

Kidney cancer - Renal squamous cell carcinoma (RSCC)



What is renal squamous cell carcinoma?

Renal squamous cell carcinoma or RSCC is a cancer that grows in the cells that line parts of the kidney called the filtration system, the renal pelvis (also called the collecting duct) or the ureter. The ureter is the tube that connects the kidney to the bladder, while the renal pelvis is the funnel-like dilated end of the ureter where it joins the kidney. The filtration system is made up from glomeruli; bundles of very small blood vessels (called capillaries) where the blood is filtered. Glomeruli are found in the body of the kidney (see *Essential guide: The Kidneys* for more information).

The filtration and collecting duct system of the kidney, including the renal pelvis and ureter, are lined with a tissue called epithelium. Renal squamous cell carcinoma starts in a type of cell in the epithelium called a squamous cell.

Occurrence

Renal squamous cell carcinoma (RSCC) is a very rare form of kidney cancer and accounts for about 0.5% of all kidney tumours. There are about 280 cases of RSCC in the whole of Europe each year. RSCC becomes more common as people get older.

Risk factors

A risk factor is anything that increases a person's chance of developing cancer. Although risk factors can influence the development of cancer, most do not directly cause cancer. Some people with several risk factors never get cancer, while others with no known risk factors do. However, knowing your risk factors and talking about them with your GP may help you make more informed lifestyle and health care choices. A cause is a factor that has been proven to give rise to cancer, for example cigarette smoking can cause lung cancer.

The cause of RSCC is unknown; however, there are a number of risk factors that can increase the risk of developing this cancer, including:

- Excess water inside the kidney and ureter causing dilation of the renal pelvis (also called hydronephrosis). This is usually caused by an obstruction in the ureter or renal pelvis causing a build-up of urine in the kidney
- Chronic irritation due to kidney stones has been linked to the development of RSCC

- Smoking tobacco is a risk factor for squamous cell cancer. Chemicals that cause cancer (carcinogens) that are present in cigarette smoke are absorbed by the blood and filtered by the kidneys to end up in the urine. These chemicals damage the cells in the kidney over a number of years. The risk increases the longer a person smokes and the more cigarettes they smoke
- The risk of developing RSCC increases with age.

Symptoms

Often kidney cancer in its early stages has no signs or symptoms. Kidney cancer can be found by accident when having a scan for other reasons or to investigate nonspecific symptoms, such as high blood pressure, weight loss, high temperature, problems with muscles or nerves in the body, and abnormal blood tests.

Symptoms of RSCC are often similar to those caused by urinary tract infections or stones in the bladder or kidneys. However, it is important to have any of the symptoms mentioned below checked by your GP, because the earlier RSCC is diagnosed, the more likely it is to be treated. Some people do not show any of these symptoms, while others may experience a number of them. Symptoms of RSCC include:

- The most common symptom is blood in the urine (haematuria), which may appear suddenly and may come and go. The urine may look pink, red or brown and you may see streaks of blood or blood clots. It is important to have blood in the urine checked by your GP immediately. Sometimes the blood cannot be seen (microscopic haematuria) and is picked up when you have your urine tested
- Occasionally, the ureter may become blocked by blood clots causing the urine to be held in the kidney and ureter (hydronephrosis). This may lead to more severe symptoms and an infection (high temperature/fever, a burning sensation when passing urine and a need to pass urine more frequently or urgently), but it is important to have them checked by your GP
- Pain or cramps in the flank/mid-back
- Lump/growth in the flank
- Unexplained weight loss
- Extreme tiredness (fatigue) and lack of energy.

Other conditions such as bladder or kidney stones, infection or inflammation in the kidney can cause similar symptoms.

For information about the kidneys and diagnosis of kidney cancer, please see *Essential guide: The kidneys* and *Essential guide: Diagnosis and tests for kidney cancer*. For information about the staging and grading of RSCC, please see *Essential guide: Staging and grading of kidney cancer*.

Treatments for renal squamous cell carcinoma

Making treatment decisions

Your surgeon or oncologist will discuss with you the treatments they think would be best for you. Sometimes they may offer you a choice of treatments. In any case, you should be sure you are part of the decision-making process and that your views and preferences have been taken into account. You should make sure you have been given enough information and you understand the options, before you give permission for the treatment to start. Don't be embarrassed about asking people to explain things again and remember to ask about any particular aspects that are worrying you.



You should be told:

- The type of treatment that is recommended for you
- How and when this will be carried out
- The advantages and disadvantages of this type of treatment
- Any possible other treatments that might be available
- Any significant risks or side effects of the treatment.

When making treatment decisions, you might also be encouraged to consider a clinical trial as an option. A clinical trial is a research study to test a new treatment or procedure to see if it is safe, effective, and possibly better than the standard of care (normal treatment).

Treatment options depend on several factors, including the type and stage of your cancer (see *Essential guide: Kidney cancer – Renal cell carcinoma (RCC)* and *Essential guide: Staging and grading of kidney cancer*), possible side effects to the treatment, your preferences and your overall health (see below).

Before your operation, you will have a talk with your surgeon about what treatment options are available for you. You might like to ask:

- Will I need my kidney removed (a radical nephrectomy) or my kidney and ureter removed (a radical nephroureterectomy) with surgery?
- Would it be possible for me to have part of my kidney removed (a partial nephrectomy) or part of my kidney and ureter removed (a partial nephroureterectomy) with surgery?
- Can I have keyhole surgery (laparoscopic or robotic surgery)?
- Is this surgery curative?
- What other related procedures or treatments might I need?

What surgical treatments are available for RSCC?

Surgery is the main treatment for RSCC. The extent of the surgery will depend on the stage and grade of the cancer (see *Essential guide: Staging and grading of kidney cancer*) and the location of the tumour. Surgical removal of RSCC tumours is usually carried out by a urologist (a doctor who specialises in diagnosing and treating urinary, bladder and kidney problems). The operation is usually carried out under general anaesthetic. The most common surgical treatments for RSCC are as follows:

Radical nephrectomy

During a radical nephrectomy the whole kidney with the tumour is removed. Sometimes it is necessary to also remove the surrounding tissues, nearby lymph nodes and the bladder if the cancer has spread into these areas. Radical nephrectomy can be carried out as an open nephrectomy or using keyhole

(laparoscopic) surgery. During open nephrectomy, the surgeon will make a cut between the lower ribs on the side of the affected kidney in order to carry out this operation. See *Essential guide: Surgery for kidney cancer* for more information about this operation.

Radical nephroureterectomy

This is an operation to remove the affected kidney, ureter and top part of the bladder. Sometimes, the surrounding lymph nodes, fat and tissues are also removed during this operation. Usually, the adrenal gland can be spared unless the cancer is very close to it and there is a risk it has spread into this gland.

Laparoscopic surgery

For keyhole or laparoscopic surgery, the surgeon makes several small cuts and uses a thin tube with a light and a magnifier at one end (called a laparoscope) to see inside your tummy and perform the operation. This type of surgery results in less scarring and faster recovering times than traditional open surgery. Surgeons need special training before they are competent to do laparoscopic surgery.

Robot-assisted laparoscopic surgery

Sometimes a robot is used to help with laparoscopic surgery (robot-assisted laparoscopic surgery). The surgeon uses a robotic system to perform the operation. Robotic tools need very small cuts, provide better 3-D images during the operation, and can make fine or complex motions that are similar to what a surgeon's hand can do in open surgery.

Surgery to remove the kidney and ureter is generally very safe. However, as with any operation, there can be some risks, such as infection, bleeding that continues for more than a few days, or damage to the bladder during surgery. If you are concerned by any of these, or if you have any symptoms of an infection (fever, feeling generally unwell, smelly or cloudy urine) or blood or blood clots in your urine, please see your GP.

After radical nephrectomy or nephroureterectomy, the remaining healthy kidney can usually do all the work so patients can live a normal life. Blood and urine tests can be used to monitor the function of the remaining kidney, if necessary.

Depending on the grade of your cancer, you may need further treatment, such as chemotherapy or radiotherapy (see below). Your oncologist or specialist nurse will discuss this with you.

What to expect after surgery?

After your surgery, your ward nurse or physiotherapist will encourage you to start walking about as soon as possible. If you are not able to walk, they will encourage you to do deep breathing exercises and leg movements in the bed. Getting active again helps recovery.

You may have a drip to put fluid into your blood stream, a catheter to drain urine from your bladder and drains to remove any excess fluid or blood from your wound when you return to the ward. The catheter and drains are usually only needed for a couple of days and the drip can be removed as soon as you are able to eat and drink normally.

You will be given pain relief while you recover from your operation. At first you will require strong painkillers such as opiates (e.g.,

morphine). These can be given as injections from the ward nurse or by a patient-controlled pump attached to your arm. Some people have an epidural method of pain relief instead. This uses a local anaesthetic to numb the area where the operation took place and uses a tube into your back to deliver the local anaesthetic to the area.

You should expect to be in hospital for between 4 and 10 days after your operation. Ask your surgeon or ward nurse how long you should rest at home before getting back into daily activities, such as shopping, exercise, gardening, housework and returning to work.

You should get a follow-up outpatient appointment to check your recovery six weeks after your operation. During this visit your oncologist should discuss your outlook (prognosis) and/or further treatment options and follow-up schedule with you.

Depending on the grade of your cancer, you may need further treatment. RSCC is different to renal cell carcinoma (RCC) in that treatments such as chemotherapy and radiotherapy might be effective against RSCC but are not effective against RCC (see below). Your oncologist or specialist nurse will discuss this with you.

Chemotherapy

If your cancer has spread into surrounding tissue or lymph nodes, you might have chemotherapy to reduce the risk of the cancer coming back or to reduce the spread of your cancer. Your oncologist might also recommend chemotherapy if you are not able to have an operation for other health reasons.

Chemotherapy is the use of toxic drugs to kill cancer cells (cytotoxic drugs). The chemotherapy drugs are given by an injection into a vein (intravenous) in the arm. They circulate around the body in the blood stream (systemic drugs) and act by disrupting the growth of cancer cells. It is important that you complete your course of chemotherapy to gain the most benefit from the drug.

Intravenous chemotherapy is given in hospital, usually in the outpatient clinic. Chemotherapy may be given before surgery to shrink the cancer and reduce the risk of it coming back. This is called neo-adjuvant chemotherapy. Chemotherapy may also be given after surgery to prevent the cancer from coming back. This is called adjuvant chemotherapy.

Chemotherapy drugs are given over a few days; this is called a cycle of chemotherapy. A number of cycles will be repeated every few weeks over a period of several months; this is called a course of chemotherapy.

Because RSCC is so rare, there are no standard chemotherapy treatments that are used to treat this type of cancer. Sometimes, platinum-based chemotherapy is used, such as cisplatin, methotrexate, or bleomycin, but with limited success.

Side effects to chemotherapy depend on the drug used and the patient, and may include fatigue, anaemia, nausea, vomiting, diarrhoea, sore mouth, loss of appetite, hair loss and risk of



infection. However, these side effects usually go away when treatment with the drug stops.

The effectiveness of some chemotherapy drugs might be reduced by dietary or herbal supplements, such as fish oil preparations. It is therefore important to let your oncologist or specialist nurse know if you are taking any dietary supplements or complementary therapies before you start treatment.

It is also not advisable to become pregnant or to father a child while taking chemotherapy drugs, as they may harm the developing baby. It is therefore important to use effective contraception during treatment and for a few months after treatment. Please discuss this with your oncologist or specialist nurse.

Radiotherapy

Radiotherapy is the use of high-energy X-rays to kill cancer cells. These X-rays are directed at the tumour so as to avoid harm to normal healthy tissue. Radiotherapy may be recommended if you are not well enough to have an operation or to treat RSCC that has spread to nearby tissues. Sometimes radiotherapy is given after surgery to reduce the risk of the cancer growing back or it can be given in combination with chemotherapy.

Radiotherapy is given in the hospital radiotherapy department. It is given as a series of short treatments for a few minutes each weekday, with a break at the weekend. The length of treatment depends on the stage of the cancer. Usually, you will have a CT scan to show the radiotherapist (a doctor specialising in radiotherapy treatment for cancer) where the cancer is located and to enable the radiotherapy beam to be directed precisely at the cancer. Your skin might be tattooed (with your permission) with tiny marks that act as reference points to help plan your treatment each day.

Stereotactic ablative radiotherapy (SABR) can also be used to treat metastases found in the liver and lungs. In SABR, radiotherapy is directed at the area of the body containing the tumour to kill the cancer cells and avoid as much healthy tissue as possible.

Side effects to radiotherapy can include tiredness, nausea and vomiting, and sore or red skin (a bit like sunburn), pubic hair loss, bladder irritation, diarrhoea and risk of infection. They take a while to build up and usually persist for a few days after the treatment has finished. Your radiographer will be able to tell you what to expect and how to cope.

Long-term side effects to radiotherapy include infertility in both men and women, impotence (inability to have an erection) in men, narrowing of the vagina in women, more frequent bowel motions or diarrhoea, shrinkage of the bladder, early menopause in women and a small chance of developing a second cancer later in life. If you are concerned by any of these, please talk to your oncologist or specialist nurse.

What happens if my cancer comes back?

When your treatment has been completed and you are in remission (your symptoms have gone away), talk with your oncologist about what happens next and how you will be monitored for recurrence of the cancer. Many patients feel worried or anxious that the cancer will return.

If the cancer does return, you will undergo further tests to learn as much as possible about the recurrence. You and your oncologist will then talk about your treatment options, such as further surgery or drug treatment.

People with recurrent cancer often experience emotions such as disbelief, confusion and fear. Patients are encouraged to talk with their healthcare team about these feelings and ask about support services to help them cope.

What if my cancer has already spread?

In advanced cases, RSCC may spread to the lymph nodes, liver, lungs and bones. If your cancer has already spread to other parts of the body, surgery may still be useful to relieve symptoms such as pain and bleeding, or to help control the chemical balance in the blood. Surgery after the cancer has spread does not usually cure the cancer, so it is important to think carefully about the risks and benefits it may bring.

Sometimes, if there is metastatic spread to just the lymph nodes, lung or liver, this can be removed by surgery as well. Removing as many of the metastatic tumours from, for example, the lung or liver can improve your overall survival.

Other treatments for patients with metastatic cancer include chemotherapy or radiotherapy depending on the location and extent of cancer spread. Patients are encouraged to talk through the treatment options with their oncologist. At this stage, patients may also be recommended to consider participation in a clinical trial.

Survival

The outcome (prognosis) of RSCC depends on the size and spread (the stage) of the tumour and how quickly the tumour is growing and spreading (the grade). Because the majority of RSCCs are found when the cancer is already quite advanced, it is very difficult to treat and has a poor prognosis. This is because of the vague signs and symptoms of RSCC, which result in a delay in diagnosis and subsequent treatment. Most cases of RSCC are diagnosed after surgery to remove the kidney and during examination of the kidney tissue. RSCC appears to be quite aggressive and spreads early to other tissues and organs resulting in poor survival.

Cancer survival statistics should be interpreted with caution. Any estimates are based on data from many people with this type of cancer, but the actual risk for a particular individual may differ. It is not possible to tell a person how long he or she will live with RSCC. Because survival statistics are often measured over a number of years, advances in the treatment or diagnosis of this cancer may not show in the numbers.

Please see the Action Kidney Cancer glossary for definitions of the medical and scientific terms used in this Action Kidney Cancer Essential Guide:

<https://actionkidneycancer.org/glossary/>

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Further reading

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