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**Introduction & Objectives:** To determine the reliability of R.E.N.A.L. nephrometry scoring system when assessed by different observers with varying degree of clinical experience.

**Materials & Methods:** One fellow radiologist (SZ), one fellow urologist (VS Jr) and two medical students (SM, UA) in their final year of medical faculty training independently scored data from 171 consecutive patients who underwent robot-assisted partial nephrectomy using preoperative axial and coronal CT or MRI images. Scores were given for total as well as for every independent R.E.N.A.L. component (R - radius, E - exophytic/endophytic properties, N - nearness to the collecting system, A – anterior or posterior description, L – location relative to the polar line). Agreement among these readers was determined using intraclass correlation coefficients (ICC) and Fleiss' generalized kappa. In the results obtained from the readers, the differences in tumour classification (ranging from low, moderate to high complexity according to total R.E.N.A.L. score) were also assessed.

**Results:** The ICC for total score was 0.768 for all readers (95% CI: 0.717-0.814). Higher agreement was observed between urologist and radiologist 0.947 (95% CI: 0.928-0.961), than between two students and radiologist 0.633 (95% CI: 0.530-0.717) and 0.664 (95% CI: 0.567-0.741). The highest Fleiss' kappa among the readers was found in R (0.726) and A (0.752) component of the scoring system, the lowest in L (0.608) and N (0.615) component. Between the urologist and the reference, the following proportion of results (respective to their appropriate classification) was agreed on as: 91.2% in all groups, 91.2% in low complex, 92.2% in moderately complex and 75% in highly complex. However, the results agreed on between the students and the radiologist were somewhat lower 73% and 72.3% in all groups of complexity, 75% and 73% (low complexity), 75% and 76.5% (moderate complexity) and finally 25% and 25% (high complexity).

**Conclusions:** The R.E.N.A.L. nephrometry scoring system shows good interobserver variability, it is easily reproducible and applicable even by much less experienced readers. It is therefore a useful tool for assessment of renal masses.