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INTRODUCTION & OBJECTIVES: Simple enucleation (SE), defined as the blunt excision of the tumor with no visible margin, following the natural cleavage plane between the tumor capsule and healthy parenchyma, has proved to be an oncologically safe procedure and it has steadily gained acceptance between surgeons. We present our surgical technique for the treatment of clinically localized renal masses: Endoscopic Robotic-Assisted Simple Enucleation (ERASE) that represents the robotic translation of the SE. Along with the accompanying video, we describe the surgical steps of the ERASE technique and analyze the corresponding cumulative surgical outcomes at our high-volume tertiary center.

MATERIAL & METHODS: After institutional review board approval was obtained, data were gathered prospectively from 130 consecutive patients who had ERASE for intracapsular kidney cancer, between January 2010 and January 2013. Preoperative assessment included blood count, liver function test, serum creatinine, electrolytes. All patients were scored according to the PADUA nephrometric classification. A descriptive statistical analysis was performed.

RESULTS: The mean (range) preoperative tumor size was 3.2 cm (0.8-10.0 cm), and clinical stage was T1a for 101 (77.7%) patients, T1b for 28 (21.5%) and T2a for 1 (0.8%) patient. Median PADUA score resulted 8 (IQR 7-9), and it was ≥ 10 in 10 (7.7%) patients. Indication was elective for 121 (93.1%) patients, and relative/imperative for 9 (6.9%). In 44 patients (33.9%), ERASE was done with no pedicle clamping. Clamping was used in 86 (66.1%) patients, among them pedicle clamping was used in 72 (83.7%), with a mean \pm SD warm ischemia time (WIT) of 18 ± 6 min. Selective clamping of the isolated arterial branch of the tumor was used in 14 (16.3%) patients. Overall, 20 patients (15.4%) had WIT > 25 min. Mean operative time \pm SD resulted 158 ± 56 min. Mean estimated blood loss \pm SD was 119 ± 105 cc. Surgical complications included blood loss treated with transfusions in 5 (3.8%) patients, with selective arterial embolization in 3 (2.3%), and with reoperation to achieve hemostasis in 1 (0.8%). Urinary fistula occurred in 1 patient (0.8%) and was treated with bedrest, with no need of ureteral stenting. One patient underwent reoperation due to spleen rupture, and was treated with splenectomy. According to Clavien system, 1 surgical complication was grade 1 (0.8%), 5 grade 2 (3.1%), 4 grade 3 (3.8%), and 1 grade 4 (0.8%). Positive surgical margin (PSM) occurred in 3 patients (2.8%). Median (IQR) length of stay was 5 (5-6) days.

CONCLUSIONS: In our experience, the ERASE has proved to be a feasible technique for the minimal invasive treatment of clinical stage T1 renal masses. Overall, the ERASE is associated with a low risk of postoperative complications and as in the open SE does not imply an increased risk of PSM compared to standard partial nephrectomy.