INTRODUCTION & OBJECTIVES: Warm ischemia time (WIT), surgical margins (SM) status and complications are key variables to be considered when reporting the outcomes of robot-assisted partial nephrectomy (RAPN). We have recently proposed to combine them in a new margin, ischemia, and complications (MIC) binary system. In the current study we performed a multi-institutional validation of the MIC system.

MATERIAL & METHODS: We retrieved data on 341 patients who underwent RAPN for cT1-T2 renal tumours between 2006 and 2012 in 4 high volume centres. Cancer control was defined as the absence of positive SM, namely the presence of tumour at the inked surface of the specimen at final pathology. Optimal functional outcome was defined as a WIT ≤ 20 minutes. Safety was defined as the absence of intraoperative-postoperative complications > grade II according to Clavien Dindo classification. The achievement of MIC was considered as the fulfilment of all of these three outcomes.

The primary endpoint was to determine the MIC rate in our study population; univariable and multivariable logistic regression models were applied to define factors affecting MIC achievement.

RESULTS: Pathological stage was pT1 in 70% of cases (236 patients) and mean tumour size was 30,4 mm (range: 6-105). Mean operative time and blood loss were respectively 141,7 min (25-350) and 137,5ml (10-1600). Mean WIT was 18,2 min (5-51). In 86 cases (25,2%) WIT was > 20 min. Mean Padua score was 8 (6-13). Positive surgical margins were found in 22 patients (6,5%). The overall major complication rate (> grade II Clavien-Dindo) was 4,7 %. According to the Clavien-Dindo classification, most complications were grade I (n=24; 7%), followed by grade II (n=17; 5%) and III (n=15; 4,4 %). The overall MIC rate was 66%. In univariable logistic regression models, lower Padua Score was associated with a higher MIC rate (OR 0,84; C.I. 0,720-0,974 p 0,021). In multivariable logistic regression analysis, after adjustment for X, Y and Z, Padua score was the independent predictor of MIC of MIC achievement (OR 0,839; C.I. 0,979-1,019 ; p 0,023)

CONCLUSIONS: MIC binary system can be used in clinical practice to summarize the achievement of optimal perioperative outcomes of RAPN in a standardized way. Tumour complexity, defined with the Padua score, was significantly associated with MIC.