There are two approaches for cryoablation used to treat kidney cancer — laparoscopic cryoablation and percutaneous cryoablation. The type chosen will depend on your physician’s judgment, along with the location and size of the tumor(s) to be treated. This leaflet provides you with more information about laparoscopic kidney cryoablation.

Laparoscopic kidney cryoablation is usually carried out using general anesthetic, meaning you will not be conscious during the procedure. Once the anesthetic has taken effect, you will be positioned on your side and three or four small incisions are made through your skin.

A special gas, which is harmless, will be released into your abdomen to create a working space and to give the doctor easy access to the kidney. A tiny camera (laparoscope) will be inserted into the same area of your abdomen through one of the small incisions. This gives the doctor excellent views of the area to be treated. Then, specially designed instruments are inserted through
the incisions, and the doctor uses these to move the kidney to be treated away from adjacent organs and large blood vessels, so that these are not damaged by the freezing process.

A special ultrasound imaging probe is used to locate the exact position and extent of the tumor. The ultrasound probe uses sound waves to create images, which, when combined with the images of the kidney from the camera, give the doctor a very accurate picture of the area that needs to be treated.

The doctor then inserts the cryoablation probes into the tumor. Compressed gas is delivered into the probes. The gas circulates through the closed metal probes generating freezing temperatures and forming ice, which the doctor shapes around the kidney tumor. Throughout this process, the doctor watches the images on the screens to monitor and control the shape and size of the ice being created, ensuring that all of the cancerous tissue is thoroughly frozen and killed. Doctors usually also freeze a small “safety margin” (surgical margin) of normal kidney tissue around the tumor in case it contains any cancer cells which are not visible.

What are the benefits of laparoscopic cryoablation?

Cryoablation offers many advantages over other treatment options, including:

- **Multiple tumors** can be treated in one session

- **Shorter recovery time than partial nephrectomy** permits rapid return to everyday life

- **Can be used when other treatments**, such as prior renal surgery, have failed

- **Less post-operative pain** (pain after the procedure) than LPN

- **Lower morbidity (fewer side effects and complications)** than surgery or radiofrequency ablation

1. Guazzoni et al, J Urology, 2010
2. Lucas & Cadeddu, J Endourol, 2010
4. DeCastro et al, Urology, 2010
7. Weld & Landman, BJU International, 2005
How long does the procedure take?

The procedure length will vary according to the size and location of the tumor, but usually lasts two to three hours.

How will I feel after the procedure?

You may feel some bruising where your kidney and other organs were manipulated, and soreness from the small incision sites. It is also possible that you may experience some pain in your side from the laparoscopic gas in your abdomen until this has been reabsorbed by your body. This is all quite normal after any laparoscopic procedure. You will be given pain medicine to manage any discomfort, but most patients report that they have very little pain after the procedure.

Effectiveness of Laparoscopic Cryoablation for Kidney Cancer (% Successful Local Tumor Control)

Local tumor control is a measure of how well the cancer has been destroyed or limited in the target tissue. A high number means more effective control at time of follow up.

Study 1: Aron et al, J Urology, 2010
Study 2: Guazzoni et al, J Urology, 2010
How long will I need to stay in the hospital?

Your doctor will want to make sure that you are eating, drinking and urinating comfortably before you leave the hospital, and this will usually mean that you will be in hospital for at least one overnight stay, and sometimes two (for example if you have any other conditions associated with your kidney cancer). You may also need to stay in the hospital longer if there are any complications.

How long before I can return to work and other activities?

Your doctor will advise you on when it is sensible for you to return to work and resume other activities since this will depend on your general health and the work you do. Usually, patients are back to their normal day-to-day activities within about two weeks of the procedure – often sooner.

The safety and effectiveness of kidney cryoablation make this technique the only truly minimally invasive treatment for kidney cancer. Cryoablation has redefined the term minimally invasive.

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In 2005, I had open partial nephrectomy surgery performed on my left kidney to remove several small cancerous tumors. It was extremely painful, required a four-day hospital stay and took many weeks to recover. Six months later, the tumors had returned. Unwilling to undergo a second open surgery, I underwent laparoscopic renal cryoablation. Compared to the open surgery, cryoablation was a walk in the park. It was relatively painless and resulted in a much shorter hospital stay and recovery period. What’s more, it’s now been three years and the tumors have not returned.

Laparoscopic kidney cryoablation patient