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Introduction & Objectives: The main goal of partial nephrectomy for RCC is adequate cancer control with satisfactory renal function. Objective of our study was to evaluate event-free survival outcomes after open partial nephrectomy for renal masses in the solitary kidney.

Materials & Methods: Patients who had a solitary kidney and underwent open partial nephrectomy for a RCC from 08.2000 to 04.2016 at N.N. Alexandrov National Cancer Centre of Belarus. Demographics, renal function, tumour characteristics, renal history, operative and pathological data were analyzed. We also evaluated 5-year event-free survival.

Results: A total of 108 patients, including 66 (61.1%) men and 42 (38.9%) women with mean age at surgery 58.4 years (range 29–80 years) were selected.

Median follow-up time was 66.2 mo (20.1–208.3 mo). During this period 15 (13.9%) patients died from progression, 10 (9.3%) patients – from other reasons, recurrence developed in 32 (29.6%) cases. Based on the Kaplan-Meier curve, predicted 5-year event-free survival – 72.4% (4.6%), 5-year cancer specific survival was 85.1% (3.9%), 5-year OS – 79.1% (4.6%).

According performed univariable analysis BMI ($p=0.072$), multifocality ($p<0.001$), Fuhrman grade ($p=0.045$), ESR ($p=0.092$), levels of red blood cells ($p=0.024$), hemoglobin ($p=0.071$) and white blood cells ($p=0.017$) were related to event-free survival with $p<0.1$.

After cut-point calculation according multivariable analysis ESR ≥ 26 (HR 2.28, 95%CI 1,0–5,22), hemoglobin <114 g/l (HR 0.25, 95%CI 0.08–0.76) and multifocality (HR 5.15, 95%CI 2,39–11.1) were preoperative factors, significantly related to event-free survival. Based on multivariable analysis 3 groups of patients with different risk of progression were developed. In a low, intermediate and high risk group 5-year event-free survival were 85.0%, 56.3% and 30.0% accordingly.

Conclusions: Open partial nephrectomy provide adequate cancer control for patients in the solitary kidney population. In a case of absence metastasis, which require metastasectomy or concomitant systematic therapy, event-free survival demonstrated relatively good durability at 5 years with 72.4%. In a group of patients without multifocality, anaemia and normal ESR 5 years event-free survival attain 85%.