P098 Development of BIFECTA: A surgical success score for percutaneous microwave ablation of renal masses and validation of PADUA, SPARE and R.E.N.A.L. nephrometry scores

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Introduction & Objectives: The commonly employed nephrometry scores are developed for renal surgery and clinicians lack of resources to predict surgical success in patients with renal masses treated with micro-wave (MW) percutaneous ablation. The aim of this study is to develop a new scoring system to define the success of the percutaneous treatment defined by the combination of complete response to the treatment at 2 months CT scan and the absence of major complications, named Bifecta.

Materials & Methods: We enrolled patients subjected to percutaneous MW ablation for renal masses (cT1a, cT1b). Pre-operative and intra-operative data were described. Post-operative complications were classified according to Clavien Dindo classification (CD). Logistics regression models (LRM) were employed to understand the correlation between PADUA, R.E.N.A.L. score and SPARE and surgical success achievement.

Results: 124 procedures were performed in a retrospective cohort of 112 patients between June 2018 and October 2021 at our institution, 25 (20.8%) were single kidney and 1 has a horse-hoe kidney. 79 (70.5%) patients were male and median (IQR) age and BMI was respectively 71 (59.0-74.7) and 27.1 (24.8-31.4). Median CCI was 4.5 (2.3-6.0). 1 patient had 3 lesions and 8 had 2 lesions. Median pre and post-operative eGFR were 75.3 (67.7-93.5) and 66.5 (59-88.1) ml/min.; Median ablation time was 9 (6-13) minutes and median total energy delivered was 36 (31.5-46.8) kJ. Persistence of tumor was recorded in 14 (15.4%) patients and 7 (5.6%) CD > 3 complications occurred. Bifecta was achieved in 73 (77.7%) of the 94 patients that have complete data. Patients with a high PADUA, SPARE and R.E.N.A.L. score were respectively 1.35 (95% CI:1.02-1.78; p=0.034), 1.24 (95% CI:1.00-1.52; p=0.046) and 1.38-fold (95% CI:1.04-1.82; p=0.025) risk of failing to achieve Bifecta. The AUC of LRMs was 0.652 for PADUA, 0.633 for SPARE and 0.674 for R.E.N.A.L. score.

Conclusions: Bifecta could be a useful resource to assess surgical success. All three nephrometry scores had moderate accuracy to predict surgical success and R.E.N.A.L. score seems to be the most accurate. There is a need for new nephrometry scores developed specifically for percutaneous ablative treatment. Further prospective studies need to confirm these findings.