



# Ablation Therapy for Kidney Cancer

Ablation therapy is a treatment option for people with small kidney tumors that uses extreme cold or heat to kill tumor cells.

## What is ablation therapy?

Ablation therapy is a method used to destroy small tumors (4 cm wide or smaller). The goal is to destroy the tumour cells and minimize damage to the surrounding healthy tissue in order to preserve as much kidney function as possible. Ablation therapy is considered as an alternative to surgery and is usually used for people in whom a less invasive treatment is recommended. There are a few different types of ablation therapy that can be used to treat kidney tumours – some use **cold** (cryoablation), while others use **heat** (radiofrequency or microwave ablation) to destroy tumor cells.

## How is ablation therapy performed?

### Percutaneous ablation therapy

Although ablation therapy can be performed in different ways, it is most commonly performed **percutaneously** – which means “through the skin.” Unlike surgery, which requires several small cuts or one large cut to be made through the skin and abdominal muscles, ablation therapy uses a small needle-like tool that is inserted through the skin and into the tumor in your kidney. Before the procedure, you may get local anesthetic to numb the area where the tool is to be inserted, along with some medication that makes you feel relaxed (also known as sedation). In some cases, general anesthetic may be used, which causes you to be unconscious. A CT scan or ultrasound is then used to mark the best spot on the skin to insert the tool and guide it to your kidney, where either cold or heat is delivered directly into the tumor to kill the tumor cells. Prior to this, a biopsy (sample) of the tumor may be taken using a separate needle. Ablation therapy is usually completed as a day procedure without the need for a hospital stay, or you may need to stay one night in the hospital.

## What are the types of ablation therapy?

### Cryoablation

Cryoablation uses extreme cold to kill the tumor cells. One or more thin metal needles are inserted into the tumor and are used to deliver very cold liquid or gas to the tumor. An ultrasound or CT scan is used to guide the tool to the location of the tumor. The tumor cells are left to thaw, and then frozen again. This may be repeated a few times.

### Radiofrequency ablation (RFA) or microwave ablation (MWA)

In both techniques, an ultrasound or CT scan is used to guide a thin needle-like tool into the tumor. Energy is sent through the needle, creating heat which kills the tumour cells.

## Advantages and disadvantages of ablation therapy

### Advantages

- Recovery times for percutaneous ablation therapy are faster compared to surgery.
- An overnight hospital stay is usually not required for percutaneous ablation therapy.
- Ablation therapy offers similar short-term safety and effectiveness as surgery.
- Ablation therapy allows your doctor to target the tumor precisely, minimizing damage to healthy kidney tissue.

### Disadvantages

- Ablation therapy does not work well for large tumors or for cancer that has spread to other parts of the body.
- Ablation therapy does not work well for very small tumors that cannot be seen on a CT scan or ultrasound.
- Sometimes, tumors may reoccur and require further treatment in the future.

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## Which type of ablation therapy is best?

This depends on many factors, including the size and location of the tumor. Your ablation doctor will discuss this with you at your consultation.

### Before the procedure

Tell your doctor about any allergies you have or medications you take. Your doctor may ask you to stop taking certain medications, like blood-thinners, before the procedure. Your doctor or nurse will let you know when you need to stop eating or drinking before the procedure. If you have diabetes, you will receive special instructions. Before the procedure, you should also arrange safe transportation home, with a responsible adult. Due to sedation, you will not be able to drive yourself home after the procedure.

### Risks/side effects

Like other medical or surgical procedures, there are risks associated with ablation therapy, and possible side effects can occur during or after your procedure. While the side effects of ablation therapy can depend on the type of ablation therapy you have, it is important to remember that everyone's experience is different. The side effects that someone else experiences may differ from those that you might experience. However, most side effects from ablation therapy are minor and go away on their own.

Possible side effects of ablation therapy include:

- Hematoma – an accumulation of blood outside of a blood vessel caused by damage to the blood vessel wall, similar to a bruise
- Pain in the treatment area – can be treated with over-the-counter pain medication

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Possible side effects of ablation therapy include:

- Hematoma – an accumulation of blood outside of a blood vessel caused by damage to the blood vessel wall, similar to a bruise
- Pain in the treatment area – can be treated with over-the-counter pain medication
- Flu-like symptoms
- Nausea or vomiting
- Infection
- Damage to tissues/organs surrounding the tumor cells
- Blood in your pee
- Bleeding - more common with cryoablation than radiofrequency ablation (RFA) or microwave ablation (MWA)
- In rare cases kidney failure can occur

## Post-procedure care and followup

After your procedure and before your discharge, you will be observed in case any complications arise. Depending on the type of procedure you have, you may need to stay at the hospital for several hours, or possibly longer. You may receive medication for any pain you may experience immediately after the procedure. You may also receive a prescription for medication to manage pain in the days following your procedure. Before you are discharged, your healthcare team will talk to you about possible side effects, how you can manage them, and when you should seek medical attention.

Recovery time from ablation therapy varies; usually around a few days to a week. It is best to avoid strenuous activity during the recovery period.

The frequency and duration of followup can vary from patient to patient. If you have significant side effect(s) from the procedure, a followup CT scan may be performed shortly afterward (3–5 days). Otherwise, the initial follow-up scan may be taken 1–3 months after ablation therapy to make sure the tumor was successfully treated. Long-term followup scans may be taken (every 1 to 2 years) to monitor for signs of recurrence.

## References

Aarts BM, Gomez FM, Lopez-Yurda M, et al. Safety and efficacy of RFA versus MWA for T1a renal cell carcinoma: A propensity score analysis. *Eur Radiol*. 2023;33(2):1040-49. doi:10.1007/s00330-022-09110-w

Abdelsalam ME, Ahrar K. Ablation of small renal masses. *Tech Vasc Interv Radiol*. 2020;23(2):100674. doi:10.1016/j.tvir.2020.100674

Beck A, Venkatesan AM, Wood B, et al. Ablation of small renal masses. Scardino PT, Lineham WM, Zelefsky MJ & Vogelzang NJ (eds.). *Comprehensive Textbook of Genitourinary Oncology*. 4th ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins; 2011: 44F: pp. 755-762.

British Society of Interventional Radiology. Kidney Tumour Ablation. 2024. Accessed February 2024. <https://www.bsir.org/patients-1/useful-terms/kidney-tumour-ablation/>

Cancer Research UK. Microwave and radiofrequency ablation for kidney cancer. 2024. Accessed February 2024. <https://www.cancerresearchuk.org/about-cancer/kidney-cancer/treatment/microwave-and-radiofrequency-ablation>

Canadian Cancer Society. Ablation therapy for kidney cancer. [unknown publication date]. Accessed February 2024. <https://cancer.ca/en/cancer-information/cancer-types/kidney/treatment/ablation-therapy>

De Cobelli F, Papa M, Panzeri M, et al. Percutaneous microwave ablation versus cryoablation in the treatment of T1a renal tumors. *Cardiovasc Intervent Radiol*. 2020;43(1):76-83. doi:10.1007/s00270-019-02313-7

Millan B, Breau RH, Bhindi B, et al. A comparison of percutaneous ablation therapy to partial nephrectomy for cT1a renal cancers: Results from the Canadian Kidney Cancer Information System. *J Urol*. 2022;208(4):804-812. doi:10.1097/JU.0000000000002798

Mauri G, Mistretta FA, Bonomo G, et al. Long-Term Follow-Up Outcomes After Percutaneous Us/Ct-Guided Radiofrequency Ablation For Ct1a-B Renal Masses: Experience From Single High-Volume Referral Center. *Cancers (Basel)*. 2020;12(5):1183. Published May 7, 2020. doi:10.3390/cancers12051183

Richard PO, Violette PD, Bhindi B, et al. Canadian Urological Association guideline: Management of small renal masses – Full-text. *Can Urol Assoc J* 2022;16(2):E61-75. <http://dx.doi.org/10.5489/cuaj.7763>

Zhou W, Arellano RS. Thermal Ablation Of T1c Renal Cell Carcinoma: A Comparative Assessment Of Technical Performance, Procedural Outcome, And Safety Of Microwave Ablation, Radiofrequency Ablation, And Cryoablation. *J Vasc Interv Radiol*. 2018;29(7):943-951. doi:10.1016/j.jvir.2017.12.020

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