolithotripsy (PCNL) is the recommended surgical treatment for large and complex renal calculi. Supine PCNL confers several advantages including reduced risk of positional injuries, ease of concurrent retrograde access, and anaesthesiological advantages such as ventilation. Here, we present our institution's experience transitioning from performing prone to supine PCNL.

**Materials & Methods:** We retrospectively reviewed all patients who underwent PCNL at our hospital (single centre, multi-surgeon) from January 2014 to December 2018. Each group of patients had baseline demographics (age, gender, comorbidities, body mass index (BMI)) collected. Pre-operative (X-Ray or Computed Tomography (CT)) images were reviewed and Guy's stone score calculated. Cumulative stone burden on the side of operation was defined as the longest dimension of the stone(s) in any plane. Operative time, estimated blood loss were recorded. Stone free rate (SFR) was defined as residual stone fragments not exceeding 3 mm in maximal diameter on imaging. Other variables reviewed included the length of stay, transfusion and complication rates.

**Results:** A total of 275 PCNLs were performed during the period of study. In 2014, PCNLs were performed exclusively in the prone position. The first case of supine PCNL was performed in January 2015 and over 4 years, 107 of such cases were performed. There was a steady increase in proportion of patients undergoing supine PCNL, from 53.4% of all cases in 2015 to 60% in 2017. Additionally, concurrent retrograde intrarenal surgery (Endoscopic Combined Intrarenal Surgery – ECIRS) was increasingly performed – it constituted 24% of supine PCNLs in 2017 and increased to 69% in 2018. Both groups of patients had similar pre-operative demographics. Notably, patients undergoing supine PCNL were more likely to have diabetes mellitus and were older (mean 62.6 years vs 58.8 years). In the supine group, mean stone size was 2.67 cm and this was similar to the prone PCNL group. 15.1% of prone PCNLs required multiple access tracts, compared to 4% of supine PCNLs. 7.5% of supine PCNLs utilised an upper pole access, while 43% of prone PCNLs utilised an upper pole access. Post-operatively, both groups of patients had similar median duration of post-operative stay (2 days), and equally low incidence of blood transfusions. There were no cases of pleural-related complications in the supine group, whereas in the prone group, there were 6 cases of pleural effusions requiring chest drain insertion. The stone-free rates were not significantly different between both groups (69.2% for prone and 73.8% for supine).

**Conclusions:** Supine PCNL has various benefits albeit with an associated learning curve. Our institution has adopted this technique since 2015 and with our increasing experience, the outcomes have been similar to prone PCNL. We are increasingly performing PCNLs in the supine position, reserving prone PCNL for selected cases.