

Review

Microwave ablation for hepatic malignancies: a call for standard reporting and outcomes



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Recurrence;
Morbidity

Abstract

BACKGROUND: Clinical standards of reporting microwave ablation outcomes have not been defined with regard to ablation success, 90-day morbidity, local recurrence after ablation, and nonablation hepatic recurrence. We propose recommendations for microwave ablation reporting and quality standards.

METHODS: Literature review of clinical studies focusing on microwave ablation of primary and metastatic hepatic tumors was reported.

RESULTS: Ablation success remains the highest quality reporting standard with variations in nomenclature, but with a universal agreement of complete destruction of the target lesion within 1 month after initial microwave ablation. Local recurrence after ablation remains highly variable, with reports as low as 2.2% to as high as 22%; standards lack a common, clearly defined distance from the initial target ablated lesion and the requirement that the target lesion be defined as an ablation success before it can be called a recurrence. Nonablation hepatic recurrence, nonhepatic recurrence, and 90-day morbidity and mortality remain limited in the current literature.

CONCLUSIONS: Standardization of hepatic microwave ablation reporting standards are proposed. Current reporting standards in microwave ablation of hepatic malignancies are suboptimal and lack standardization for comparison across institutions.

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Primary and metastatic hepatic tumors remain a common and challenging multidisciplinary clinical problem. Primary hepatocellular carcinoma (HCC) and metastatic colorectal hepatic metastasis (CRHM) tumors are the most common hepatic malignancies encountered. In general, there are various options for treating hepatic tumors, with resection, transplantation, ablation, and embolization being the most common options. The type of disease, size of

index lesion, extent of disease, biology of the disease, patient comorbidities, and the capability of the treating institution's technical ability dictate selection of a specific treatment modality.

Although surgical resection is the only potentially curative approach for patients with primary and/or metastatic liver tumors, most patients with hepatic malignancy are precluded from resection because of multifocal disease, anatomic limitations, inadequate functional liver reserve, extra-hepatic metastasis, or medical comorbidities. Consequently, several methods of tumor ablation have been developed as alternate treatment strategies for patients with unresectable hepatic tumors or as adjuncts in total cancer therapy.¹ Microwave ablation (MWA) is a rapidly expanding ablation option, with now more than 8 MWA device manufacturers.

The most powerful prognostic factor for ablation success that can be translated into improved progression-free survival remains the completeness of the initial ablation, but standards of optimal MWA have not been defined and no recommendations are available from national or international societies. Improvement in MWA reporting standards, particularly with regard to ablation success, local recurrence after ablation, and nonablation hepatic recurrence, could

improve the variable local recurrence rates and potentially contribute to increasing overall survival. This study, based on reviews of both anatomic and clinical literature, addresses the current reporting of MWA data and we propose recommendations for MWA reporting.

Methods

A literature search was conducted using PubMed and the Cochrane Collaboration Library. The initial search using the terms "microwave ablation" and "liver" yielded 473 results. In addition, there were 4 hand-selected articles that were added to the study. The 477 articles were narrowed down to 465 after 12 duplicates were removed. From this group of 465 articles, 304 were excluded after being screened for the following criteria (Fig. 1): publication date between January 1, 2007 and June 1, 2013, English-only articles, and human subjects only. The inclusion criteria from this point forward were as follows: MWA as the primary treatment, in vivo human studies only, patient sample size of at least 20, and a follow-up period of at least 6 months. Meta-analyses and case studies were also excluded from the findings. From these 161 articles, 54

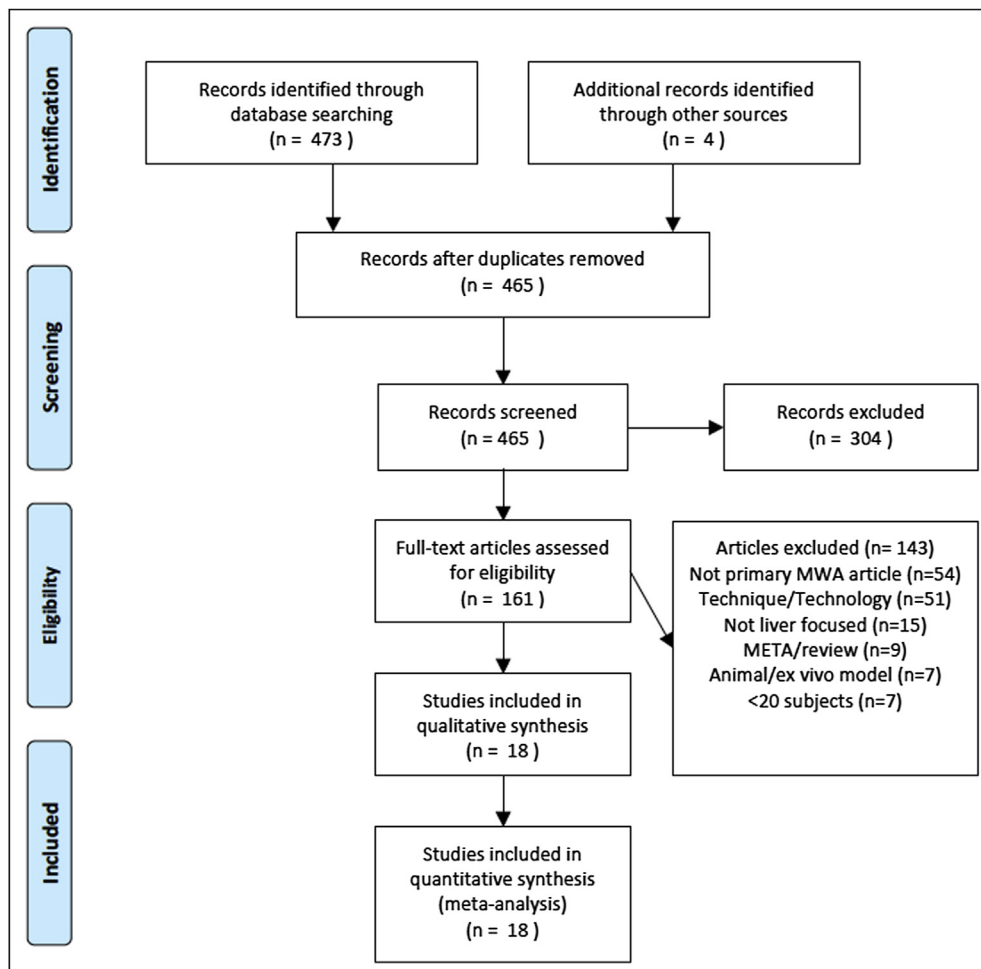


Figure 1 Identification and literature review of clinical studies in microwave ablation of the liver.

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