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**A multicenter evaluation of long-term oncological outcome of radiofrequency of kidney tumors**

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**Background:** Percutaneous radiofrequency ablation (RFA) is a minimally invasive treatment option for patients with kidney tumors. Due to the lack of adequate oncologic follow-up and several drawbacks, such as accuracy of renal biopsy, the need for frequent imaging, and the high rate of benign pathology RFA still remains reserved for clinically infirm patients.

**Objective:** To assess in a retrospective multicenter study the oncologic effectiveness of RFA in patients with at least a 5-year follow-up.

**Patients & Methods:** We provide the long-term oncologic outcomes for 131 patients with kidney tumors treated with RFA. Most of the patients had contraindications to surgery. The interventions were performed under conscious sedation with local anesthesia. Depending on the institution's experience, the RFA procedures were performed under ultrasound (US) or computed tomography (CT) guidance. 71 (54%) of patients in our group had a biopsy proven renal cell carcinoma (RCC). Treatment efficacy was assessed by computed tomography. The chi-square test and Wilcoxon rank-sum tests were used to compare proportions and medians, respectively. Disease-specific survival (DFS) and overall survival (OS) were calculated using Kaplan-Meier analysis. The Cox regression analysis was used to determine the prognostic factors for survival. Two-tailed tests were considered significant at a  $p$  value  $<0.05$ .

**Results:** The median tumor size was 25 mm (range, 8–67 mm) with the median age of 70 years (range, 36–86 years). 104 (79.4%) lesions were exophytic and there were 16 (12.2%) patients with bilateral tumors. Median treatment time was 12 minutes (range, 5-36). Tumor stage was T1a: 118 (90.1%) or T1b: 13 (9.1%). There were 6 (4.6%) local recurrences, and 19 complications (14.5%). Median time to recurrence was 2 years. The size of the tumor ( $<30$  mm and  $\geq 30$  mm) had no impact on patients' OS. However, during the first 68 months of follow-up, there was a trend towards worst survival in patients with lesions over 40mm. In a multivariate analysis age at RFA, chronic kidney disease in a preoperative assessment and biopsy proven RCC influenced the survival significantly. Patients' age at RFA had the strongest influence on the survival.

**Conclusions:** RFA can provide a durable oncologic control with a low recurrence risk in patients with small renal masses. Therefore, percutaneous RFA remains a very promising minimally invasive treatment option for appropriately selected patients with organ-confined, at best exophytic, tumors.