Radiofrequency Ablation

For inoperable liver tumors, radiofrequency ablation (RFA) offers a nonsurgical, localized treatment that kills the tumor cells with heat, while sparing the healthy liver tissue. Thus, this treatment is much easier on the patient than systemic therapy. Radiofrequency energy can be given without affecting the patient’s overall health and most people can resume their usual activities in a few days.

In this procedure, the interventional radiologist guides a small needle through the skin into the tumor. From the tip of the needle, radiofrequency energy (similar to microwaves) is transmitted to the tip of the needle, where it produces heat in the tissues. The dead tumor tissue shrinks and slowly forms a scar. The FDA has approved RFA for the treatment of liver tumors.

Efficacy

In a small number of cases, RFA can extend patients' lives, but it is generally palliative. Depending on the size of the tumor, RFA can shrink or kill the tumor, extending the patient’s survival time and greatly improving their quality of life while living with cancer. Because it is a local treatment that does not harm healthy tissue, the treatment can be repeated as often as needed to keep patients comfortable. It is a very safe procedure, with complication rates on the order of two to three percent, and has been available since the late 1990s.

By decreasing the size of a large mass, or treating new tumors in the liver as they arise, the pain and other debilitating symptoms caused by the tumors are relieved. While the tumors...
themselves may not be painful, when they press against nerves or interfere with vital organs, they can cause pain. RFA is effective for small to medium-sized tumors and emerging new technologies should allow the treatment of larger cancers in the future.

![A LIVER TUMOR TREATED WITH RFA](https://via.placeholder.com/150)

**Benefits**

- Is most effective when all the cancer is localized in the liver
- Can be used to treat primary liver cancer and tumors that have metastasized (spread) from other areas in the body to the liver
- Usually does not require general anesthesia
- Is well tolerated—most patients can resume their normal routine the next day and may feel tired for a few days
- Can be repeated if necessary
- May be combined with other treatment options
- Can relieve pain and suffering for many cancer patients

**Cryoablation**

Cryoablation is similar to RFA in that the energy is delivered directly into the tumor by a probe that is inserted through the skin. But rather than killing the tumor with heat, cryoablation uses an extremely cold gas to freeze it. This technique has been used for many years by surgeons in the operating room, but in the last few years, the needles have become small enough to be used by interventional radiologists through a small nick in the skin, without the need for an operation. The "ice ball" that is created around the needle grows in size and destroys the frozen tumor cells.