Prospective Analysis of Morphometry-Based Staghorn Stone Classification

Introduction and Objective: To prospectively analyse the Morphometry-based staghorn stone classification for its clinical relevance.
Materials and Methods: Mishra et al classified staghorn stones into type 1 staghorn with a total stone volume (TSV) of less than 5,000mm^3 with lesser than 5% unfavourable calyx stone percentage volume. Type 3 staghorn has a TSV of more than 20,000mm^3 with greater than 10% unfavourable calyx stone percentage volume. Type 2 staghorn is in between type 1 and 3, with < 2% unfavourable calyx as 2A & > 2% unfavourable calyx as 2B. In the retrospective analysis, type 1 staghorn stone required single tract & single stage; type 3 staghorn stones required multiple tract & multiple stages; type 2 required single tract-single/multiple stages or multiple tract-single stage for complete clearance. In our prospective analysis, CT Urography of 38 patients depicting the staghorn calculus was analyzed with 3D-DOCTOR^{TM} software preoperatively. Data about the no. of tracts, stages, classification, stone burden was obtained. The expert operating surgeon was blinded about the data. All attempts were made to minimise number of stages and tracts during PCNL. The morphometry analysis was compared with per operative findings.
Results: In type1, type 2A, type 2B & type 3 respectively 4, 9, 21, 4 numbers of patients were classified. They required 1.75±0.95 1.125±0.3535, 3±1.55, 3.75±1.26 number of tracts & 1±0, 1.125±0.3535, 1.68±0.60 & 2.5±0.58 number of stages for complete clearance, respectively.
Conclusion: This classification classifies stones into clinically relevant classes which will help in preoperative planning of staghorn PCNL.