

## Chapter 21

# COMPARISON OF RADIOFREQUENCY ABLATION AND CRYOABLATION IN RENAL TUMORS

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### INTRODUCTION

Small renal masses are defined as renal neoplasms with a maximum diameter of 4 cm or less, and are expressed as T1a tumors in TNM staging (1). In the management of small renal masses, there are wide range of options ranging from active surveillance to radical nephrectomy. One of these options is ablation therapies. According to the American Urology Association (AUA) guidelines, partial nephrectomy is the gold standard treatment for T1a renal masses, but ablation therapies are also offered as treatment options (2). Ablative therapies are good option, especially in patients with severe comorbidities, or in patients who do not accept surgery (3).

In this review, we aimed to compare the oncologic outcomes and complication rates of radiofrequency ablation (RFA) and cryotherapy used for ablation therapy in small renal masses.

### RADIOFREQUENCY ABLATION

RFA is based on the generation of heat by an alternative electric current used at different frequencies, and consequently, cell death occurs in the exposed area. This alternating electric current is transferred to the tissue with a probe placed in the center of the target tissue, and these systems are usually monopolar. RFA-induced cellular damage is based on a time-temperature curve that requires less time at higher temperature (4).

In one study, it was shown that cellular damage developed after 60 minutes at 45 ° C, 5 minutes at 55 ° C and 1 minute at 70 ° C (5). When the temperature exceeds 60 ° C, the cell loses its intracellular buffering ability, resulting in increased

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cryotherapy and 19% in the RFA group. It was concluded that there were similar results in terms of complication rates between both treatment modalities (21).

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