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Introduction & Objectives: Nowadays, the robot assisted partial nephrectomy is established as a standard of care option for treatment of renal masses. In most of the robotic cases, the transperitoneal approach is still the favored option. This study should demonstrate the feasibility of the retroperitoneoscopic robotic partial nephrectomy.

Materials & Methods: Data of 793 patients in the combined database of three German robotic centers were analyzed; the retroperitoneoscopic approach was employed in 170 cases (n=133 Missioklinik Wuerzburg, n=20 Essen University Hospital and n=17 University Medical Center Schleswig-Holstein Kiel). Patients with multifocal tumors or insufficient imaging material were excluded. For quality control, the MIC system (negative margins, ischemia time < 20 minutes, no major complications) was used.

Results: The median age of the patients was 62 years with a BMI of 27.2 kg/m². The clinical tumor size was 27 mm with a median PADUA score of 9. 23% of the tumors were allocated in the lowest complexity group, 34% in the intermediate group and 43% in the highest risk group. Intraoperatively, 122 minutes skin-skin-time and a median ischemia time of 9 minutes could be observed. Intraoperative complications were seen in 2.4% of the cases with two conversions and one transfusion. Postoperatively, complications occurred in 7% with major complications in four patients; no Clavien V complication. Median decrease of hemoglobin on postoperative day 1 was 2.2 g/dl with a median loss of eGFR of 7.0 ml/min before discharge. In pathological results showed 72% malign tumors and positive surgical margins were seen in 3.6%. The quality criteria according to the MIC score could be achieved in 92% of the patient cohort.

Conclusions: In this study we could confirm very good perioperative and functional results with a short warm ischemia time for the retroperitoneoscopic robotic partial nephrectomy. Therefore, in experienced hands this approach is an excellent option even in more challenging tumor constellations.