

Thermal Ablation in Non-Small Cell Lung Cancer: Evaluation of Recurrence Rates

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Purpose

Lung cancer is one of the most common causes of cancer-related mortality for both men and women in the US; as such, the utilization of alternative treatment modalities, such as ablation procedures, are essential to improving outcomes. This review will examine post-operative recurrence rates of NSCLC in patients who received tumor ablation procedures.

Materials and Methods

A review of randomized control and clinical trials published between 2015 and 2025 investigating NSCLC recurrence rates in patients who underwent ablation therapy was conducted. The studies evaluated described the ablation procedure and protocols, as well as their observed local recurrence rates as a percentage of the total patients followed. Side effects as noted by the study authors were also reviewed.

Results

Study	Year	# of pts	Tumor Type	Type(s) of ablation studied	Local recurrence rate	Complication rate	Common complications
Aufranc, et al.	2019	115	NSCLC	RFA + MWA	RFA: 7.6%, MWA: 3.7%	RFA: 49%, MWA: 50%	Pneumothorax
Botsa, et al.	2022	124	NSCLC	RFA + MWA	RFA: 5%, MWA: 15%	RFA: 15%; MWA: 9.5%	Pneumothorax, post-ablation syndrome
Sanger, et al.	2023	33	Stage IA NSCLC - 34 adenocarcinomas + 7 squamous cell carcinomas + 1 poorly differentiated NSCLC	Cryoablation	7% (3 incidences out of 42 NSCLCs, shown at 4, 17, and 22 months)	-	-

Discussion

As NSCLC continues to be one of the leading cancer-related causes of death in the US, there is an increasing need in modern healthcare for the expansion of options to treat these conditions. Tumor ablations, such as RFA, MWA, and cryoablation, among others, have been proven as an up-and-coming method of treating these solid malignancies with promising results. As evidenced by their low tumor recurrence rates, ablations can be an effective option for patients who may not be able to tolerate conventional surgery or chemotherapy.

References

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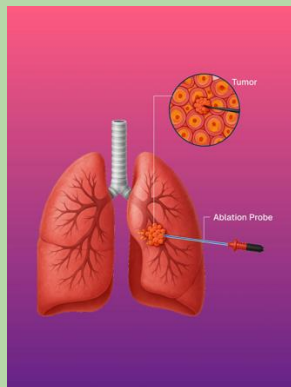


Fig. 1: Diagram of tumor ablation procedure in the lung (Patel, P. (2025). *Thermal Ablation (RFA & Microwave) of Lung Metastasis*. IR Clinics India. Retrieved 2025, from <https://irclinicsindia.com/procedures/thermal-ablation-rfa-microwave-of-lung-metastasis>.



Fig. 2: Lung after RFA of primary lung adenocarcinoma in 71-year-old man (Murphy, M., Wrobel, M., & Fisher, D. (2022). *Lung after RFA of primary lung adenocarcinoma in 71-year-old man*. American Journal of Roentgenology. ARRS. Retrieved 2025, from <https://ajronline.org/doi/10.2214/AJR.21.27099>.)

Table 1: Reviewed studies evaluating tumor recurrence and complications following thermal ablation of NSCLC