P047 Preliminary results of vacuum-assisted mini-percutaneous nephrolithotomy in a tertiary academic referral center: Our first 103 cases

EUR Urol Suppl 2019;18(7):e2783

Lievore E., Zanetti S.P., Fontana M., Turetti M., Gallioli A., Longo F., Rocchini L., Albo G., De Lorenzis E., Montanari E.

Foundation IRCCS Ca' Granda Ospedale Maggiore Policlinico, Dept. of Urology, Milan, Italy

Introduction & Objectives: Standard percutaneous nephrolithotomy is performed with an open circuit, with a passive drainage from the collecting system through the access sheath. Vacuum-assisted mini-PCNL (vmPCNL) is performed through a semi-closed circuit which allows an efficient simultaneous lithotripsy and lapaxy through suction. This is achieved by means of a dedicated 16 ch nephrostomic sheath, externally closed by a sealing plug, that integrates vacuum on a lateral arm. The aim of our study is to assess the efficacy and safety of this technique.

Materials & Methods: Data from all consecutive vmPCNL procedures performed at our center from September 2017 to April 2019 were prospectively collected. All patients underwent pre-operative abdominal CT scan and urine culture. The procedure was carried out with a 16 Ch Clear Petra® nephrostomic sheath and a 12 Ch Storz® nephroscope, and Ho:YAG laser was used for lithotripsy. Litholapaxy was performed through suction alone or with the aid of basket when needed. The CROES PCNL Clavien score was used to grade post-operative complications. A 1-3 months follow up imaging (CT scan or US) was performed. Success was defined as stone-free or the presence of fragments <4 mm.

Results: We performed a total of 103 vmPCNLs on 95 renal units. Patients and stones characteristics are shown in Table 1. Mean lithotripsy and simultaneous lapaxy time was 36 ± 25 minutes. We recorded a total of 38 complications on 29 patients (28.1%). The majority of complications (84.2%) were classified as Clavien I and II. Nine patients (8.7%) experienced post-operative fever treated with antibiotics. Among the post-operative Clavien grade ≥ III, three patients underwent DJ stent placement, two underwent post-operative embolization and one had a colonic puncture. Mean post-operative Hemoglobin drop was 1,38 g/dL, and no patient was transfused. Success rate was 71.8%. Eight renal units were retreated, 7

of which in a pre-operatively planned multi-staged procedure.

Variables	Patient N: 103	Mean (± SD); Median (IQR)
Sex		
	Female	36,8%
	Male	63,2%
Age		55,4 (± 15,0)
BMI		25,2 (± 4,5)
ASA score		
	1-2	81,5%
	3	18,5%
Antiplatelet		14,5%
Anticoagulant		4,8%
Stone number		
	Single	21,7%
	Multiple	78,3%
Location		
	Single location	30%
	Staghorn	11%
	Multiple locations	59%
Renal abnormalities		5.8%
	Malrotated kidney	1.9%
	Duplicated ureter	1.9%
	Horseshoe	0.9%
	Ectopic	0.9%
Stone volume (cm^3)		1,9 (0,9;3)
Max HU		1247 (± 379)
Mean HU		796 (± 251)

Table 1. Patients and stones characteristics

Conclusions: vm-PCNL seems to be an effective and safe procedure, characterized by short lithotripsy and lapaxy time and minimal bleeding. Although in our series of complex stones the incidence of post-operative fever remains present, we didn't observe any high-grade infectious complication. The stone-free rate is to be improved, but it reflects the particular complexity of patient of our tertiary referral stone center.