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**Introduction & Objectives:** Nephron-sparing surgery (NSS) is considered a treatment choice for localized forms of kidney cancer, if such an operation is technically possible. We analysed our results of organ-saving surgery for kidney tumors with high value (RENAL 10-12).

**Materials & Methods:** 368 operations by renal neoplasm were performed from 2013 to 2019, including 237 (64,4%) NSS. Results were analysed and summarized retrospectively. Postoperative complications were classified with the use of Clavien-Dindo system. Patients data are presented in the table 1. In the group RENAL 10-12 and the group RENAL 4-9 operations were performed by open (1,96% and 1,61%), laparoscopic (3,92% and 34,41%) and robot-assisted access (94,12% and 63,98%). Table 1. Data of the patients.

RENAL scale index	10-12	4-9	p
Number of patients, n (%)	51 (21,5%)	186 (78,5%)	-
Age, med [Q25; Q75], years	57,2 [49,5; 65,0]	62,4 [54,0; 68,2]	0,07
BMI, med [Q25; Q75]	27,9 [25,1; 30,4]	28,3 [24,8; 31,5]	0,4
Tumor size, med [Q25; Q75], cm	5,5 [4,4; 7,0]	3,5 [2,5; 4,3]	0,0001

### Results:

In the RENAL 10-12 and RENAL 4-9 groups the median surgery duration was 190 and 150 min ( $p=0,0001$ ), blood loss was 150 ml [100; 300] and 100 ml [50; 200] ( $p=0,18$ ), duration of total thermal ischemia 21 min [17; 27] and 15 min [11; 20] ( $p=0,0001$ ), respectively. Within the first and second groups the total thermal ischemia was used in 35 (68,6%) and in 124 (66,7%), segmental ischemia occurred in 12 (23,5%) and in 32 (17,2%), without ischemia in 4 (7,8%) and 30 (16,1%) cases. Blood transfusion required for 3 patients (6,82%) in the group of complex tumors and 7 patients (5,79%) in the other group ( $p=0,81$ ). Intra- and postoperative complications are presented in the table 2.

Table 2. Intra- and postoperative complications

RENAL scale index	10-12	4-9	P
All complications, n (%)	13 (25,5%)	33 (17,7%)	0,23
Intraoperative (%)	3 (5,9%)	6 (3,2%)	0,42
Postoperative (%)	Grade I-II	11 (5,9%)	0,9
	Grade III	7 (14,0%)	0,3

In the first 3 days a decrease eGFR more than 20% was fixed in 16 (31,4%) cases in patient's group with RENAL 10-12 and in 38 (20,4%) cases in second group ( $p=0,31$ ). Positive surgical margin was presented in 1 (1,96%) and 2 (1,1%) operated patients ( $p=0,6$ ) and tumor recurrence in 2 (3,9%) and 6 (3,2%) cases ( $p=0,8$ ), trifecta indicator amounted to 58,6% and 45,1%, respectively ( $p=0,087$ ).

### Conclusions:

NSS for high complexity kidney tumors is an absolutely effective type of surgical treatment, demonstrate an acceptable level of postoperative complications, decrease eGFR and low level of PSM. NSS for kidney tumors of high degree of complexity (RENAL 10-12) is very advanced procedure with a significantly longer thermal ischemia. However, our clinical practice showed that NSS for kidney tumors with RENAL index 10-12 is safe and can be used, also demonstrated similar results comparing for kidney tumors with RENAL index 4-9.