Ureteric Cancer

Action
Bladder Cancer UK

A short guide to UTUC
(upper urinary tract urothelial cancer)

This guide is a short introduction to ureteric cancer (also referred to as upper urinary tract urothelial cancer or UTUC). It is intended to give you more information following a suspected diagnosis and help you understand the basics of UTUC, how it is tested and graded, the main treatment options and where you can find more support. If you have any questions during your testing or treatment, make a note and take them to your appointment or contact your medical team. Throughout this leaflet we have suggested examples of things you might want to know.

You can download this leaflet and other ABC UK leaflets and information sheets on our website **www.actionbladdercanceruk.org/resources.**

Or order print copies by using our online order form on our website or contacting us on **info@actionbladdercanceruk.org** or **0300 302 0085.**

About UTUC or ureteric cancer

What is UTUC or ureteric cancer

The urinary tract or system's function is to filter the blood and create urine as a waste product. The kidneys remove waste and extra fluid from the blood to make urine. The urine flows from the kidneys through the ureters to the bladder. It is stored in the bladder until it leaves the body through the urethra.

The urinary tract is divided into two parts - the upper urinary tract which includes the kidneys, the renal pelvis (the drainage part of the kidneys), and the ureters (the tubes carrying urine from the kidneys to the bladder); and the lower urinary tract which includes the bladder itself and the urethra (the tube taking urine from the bladder out of the body).

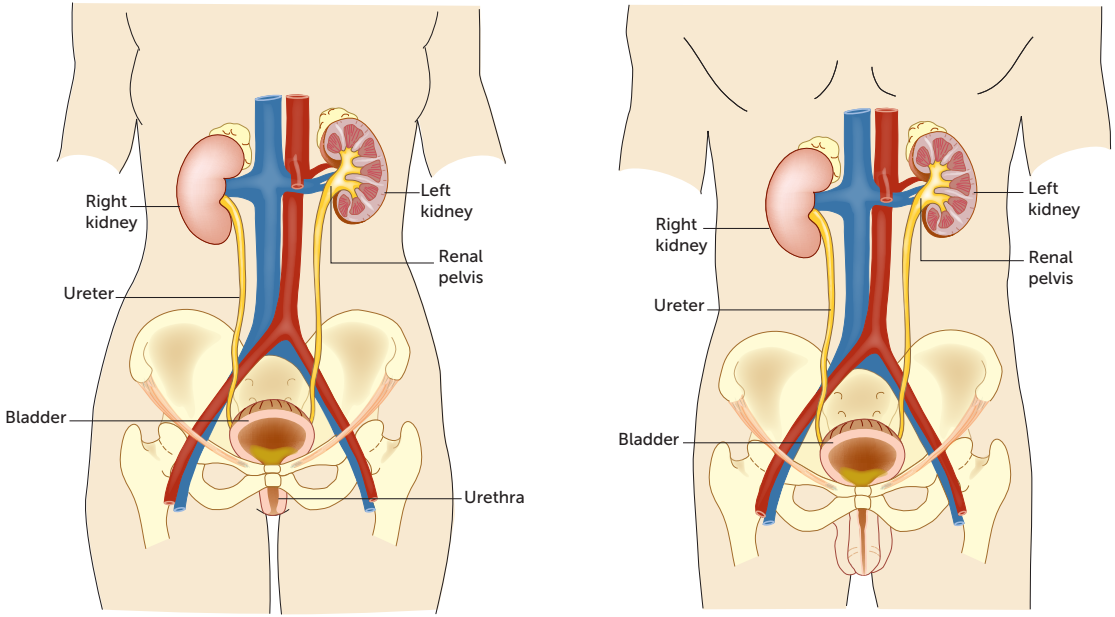
The same kind of specialised cells, called urothelial cells, line the urinary tract When cancer affects these cells, it is termed "urothelial cancer" or sometimes "transitional cell cancer".

Ureteric cancer, more correctly termed "upper urinary tract urothelial cancer (UTUC)" is cancer which affects the parts of the urinary tract which are above the bladder - namely the renal pelvis or ureters. Usually, only one ureter or renal pelvis is affected.

UTUC is rare, accounting for only 5–10% of cases of urothelial cancer. However, it can often be a more aggressive disease than cancer affecting the bladder. The renal pelvis is affected by UTUC almost twice as commonly as the ureter and up to 20% of cases will affect more than one location. UTUC occurs most often in older people and can occur in people who have previously been treated for bladder cancer.

People diagnosed with UTUC have an increased risk of bladder cancer, so you will probably have tests for bladder cancer too.

Anatomy of the urinary tract, male and female (kidneys, renal pelvis, ureters, bladder, urethra)



The kidneys filter the waste products from the body. Urine passes down two tubes (the ureters) into the bladder, where it is stored until the person is ready to urinate through the urethra.

Cross-section of Ureter

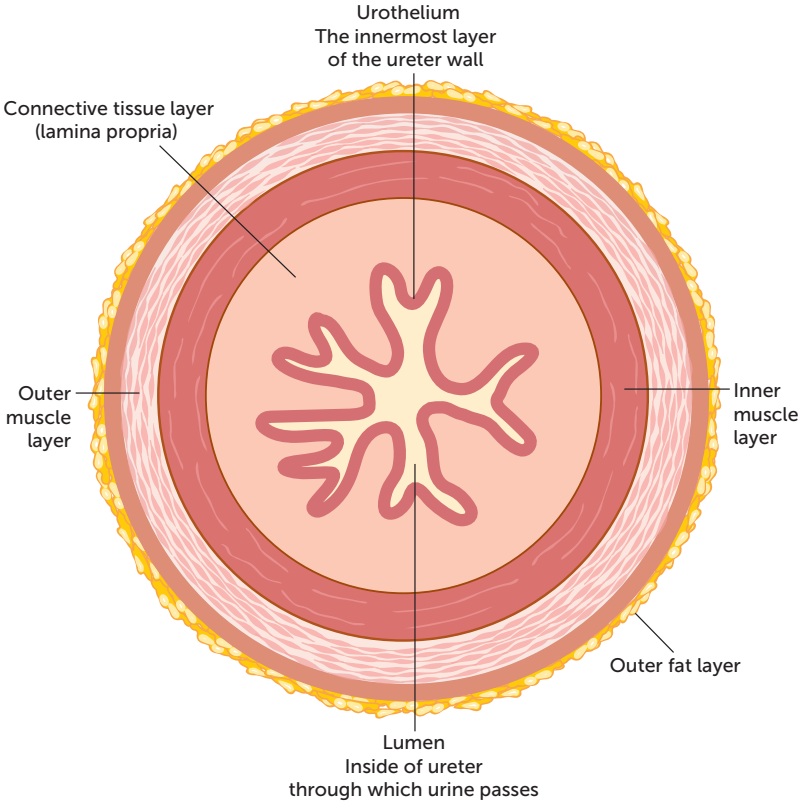
The ureter wall has several layers:

Outer muscle layers (muscularis propria), the outermost layer of muscle tissue. It rhythmically relaxes and contracts to push urine from the kidney (renal pelvis) to the bladder.

Lamina Propria is the layer of connective tissue between the outer and inner layers.

Inner layer (urothelium or transitional epithelium), the innermost layer of the ureter wall. Most ureteric cancers start to develop in this layer.

Lumen – this is the central space of the ureter that the urine passes through.



Symptoms of UTUC

The symptoms of UTUC are very similar to those of bladder cancer. The most common symptoms are:

- Blood in the urine (even just once)
- Pain or aches in lower back or side (only some people will experience these)

It is very important that you go to see your GP at the first sign of blood or other symptoms. Even if it goes away, don't wait. It may not be bladder cancer or UTUC but don't take that risk. The earlier that bladder cancer or UTUC is diagnosed, the sooner it can be treated and the better the outcome.

Incidence rates

About 25% (1 in 4) of people with visible blood in their urine (haematuria) will have bladder cancer or UTUC identified. This means that 75% (3 in 4) will not. Sometimes you can't actually see the microscopic blood particles in urine (non-visible haematuria). In these cases, only around 5% of people will be confirmed with bladder or UTUC.

Testing for possible urothelial cancer

At the GP

The first stage of testing will take place at your GP surgery. Your GP will usually discuss your general health, ask about symptoms and carry out a general examination. They may do a urine test at the surgery or send a sample to the lab. If appropriate, your GP will then refer you to the urology department at your local hospital. There may be reasons other than bladder cancer or UTUC for blood being found in your urine and it is vital that the cause is found and treated appropriately.

At hospital

Once you've been referred by your GP, you may be given an appointment at a haematuria clinic (many hospitals now have these clinics) or to see a urologist or specialist nurse. A doctor or nurse will ask you about your urinary symptoms, health and medical history, medications, family history, occupation and smoking history. You will have a physical examination which may include a rectal examination for males and a vaginal examination for females. A mid-stream urine sample will be taken and sent to the lab to check for urinary infection.

Urine may also be sent for cytology (checking for cancerous cells under a microscope). You may have blood tests to check the number of blood cells as well as liver and kidney function. Further tests and scans will then be necessary to confirm (or exclude) bladder cancer or UTUC.

Questions

- What test(s) will I need and why?
- What does each test involve?
- How long will it take and do I need to take anyone with me?
- Can I drive afterwards?
- Will I need to stay in hospital?
- Will I feel unwell after the test?
- When will I get the results?
- What happens next?

Confirming a diagnosis

When you are referred to hospital by your GP to see if you have bladder cancer or UTUC, you will have various tests and/or scans. These tests may include scans of your urinary tract to help the urologist detect any abnormal areas or growths and to assess the size and position of these areas. The scan will be one of the following:

- **Ultrasound** – this is a common scan which uses soundwaves to build up images
- **CT** – computed tomography scan is another commonly performed scan, which uses special x-ray equipment to create detailed images. This is usually performed with injection of a contrast dye which helps to show the anatomy and to make a diagnosis.
- **MRI** – magnetic resonance imaging is a type of scan that may also be used, which uses strong magnetic fields and radio waves to produce detailed images

Some patients who have an ultrasound first may then be referred for a CT scan, depending on the ultrasound scan results.

Questions

- Will I need any scans?
- What will these scans show?
- Do I need to do anything to prepare for having a scan?
- Where will I have the scans?
- When will I get the results?

Very occasionally, some people may be diagnosed with UTUC after having been initially sent for tests for possible kidney cancer – some of the early symptoms can be similar.

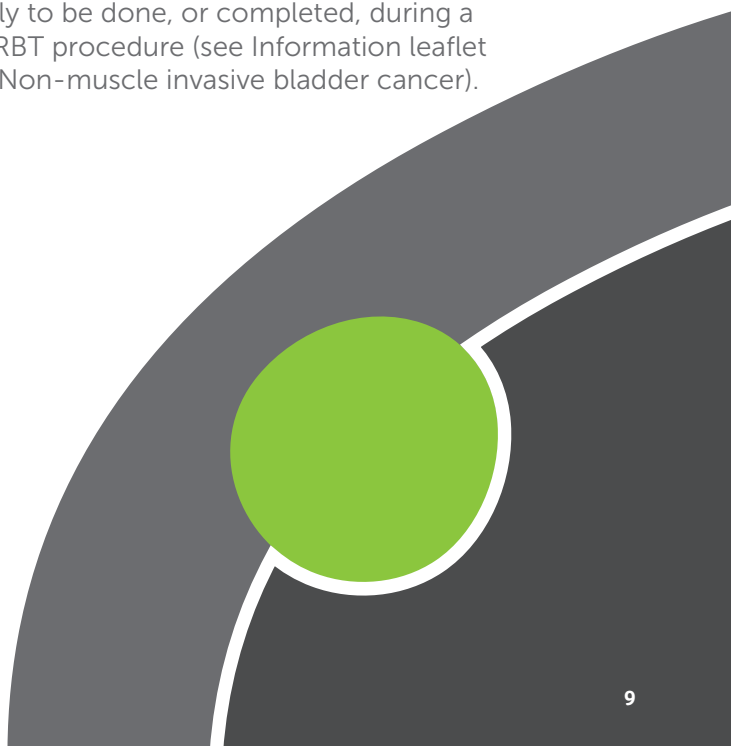
This may mean that you are then sent for additional tests to examine the inside of your bladder and ureters.

Cystoscopy

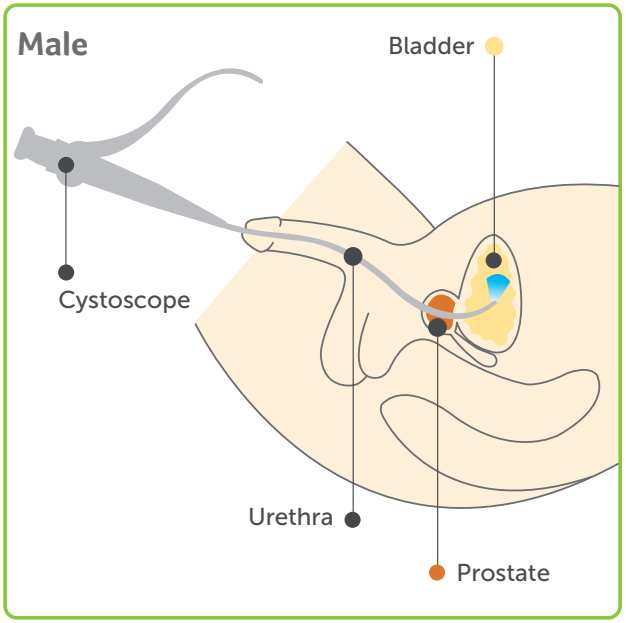
Cystoscopy (a camera inspection of the bladder) is usually recommended as both patients with symptoms of UTUC, or with a diagnosis of UTUC, have a risk of bladder cancer. This is the usual way of detecting abnormal areas or growths in the bladder and the possible presence of bladder cancer. This involves examining the inside of the bladder with a very narrow fibre-optic tube with a camera and a light at the end (a cystoscope), inserted through the urethra (which is the tube that carries urine from the bladder to the body's exit).

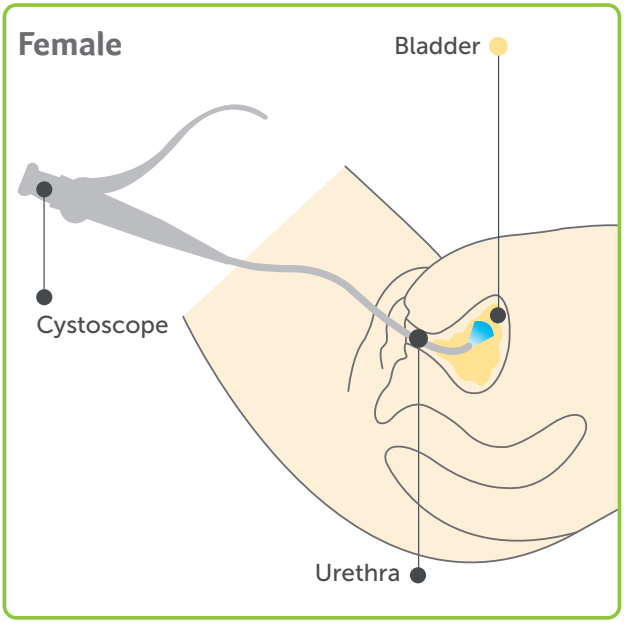
A flexible cystoscopy is done using local anaesthetic gel to make things more comfortable and only takes a few minutes. You may be asked to drink lots of fluid before and provide a urine sample. There's a small risk of urinary infection (2 or 3 per 100 patients will have a urine infection causing symptoms), but any infection is treatable with antibiotics.

The results of flexible cystoscopy are instant, with the urologist or nurse being able to see anything unusual or any growths that require further investigation, and their size. You may be able to see this yourself on a screen. Sometimes a rigid cystoscopy is carried out under a general or spinal anaesthetic. The urologist may also take tissue samples (biopsies) from the bladder and may, possibly, remove any growths. However, removal of any growth in the bladder is more likely to be done, or completed, during a TURBT procedure (see Information leaflet on Non-muscle invasive bladder cancer).



Flexible cystoscopy in male or female





Questions

- How is a cystoscopy done?
- What is flexible cystoscopy and what is rigid cystoscopy?
- How long will it take?
- Will it be painful?
- Will I need an anaesthetic?
- How will I feel afterwards?

Next steps
Ureteroscopy procedure

If an abnormal area within the upper urinary tract is suspected on the scans, you may then be recommended to undergo a procedure called a ureteroscopy, which is similar to a cystoscopy. You will have an anaesthetic and both the inside of your bladder and then your ureter will be given a detailed telescopic examination through the urethra (no surgical incision is needed).

As well as being the process to get a confirmed diagnosis for the abnormal area in the ureter, in some cases a ureteroscopy may also involve treatment if the tumour is relatively small. In this case, the tumour may be burnt away (ablated) using a laser. You may only need a ureteroscopy once, or it may need to be repeated. This may mean an overnight hospital inpatient stay or may sometimes only need you to come in for a day.

During the inspection of the bladder and ureter, any abnormal areas or growths which can be seen may be sampled. Samples of the removed abnormal area or growth will then be analysed in a laboratory (a biopsy). Performing a ureteroscopy is associated with a slightly higher risk of later recurrence of a tumour in the bladder; if other investigations (particularly the CT scan) are highly suggestive of UTUC, then your doctor may suggest the ureteroscopy is unnecessary.

If the abnormal area or growth is thought to be cancerous on imaging and/or ureteroscopy, it will be classified according to how aggressive it appears as follows:

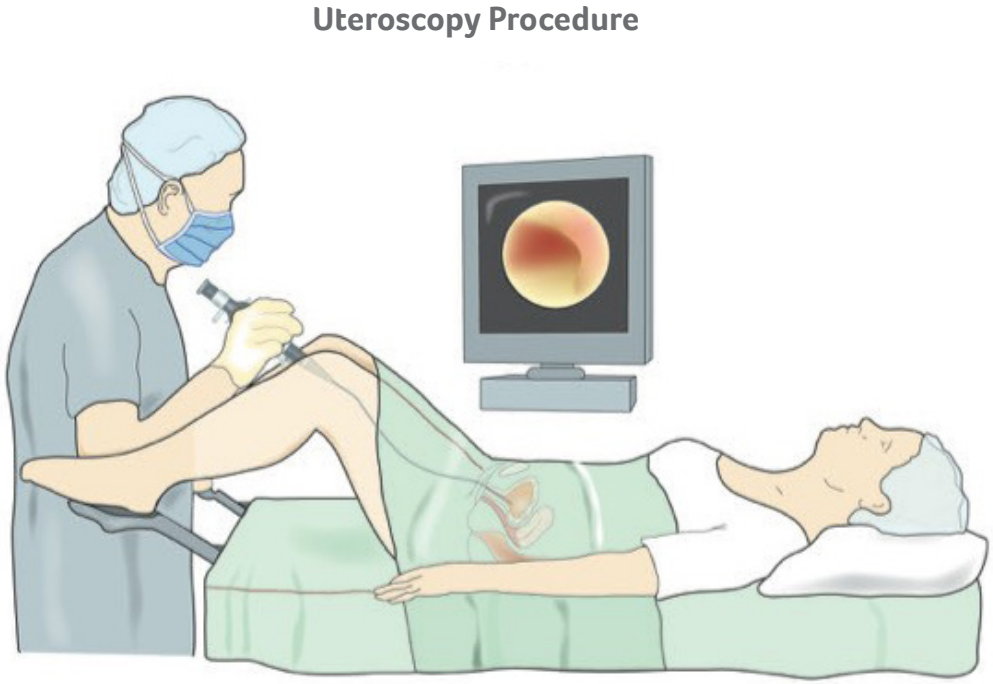
- How far it has grown into the ureter wall
- How likely it is to spread
- And, rarely, whether it has already spread to other parts of the body

If cancer is confirmed or suspected, it will then be described using letters and numbers – this is known as **Staging and Grading**.

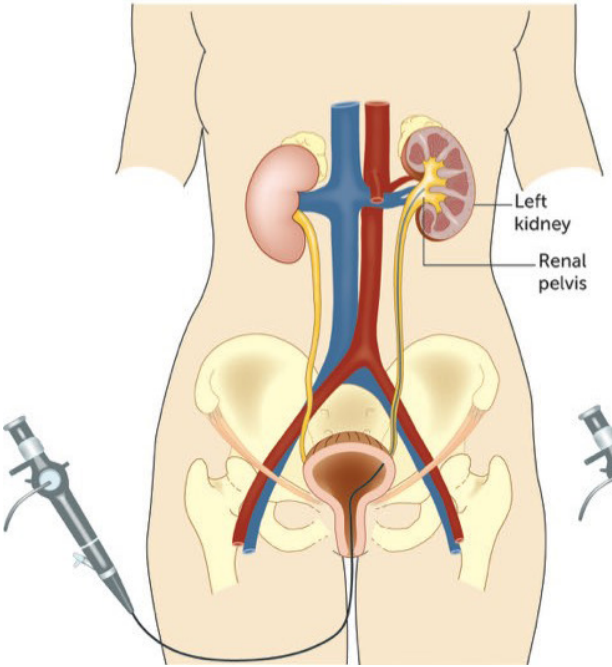
Questions

- How is a uteroscopy done?
- How long will it take?
- Will it be painful?
- Will I need an anaesthetic?
- How will I feel afterwards?

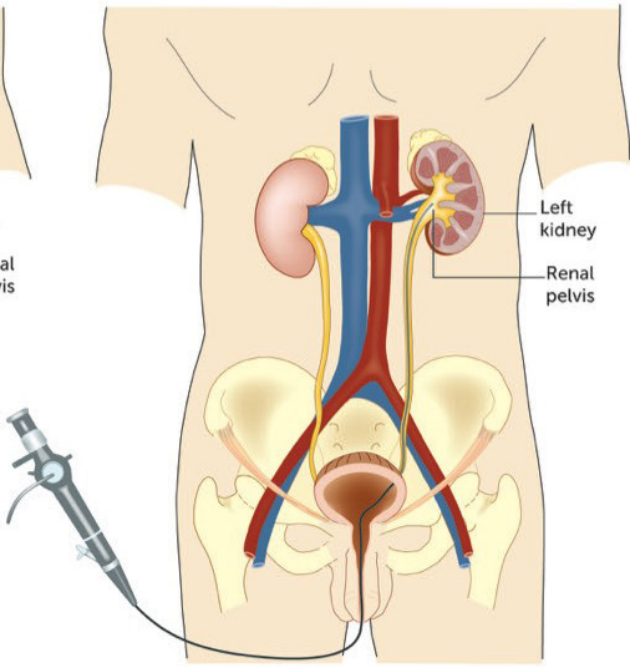
Image of uteroscopy in male or female



Female Uteroscopy



Male Uteroscopy



Cancer type

By looking at the pattern of cells under a microscope (called histology) and doing some tests, it's possible to tell the type of UTUC. This helps doctors predict how it will develop. Urothelial cancer is the most common type of ureteric cancer, however there are some, rarer, other types. Genetic profiling of the cancer can tell doctors which gene is faulty and has caused the cancer. This can be important for people having medical therapy, as some medications are effective only for people with certain genetic faults. Although these techniques are new, they're likely to become an important part of diagnosis in the future.

Staging

UTUC is divided into two risk groups – low risk and high risk – which indicate how likely it is that the cancer might spread further (progression) or come back after treatment (recurrence).

The risk group depends on several things including the stage, grade and type of ureteric cancer. As the name implies, High Risk UTUC is a serious version of UTUC and can become life threatening if not treated successfully.

The grading and staging section explains how UTUCs are described. This information is essential when deciding the best treatment.

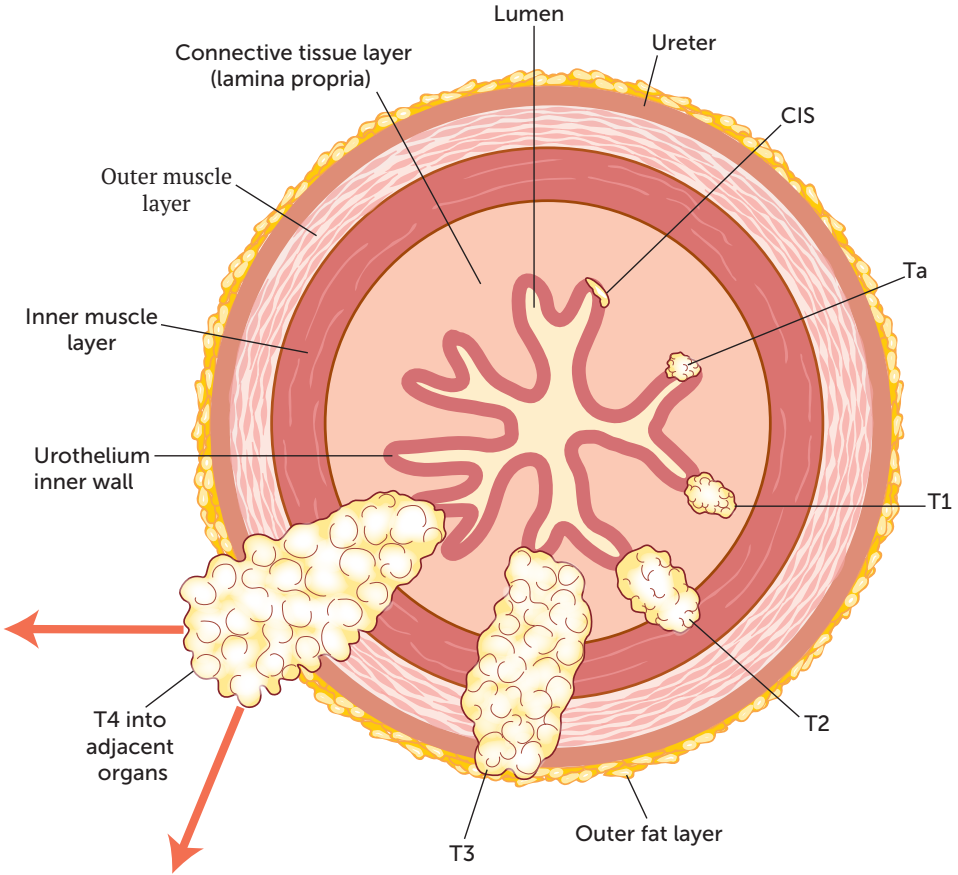
Staging assesses how far the cancer has spread within the ureter and whether (more rarely) it has spread to the lymph nodes or elsewhere in the body.

Ta	Papillary cancer. Confined to the ureter lining.
CIS	Carcinoma in situ. High grade cancer cells, a flat, patch, tumour still in the innermost layer of the ureter lining. CIS is an aggressive form of UTUC and is more likely to come back.
T1	The cancer has grown from the ureter lining into the next layer of connective tissue.
T2	The tumour has grown into the muscle layer (muscularis propria)
T3	The tumour has grown beyond the muscle layer and into the layer of fat that surrounds the ureter or kidney
T4	The tumour has grown to invade adjacent organs

Sometimes a small letter p or c is written in front of the T (e.g. pTa) or it is written with an N or M instead of a T

pT	The stage has been found out by biopsy – pathological (microscope) findings.
cT	The stage has been based on clinical (often imaging) findings.
N1 **N2**	The cancer has spread to lymph nodes. If lymph nodes are not involved, it is staged **N0.**
M1	The cancer has spread to other parts of the body. If it has not spread, it is staged **M0.**

Image of ureter in cross-section with tumours showing the stage



Grading

Grading assesses how aggressive the cancer is by looking at the cells under a microscope. Grades are scored from 1 to 3 and can be written as G1, G2 or G3. (low) is the least aggressive, meaning that the tumour is less likely to spread and is slower growing. (moderate) is moderately aggressive. (high) is the most aggressive, faster growing and most likely to grow and spread.

Risk categories

Low risk: all of the following should be present

- Tumour present at a single location in the ureter
- Tumour size less than 2 cm
- No high-grade cells seen in urine sample (cytology)
- Low-grade biopsy from ureteroscopy
- No evidence of invasion on CT

High risk: if any of the following are present

- Tumour present in more than one location in the ureter/bladder
- Tumour size greater than or equal to 2 cm
- High-grade cells seen in urine sample (cytology)
- High-grade biopsy from ureteroscopy
- Local invasion on CT (T2 or greater)
- Evidence of blockage of the ureter (Hydronephrosis)
- Previous surgery to remove the bladder because of high-grade bladder cancer (radical cystectomy)
- Non-typical or aggressive subtype of UTUC identified in biopsy

Questions

- How far has my cancer grown?
- How will this affect the treatments available?
- What is the time scale for treatment?
- What will happen next?

Treatments and care plan

Your care team, called a multidisciplinary team (or MDT), will be looking after you and will talk to you about the type of cancer you have, and how it could affect treatment decisions. They will discuss your treatment and care plan, what the treatment should achieve and the possible effects of treatment.

Patient care plan

Every patient should have a care plan which should be worked out with the patient, their partner/family/carer and their hospital and care team. This plan will include a summary plus details of test results, treatment plans and progress. It should identify and address each patient's needs, empower the patient and improve their quality of life whilst living with cancer. Certain things should happen at key points in a treatment pathway and these should be shown on your care plan. A care plan should also include a holistic needs assessment (HNA) which looks at all a patient's needs. Other useful information it can show is details of any local bladder or ureteric cancer support groups or well-being events.

Treatment options and decisions

Decisions will depend on:

- the stage of cancer
- the type of cancer
- your general health and fitness

You will decide which treatment you receive. Your specialist will talk to you about the benefits and risks of each treatment option. It is important you ask any questions you have and make sure you understand what they are saying to you – ask them to repeat their recommendations if you are not sure. You may need to talk to more than one of the specialists in your care team (for example, your urologist or oncologist), depending on the treatment options.

Discussions should include:

- your outlook with and without the treatment
- the evidence for how effective the treatment is
- the benefits and risks

When you have decided on the treatment, you may find it helpful to talk to people who have had it. Ask your nurse specialist if there's a UTUC or bladder cancer group in the area. If not, ask whether they

could put you in touch with someone you could talk to. ABC UK can also help you find your nearest support group or put you in touch with another patient who has experienced the same treatment – see http://actionbladdercanceruk.org/patient-support/

The usual options for UTUC are:

- Surgery to remove all or part of the ureter and kidney on that side. This operation is called a nephroureterectomy
- Surgery via ureteroscope to ablate (burn-away) the tumour from inside the ureter (this is only possible for smaller tumours)

Questions

You might find it helpful to write down a pros and cons list, you can ask for help from your care team. It's easy to forget to ask questions at a hospital appointment, keep a list and take it with you. If you think of a question later, you can contact your CNS or another member of your care team to ask it.

- What is my outlook with and without the treatment?
- Can you explain the process for each option?
- When and where would I have the treatment?
- Would I have chemotherapy with the main treatment?
- How effective is treatment?
- What are the benefits of each option? And what are the risks of each option?
- What would happen if my cancer was found to be more advanced during surgery?
- How long will I be in hospital?
- Will I need someone with me at home after treatment?
- How long would it take me to recover?
- What unwanted effects might I have immediately and in the long term?
- What follow-up appointments will I have and does the hospital make these appointments?
- Might I need more treatment?
- What are the contact details for my CNS (Clinical Nurse Specialist) – phone number, email?

Surgery

A **nephroureterectomy** is an operation that aims to remove the cancer by taking out the whole ureter, along with the kidney and a small area of bladder on the affected side. Some of the nearby lymph nodes may also be removed. If you opt for surgery, your care team will discuss what is involved. There are various ways the operation may be performed, which depend on the location and stage of the tumour, along with the available equipment and expertise at your hospital. Most commonly, the operation is performed by a telescopic (keyhole) technique, either as a laparoscopic or robotic-assisted procedure. The technique involves several small incisions in the abdomen, with one incision extended to remove the kidney and ureter, and occasionally with an additional larger incision to remove the lower part of the ureter.

You would usually be in hospital for 2-5 days after the procedure, depending on the complexity of the operation. Full recovery can take up to 6 weeks, and may take longer.

Your surgeon will discuss the risks and benefits of the operation with you. Around the time of the operation, the main risks are related to bleeding, infection, needing a more complicated operation (because the tumour is more advanced or the procedure is technically more challenging than expected) and the risk to you of having a general anaesthetic. In the longer term the main risks relate to reduced kidney function and tumour recurrence either within your urinary tract (particularly in the bladder) or elsewhere.

Post-procedure mitomycin

Between 5 and 14 days after surgery you may have an X-ray test of your bladder (cystogram). In this test, dye is injected via your catheter and images are taken to check the bladder has healed.

Regardless of whether you get a cystogram or not, Guidelines recommended that you are given a chemotherapy drug called Mitomycin directly into your bladder before your catheter is removed. This destroys any possible cancer cells that might be present in your bladder, and reduces the chances of recurrence in your bladder.

Alternative surgery

As nephroureterectomy involves removal of one kidney, it is major surgery and your kidney function will inevitably reduce. For most people this will not result in symptoms, however for some people with reduced kidney function to start, those with only one kidney, or people with other medical problems, this could result in significant problems. In these cases, "kidney-sparing surgery" may be offered for UTUC:

- Ureteroscopy and ablation (burning away the tumour), usually with a laser. This can be performed on more than one occasion.
- Removing just the segment of ureter containing the tumour, and then re-joining the tubes to allow urine to continue to flow to the bladder.

These options can be considered on a case-by-case basis, accepting that there is a greater risk of tumour progression and recurrence with these options than with nephroureterectomy. Your doctor may discuss these with you if they think they are suitable for you.

Chemotherapy

Chemotherapy is treatment with anti-cancer (cytotoxic) medication that aims to stop cancer cells growing and dividing.

Your care team may discuss this treatment with you, and you must be relatively fit and have reasonable kidney function to be eligible for it.

You may hear the words 'adjuvant' and 'neoadjuvant' in connection with chemotherapy.

You may have chemotherapy after having surgery, to reduce the risk of cancer coming back - this is **Adjuvant chemotherapy** - treatment given after the main treatment, with the aim of destroying any cancer cells that may remain. You may have chemotherapy to reduce the risk of cancer coming back after surgery if it is stage pT2, pT3 or pT4.

Neoadjuvant treatment is given before the main treatment, and it aims to reduce the size of the cancer, destroy any cancer cells that may be preparing to grow in different parts of the body or make the main treatment more likely to be effective. This is not commonly used in UTUC.

Chemotherapy may also be used as the main treatment for UTUC that has spread to other parts of the body.

Whilst undergoing chemotherapy, people may often feel worse than they did. Your care team will tell you about the possible unwanted effects of treatment, which could include:

- being more likely to pick up infections, which would be more serious than usual
- developing a high temperature
- losing your appetite, feeling sick, being sick, having diarrhoea
- feeling out of breath and/or weak
- having bruises, nosebleeds and bleeding gums
- feeling extremely tired
- developing kidney problems

When you're discussing chemotherapy, you need to weigh these effects against the likelihood that chemotherapy will improve the chances of a successful treatment. You should be given the opportunity to talk to a cancer specialist (an oncologist) who treats people with UTUC before you make your decision.

Radiotherapy

Radiotherapy uses radiation to damage cancer cells in an area. There are different ways of directing the radiation to the cancer. The aim is to focus on the cancerous area and to minimise the effects on nearby normal tissue. Radiotherapy is not widely used in UTUC. It may be used to treat tumour recurrence after nephroureterectomy, or for control of symptoms (particularly problematic bleeding) if surgery is not possible.

Immunotherapy

Immunotherapy drugs encourage the body's immune system to fight cancer cells. Targeted therapy drugs aim to kill cancer cells by targeting specific factors the cancer cells are using to grow and survive. Your cancer doctor (oncologist) may discuss these with you if they think a drug is suitable for you. Some of these drugs are not available on the NHS, but may be offered to you as part of ongoing research studies (clinical trials).

Clinical trials

Clinical trials are vital to develop new and better treatments. They can also be a way of accessing a new treatment once it has been developed and tested in a laboratory but before it becomes generally available. Clinical trials might test a drug, procedure, device or another type of therapeutic intervention. As a patient with UTUC, you might be asked by your doctor whether you wish to take part in a particular clinical trial or you may want to find out yourself what trials are available and which could be appropriate. Not all patients will be suitable to take part in a clinical trial and some trials may only be available in certain hospitals. Speak to your doctor about any which might be appropriate for you. Please use direct link to CRUK clinical trials page: https://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial

Follow up

Your care team will organise regular check-ups to see how you are and to check for signs whether the cancer has returned (called recurrence). If your cancer does come back, your clinical team will talk about your options for further treatment. The most likely site of recurrence is in the bladder.

Most upper tract urothelial cancers will need follow-up cystoscopies and/or ureteroscopies, imaging and urine tests annually.

After surgery, your cancer will be fully staged and your follow up depends on this.

If your tumour is high risk then regular CT scans of your chest and abdomen may take place perhaps every six months for two years, and then annually. You may also get blood tests, particularly to monitor your kidney function throughout your period of follow up.

After surgery there is a risk of recurrence in the bladder. Current guidelines recommend follow up with cystoscopy (a camera inspection), you will have more cystoscopies if your tumour is higher risk.

If you have undergone “kidney-sparing surgery”, you are likely to have a more intensive follow up schedule which may involve further ureteroscopy procedures.

Key people

The following are some key people you might meet during your treatment:

Care Team:
The team of healthcare professionals who will manage your care (also see MDT)

CNS (Clinical Nurse Specialist):
A nurse who is an expert within a certain field e.g. cancer, urology, bladder cancer, ureteric cancer, palliative care. A key person during UTUC treatment and often your main contact for information and support.

Key Worker:
Your designated point of contact from your care team.

MDT (Multidisciplinary Team):
A specialist team with different skills and experience. The team might include urologists, oncologists, radiologists, pathologists and specialist nurses.

Oncologist:
A doctor who specialises in treating cancer with drugs or radiotherapy.

Pathologist:
A doctor who specialises in examining tissue samples for example to study the nature and causes of a disease.

Radiologist:
A doctor who specialises in carrying out and examining scans of the body.

Specialist Urology Multidisciplinary Team:
A specialist team with different skills and experience who manage more complicated types of UTUC.

Urologist:
A doctor who specialises in diagnosing and treating problems in the male and female urinary tract and male reproductive organs.

Urology Multidisciplinary Team:
A specialist team with different skills and experience who specialise in problems in the urinary tract.

NOTES/QUESTIONS

W: www.actionbladdercanceruk.org
E: info@actionbladdercanceruk.org
T: 0300 302 0085

Action Bladder Cancer UK

ABC UK has been working since 2009 to get bladder cancer recognised as a common cancer with the awareness, new treatments and research investment it merits and those with bladder cancer deserve. We want bladder cancer patients to have a voice and the support they and their families need. Our trustees are drawn from the UK's leading medical and research specialists and bladder cancer patients.

There is a lot more information about bladder cancer, ABC UK information materials, support groups and our work on our website.

W: www.actionbladdercanceruk.org

Or contact us:

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First published: August 2024

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Registered charity no: 1164374