



California Pacific
Medical Center

A Sutter Health Affiliate
With You. For Life.

Radiofrequency Ablation For Liver Cancer

AT CALIFORNIA PACIFIC MEDICAL CENTER we are committed to bringing new and advanced diagnostic tools, medical treatments and surgical options to the physicians and patients we serve. Through this procedure profile, our physicians illustrate surgical capabilities and techniques that provide you with a window into their practice of diagnosis, treatment and patient follow-up.

At California Pacific we go beyond medicine to treat the whole person, not just the illness. Our promise to our patients is to deliver the highest quality expert care with kindness and compassion. Because medicine can transform a body, but going beyond medicine can transform a life.

For patient referrals:
888-637-2762
www.cpmc.org/liver

Beyond Medicine.

What is Radiofrequency Ablation?

Radiofrequency ablation (RFA) is a new technique used to treat benign and malignant liver tumors, often without the long incisions traditionally used in liver tumor ablation.

In the past, destruction of liver tumors could only be accomplished by freezing (cryoablation) or injection with toxic chemicals. RFA combines the advantages of improved technology and minimally invasive surgery to give patients another option for treatment of liver tumors.

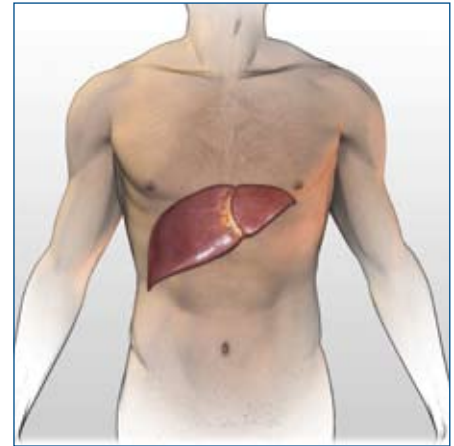
At California Pacific Medical Center, we have incorporated radiofrequency ablation into our treatment for hepatocellular carcinoma (liver cancer) as well as other cancers that have spread to the liver, such as metastatic colon cancer.

How does RFA Work?

Radiofrequency ablation uses alternating current (electricity) delivered through a specially designed probe that is directed into the liver tumor using ultrasound or CT scan guidance. The probe allows the electric current to pass into the tumor, while the surrounding tissues (skin, muscle and blood vessels) are not affected. The electric current generates heat which causes death of tumor cells. After the tumor cells are destroyed, the tumor will eventually be replaced by scar tissue.

How is RFA Performed?

Radiofrequency ablation can be performed using many different approaches, but usually requires surgery



While the liver lies in close proximity to other abdominal organs, radiofrequency ablation enables the surgeon to precisely target and destroy liver tumor cells without disrupting surrounding tissues.

and general anesthesia to be done safely. In most cases laparoscopic surgery is used, employing small incisions with a camera placed inside the abdomen to guide the ablation procedure.

Typically three or four small incisions are made. Ports are then inserted into these incisions, which enable the surgeon to easily guide the radiofrequency and ultrasound probes into the liver (see illustration on reverse). The location of each incision depends upon the location of the tumor within the liver. In rare situations, the tumor may be too large for the laparoscopic approach, or may be located in an area that is not safe for laparoscopic surgery. In these cases, a traditional open incision will be used.

During surgery, a small ultrasound probe is also placed into the abdomen to accurately locate the tumor



Three to four ports inserted in the abdomen enable surgeons to view the liver tumor(s) via an ultrasound probe and insert the radiofrequency probe(s) for ablation.

and guide the RFA probe into the center of the tumor. Patients typically spend four hours in surgery.

What are the advantages of RFA?

Radiofrequency ablation has many advantages over other ablation techniques, including:

- More effective tumor destruction
- Fewer complications
- Can be performed laparoscopically in most patients
- Usually requires only one treatment session
- Allows for faster recovery

On average, patients who undergo RFA spend two or three days in the hospital following surgery. While RFA can be repeated, this is rarely necessary.



The radiofrequency probe is inserted into the liver tumor.

What are the risks of RFA?

Radiofrequency ablation is very safe, although it usually requires laparoscopic surgery. Therefore, the risks can include bleeding and the development of infections, and a small chance that your liver disease may become worse following ablation. There is also an exceedingly small chance (1 in 200) that the tumor may spread outside the liver during the operation. The majority of patients do not experience any complications following RFA.

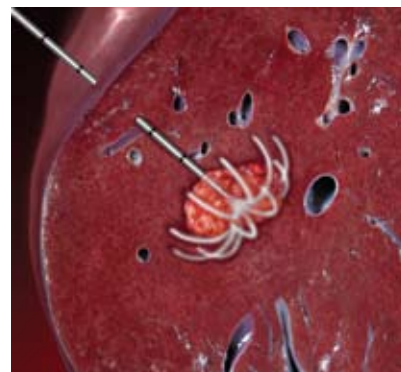
Is RFA a good choice for me?

Radiofrequency ablation is not for everyone. If you have severe portal hypertension, a very large tumor or your tumor has spread outside of the liver, the risk of undergoing RFA may outweigh the potential benefit. Only your doctors can determine if RFA is right for you.

Why Choose Us?

California Pacific's Liver Disease Management and Transplant Program offers comprehensive specialty care for adult end-stage liver disease. We emphasize ongoing communication with referring physicians and incorporate them into the decision process of their patient's medical management. We follow up our care with an organized discharge report to the referring physician.

For patients requiring hospitalization, we have a dedicated critical care liver unit, hospitalists who specialize



The surgeon deploys electrodes from the probe which deliver radiofrequency energy. This high heat causes death of tumor cells.

in liver disease, physician assistants, on-call anesthesia staff and a specialized O.R. nursing team. At California Pacific, our focus is on going beyond medicine. We look intently at each individual case and treat the whole person, not just the illness.

With the use of new surgical methods and ongoing clinical research, patients now have more options than ever for treating liver cancer. For patients who may not be eligible for the therapy outlined above, California Pacific has an active Hepatology and Gastroenterology Research Program that is involved in new, investigational techniques.

For more information

For surgical information, contact any of our liver surgeons:

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Assad Hassoun, M.D.

Garrett Hisatake, M.D.

Harish Mahanty, M.D.

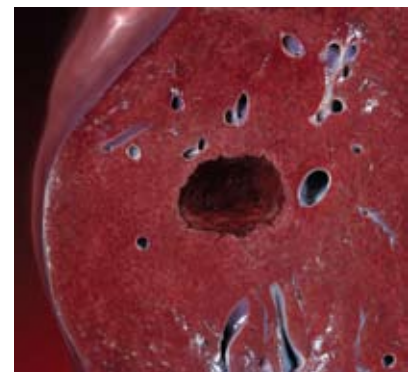
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Following the procedure, the tumor cells are destroyed and will eventually be replaced by scar tissue.