

# INPLASY PROTOCOL

To cite: Fei et al. Efficacy and safety of no-touch radiofrequency ablation for small hepatocellular carcinoma-a systematic review and single-arm meta-analysis. Inplasy protocol 202270101. doi: 10.37766/inplasy2022.7.0101

Received: 23 July 2022

Published: 23 July 2022

**Corresponding author:**  
Fei Du

dufei2021@fotmail.com

**Author Affiliation:**  
Qinghai University

**Support:** None.

**Review Stage at time of this submission:** Data extraction.

**Conflicts of interest:**  
None declared.

## Efficacy and safety of no-touch radiofrequency ablation for small hepatocellular carcinoma-a systematic review and single-arm meta-analysis

Fei, D<sup>1</sup>; Li, R<sup>2</sup>.

**Review question / Objective:** Since the first clinical study in 1995, the clinical application of percutaneous radiofrequency ablation (RFA) for early-stage hepatocellular carcinoma (HCC) has been expanding. Currently, RFA and surgical resection are recognized as a treatment method for early-stage HCC, and RFA has been widely used as a minimally invasive method for treating early-stage HCC. Many studies have proven that RFA is as effective as surgery in treating early stage HCC. In addition, thermal ablation is a radical treatment for small HCC in addition to hepatectomy, and RFA is the first-line treatment for this technique, which is recommended by every liver research association. In prospective studies of Milan criteria-eligible patients with HCC receiving unipolar RFA as the only first-line therapy, three-year local tumor progression of 8%-26% has been reported. A new No-touch RFA (NTRFA) technique has been gaining attention in recent years for its advanced concept, which overcomes the shortcomings of conventional RFA and provides a greater range and volume of necrosis. Although many studies have provided encouraging results, studies on the prognosis and complications of NTRFA for HCC remain scarce. In this study, we performed a single-arm meta-analysis to determine the pooled proportion of local tumor progression-free survival, recurrence-free survival, overall survival, and adverse events for NTRFA in patients with small HCC in order to provide a reliable pooled proportion for subsequent studies.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 July 2022 and was last updated on 23 July 2022 (registration number INPLASY202270101).

### INTRODUCTION

**Review question / Objective:** Since the first clinical study in 1995, the clinical application of percutaneous radiofrequency ablation (RFA) for early-stage

hepatocellular carcinoma (HCC) has been expanding. Currently, RFA and surgical resection are recognized as a treatment method for early-stage HCC, and RFA has been widely used as a minimally invasive method for treating early-stage HCC. Many

studies have proven that RFA is as effective as surgery in treating early stage HCC. In addition, thermal ablation is a radical treatment for small HCC in addition to hepatectomy, and RFA is the first-line treatment for this technique, which is recommended by every liver research association. In prospective studies of Milan criteria-eligible patients with HCC receiving unipolar RFA as the only first-line therapy, three-year local tumor progression of 8%-26% has been reported. A new No-touch RFA (NTRFA) technique has been gaining attention in recent years for its advanced concept, which overcomes the shortcomings of conventional RFA and provides a greater range and volume of necrosis. Although many studies have provided encouraging results, studies on the prognosis and complications of NTRFA for HCC remain scarce. In this study, we performed a single-arm meta-analysis to determine the pooled proportion of local tumor progression-free survival, recurrence-free survival, overall survival, and adverse events for NTRFA in patients with small HCC in order to provide a reliable pooled proportion for subsequent studies.

**Condition being studied:** Literature inclusion criteria: (1) study type: randomized controlled trials (RCTs), clinical controlled trials, uncontrolled prospective trials, prospective observational studies, and retrospective studies; (2) subjects: patients aged 18 years or older with hepatocellular carcinoma less than 5 cm treated with no-touch radiofrequency ablation, regardless of sex, race, or etiology; (3) interventions: no-touch radiofrequency ablation; (4) the article reported the outcome indicators. Literature exclusion criteria (1) other study types such as reviews and case reports; (2) non-English literature, duplicate publications or conference abstracts; (3) animal studies.

## METHODS

**Participant or population:** patients aged 18 years or older with hepatocellular carcinoma less than 5 cm treated with no-

touch radiofrequency ablation, regardless of sex, race, or etiology.

**Intervention:** No-touch radiofrequency ablation.

**Comparator:** None.

**Study designs to be included:** Randomized controlled trials (RCTs), clinical controlled trials, uncontrolled prospective trials, prospective observational studies, and retrospective studies.

**Eligibility criteria:** (1) other study types such as reviews and case reports; (2) non-English literature, duplicate publications or conference abstracts; (3) animal studies.

**Information sources:** Pubmed, enbase, Cochrane Library.

**Main outcome(s):** The primary outcome was Local tumor progression-free survival, and the secondary outcomes were RFS, OS, and adverse events.

**Quality assessment / Risk of bias analysis:** Since only single-group studies were included in the literature search, the JBI critical appraisal quality assessment of the cage selles study was used as a quality assessment tool.

**Strategy of data synthesis:** Where possible and appropriate, we performed meta-analyses of quantitative and qualitative data using windows R4.0.1. The combined proportions were calculated using the 'meta' package. We used a random effects model because the clinical and methodological aspects are likely to be different between these studies. The I<sup>2</sup> statistic was used to assess heterogeneity between effect sizes for individual studies and was defined as low (25-50%), medium (50-75%), or high (>75%). If a meta-analysis of the results was not possible, we described the results qualitatively.

**Subgroup analysis:** None.

---

**Sensitivity analysis:** To address the impact on effect estimates, we tested the results by performing sensitivity analyses.

**Language:** English.

**Country(ies) involved:** China.

**Other relevant information:** None.

**Keywords:** Hepatocellular carcinoma, No-touch Radiofrequency ablation, Local tumor progression-free survival.

**Contributions of each author:**

Author 1 - Fei Du.

Author 2 - Li Ren.