P076 Comparative study of miniaturized percutaneous nephrolithotomy with standard and modified aspiration sheath for the treatment of kidney stones 20-30 mm in diameter

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Introduction & Objectives: Miniaturized percutaneous nephrolithotomy (mini-PNL) was introduced in an effort to reduce procedure related morbidity. However, the use of smaller tract size raised concerns of elevated intrarenal pressure and difficult fragments extraction. Recently, a modified sheath with active aspiration was introduced to overcome these drawbacks. The objective of this study is to compare the efficacy and safety of miniaturized PCNL performed with standard and modified aspiration sheath for the treatment of kidney stones 20-30 mm in diameter.

Materials & Methods: A prospectively collected database of 114 miniaturized PCNL procedures with kidney stones 20-30 mm carried out between January 2018 and May 2019, was reviewed. 84 patients (73,7%) underwent mini-PNL performed with 12 Fr nephroscope and standard reusable 18 Fr sheath with vacuum cleaner effect for fragments evacuation and 30 patients (26,3%) – mini-PNL with 12 Fr nephroscope and 14 Fr modified single-use sheath with aspiration channel. Data on patients' preoperative characteristics, stone-free rates, operating times, intra- and postoperative complications were prospectively compared.

Results: Patients' preoperative characteristics were comparable between groups. Stone size and mean stone surface were significantly higher in group with standard sheath (respectively, 22.76±3.22 mm vs 20.43±0.89 mm, p=0.000 and 298.6±88.60 mm^2 vs 197.22±39.13 mm^2, p=0.000). Success rate after a single procedure and at 3rd month of follow-up was comparable (89.3% vs 90.0%, p=1.000 and 88.1% vs 90.0%, p=1.000, for standard and modified aspiration sheath, respectively). Operating time and hospital stay were higher in the standard sheath group (38.17±15.05 vs 33.75 ± 7.67 min, p=0.042 and 3.89±1,29 vs 3.07±0.69 days, p=0.001, respectively). There were no statistically significant differences in postoperative complications rate (7.2% vs 6.6%, p=0.862) and postoperative Hg drop (10.43±9.69 vs 9.63±2.82, p=0.659).

Conclusions: The clinical outcomes of mini-PNL with standard and modified aspiration sheath were comparable in terms of stone-free rate and complications rate. Patients treated with modified aspiration access sheath had a higher stone-free rate, although not statistically significant, shorter hospital stay and operating times. However stone size in this group was significantly smaller compared to standard mini-PNL.