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Percutaneous nephrolithotomy for staghorn stone: various values affecting stone free rate and complications

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Objective: To investigate the factors associated with stone free rate and complication of percutaneous nephrolithotomy (PCNL) for treatment of staghorn stone.
Materials and Methods: We retrospectively reviewed all patients undergoing PCNL in our center from June 2003 to June 2014. Perioperative patient and stone factors, including age, sex, body mass index (BMI), side, renal anomalies, operative time, stone burden and type, pre-existent urinary tract infection and hydronephrosis, multiplicity, puncture site, previous history of ESWL and renal surgery, comorbidities, and complications classified by modified Clavien grading system were investigated. For statistical evaluation, univariate analyses and multivariate logistic regression analyses were used.
Results: The 184 patients (104 male and 80 female) with a mean age of 53.6±14.7 years (range 3-80yrs) had a mean stone size of 1639.9±1292.3 mm², with 61 (33.2%) patial staghorn and 123 (66.8%) complete staghorn stones. The initial and overall stone free rates of PCNL were 60.8% and 78.8%. The overall complication rate was 26% (48 patients). Independent risk factors for lower SFR were increased stone size, complete staghorn stone and the use of Amplatz dilator (odd ratio= 7.86, 3.24 and 4.60, respectively). The lengthening of operative time was independent risk factor for development of complications on multivariate analysis (odd ratio= 1.398).
Conclusion: The results of this study showed that an increased stone burden, complete staghorn stone, and the use of Amplatz dilator were associated with lower SFR after PCNL. Complications happen more much as the operative time is lengthened.