The prostate is a walnut-sized gland below the bladder present in men only. It makes the fluid that carries and nourishes sperm. The prostate sits in front of the rectum ('back passage'), which is why the prostate can be felt by putting a finger into the rectum. Urine flows from the bladder through the prostate to the urethra and then to the outside world. The prostate is like a ring doughnut or polo mint with a hole in the middle.

prostate\_gland.gif

There are three main problems that affect the prostate, prostate enlargement (benign prostatic hyperplasia, BPH), prostate cancer and prostatitis.

If the channel through the prostate gets small as the prostate enlarges, urinary symptoms can develop such as getting up at night, passing urine frequently, or a poor urinary stream. However, the prostate is not the only cause for urinary symptoms. Investigations and treatments for these problems can be found operations for the benign prostate enlargement including laser prostatectomy.

In general, prostate cancer does not cause urinary symptoms unless it is very advanced. Therefore, the majority of men with urinary symptoms do NOT have prostate cancer/

Prostate cancer is a growing problem in this country as men live longer (see graph below). When it starts there are no symptoms, but it is now the second commonest cause of death from cancer in men after lung cancer (see graphs below). Prostate cancer can be detected early using the PSA, PCA3 Score, subsequent prostate biopsies and then deciding what treatment options are best for you including observation. PSA testing is controversial and so it is important to understand the advantages, risks and alternatives to PSA testing. Multiple new treatments have arisen for prostate cancer including HIFU (high intensity focused ultrasound), laparoscopic and robotic prostatectomy.

Urinary symptoms can be due to a variety of different causes. When due to the prostate, these symptoms include getting up a night, passing urine frequently by day, and taking a long time to pass urine when in the toilet.

The prostate is a small gland sitting below the bladder. Urine flows the prostate which is like a ring doughnut or polo mint with a hole in it. As the hole gets smaller, urinary symptoms can get progressively worse. However, the prostate is not the only cause for urinary symptoms.

Diagram of Prostate Gland

See the frequently asked questions (FAQ) regarding the enlarged prostate, operations for the benign prostate enlargement including laser prostatectomy that treats the prostate with almost no bleeding and as a day case so that you can get home the same or next dayHow do I work out how serious my cancer is?

There are several considerations:

•the underlying risk of the cancer affecting your quality of life

•your general health

The underlying risk of the cancer is determined principally by:

•Gleason Score: this is a measure of how aggressive the cancer is. The two commonest patterns of cancer are each graded from 1 to 5. The two grades are summed and the total is known as the Gleason score. Therefore, this ranges from 2 to 10. Most cancers have a Gleason Score of 6: the most serious is 10 and the best is 2.

•Cancer Stage: This refers to how far the cancer has spread and can be determined partially by prostate examination with a finger, and sometimes with transrectal ultrasound at the time of prostate biopsies, a bone scan or magnetic resonance imaging (MRI) scan. If the cancer is confined to the prostate, the stage is 'T1' or 'T2', if it is outside the prostate it is 'T3' or 'T4'. Bone scans indicate whether there is cancer in the bones. Sometimes, the lymph nodes in the pelvis are sampled laparoscopically to determine if cancer is present there.

•PSA: the higher the PSA, the more likely the cancer is outside the prostate; the faster the rate of change, the more likely serious cancer is present

•Other bits of information can be used and relate often to the information gained from the prostate biopsies: the proportion of positive biopsies, the length of cancer in the biopsies or the percentage of the core with cancer.

It is important to know how the cancer was detected i.e. by screening with a PSA test or because of symptoms. Most of our knowledge is based on prostate cancer detected in patients with urinary symptoms. If the cancer was detected early because of PSA testing, the time between diagnosis and the development of symptoms from the cancer is likely to be much longer than if the cancer was detected because of urinary symptoms.

What additional tests or scans are necessary now I have prostate cancer?

These tests relate mostly to determining if the cancer is confined to the prostate and what chance there is that treatment will fail after a few years. It is possible to combine the information to calculate whether the cancer has spread outside or the chance that the cancer will return after treatment. The information required is:

•PSA

•Gleason Score

•Clinical stage determined by examination of the prostate by a finger

•the proportion of positive biopsies

The following web sites contain 'calculators' enabling you estimate your risk. This information should be interpreted with a doctor who understands prostate cancer.

• the Sloane Kettering Nomogram

• The Prostate Calculator

Other investigations, such as magnetic resonance imaging (MRI) can help tell if the cancer is has spread outside the prostate and give information about your anatomy relevant to treatment and side-effects. For this test, you enter a scanning machine, which makes a lot of noise, and produces high quality images of the prostate. It may help determe if the lymph nodes ('lymph glands') contain cancer or not. Sometimes, lymphotropic superparagmagnetic particles are used (this is still under trial). The best way to tell is by laparoscopic lymph node sampling, which is a keyhole procedure for obtaining tissue to examine under the microscope. This is a highly specific test for the identification of cancer in the lymph nodes.

What are my choices?

Depending on your individual situation you might choose

•active monitoring

•radical radiotherapy (external beam)

•radical prostatectomy (either open, laparoscopic or robotic)

•brachytherapy

•cryotherapy

•high intensity focused ultrasound (HIFU)

•hormone therapy

The situation is often difficult and experts frequently disagree. A careful decision needs to be made usually in conjunction with consultants in radiotherapy and urology.

Part of the problem is that early prostate cancer grows slowly and so treatments are for problems that will often not present for several years. Having said that, the opportunity for curative treatment is available only when cancer is confined to the prostate and has not spread elsewhere.

What is active monitoring?

The prostate cancer is monitored to determine whether it is progressing or not. The implication is that if the prostate appears to be growing and is at risk of causing problems, then a treatment option will be undertaken. To do this, the tumour should be of loss risk of progression anyway. There are no universally accepted criteria for this and a discussion is necessary with an experienced prostate cancer doctor. In patients less than 70 years of age in good health, few doctors would recommend active monitoring especially if the cancer was detected because of urinary symptoms, the Gleason score was 7 or more, or if the PSA was 15 ng/ml or more, or if both sides of the prostate contained cancer (stage T2b or higher). If these conditions do not apply, then active monitoring may be appropriate.

Active monitoring involves regularly measuring the PSA and seeing how it changes. Some people perform prostate examinations regularly and repeat prostate biopsies annually. The idea is to look for evidence that the disease is advancing. Provided it does not advance too far, curative treatment might still be possible or not be necessary! This is becoming a more acceptable way to manage people with prostate cancer. Probably the best strategy is to incorporate all pieces of information regarding the disease and your overall health.

It is possible to calculate the rate at which PSA changes. The faster the PSA increases, the more likely it will be a problem. More than 2 ng/ml in the year per year is thought to be serious. The slower the PSA doubles, the less likely the tumour will affect the individual with it. Conversely, the faster the PSA doubles, the more likely the prostate cancer will cause problems. Men with low grade cancer rarely develop problems until the PSA is greater than 50 ng/ml. If the cancer is high grade, a long or slow PSA doubling time is unreliable although a short doubling time indicates treatment is probably necessary.

The advantage of this option is that the prostate is preserved and the side-effects of treatment are avoided. The disadvantages are that the opportunity for curative treatment might be missed and that our ability to make an accurate estimate of whether a cancer is 'safe' or not is not reliable enough on an individual person basis.

Even older men may benefit from intervention, based on recent evidence (Wong 2006 JAMA)

What is a radical prostatectomy?

A radical prostatectomy is the operation to remove the prostate. At the same time the seminal vesicles, which are attached to the prostate, are removed occasionally with the lymph nodes, which are specialised tissue to which the prostate drains. This procedure can be performed by an incision through the lower belly or by key hole techniques ('laparoscopic' or 'endoscopic' or 'robotic'). The advantages are:

•the prostate gland with its cancer and surrounding tissue is removed offering what many doctors believe to be the best chance of preserving length of life. This is believed to be most accurate when the cancer is detected because of 'prostate' (urinary) symptoms, the cancer can be felt with a finger, or the cancer is Gleason score 7 or more.

•the prostate can be examined completely and a more accurate prediction made of the likley outcome

•the PSA should fall to almost unrecordable values making it much easier to determine if the disease has unfortunately recurred

•additional treatment such as radiotherapy can be given with fewer side-effects

•a short hospital stay (3 to 7 days) is necessary rather than regular attendance

•urinary symptoms (weak or slow flow etc) due to the prostate are usually eliminated completely

The disadvantages are

•it is a major operation

•a blood transfusion may occasionally be necessary

•control of urine is less good in some after surgery and pads may be required. About 1 in 20 men have problems with leakage and it is more common in men over 70 years of age

•erections may be weaker or non existent although good sexual activity can be had with Viagra, Cialis or Levitra

•additional treatments may be required if the prostate cancer returns

There is strong evidence that radical prostatectomy reduces the chance of dying from prostate cancer by about 50% compared to watchful waiting and deferred androgen deprivation. The evidence comes from a randomised study published in one of the world's most prestigious medical journals. However, the results are most applicable to men with cancer detected because of symptoms, with a PSA around 12 ng/ml, prostate cancer that can be felt with a finger when examined, and Gleason score 6 or 7. Nowadays, many men have few urinary symptoms, PSA values around 5 to 8, Gleason score 6 and impalpable cancer ie the cancers are detected earlier in their history. This is not to say that surgery is not effective just that to benefit one has to wait longer.

The procedure can be performed through a traditional incision in the lower abdomen or through 5 very small incisions ie endoscopic or laparoscopic surgery. The advantages of laparoscopic surgery include improved view allowing more precise surgery, shorter hospital stay (2-3 days) and earlier return to leisure activities and work. It is technically difficult to and specialised training is required.

What is radiotherapy?

The prostate is treated by radiotherapy given whilst lying in a machine at a special hospital. Usually, one attends on week days for 6 to 7 weeks for a short time for the treatment. This treatment is sometimes accompanied or preceded by hormonal therapy to block the effects of testosterone, which is the male hormone that drives prostate growth. The advantages are:

•the prostate cancer is treated and is less likely to recur or cause symptoms

•there is a much lesser chance of incontinence compared to radical prostatectomy or brachytherapy, but frequency or urgency may be worse

•radiotherapy can be given to the side walls of the pelvis which may be important if the cancer has spread.

•HIFU or cryotherapy can be used if radiotherapy fails

•surgery is avoided

There are disadvantages too:

•many doctors believe that radiotherapy is probably a less effective treatment than surgery when compared over long periods of follow up

•side-effects include diarrhoea, and blood in the stools

•erections become weaker over time

•it is more difficult to use the PSA to determine if the treatment has been successful or not

•if treatment fails, cryotherapy or surgery is associated with more side-effects such as worse incontinence

What is brachytherapy?

Seeds with radiotherapy energy are placed systematically in the prostate under a general anaesthetic. Patients stay in hospital usually overnight. This is done either in one or two stages depending on the set up.

The advantages are:

•this can be a day case procedure so patients can often leave the same day

•it is possible to have additional therapy, usually external beam therapy, if there is disease recurrence

•incontinence of urine is less likely

The disadvantages include

•urinary symptoms often become significantly worse after surgery and sometimes a catheter is required for a period to empty the bladder

•the treatment is probably less effective than surgery regarding cancer cure

•weakness of erections occurs, although possibly less commonly than after surgery or external beam radiotherapy

What is cryotherapy?

The prostate and its cancer can be killed by freezing the cells. To give this therapy, a general anaesthetic is necessary and a catheter needs to be placed for several days.

The main advantage is that it can be given after radiotherapy if it is not effective. It can also be repeated. However, it almost always causes erectile dysfunction. Expertise with its use is limited in the UK.

What is hormonal therapy

This usually refers to reducing testosterone levels in the body and is usually known as androgen deprivation, androgen suppression or castration. Testosterone with its derivative dihydrotestosterone is the male hormone that drives prostate growth. Rather than reduce the levels of testosterone, its action can be blocked by drugs and this is known as androgen blockade.

This form of therapy is usually used with or without radical radiotherapy, and sometimes after radical surgery but not before. The prostate cancer tends to be more advanced than early.

The side effects of this include hot flushes, tiredness, anaemia, and in the long term osteoporosis.

How do I decide what to do?

You have to trade-off the advantages over the disadvantages of each option. It depends on the relative values of each. This is best done by discussing the issues with a doctor and close family. In general, if the thought of having cancer and not doing the most possible to get rid of it dominates your thinking, then you should choose an interventional treatment. There is no caste iron evidence to indicate one treatment is better than another, but many doctors believe that radical prostatectomy offers the best chance of prolonging life. It becomes more important to maximally remove the cancer if it is high risk or there are many years of life possibly ahead. On the other hand, active monitoring may be the best option if quality of life is more important than preserving a few years of life especially if there is uncertainty over the benefit of treatment and the cancer does not seem obviously to be high risk. A second opinion is often helpful.

Several websites offer details and on-line help in making decisions including:

The Prostate Cancer Charity

IPSS Questionnaire for urinary symptoms possibly due to the prostate

A symptom score helps evaluate the severity of your symptoms when due to the benign enlargement of the prostate and quantify how much bother it causes.

The IPSS (International Prostate Symptom Score) is the name for one of these questionnaires. Download here (PDF file).

The symptoms are graded as:

•Mild: score 1 to 8

•Moderate: score 9 to 19

•Severe: score 20 to 35

**Urodynamics in men with an enlarged prostate: why, what and what to expect?**

What are urodynamics?

This is a one-hour outpatient diagnostic test to help understand why urinary symptoms are present and to help predict the outcome of treatment. The tests aims to determine the activity of the bladder whilst it is filling with fluid, and the pressure and speed at which urine is passed.

To do this, a very narrow tube has to be passed into the bladder through the urethra. Sometimes, it is combined with x-rays and is known as 'videourodynamics'. A gel with local anaesthesia may be used, but not general anaesthesia. Pressures are measured in the rectum (a.k.a. back passage) at the same time through another narrow tube.

Why am I having this test?

The test can determine the cause of urinary symptoms such as:

•slow flow, stopping and starting, and the need to dribble to finish passing urine

•increased frequency of passing urine during the day and night

•urine leakage (incontinence)

It can also help predict whether drugs or surgery are likely to have a good result for:

•urinary symptoms in men due to obstruction of the bladder by the prostate (BPH) or other cause

•overactivity of the bladder (also known as detrusor instability or detrusor overactivity)

What should I do before this test?

If you are taking drugs for your prostate or bladder, you should probably stop these a week before having the test. Check first with the nurses or doctors. These include:

•solifenacin (Vesicare)

•tolterodine (Detrusitol)

•oxybutynin (Kentera patches, Cystrin, Ditropan, Lyrinel)

•trospium (Regurin)

•propiverine (Detrunorm)

•tamsulosin (Flomax)

•terazosin (Hytrin)

•indoramin (Doralese)

It is not necessary to fast the night before or take laxatives. As long as a urine test to test for infection is normal, the study is very safe and can be performed with minimal discomfort. It is important to arrive with an almost full bladder since it may be necessary to do a urinary flow test before the formal urodynamic test. Usually, a nurse will be in the room during the study. Occasionally, a radiographer or doctor may be there also.

What will happen during the test?

You will need to undress and put on a gown. Local anaesthetic jelly will be placed in the urethra. A narrow tube (catheter) will be placed by a doctor or nurse through the urethra into the urinary bladder. In addition, another narrow tube will be placed in the rectum, which improves the accuracy of the test. The study can be performed whilst standing or sitting. A computer will record all of the measurements and a “tracing” will be generated.

Your doctor may be present during the critical parts of the study. He will analyse and interpret the study based on the tracings and x-rays if these are taken.

What happens after the test?

Half an hour after the test, you will be able to go home. You may experience some burning when passing urine for a few days and this is normal. There may be some blood in the urine, but as long as large clots are not formed, the bleeding will settle if you drink plenty of fluid. You can resume regular diet, medications, and normal activity levels after you leave. Often, antibiotics are prescribed for a few days afterwards. Your results will be discussed in outpatients.

For more information, download the following file:

urodynamics patient information

Are there any medicines that can help symptoms due to an enlarged prostate?

Rather than an operation, drugs, such as alpha blockers (e.g. tamsulosin, Flomax, Omnic, alfuzosin, Xatral, Cardura), relieve prostate symptoms by relaxing the muscle of the prostate and are useful in some patients with BPH, especially younger men with milder symptoms.

Finasteride or dutasteride can reduce the size of the prostate, and improve symptoms in about 30 percent of patients who take it. However, drugs have to be taken for the rest of your life in order to remain effective.

Using finasteride and an alpha-blocker together is more effective than either drug alone to relieve symptoms; they prevent BPH getting worse. The two-drug regimen reduced the risk of BPH getting worse in two out of three patients, compared to one-in three for an alpha-blocker alone and one in three for finasteride alone.

Drugs or medicines may not be enough, and more effective treatments such as TUNA, TURP or GreenLight PVP may be necessary.

Should I have an operation?

At one time, BPH was invariably thought to be a progressive disease. That is no longer the case. Only about 40 to 50 percent of all men with BPH actually develop any symptoms due to this condition, and of that number, only a proportion will need prostate surgery.

BPH requires treatment only if the symptoms are severe enough to disrupt your life or threaten your health. If, during your prostate examination, your doctor finds that you have significant symptoms and that your prostate gland is enlarged, you may start a program of medication and changes in life style to improve your symptoms. During this time, your doctor may examine you periodically and ask you to complete questionnaires (e.g. IPSS).

If your urination problems are not adequately relieved by medication or the side effects of the drug are excessive, you might then consider TUNA, a TURP or Greenlight PVP. TUNA is the least invasive of all treatments and Greenlight PVP utilises a laser to remove prostate tissue. With surgery for BPH, only the enlarged tissue that is pressing against the urethra is removed; the rest of the prostate is left intact. Removal of the enlarged part of the prostate is the best long-term solution for patients with BPH. Surgery usually relieves the obstruction and incomplete emptying caused by BPH more than any other treatment.

For certain patients with particular signs and symptoms, a TURP or laser prostatectomy is almost always recommended. These signs and symptoms include:

•Total inability to urinate

•Profuse bleeding through the urethra due to prostatic enlargement

•Difficulty emptying the bladder because of prostatic obstruction, which can lead to progressive kidney failure

•Recurrent urine infections

If you decide to have a prostatectomy for reasons of comfort or for a more severe indication, you should know that an operation offers the greatest chance of getting rid of your symptoms.

Are there any alternatives to TURP or laser prostatectomy for BPH?

TUNA is a good minimally invasive treatment for prostate enlargement. It has advantages over traditional surgery in that it is less invasive and does not affect ejaculation. A stent is another alternative, but this is usually reserved for older men for whom a surgical procedure is particularly risky.

What are the risks/benefits of surgery?

Although there are nonsurgical treatments available to treat BPH, an operation offers the highest chance of alleviating prostate problems. However, it also can result in problems either during or after surgery.

After a TURP or laser prostatectomy, some men will find that semen does not go out of the penis during orgasm. Instead, it passes into the bladder and is passed with the urine next time. The feeling of orgasm stays the same. This backwards ejaculation is a problem for couples who want to have a baby.

Some conditions after TURP or laser prostatectomy may require additional treatment including:

•impotence (small risk)

•uncontrolled urine leakage i.e. incontinence (very small risk)

•a constriction of the urethra (stricture); or the necessity of a second operation later, in some patients (10%).

These risks and benefits must be considered by anyone considering a prostate operation, and your doctor can help you make your decision.

What tests are there to help decide what treatment is necessary and appropriate?

These tests include the following, but do not necessarily have to be performed always:

•Urinary symptoms (IPSS) questionnaire: This quantifies the severity of the symptoms and how much bother they cause.

•Blood test: for kidney function and to estimate the size of the prostate, and risk of prostate cancer (PSA)

•Urine Chemical Analysis: to determine the presence of blood or evidence of infection

•Urine Flow Rate: you will be asked to pass urine into a special machine that measures the speed of your urine flow as well as the volume of urine expelled. This test helps in evaluating the function of your bladder and the degree of prostatic obstruction.

•Measurement of the urine left in the bladder after passing urine (postvoid residual): The volume of urine in the bladder after it has been emptied can be measured by an ultrasound scan. If this is increasing over time, then surgery is probably a good idea

•Transrectal ultrasound measure of prostate volume: A probe is inserted in the back passage (rectum) and the size of the prostate is accurately measured. The larger the prostate, the greater the chance of problems in the future.

•Urodynamics: Measuring pressure in the bladder during urination can determine how strongly the bladder contracts, the extent of obstruction by the prostate, and whether the bladder contracts inappropriately when it is filling with urine. This test also is done by placing a small catheter in the bladder and rectum.

•Cystoscopy: To look at the configuration of the prostate and changes in the bladder that may be responsible for urinary symptoms.

How do I decide what treatment is necessary?

You can predict your chance of being completely unable to pass urine or needing surgery over 6 years by going to the following website (www.oncovance.com). If you register, you then need to know your age, IPSS score (also known as AUA SI) and PSA. Further information can be entered, if you have it, to improve the accuracy.

Mild and non bothersome urinary symptoms

If your urinary symptoms are mild (ie IPSS less than or equal to 7 out of 35) and do not cause bother (bother score less than 3 out of 6), then only changes in lifestyle are usually all that is necessary especially if the prostate is small, the PSA is less than 1.5 ng/ml and the bladder empties efficiently. If necessary medication such as an alpha blocker may be given to reduce symptoms. A 5 alpha reductase inhibitor may shrink the prostate over time and reduce the chance of significant problems in the future. Surgery is not usually suggested if the symptoms are mild and respond well to alpha blockers.

If biopsies of the prostate have been taken and inflammation of the prostate was found, there is a greater chance that there may be more problems with either a complete blockage (acute urinary retention) or that surgery may be needed in the future. As such, it is probably sensible to take a 5 alpha reductase inhibitor (e.g. finasteride or dutasteride) as these can reduce the probability of these undesirable outcomes.

Moderate and bothersome urinary symptoms

If the symptoms are more moderate (IPSS between 8 and 19 out of 35) and bothersome (bother score 4 or more out of 6), then treatment by either drugs (alpha blockers), TUNA, laser prostatectomy or traditional TURP is usually effective. If alpha blockers have not worked well or the bladder is emptying less well over time, then surgery is recommended.

When drugs are used, it's better to use a combination of alpha blockers with finasteride or dutasteride especially when the prostate is large or the PSA is greater than 1.5 ng/ml.

Transurethral needle ablation (TUNA) is a minimally invasive procedure performed as an outpatient. There are many advantages of TUNA including the preservation of normal ejaculation and sexual function. However, about 4 in 5 men find the treatment still works after 5 years. There is less long term evidence for its use compared to a traditional TURP.

The GreenLight PVP laser prostatectomy and TURP are more effective than drugs. In general, Greenlight PVP laser prostatectomy and TURP are most likely to be effective if the prostate is causing obstruction of the bladder. This can be determined by the tests listed above.

Severe and bothersome urinary symptoms

For severe urinary symptoms (IPSS 20 or more) that are bothersome (4 or more out of 6), it is important to look in the bladder to make sure there are no other problems. Further tests to determine whether urinary symptoms are due to obstruction by the prostate will often be necessary, especially if a TURP or other surgical procedure is being considered. The biggest improvement in symptoms and quality of life occurs with the GreenLight PVP or TURP, but not everyone wants these procedures. Medicines such as alpha blockers or finasteride/dutasteride also relieve symptoms, but not as much. If drugs are used alone, further treatment is necessary. A poor response to alpha blockers and increasing residual urine or symptoms mean that surgery is almost always necessary.

In addition, if surgery is delayed when the bladder is obstructed by the prostate, the benefit of surgical procedures may be less than when surgery is performed early. This is possibly because the bladder may undergo irreversible changes if it is blocked for a long period of time. With less invasive treatments available now (eg TUNA or GreenLight PVP laser prostatectomy), it may be better to opt for one of these earlier than later.

How do I decide between drugs or surgery?

Conservative treatments and drugs such as alpha blockers work best when symptoms are mild or moderate. TUNA gives symptom relief as a minimally invasive procedure that preserve normal sexual function. If symptoms are severe and the prostate is causing a blockage, then GreenLight PVP or TURP surgery is more effective and lasts longer than TUNA or drugs.

The severity of symptoms is judged best by assessing the symptom score (IPSS). If the symptom score is 20 or more and the symptoms are bothersome (4 or more). A test called urodynamics can determine if there is a blockage or not, and can also tell if the bladder contracts at the wrong time. Sometimes, urinary symptoms such as getting up at night or having to rush urgently to pass urine are not due to the prostate; these symptoms may be due to the bladder contracting inappropriately. Urodynamics can help predict if the GreenLight PVP or TURP may help. The GreenLight PVP or TURP is most effective when there is obstruction present and this is usually proven by urodynamic testing.

Other factors are also important such as general fitness. It may not be safe to have an anaesthetic, which is necessary for a TURP or GreenLight PVP. Drugs may be the only treatment possible. Occasionally, other procedures are also possible such as 'stents'.

What do I do about having to get up at night?

Getting up at night and passing urine becomes more common as one gets older. Surgery on the prostate may help if the bladder is not emptying completely because of obstruction. However, the prostate is not always the cause of getting up at night. Usually, urine production stops at night, but this may not occur resulting in excess urine production at night. To detect this, keep a record of the total amount of urine passed during the day and night. If the amount of urine made at night is more than 25% of the total daily amount, then the following can help, but discuss with your doctor before adopting the advice below:

•stop drinking 4 or more hours before going to bed

•take a nap in the afternoon making sure the legs are elevated and the body is horizontal if possible.

•wear tight compression leg stockings during the day

Your doctor should advise you further.

Drugs such as alpha blockers (eg tamsulosin or alfuzosin) can also be of benefit. These measures can be combined with a tablet to help encourage more urine production in the afternoon (a diuretic) and something to stop urine production at night (DDAVP).

In some cases, the urgent need to pass urine occurs during the day and night. This problem may be due to overactivity of the bladder muscle and can be helped by avoiding caffeine and taking medicines. These medicines include solifenacin (Vesicare), tolterodine (Detrusitol) and oxybutynin (Lyrinel).

Are there any medicines that can help symptoms due to an enlarged prostate?

Rather than an operation, drugs, such as alpha blockers (e.g. tamsulosin, Flomax, Omnic, alfuzosin, Xatral, Cardura), relieve prostate symptoms by relaxing the muscle of the bladder neck and prostate and are useful in some patients with BPH — typically younger men with milder symptoms. The drugs reduce symptoms by about 25% or 4 to 6 points out of a total of 35 (see IPSS questionnaire) in more than half of men who take the drug. Symptoms are reduced within a few days. Side effects include drowsiness and headache in about 15% of men, reduced semen volume, and nasal congestion.

Finasteride or dutasteride can reduce the size of the prostate by about 20%, and improve symptoms in about 30 percent of patients who take it. Symptom scores improve by about 4 or 5 points out of 25. For example, if your symptom score was 16, then the symptom score would be about 11 or 12 out of 35 after 6 months or more of treatment. The chance of needing surgery for the prostate or being completely unable to pass urine ('acute urinary retention') is reduced by about 50%. To remain effective, the drugs need to be taken for the rest of your life. The side effects of finasteride include reduced volume of semen and altered semen quality, impaired erections, reduced libido, and occasional growth of the breast tissue.

Using finasteride and an alpha-blocker together is more effective than either drug alone to relieve symptoms and prevents BPH getting worse. The two-drug regimen reduced the risk of BPH progression in two out of three patients, compared to one-in three for an alpha-blocker alone and one in three for finasteride alone.

Drugs or medicines may not be enough, and more effective treatments such as TUNA, a TURP or the GreenLight PVP, which is a minimally invasive form of prostate treatment using a laser, may be more suitable.

What do I do about having to get up at night?

Getting up at night and passing urine becomes more common as one gets older. Surgery on the prostate may help if the bladder is not emptying completely because of obstruction by the prostate. However, the prostate is not always the cause of getting up at night. Usually, urine production stops at night, but this may not occur resulting in excess urine production at night. To detect this, keep a record of the total amount of urine passed during the day and night. If the amount of urine made at night is more than 25% of the total daily amount, then the following can help, but discuss with your doctor before adopting the advice below:

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What about Saw Palmetto?

Saw palmetto (Serenoa repens) is a type of palm tree, also known as the dwarf palm. Its primary medicinal value lies in the oily compounds found in its berries. Most dietary supplements are composed of an extract from the berries or a berry powder.

Saw palmetto dietary supplements improve urinary flow, and reduce the frequency and urgency of urination in men with prostate enlargement. Saw palmetto is believed to inhibit the actions of testosterone in the prostate that cause prostate enlargement and interference with urinary flow.

Fatty acids and sterols found in Saw palmetto inhibit testosterone in the prostate. Sterols are also present in other herbs (such as pygeum bark, stinging nettle root, and pumpkin seed extract) used in treating symptoms of prostate enlargement.

Saw palmetto is commonly used in Germany and other parts of Europe and the United States, but less commonly in England. There have been concerns about the quantity of active agent in various preparations of Saw palmetto.

Transurethral Resection of the Prostate

Overview on TURP

TURP is the classic treatment for urinary symptoms due to the prostate (prostatism) or BPH. Prostatic tissue is removed and so the physical bulk of the prostate is reduced. Obstruction is reduced and urinary symptoms considerably improved. The operation is performed through the penis and usually there are no cuts or surgical incisions. The procedure is tolerated reasonably well, although associated with retrograde ejaculation. It is the gold standard treatment for BPH with many years of history to support its use.

Why have a TURP?

There are several potential reasons for having a TURP:

•urinary symptoms due to an enlarged prostate (BPH) that are bothersome and are not adequately improved by medicines or changing one's lifestyle

•urinary symptoms due to BPH that are bothersome and cannot be treated by drugs or other minimally invasive techniques

•urinary symptoms due to BPH proven to be due to bladder outlet obstruction on urodynamics with a desire to remove obstruction in order to avoid long term problems of bladder outlet obstruction

•The inability to pass urine without a catheter ('urinary retention')

•kidneys that are not functioning properly because the prostate is blocking the bladder

•recurrent urine infections due to obstruction caused by the prostate

•bleeding from the prostate due its enlargement (BPH), which may not have improved with a 5-alpha reductase inhibitor like finasteride or dutasteride

•prostate cancer ('channel TURP'): this is to allow urine to flow and is not intended to be curative

What are the advantages of a TURP?

TURP has several advantages. These include:

•rapid removal of prostatic tissue at the time of surgery

•it can be combined with some other procedures such as removing small bladder stones

•many years of data to support its use with a thorough understanding of its advantages, risks and outcomes

•widespread use throughout hospitals in most countries by urologists

How well does TURP work?

Almost 9 out 10 men who have a TURP for BPH find that their symptoms are significantly better after TURP providing

•bladder outlet obstruction is proven (e.g. on urodynamic studies)

•bladder that contracts with normal strength and has not become weak.

Men experience a much stronger flow of urine, shorter time in the toilet when passing urine and longer intervals between visits to the toilet. If the bladder did not empty before surgery, then getting up a night may also improve. After a year, the urgent desire to pass urine that some men suffer also gets better.

Men who have had to use a catheter to empty their bladder before find that they can pass urine without a catheter in many cases. However, this is not always true.

What are the risks or disadvantages of a TURP?

Most men have little trouble with the procedure and only about 1 in 6 have some form of problem. The most common is the inability to pass urine after the procedure ('urinary retention'). This may occur in about 1 in 14 men (about 6%) and usually resolves after another period of catheterisation.

Blood loss may occur and so anaemia may be a problem in 1 in 25 patients (4%) requiring a transfusion. Occasionally, bleeding results in blood clots in the urine. If these are very large, they may block the catheter. A urinary infection may occur and rarely this can be severe and lead to loss of life. This is very rare affecting less than 1% of men.

The fluid used during the procedure can be absorbed resulting in a drop in the sodium level of the blood. This is known as 'TUR syndrome'. This can occur in 2% of men (i.e. 1 in 50 men). In some cases, this is serious, but it can be avoided by following safe procedures.

Bleeding can occur in the urine for up to 3 weeks after leaving hospital. About 1 to 2 weeks after the operation, blood clots may appear in the urine, which also becomes pink. Drinking fluid and going to the toilet frequently clears the clots.

After the procedure, a strong sense of urgency may develop i.e. an urgent desire to pass urine sometimes associate with urinary leakage ('urge incontinence'). This occurs because the bladder muscle is intrinsically overactive in about 1 in 3 men who have the procedure, and the prostate prevented leakage by its sheer bulk before surgery. Drugs such as tolterodine, oxybutynin or solifenacin can improve these symptoms. This usually resolves by 6 months.

Rarely (less than 1 in 30 men), the muscle mechanism that controls the flow is damaged by TURP leading to incontinence on activity ('stress incontinence'). Pelvic floor ('Kegel') exercises can help this and again this usually resolves within 6 months of surgery. In the most severe cases, another operation may be needed to reduce leakage.

A narrow area may develop in either the urethra, which is known as a urethral stricture, or at the bladder neck, which is known as a bladder neck contracture. This affects about 1 in 30 men after TURP and can explain why urinary symptoms deteriorate after an initial improvement. These may need further surgical procedures before improvement.

Most men (over 70%) find that they have either a very reduced volume of semen or no semen when they have an orgasm and ejaculate. This is called 'retrograde ejaculation'. The semen is passed in the urine. This is not dangerous, but obviously some men may find that unacceptable in which case they should either not have surgery or choose TUNA, which does not have this side-effect.

Erections may get worse or sometimes get better. As it is not possible to guarantee that erections will not be affected, one needs to think about this possibility before undergoing a TURP.

What are the alternatives to a TURP?

There are several procedures of which the most common are listed below.

•Transurethral Needle Ablation (TUNA) of the prostate: this is a less invasive procedure than TURP, can be performed in day surgery or as an outpatient, with fewer problems and maintains normal ejaculation. Symptoms are improved after TUNA, but not as much as after TURP.

•green Light PVP laser prostatectomy: Compared to TURP, There is much less blood loss, a shorter hospital stay and reduced chance of needing a blood transfusion. For up to 2 months after PVP, there may be much more frequency, urgency and discomfort felt in the bladder and penis when passing urine.

•Open prostatectomy: For this, an incision is made in the lower abdomen under general anaesthetic or when the skin is made numb from the waist down, and the prostate removed. Urinary symptoms are improved possibly slightly better than TURP. A prolonged hospital stay is required and bleeding can occur sometimes requiring a blood transfusion. This option is reserved for very large prostates that are usually too large to be treated by one of the other options.

•Prostate stent: This is usually reserved for patients who are unsuitable for any other form of therapy. It is performed in day surgery, involves local anaesthesia, but is probably less effective than the other options. Problems are more common later than after other procedures.

•Transurethral Microwave Thermotherapy (TUMT): this is another minimally invasive option that works well in selected patients but still results in retrograde ejaculation.

Are any special tests needed before a TURP?

In general, the tests performed before to evaluate urinary symptoms are all that required. If there is concern that the prostate is not the only cause for problems, then a flexible cystoscopy to examine the prostate, bladder and urethra (water pipe) may be necessary. If there is concern that prostate cancer may be present, then it may be necessary to take prostate biopsies.

What do I need to do before a TURP?

You should take your normal medication as before the procedure. Ask your doctor if you should stop aspirin or clopidogrel (Plavix) 7 days before the operation. In addition, you may need to stop warfarin, so be sure to check what needs to be done. You may need a blood test before surgery to determine if clotting has become normal enough. In some cases, you may be allowed to continue with warfarin.

If you have symptoms that might indicate a urine infection, antibiotics may need to be given to make it safe to have the procedure. Symptoms such as pain passing urine, increased visits to the toilet, bladder discomfort, offensive smelling urine or feeling unwell may indicate a urine infection. The urine should be checked by a health professional.

No food should be eaten 6 hours and no fluid drunk 4 hours before the planned time of laser prostatectomy. Special stockings to reduce the chance of a blood clot in the legs are worn on the day of surgery.

What happens during a TURP?

Under general anaesthesia (i.e. asleep) or spinal anaesthesia (i.e. numb from the waist down), a telescope examination is made of the prostate and bladder using a camera mounted on the end of a tube passed through the water pipe (urethra). As the instrument used for the procedure is quite large, the urethra may be enlarged slightly by performing what is known as an optical urethrotomy. A resectoscope is passed to the prostate. This has a tiny looped wire that is used to shave away layer after layer of prostatic tissue. The shaved tissue is then flushed into the bladder and washed out through the tubing at the end of the operation.

For men with smaller prostates, an alternative operation may be chosen: a TUIP (transurethral incision of the prostate) also known as a bladder neck incision (BNI). In this case, the surgeon uses an instrument that makes a few small cuts in the prostate and bladder neck rather than removing tissue. These cuts reduce the obstruction in the urethra and improve urine flow.

A catheter is placed in the urethra. This is used to wash the bladder gently following the procedure.

What happens immediately after a TURP?

BPHpro1At the end of a TURP, a catheter will be inserted through the urethra into the bladder to drain away the urine and blood. It is normal for the fluid draining from the bladder to be bright red after the operation. There is some discomfort but usually no pain post-operatively. The catheter will be left in place for a few days and removed when the urine is pink. Drinking plenty of fluids (8 cups a day or 3 litres/day) will ensure a good flow of urine and decrease the possibility of of blood clots, which can block the catheter The catheter may cause you to have bladder spasms or to feel the need to urinate. These symptoms can be improved by drugs.

You may be given antibiotics while you are in the hospital to prevent infection. The day after surgery, you should be able to get out of bed and walk around.

BPHpro2 The catheter is held in place by a balloon inflated with water. When the balloon is deflated, the catheter slips out. You may feel pain the first few times you urinate because the prostatic urethra will still be healing. After removal of the catheter, the desire to pass water may be very urgent and it may sting a little. This improves gradually over the next few weeks. If you have difficulties, it may be helpful for you to try to hold on for 10 minutes each time you wish to pass water. Medication can also help. Another exercise is to stop passing urine in midstream and count to three. This helps improve your control. Do not worry if you experience some dribbling of urine at this stage. Providing your bladder is emptying completely, you will be able to go home. Sometimes, an ultrasound scan of the bladder will be performed to check the bladder is empty.

What is life like after TURP?

Recovery can take anywhere from two to eight weeks. During the first few weeks after the operation, there may be a deterioration of some of the symptoms present before surgery. You may have some temporary problems controlling urination, but long-term incontinence rarely occurs. These symptoms can be helped by pelvic floor exercises and medication sometimes, especially to reduce the urge to pass urine.

During the first month after TURP or BNI, the scab inside the prostatic urethra may loosen and cause bleeding. The bleeding usually will subside if you increase your fluid intake and decrease your physical activity or by resting in bed and drinking fluids.

Contact your doctor if

•your urine is so red that it is difficult to see through it

•if it contains clots

•if you feel significant or increasing discomfort

In general, you should:

•Continue drinking a lot of water to flush the bladder.

•Avoid straining when moving your bowel.

•Eat a balanced diet to prevent constipation. If constipation occurs, ask your doctor if you can take a laxative.

•Don't do any heavy lifting.

•Don't drive or operate machinery.

By six to eight weeks after the operation, urination should be easier and less frequent, although you may have to get up at night to urinate. Months may go by before you feel completely normal. Generally, the longer you had the problem before you were treated, the longer your recovery time will be.

What will happen to my sex life?

You should not resume sexual activity until your surgeon says you are ready, which is usually about 4 weeks. Many men are afraid that prostate surgery will make their sex life a thing of the past. Today, that is generally not the case. In fact, if you have been suffering with an enlarged prostate for a long period, your sex life may actually improve after surgery.

What happens to my erections?

There is a small chance that TURP or open prostatectomy will affect your ability to have an erection. However, if you were in good health and were capable of having an erection before the operation, and if the nerves involved were not affected by the procedure, your chances of resuming normal sexual activity are very good. However, surgery cannot usually restore potency that was lost before the operation. Complete recovery of the sexual function you had may take up to 1 year, lagging behind a person's general recovery. The exact length of time depends on how long after symptoms appeared that BPH surgery was done and on the type of surgery.

What happens when I ejaculate after a TURP?

Although most men are able to continue having erections after a TURP, a prostatectomy frequently makes them sterile (unable to father children) by causing a condition called "retrograde ejaculation" or "dry climax." During sexual activity, sperm from the testes enters the urethra near the opening of the bladder. Normally, a muscle blocks off the entrance to the bladder, and the semen is expelled through the penis. However, the coring action of prostate surgery cuts this muscle as it widens the neck of the bladder. Following surgery, the semen takes the path of least resistance and enters the wider opening to the bladder rather than being expelled through the penis. Later it is harmlessly flushed out with urine.

Will I still have an orgasm if I can’t ejaculate?

Most men find little or no difference in the sensation of orgasm, or sexual climax, before and after surgery. Although it may take some time to get used to retrograde ejaculation, you should eventually find sex as pleasurable after surgery as before.

Many people have found that concerns about sexual function can interfere with sex as much as the operation itself. Understanding the surgical procedure and talking over any worries with the doctor before surgery often help men regain sexual function earlier.

If you have any problems after treatment for a prostate condition, talk to your doctor. Erection problems and loss of bladder control can be treated, and chances are good that you can be helped.

Is further treatment needed later for BPH?

Since surgery for BPH leaves behind part of the gland, it is still possible for prostate problems, including BPH, to develop again. However, surgery usually offers relief from BPH for at least 15 years. Only 10 percent of the men who have surgery for BPH eventually need a second operation for enlargement. Usually these are men who had the first surgery at an early age.

Sometimes, scar tissue resulting from surgery requires treatment in the year after surgery. Rarely, the opening of the bladder becomes scarred and shrinks, causing obstruction. This is known as 'a bladder neck contracture' and may need a surgical procedure similar to transurethral incision. More often, scar tissue may form in the urethra and cause narrowing ('urethral stricture'). This problem can usually be solved during an outpatient visit when the doctor stretches the urethra.

Can I get prostate cancer even though I have had a TURP?

Prostate cancer is still a possibility, since surgical procedures such as TURP do not remove the entire prostate. Prostate cancer can appear in the remaining tissue of the prostate. Therefore, it is important to maintain contact with your doctor, so that he or she can determine if any further investigation or treatment is required.

Who does the TURP and does experience matter?

Almost all urological surgeons are taught how to perform a TURP and so NHS or Private Consultant Urological Surgeons should be able to perform the procedure as part of their basic training.

Who is suitable for treatment by TURP?

Men who fulfil one of the reasons for surgery are suitable for TURP. There should be a good reason to undergo the procedure. The advantages, alternatives and risks need to be carefully considered before having the procedure.

Who is suitable for treatment by TURP?

If there is uncertainty about having a TURP, it may be wiser to try drugs for a period of time, as these can alleviate symptoms well in some people. TUNA can also alleviate symptoms and is less invasive than a TURP and preserve normal ejaculation.

Men with urinary symptoms and have no obstruction at all on urodynamics are unlikely to do well after a TURP.

Certain conditions or drugs make bleeding significantly more likely during or after TURP. Such drugs include aspirin, warfarin, clopidogrel and other drug thinners. Other surgical options less likely to cause bleeding such as laser prostatectomy may cause fewer problems.

Men who have an unstable heart (e.g. recent heart attack or coronary stent) or lung problem may be better waiting for a few months before having a TURP. If necessary a prostatic stent can be inserted if men are unable to pass urine and this can avoid a catheter.

Certain neurological conditions (e.g. myasthenia gravis, multiple sclerosis, or Parkinson disease) give rise to urinary symptoms in their own right. In such cases, extra special care should be taken to ensure that the prostate is in fact the primary cause for the symptoms. Video-urodynamic studies are necessary before surgery otherwise incontinence may results. If there is uncertainty about the benefit of a TURP, a prostatic stent can be inserted as this can be removed simply. Similarly, severe pelvic fractures can also give rise to incontinence after TURP.

Some men develop urinary symptoms after radiotherapy for prostate cancer. In general, it is better to delay or avoid a TURP as much as possible because incontinence may develop.

Treatment for prostate cancer by cryotherapy or brachytherapy can also cause problems if a TURP is performed. Alternatives should be sought if possible.

If an active urinary infection is present, a TURP should be deferred until the infection has been cleared or antibiotics have been administered.

Green Light PVP Laser Prostatectomy

Overview on green light PVP treatment for BPH

The GreenLight PVP Laser System uses a green light laser to vapourise the prostate. A thin fibre is inserted into the urethra through a cystoscope, which is an instrument that allows the doctor to examine the bladder and prostate. A wide-open channel is created in the prostate allowing urine to flow much better than before. There is minimal if any bleeding and patients can either go home the same or next day.

For more information read below. It is also possible to download information about this:

National Institute for Clinical Excellence advice to patients regarding the GreenLight PVP system

LaserScope information to patients about the GreenLight PVP system

LaserScope Information to patients giving advice before and post procedure

PVP.jpg

Why have a laser prostatectomy?

The reasons are the same as for a TURP, which are:

•urinary symptoms due to an enlarged prostate (BPH) that are bothersome and are not adequately improved by medicines, changing one's lifestyle

•urinary symptoms due to BPH that are bothersome and cannot be treated by drugs or other minimally invasive techniques

•urinary symptoms due to BPH proven to be due to bladder outlet obstruction on urodynamics with a desire to remove obstruction in order to avoid long term problems of bladder outlet obstruction

•The inability to pass urine without a catheter ('urinary retention')

•kidneys that are not functioning properly because the prostate is blocking the bladder

•recurrent urine infections due to obstruction caused by the prostate

•bleeding from the prostate due its enlargement (BPH), which may not have improved with a 5-alpha reductase inhibitor like finasteride or dutasteride

•prostate cancer ('channel TURP'): this is to allow urine to flow and is not intended to be curative

In addition, the treatment can be performed in patients who have abnormal clotting or are on drug thinners (e.g. aspirin, warfarin etc) in certain cases.

What are the advantages of a laser prostatectomy?

Urinary symptoms are reduced as much as for traditional surgery and significantly more than with the use of medication. In addition, there is shorter stay in hospital, shorter period or no catheterisation and less blood loss. There is much less bleeding, which is why the procedure can be performed on men taking aspirin.

The instrumentation for a laser prostatectomy is smaller than that used for a TURP, so, in theory, there should be a reduced chance of a urethral stricture.

Saline is used during the procedure to irrigate the area, and this is safer than the irrigation used to a TURP that can cause a rare but dangerous problem known as TUR syndrome.

How well does a laser prostatectomy work?

The GreenLight PVP works as well as TURP for small or moderate sized prostates. Providing men have bladder outlet obstruction, 9 in 10 men should experience a significant improvement in urinary symptoms after laser prostatectomy. Patients who had a catheter in should be able to pass urine with little problem.

What are the disadvantages of a laser prostatectomy?

The procedure takes slightly longer to perform than a standard TURP and is not so effective on very large glands.

As the prostate is vapourised, no tissue is available for analysis to determine if prostate cancer is present. After a TURP, there is prostatic tissue available that can be used for histological analysis.

Discomfort or pain on passing urine is more common after a laser prostatectomy than after a TURP. This may last a week or sometimes go on for several months. This is sometimes accompanied by needing to visit the toilet more often and urgently during the day and the night.

Sometimes, slough, which is dead prostatic tissue, may be passed after the laser prostatectomy. This may temporarily interrupt the flow of urine; TURP can also be affected by blood clots that has similar problems.

Complications can occur although these are rare and can follow inappropriate firing of the laser into the bladder and damaging the tissue in that area.

What are the alternatives to GreenLight PVP laser prostatectomy

There are several procedures of which the most common are listed below.

•Transurethral Needle Ablation (TUNA) of the prostate: this is a less invasive procedure than laser prostatectomy, can be performed in day surgery or as an outpatient, with fewer problems and maintains normal ejaculation. Symptoms are improved after TUNA, but not quite as much as after laser prostatectomy.

•TURP: This is the gold standard treatment for BPH by which other treatments are judged. Compared to laser prostatectomy, There is more blood loss and a greater chance of needing a blood transfusion, a longer hospital stay and more post operative complication. There is less discomfort felt in the bladder and penis after this compared to laser prostatectomy and usually there is no slough to pass.

•Open prostatectomy: For this, an incision is made in the lower abdomen under general anaesthetic or when the skin is made numb from the waist down, and the prostate removed. Urinary symptoms are improved possibly slightly better than laser prostatectomy. A prolonged hospital stay is required and bleeding can occur sometimes requiring a blood transfusion. This option is reserved for very large prostates that are usually too large to be treated by one of the other options.

•Prostate stent: This is usually reserved for patients who are unsuitable for any other form of therapy. It is performed in day surgery, involves local anaesthesia, but is less effective than the other options.

•Transurethral Microwave Thermotherapy (TUMT): this is another minimally invasive option that works well in selected patients but still results in retrograde ejaculation.

Are any special tests required before laser prostatectomy?

To make sure that a man has the appropriate prostate that can be treated well by laser prostatectomy, the following tests or investigations are sometimes necessary in addition to those necessary to evaluate symptoms:

•ltrasound scan of the prostate: an ultrasound probe is through the anus to scan the prostate. It may be uncomfortable, but no needles are used and it is not painful. This gives the size of the prostate which determines if the prostate is not too large for laser prostatectomy.

•telescope examination of the bladder (flexible cystoscopy): this is to evaluate the shape of the prostate and rule out other potential reasons that may cause urinary symptoms or prevent treatment by laser prostatectomy.

In some men, biopsies from the prostate may need to be taken to exclude prostate cancer. If prostate cancer is found, then alternative treatments may be necessary.

What do I need to do before a laser prostatectomy?

You should take your normal medication as before the procedure. Ask your doctor if you should stop aspirin 7 days before the operation. In addition, you may need to stop warfarin, so be sure to check what needs to be done. You may need a blood test before surgery to determine if all is well. In some cases, you may be allowed to continue with warfarin.

If you have symptoms that might indicate a urine infection, antibiotics may need to be given to make it safe to have the procedure. Symptoms such as pain passing urine, increased visits to the toilet, bladder discomfort, offensive smelling urine or feeling unwell may indicate a urine infection. The urine should be checked by a health professional.

No food should be eaten 6 hours and no fluid drunk 4 hours before the planned time of laser prostatectomy.

Patients have not reported any pain during the procedure. You and your doctor will discuss appropriate sedation.

Most patients can go home a few hours after the procedure. Sometimes, you may need to spend the night in hospital and go home the following morning. This is more likely if your procedure is done late in the day, or if you travelled a long distance to reach the hospital.

What happens during a laser prostatectomy?

Under general anaesthesia (i.e. asleep) or spinal anaesthesia (i.e. numb from the waist down), a telescope examination is made of the prostate and bladder using a camera mounted on the end of a tube passed through the water pipe (urethra). The laser is introduced and the prostate vapourised.

A catheter is placed in the urethra and then the patient returns to the ward.

What happens immediately after a laser prostatectomy?

You will return back to the ward. A catheter will be in place draining the bladder. This may have a slightly red colour. Usually, this will stay in either 6 hours or overnight. There may be a little discomfort, but it is unusual to have pain. Drinking plenty of fluids (8 cups a day or 3 litres/day) will ensure a good flow of urine. The catheter may cause you to have bladder spasms or to feel the need to urinate. These symptoms can be improved by medication if necessary.

You will be given antibiotics while you are in the hospital to prevent infection and a drug to reduce inflammation (e.g. diclofenac). These will probably continue for 1 week after the procedure. You should be able to get out of bed and a walk around soon after returning from the operating theatre.

The catheter is held in place by a balloon inflated with water. When the balloon is deflated, the catheter slips out. You may feel pain when you urinate because the prostatic urethra will still be healing. After removal of the catheter, the desire to pass water may be very urgent and it may sting. This improves gradually, but may take as long as a few months. If you have difficulties, it may be helpful for you to try to hold on for 10 minutes each time you wish to pass water. Medication can also help. Another exercise is to stop passing urine in midstream and count to three. This helps improve your control. Do not worry if you experience some dribbling of urine at this stage. Providing your bladder is emptying completely, you will be able to go home. Sometimes, an ultrasound scan of the bladder will be performed to check the bladder is empty.

What is life like after laser prostatectomy?

Many patients obtain immediate relief of symptoms and dramatic improvement in your urine flow usually within 24 hours of the procedure. In some patients, it may take up to 8 weeks for the urinary flow to improve and there may actually be a deterioration in the flow with increased need to visit the toilet during the day and night. This occurs because some prostate ('slough' i.e. lasered prostate) may need to be passed in the urine before the flow can be improved.

You will probably be taking an antibiotic, anti-inflammatory and possibly a drug to calm the bladder for the first week or so.

Contact your doctor if

•your urine is so red that it is difficult to see through it

•if it contains clots or bits of tissue (slough) if you feel significant or increasing discomfort

In general, you should:

•Continue drinking a lot of water to flush the bladder.

•Avoid straining when moving your bowel.

•Eat a balanced diet to prevent constipation. If constipation occurs, ask your doctor if you can take a laxative.

•Avoid caffeine and alcohol

•Don't do any heavy lifting for 2 weeks

•Don't drive or operate machinery until you feel ready and for at least 1 to 2 weeks

By six to eight weeks after the operation, urination should be easier and less frequent, although you may have to get up at night to urinate. Months may go by before you feel completely normal. Generally, the longer you had the problem before you were treated, the longer your recovery time will be.

How long is the recovery time? How soon can I return to normal activities?

Most patients can resume normal activities within the week. This would include a desk job and driving a car, which you should be able to resume within a couple of days. You will have to avoid more strenuous activities, as well as lifting more than 30 pounds or riding a lawnmower for example, for about 2 weeks following the GreenLight PVP Laser procedure.

Will I still be able to have sex following the PVP procedure?

The GreenLight PVP Procedure should not affect your ability to have an erection or an orgasm. Some men have reported retrograde ejaculation, or “dry climax” following the procedure. If you are sexually active now, you can look forward to remaining sexually active.

Can I have PVP if I have failed TUNA or TUMT

Yes, many patients who have failed these treatments have been successfully treated with PVP.

Can I have PVP if I had a TURP?

Yes, absolutely

My doctor has told me that I am not a candidate for TUNA, TUMT, ILC, or WIT…and has recommended that I have a TURP? Can I still have the PVP procedure?

As a rule, if you are a suitable candidate for TURP, you can be considered a good candidate for PVP. Prostate size or length does not generally rule you out as being a good candidate for PVP; however, your doctor will need to make that determination, based upon your individual condition.

Will I still need to take my prostate medication following the PVP procedure?

No. Your doctor will tell you when you can stop taking these medications.

How do I know if I am a candidate for PVP?

Only your urologist can determine if you are a candidate, based upon your history & physical examination, as well as his clinical judgement.

How long can I expect the effects of the procedure to last?

Clinical studies show that the procedure is very long lasting. Very few patients require re-treatment. We do not know how long you can expect improvement until more data is gathered from clinical studies.

Prostate Cancer Frequently Asked Questions

What is prostate cancer?

The body is made up of many types of cells. Normally, cells grow and divide to produce more cells only when the body needs them. This orderly process helps keep the body healthy. Sometimes cells keep dividing when new cells are not needed. A mass of extra cells forms, and this mass is called a growth, tumour or cancer. Prostate cells in cancer tumours are abnormal and divide without control or order. These cancer cells can invade and destroy the tissue around them. Cancer cells can break away and spread through the blood and lymphatic system. In this way, secondary cancers known as metastases form. The spread of cancer is called metastasis.

What types of prostate cancer are there?

The majority are known as adenocarcinomas of the prostate, but there are other rare form such as mucinous carcinoma.

What increases the risk of prostate cancer?

•Age: the older men get, the more likely a cancer might develop in the prostate.

•Race: Afro-Caribbean men are at higher risk than Caucasians and men from the Far East have a lower risk for cancer.

•Family history: If a father, brother or uncle has prostate cancer, the risk is also increased.

•Obesity: increases the risk of lethal prostate cancer.

•'metabolic syndrome'

•Tall stature: increases the risk of advanced prostate cancer

•Occupation: Farmers, firemen, workers in electrical capacitor plants, pesticide workers and rotating shifts workers

•Diet: see the question below.

It is not certain, but a history of gonorrhoea may also be significant. Benign overgrowth of the prostate (BPH) is not a risk factor for prostate cancer. Smoking may make prostate cancer more serious if a diagnosis is made, but it is not known if it significantly increases the chance of prostate cancer. Men with only daughters as off spring also appear to be at great risk than men with both boys or no children (ref)

Is diet important in prostate cancer?

It is not absolutely proven, but certain types of diet may increase the risk of prostate cancer including:

•red meat

•saturated fat

•low intake of fruit and vegetables

•omega 6 fatty acids (corn, safflower oils and red meats).

•high calorie diet

•high calcium and milk consumption

The following diet appears to be associated with either a lower incidence of prostate cancer or lower chance that prostate cancer will spread or be more serious:

•selenium - seafood, poultry, brazil nuts and especially broccoli florets

•vitamin E (wheat germ, nuts, soybeans, organ meats and vegetable oils)

•beans -- black, pinto, small red and kidney beans are high in fiber, which helps the body rid itself of excess testosterone. Beans are also rich in inositol pentakisphosphate, a known cancer-fighter

•soy and soya products (e.g. 62.5 mg Soy isoflavone aglycones (ADM Novasoy)

•folate supplementation

•lycopenes - found in concentrated tomato sauces (e.g. pizza), watermelon and pink grapefruit. These work when eaten with broccoli simultaneously

•cruciferous vegetables (cabbage, broccoli, brussel sprouts, cauliflower, bok choy and kale)

•omega 3 fatty acids found in oily fish (e.g. tuna, sardines, salmon), linseed, walnuts or food supplements

•sweet potatoes, carrots and cantaloupe are rich in beta-carotene, which gives them their orange color and helps the immune system keep cancer at bay

•pomegranate juice (8 oz/day)

•zinc

•milk thistle

•turmeric (curcumin): a chemical found in curry especially in combination with watercress, cabbage, winter cress, broccoli, brussels sprouts, kale, cauliflower, kohlrabi and turnips.

•green tea (the evidence for this is less strong than it was a few years ago)

•quercetin: possibly helpful

•A low glycaemic index (GI) diet may also be helpful as this reduces the amount of circulating insulin that . Follow this link for further information.

There was concern that flax seed may be dangerous for prostate cancer, because it is rich in alpha-linolenic acid. However, this is probably a red herring and is probably safe. See the discussion on this link: flax seed and prostate cancer.

Some drugs can also reduce the risk of prostate cancer including 5a-reductase inhibitors (e.g. finasteride, dutasteride). Statins are used to reduce cholesterol and seem to reduce the probability that prostate cancer will spread outside the prostate if develops at all.

For more information go the following link: prostate cancer and diet.

How common is prostate cancer?

For most men, there is a 1 in 6 chance (16%) of being diagnosed with prostate cancer in their lifetime and a 3% chance of dying from it.

The chance of a diagnosis of prostate cancer increases as men get older.

Age (years)

Odds

45

1 in 2500

50

1 in 476

55

1 in 120

60

1 in 43

65

1 in 21

70

1 in 13

75

1 in 9

It is possible to estimate the risk of prostate cancer by following this web link:

http://www.hyperion-interactive.com/astrazeneca/risk.htm

or this one:

Harvard Center for Risk Cancer Prevention Prostate Cancer Risk Calculator

or this one:

Prostate Cancer Research Foundation of Canada

Go to PSA to see the chance of prostate cancer alone and high grade prostate cancer by PSA alone.

Is prostate cancer important?

About 10 000 men a year die with prostate cancer in England and Wales. Recently, there have been suggestions that there is considerable over treatment for prostate cancer. That is partly true, but prostate cancer is important and around 10,000 men still die from it. Many men with prostate cancer die from other problems before prostate cancer, but some men's quality of life can be severely affected whilst living with it. In general, men aged 45 have various causes of death and these are shown diagrammatically below. Heart disease, lung cancer, strokes and emphysema kill more people than prostate cancer, but as these diseases become controlled, there is a chance that prostate cancer will become more important.

Prostate diagram

The important thing is to try and identify prostate cancer at high risk of progression and causing problems. The factors to consider are: change in PSA over time, change in palpable volume of the tumour, the grade (Gleason Score) of the prostate cancer, and the amount of prostate cancer present in the biopsies (mm in length Ca), versus no cancer in the biopsies (mm in length non-Ca) taken from the prostate.

Does prostate cancer produce symptoms?

When prostate cancer starts, there are usually no symptoms. As prostate cancer advances, symptoms may include:

•blood in the urine

•frequency and nocturia

•weak urine flow that stops and starts

•discomfort whilst passing urine

•inability to urinate ('urinary retention')

•persistent pain in the back, thighs and pelvis

•inability to get an erection (impotence)

However, these symptoms usually occur for other reasons including a urine infection, benign overgrowth of the prostate or other problems, but not prostate cancer. Therefore, you should not immediately worry and think you may have cancer if you have these symptoms. Nevertheless, they must be checked out by a doctor.

Advanced prostate cancer can cause pains in the bones (e.g. back), urinary problems and weight loss. These must be investigated by a doctor in the appropriate setting.

How can prostate cancer be detected early?

Usually, there are no symptoms. The only way to detect cancer early is take samples (biopsies) from the prostate. However, this is not necessary in everyone.

Several factors can be used to help determine the risk of prostate cancer. These include:

•PSA exact level(see PSA FAQ)

•Whether the prostate feels cancerous or not when felt on examination

•Age

•Race

•Prostate size or appearance on ultrasound

•PSA density (PSA/prostate volume)

•Certain variations of PSA (eg Free/Total PSA, complexed PSA)

•PCA3 score

These bits of information can be used to predict the risk of finding cancer if biopsies are taken.

A new test is available and will probably be very useful. This is the PCA3 score. Essentially, PCA3 is a gene found much more in prostate cancer cells than prostate cells without cancer. After examination of the prostate by a finger (DRE), urine is collected and tested for the amount of a product associated with PCA3. High levels are associated prostate cancer. The PCA3 score seems to be more specific than blood levels of PSA alone for the detection of prostate cancer, and so may help predict who may or may not have cancer found if prostate biopsies are taken.

Should I be tested for prostate cancer?

Many doctors believe it is of benefit to detect prostate cancer early providing you are in good health, younger than 70 years with at least 10 years of life ahead of you. Knowing how many years you can live can be difficult to guess obviously. The risk of prostate cancer can be calculated.

If you have prostate or waterworks problems anyway, detecting prostate cancer and treating it may alleviate symptoms. There is good evidence that treating people with prostate cancer detected because they have symptoms live longer and have a lesser chance of the cancer spreading. However, not everyone wishes to go through the process to find prostate cancer.

The advantages of screening for early prostate cancer are

•peace of mind

•finding a problem, taking further tests and treating a potentially serious cancer

•the opportunity for treatment early when it is still possible for the cancer to be completely removed and be cured

•having early treatment at a younger age, when the body is able to tolerate it

•the treatments available have significantly improved and have fewer side-effects than they did many years ago, so there are less side-effects than before

•the ability to enter an active monitoring scheme i.e. close following of the cancer to determine if it has features suggesting it may be dangerous or benign, and so choose an intervention only when absolutely necessary

If you want to catch prostate cancer early, PSA testing should be begin from 50 years of age. In general, if the risk of prostate cancer is thought to be high enough to worry, biopsies may be recommended. The risk can be calculated on line as indicated above. If the prostate feels abnormal when examined by a doctor, most doctors would recommend biopsies, as the chance of significant prostate cancer is high. It is important to realise that there is no absolute PSA value that is globally recognised as being appropriate; It is best to calculate the risk of prostate cancer based on algorithms or nomograms. The implications of the test and biopsies must be understood before undergoing the test.

Why shouldn't I be tested for prostate cancer?

This might sound like a silly question, but it has not yet been proved that detecting men with early prostate cancer and no symptoms through screening improves the quality of the rest of the life. This is so for several reasons:

•using the PSA test to find cancer probably makes the diagnosis occur about 10 years earlier than it would have been made without a PSA test - this can be upsetting and cause anxiety

it is possible that many of the cancers detected so early would not get worse and not kill or interfere in the lives of the affected men

•the treatments available for early prostate cancer treatment can result in serious side effects. The side-effects are unusual but can include the need to wear pads to stay dry because of incontinence, bowel problems and the permanent loss of erections

•the treatments do not always work i.e. the cancer persists after treatment.

However, what is also known is that there is no cure for prostate cancer unless it is diagnosed when it is confined to the prostate (i.e. early prostate cancer, localised prostate cancer). Furthermore, it is very difficult to predict with certainty which men with prostate cancer will go on and have problems from those that will not. In addition, it younger men are better able to tolerate the main treatments available for prostate cancer than older men. Thus, early detection is the only way currently available to give an opportunity for cure.

Dr Thomas Stuttaford in the Times wrote an interesting article on PSA testing that can be read in the Times Online.

How can I be tested for prostate cancer?

Ask your general practitioner and have a discussion with him or her about it. Alternatively see Contact Us.

What do I do next if I have a diagnosis of prostate cancer?

Do not worry unduly. No two men are alike with prostate cancer and many things need to be considered when deciding what to do to. These include:

•Your age

•general health including the qualify of your sex life

•whether you have urinary or bowel symptoms already

•the grade (severity) of the cancer, which is usually given as the Gleason score.

•PSA level

•whether the cancer is located only within the prostate or has spread outside either beyond the prostate borders, to the lymph glands or elsewhere such as the bones

•your inclination for treatments including radiotherapy or surgery

•to what extent treatment affect the natural history of disease

These issues can be discussed with your doctor.

Prostate Specific Antigen (PSA)

What is PSA?

PSA stands for Prostate Specific Antigen. This is something produced by cells in the prostate and its level can be measured in the blood when it is taken from a vein for analysis. PSA is used best in combination with other factors, when estimating the risk of prostate cancer being found on prostate biopsies or the severity of prostate cancer.

What is important to know about PSA?

The absolute level and rate of change of PSA are important. A raised PSA may be either transient i.e. temporary or sustained and persistent. PSA varies by as much as 33% between tests, although not usually as much. For example, if the PSA is 3 ng/ml on 1 occasion, it may go down to 2 ng/ml or even up to 4 ng/ml on another occasion without being significant. This may be just normal variation in PSA measurements.

Therefore, several readings over time (e.g. 1 per month or every 3 months) may be needed to determine if a raised PSA is genuine or due to a temporary aberration. After several readings have been made, it is possible to calculate the PSA velocity, rate of change or doubling time, which may give additional information as to the chance or severity of prostate cancer.

It is important to remember that PSA is just one factor to be considered when considering the risk or severity of prostate cancer.

What does the level of PSA indicate?

This means how low or high it is. PSA is made by cells within the prostate and so PSA levels are higher in men who have big prostates and lower in men with small prostates.

PSA levels can be consistently high for the following reasons:

•benign (non-cancerous) enlargement of the prostate

•prostate cancer

•chronic inflammation (chronic prostatitis)

Transient reasons for elevations in PSA occur:

•when the prostate is disturbed by a medical procedure (e.g. cystoscopy, prostate biopsy or prostate surgery)

•urine or prostate infection

•acute inflammation (acute prostatitis)

•the sudden inability to pass urine ('acute urinary retention')

•ejaculation in the previous 24 to 48 hours sometimes

PSA levels may also fall because of drugs:

•drugs finasteride (Proscar, Propecia), dutasteride (Avodart)

•hormone or steroid medications

•antibiotics (especially when there is prostatitis present)

Sometimes, the PSA changes because of laboratory reasons e.g. different test components or kits that are used in different hospitals.

Should I be worried about my PSA?

It is of value to determine the PSA level and rate of change if knowledge of its level helps you make decision that might have an impact on your quality of life. Thus, it depends on your age, whether you have urinary (water works) symptoms that are causing bother, and whether you have any other significant health problems affecting your life. It is best to have a discussion with a doctor who understands all the nuances before having the test done.

Dr Thomas Stuttaford in the Times wrote an interesting article on PSA testing that can be read in the Times Online.

In what situations is it helpful to know the PSA?

There are three main situations when it can be helpful:

•Prostate cancer: If you are less than 70 years old, in good general health, PSA can be used to find men who might have prostate cancer. If the level is between 2.5 and 10 ng/ml, then there is a 25% to 40% chance that prostate cancer might be present if samples (prostate biopsies) are taken from the prostate. If the PSA is more than 10 ng/ml, the chance is more than 40%. However, it is important to understand that the PSA can rise for other reasons as indicated in the previous question.

•Urinary symptoms due to non-cancerous (benign) prostate enlargement (BPH): If you have this problem, a higher PSA may mean that the prostate is enlarged and that there is a slightly greater risk that you might stop passing urine altogether ('urinary retention') and need a catheter or TURP (an operation to remove blockage from the prostate) to improve your urinary symptoms. It is important to exclude the possibility of prostate cancer and this may mean that prostate biopsies need be taken. Treatment with drugs is less likely to be successful for long in reducing symptoms from the prostate if it is large compared to when the it is small.

•Bony aches in men that are new, persistent and painful: Rarely, such pain can be due to spread of prostate cancer to the bones. As many people have back ache anyway, usually the cause will not be cancer. However, one should think carefully about back pain that has recently started, persistent and disturbs sleep.

There is a booklet (Adobe PDF) that can be downloaded from Cancer Backup by following this link:

What level of PSA is dangerous?

This is very controversial for reasons given above and below.

The National Institute of Excellence (NICE) has recommended the referral of every patient with a hard and irregular prostate be referred to a urologist. NICE has recommended that referral should also be made to a urologist if t the PSA is above the average for the age of the patient even with a normal feeling prostate: i.e.

Age (years)

PSA (ng/ml) threshold

50-59

3

60-69

4

70+

5

However, not all experts agree with this. The problem is that the average PSA for each age group includes men with prostate cancer that has not yet been detected. In addition, the higher the PSA, the less chance of cure because cancer spreads out from the prostate cancer. Many experts recommend testing for prostate cancer if the PSA level is more than 2 ng/ml or 2.5 ng/ml. However, there is a lack of consensus on this.

In a recent study (Thompson et al, 2004, New Engl J of Med) of more 18,000 men performed to evaluate how to reduce the risk of prostate cancer, the proportion of patients with cancer by PSA is shown in the table below:

PSA (ng/ml) range

Percentage of men with prostate cancer

Percentage of men with high-grade prostate cancer

<0.5

7%

1%

0.6 to 1.0

10%

1%

1.1 to 2.0

17%

2%

2.1 to 3.0

24%

5%

3.1 to 4.0

26%

7%

This may look alarming at first glance, but should be seen as one of the problems with PSA used as a test when other risk factors are not considered. Even at low levels of PSA, prostate cancer is present, although the chance of high grade (i.e. dangerous) disease is lower.

It is possible to estimate the risk of 'high-grade' cancer and any grade of prostate cancer providing you know the following:

•PSA level in the blood

•whether the prostate feels normal or abnormal on examination

•whether there is prostate cancer in the family

•if you have had negative prostate biopsies in the past

•Race

Then go to 'Predicting Likelihood Of Cancer If A Prostate Biopsy Is Performed'. Also the prostate risk indicator offers more estimates of risk that are more accurate than PSA alone.

See this picture for a graph of the chances using age, PSA level and what the prostate feels like:

High grade prostate cancer diagram

The rate of change of PSA is also important and may indicate that high grade (i.e. important cancer) or risky cancer is present.

What rate of change of PSA is dangerous?

If the PSA is rising rather than staying at the same level, it can mean prostate cancer is present even at low absolute levels. If the PSA was measured every year and changed as follows from 1.00, 1.25, 1.56, 1.95 ng/ml, then the PSA is doubling every 3 years or so. This can indicate a prostate cancer is present and growing slowly.

Similarly, if the PSA rises more than 2 ng/ml in 1 year, then it is more likely that serious prostate cancer is present.

Thus, even at low absolute levels of PSA, cancer may be present and this can be detected by serial monitoring of PSA. If prostate cancer is present, the rate of change of PSA or PSA doubling time is also associated with the degree of spread of prostate cancer.

Thus, a baseline PSA when young can be helpful for the future (see ref).

Rapid increases in PSA over a short time period (weeks) can be due to infection in the urine or prostate ('prostatitis'). This is as frequent a cause for a rapid rise in PSA over a short period as prostate cancer. If there is any suggestion of infection, this should be treated first with antibiotics and then the PSA measured again.

Therefore, it is important to remember that the PSA can also change for the reasons as indicated in the question above.

What is my chance of having a high PSA?

If a 100 men aged over 50 years have a PSA test, then about 85 will have a level less than 4 ng/ml and are less likely to have prostate cancer. Fifteen men will have a PSA greater than 4 ng/ml, and about 3 of these 15 men will have prostate cancer. These numbers are slightly higher in Afro-Caribbean men and lower in men from the far east.

What does finasteride or dutasteride do to my PSA?

You should multiply your PSA value by 2 or 2.3 if you are taking a drug like finasteride (Proscar) or dutasteride (Avodart) and use this adjusted value to make decisions such as whether to have prostate biopsies or not. These drugs lower PSA and an adjustment must be made for correct interpretation.

When on these medications, most of the change in PSA is due to prostate cancer, if present, and so changes in PSA are more important.

Are there any improvements on PSA alone?

There has been much hope in the use of Free PSA also known as free/total PSA. It identifies more closely those people who might have high grade prostate cancer. It may be helpful in deciding who should or should not have a repeat biopsy of the prostate if the first biopsy was negative and there is still worry that prostate cancer might be present. It has little use if the prostate is vey large or there is prostatitis (infection/inflammation). High levels (i.e. more than 25%) are good.

It is possible to check the urine also using the PCA3 score. This determines whether there are gene associated products present that predispose to prostate cancer. See more on this on PCA3 score.

Complexed PSA may be an improvement, but this needs to be determined further and is relatively unavailable.

Using PSA as one variable in a nomogram can enhance its accuracy in predicting prostate cancer. A link to a predictive model is given above, but there are also publications of predictive methods that can be used. Some of these have been authored by M Kattan and M Garzotto. These include the use of prostate volume and PSA density. These significantly improve the accuracy with which a diagnosis of prostate cancer can be made; however, a transrectal ultrasound is necessary to calculate the prostate volume.

Current research is focused on other areas including proPSA, which is a different kind of PSA and appears to be better than free PSA. It is available for testing only in a research setting. Another test is for EPCA-2 (early prostate cancer antigen-2), which shows much promise. This is still in research and not yet available.

How can I get a PSA test done?

You can have this test performed through your general practitioner or urologist. Before the test is done, you should understand carefully the implications and limitations of the test result. A careful discussion and counselling is necessary, which should be with a knowledgeable individual.

What should I do next if my PSA is high or is rising quickly?

Don't get alarmed. There are many reasons for a high PSA other than prostate cancer as indicated above. It is important to have a discussion with your doctor or urologist quickly to make a plan. This may mean either another blood test possibly after antibiotics, biopsies of the prostate, drug treatment or no action at all.

Click for an information sheet on PCA3

What is the PCA3 score?

This is a new genetic test that determines whether products of genes associated with prostate cancer are present in the urine of men.

How do I get the test done?

A sample of urine that contains prostate cells is needed. This is obtained from the first part of the urine passed after the prostate has been examined with a finger. The sample is cooled and sent for analysis. No blood is taken.

What does the PCA3 score tell you?

A numerical score is obtained and the value of this gives an idea on how likely prostate biopsies are to show prostate cancer. The data are new, but a rough idea using the PCA3 score alone is shown below:

PCA3 Score

Probability of prostate cancer on biopsy

<5

14%

5-19

26%

20-34

37%

35-49

47%

50-100

55%

>100

78%

As you can see, it does not rule in or rule out prostate cancer, and the chance of prostate cancer is variable.

However, the PCA3 score is significantly better than PSA alone, and when used in conjunction with the PSA value, digital rectal examination findings, age, prostate size and percentage free PSA, it is possible to make a better estimate about the risk of biopsy-detectable prostate cancer. The data have been used to generate a research model to give an overall probability. This has been presented at the European Association of Urology annual meeting 2008.This seems to be the best, but has not yet been published. We have this but we are unable to quote it until it is actually published.

A prostate biopsy is still necessary to prove if cancer is present or not.

Does the PCA3 score tell you how serious the cancer is, and whether treatment might be necessary?

This year, two scientific studies have been published that show the PCA3 score does and does not correspond with the severity of prostate cancer. As such, it is not possible to know yet with any reliability whether the PCA3 score is likely to be able to tell who should and who should not have treatment for prostate cancer.

How does the PCA3 score compare with PSA?

The results are more accurate than PSA alone, but are not sufficient to rely on in isolation. The PCA3 score is not affected by the size of the prostate, unlike PSA. It is also less affected by urinary infections, which can make PSA completely unreliable. It is not yet entirely clear if drugs can affect PSA. It is possible that reduced levels of testosterone or dihydrotestosterone that can occur with age or on drugs (e.g. LHRH agonists, bicalutamide or finasteride) might influence the results.

Reasons for prebiopsy multiparametric MRI

What if an MRI is performed before prostate biopsy? There are several advantages to such an approach.

Firstly, some men may be so reassured by a negative MRI that they decide not to have a biopsy at all. We know that a very high quality MRI (ideally at 3T) is, if negative, more reassuring about the absence of tumour than a negative biopsy, and some men decide to go no further, and to have their PSA checked regularly, and perhaps another MRI at an interval. If they decide on biopsy, and that is negative too, they are very unlikely indeed to have a cancer that will harm them.

Secondly, we can detect most significant tumours on MRI, so that the biopsies can be targeted to the suspicious area. This stops us missing tumours that lie in difficult to reach places (around 10% of significant cancers are completely missed by standard biopsy because of where they lie, but picked up by MRI) and it also helps us to be sure that the sample is representative: sometimes random biopsies just shave the edge of a large tumour, leading us to underestimate how much there is.

This leads on to the third advantage of MRI before biopsy. If a small amount of tumour is detected, MRI can check that this is not the edge of a large amount, or that there is a larger tumour in the front of the prostate. Active surveillance is unsuccessful in some men precisely because of such undetected tumours, most of which can be seen with MRI.

Finally, the finding of a significant cancer usually means that staging is required to detect spread outside the prostate. Radiologists who have looked at MRI images both before and after biopsy have no doubt that they are degraded for several months by the effects of bleeding from the biopsy: the best quality staging scan is undoubtedly one done before any of this has occurred - before the biopsy.

In all three cases then: whether no disease is found, a small amount, or a significant amount, MRI is likely to be useful. This is why most of the urologists and radiologists at Nuada would see it as the optimal first step in a man presenting with a raised PSA.

Summary

A prostate biopsy is a procedure to remove small samples of prostate tissue to be examined under a microscope. See an illustration of the prostate gland.

Prostate Biopsy Diagram

For a prostate biopsy, an ultrasound probe is inserted through the rectum ('transrectal ultrasound') and needles passed ('transrectal biopsy'). The biopsy samples are examined under a microscope for cancer cells.

A biopsy may be done when there is a suspicion that prostate cancer is present e,g. after a blood test shows a high level of prostate-specific antigen (PSA) or after a rectal examination reveals an abnormal prostate or a lump.

Why have a prostate biopsy?

Biopsies are taken to find the cause for:

•a high PSA or PCA3 score

•because the prostate feels abnormal

•abnormal findings on transrectal ultrasound or MRI

Once biopsies are taken, it may be be possible to determine the severity of cancer, if it is found. This enables a decision on how to treat prostate cancer if it is present.

How do I prepare for prostate biopsies?

It is important to let the nurses and doctors know of the following:

•allergies to latex, drugs or medicines

•current medications or drugs (antibiotics, blood thinning agents or anticoagulants, e.g. warfarin, aspirin, clopidogrel or herbal remedies)

•Have had bleeding problems (e.g. after dental treatment).

Please also do the following:

•Stop aspirin and clopidogrel (Plavix) at least 5 and preferably 10 days before the procedure

•Stop anti-inflammatory medications such as ibuprofen, Advil, Nurofen, Voltarol, Arthrotec, three days before the biopsy

You will need to sign a consent form that says you understand the advantages, risks and alternatives of a prostate biopsy and agree to have the test done.

Let us know about any concerns you have regarding the need for the test, its risks, or how it will be done.

How are prostate biopsies performed?

One hour before the procedure is planned, you will take an antibiotic (ciprofloxacin 750 mg) by mouth with water. You will be asked to take off all of your clothes and put on a hospital gown. Usually, the procedure takes place in the outpatient department. Just before the prostate biopsy samples are collected, a very small needle will be placed in an arm vein and an antibiotic (gentamicin) given. These antibiotics are to prevent infection.

You will be asked to lie on your left side. Your prostate may be re-examined with a finger in a glove. Then, an ultrasound probe is passed up the anus. This can sometimes be uncomfortable as the anus is sometimes stretched by the probe. The prostate is examined by ultrasound and local anaesthetic is injected around the prostate to allow the biopsies to be taken comfortably. Transrectal ultrasound (TRUS) is used to guide the needle to the correct biopsy location. Biopsies are taken with a spring-loaded needle. The needle enters the prostate gland and removes a tissue sample quickly, but is quite loud and makes a snapping sound as a biopsy is taken.

Prostate Biopsy

How does it feel to have biopsies taken from the prostate?

You may feel a slight sting when you receive an injection of local anaesthetic, which rapidly fades. You may feel a dull pressure as the ultrasound probe is placed in the rectum and when the biopsy needle is inserted. As local anaesthetic is use, it is usually painless. Rarely, you also may feel a brief, sharp pain as the biopsy needle is inserted into the prostate gland. Usually several biopsy samples are collected over 5 minutes. Finally, an antibiotic suppository (metronidazole, Flagyl) in placed in the rectum.

Following the test, you will be asked to avoid strenuous activities for about 2-48 hours. You may experience some mild discomfort in the biopsy area for 1 to 2 days after the test and may notice some blood in your urine. Also, you may have some discoloration of your semen for up to one or two months after the biopsy. You may experience a small amount of bleeding from your rectum for 2 to 3 days after the test.

However, notify us or a doctor immediately if:

•You have persistent bleeding that fills the toilet bowl

•You feel faint.

•Your pain increases.

•You have a fever higher than 100.4 °F (38 °C).

•You are unable to urinate within 8 hours.

If you have a general anaesthetic, you will return to your room a few hours after the procedure. You will need someone to drive you home when you are released.

You will need to take antibiotics for five days after the procedure. Usually ciprofloxacin 500 mg is given twice a day.

What are the risks of having a prostate biopsy?

The following problems can occur after prostate biopsies:

•Infection: this can occur in the blood, prostate or urine. Antibiotics taken before and after reduce this risk to a minimum

•Blood in the urine: usually there is no blood, but sometimes there is blood and this can form clots from time to time. If the clots become large, it can sometimes be difficult to pass urine and this may require a return to your doctor

•Bleeding from the rectum. You may experience a small amount of bleeding from your rectum for 2 to 3 days after the test. Contact your doctor if the bleeding persists beyond this time.

•The biopsy samples may not contain cancer even though cancer is present in the prostate.

•Further biopsies may be necessary at a later date.

•Swelling of the prostate after biopsies can make it more difficult to pass urine afterwards, and rarely a catheter may be necessary to empty the bladder.

What do the results show?

Usually, the results are available within 4 days. The following may be found:

•normal prostatic tissue: no infection and no cancer

•prostate cancer

•prostatic intraepithelial neoplasia (PIN): this may or may not go on to prostate cancer and needs further observation

•Inflammation: this indicates that there is a greater chance of developing urinary problems in the future but not necessarily cancer

•ASAP cells that are commonly found if cancer is present, but not true cancerous cells

•Other abnormalities: rarely other findings are made

If cancer cells are present, analysing them can determine how fast the cancer is likely to spread. This analysis is called a Gleason score, which we will discuss with you. Further tests (such as prostate-specific antigen, bone scan, lymph node biopsy, or MRI scan) may be done to evaluate whether the cancer has spread beyond the prostate gland.

What Affects the Test Results?

Test results may be inconclusive if the prostate biopsy sample does not contain enough tissue to make a definite diagnosis.

Because a needle biopsy collects tissue from such a small area, there is a chance that a cancerous growth may be missed.

What to think about?

Normal prostate biopsy results do not rule out cancer.

If the biopsy results indicate cancer, other tests may be needed to determine the extent of the cancer. These tests may include a blood test (prostate-specific antigen), bone scan, lymph node biopsy, or MRI scan.

Not all cases of prostate cancer are treated. There are many factors to consider when deciding on a treatment plan.

A prostate gland biopsy does not cause problems with erections and will not make a man infertile.

What are the alternatives to a prostate biopsy?

Multiparametric MRI is the most promising alternative to prostate biopsies, as these can indicate with reasonable certainty whether high grade disease is present. This needs to be performed in places experienced in prostate MRI. We work with Dr Ali Hassan and Nuada Medical, who have experience with this.

The PCA3 score is the first genetic test for prostate cancer risk. It looks for a gene that is over-expressed in prostate cancer tissue. If the PCA3 score test is positive, there is a higher risk of prostate cancer. To perform the test, the prostate is massaged by a finger placed in the rectum for about 1 minute. The bladder is emptied and the first part of the voided urine is analysed for the PCA3 score. If positive, it indicates a significant chance of prostate cancer being present. Usually, biopsies are still necessary to prove cancer is present. If the PCA3 score is low, then prostate cancer is significantly less likely.

Sometime, it is appropriate not to have a prostate biopsy and just repeat the blood test in case it was an error or just a transient rather than sustained rise in PSA.

Before cancer treatment is planned or given, it is usually essential to have proof of cancer. Usually, this can only be obtained by taking a biopsy. In some situations, it can be possible to make a diagnosis based on other features. These include:

•a very high PSA level (having ruled out an infection in the urine or prostate) or PCA3 score

•what the prostate feels like when examined with a finger, or how it looks when an MRI or transrectal ultrasound is performed

•the presence or absence of abnormalities in the bones when a bone scan or x-ray is performed

Usually, at least two of the three features should be present before a diagnosis of prostate may be made without biopsies from the prostate.

These are special biopsies that map the WHOLE prostate such that EVERY part of the prostate is a biopsies. This overcomes the major disadvantage of typical transrectal prostate biopsies that do not sample the prostate as thoroughly that result in cancers being missed inappropriately.

For more information, please download the patient information sheet on prostate mapping biopsies and read below.

Why should I have this procedure?

There are a number of reasons why prostate mapping biopsies may be suitable for you:

Precision diagnosis:

•If you have a raised PSA and need to have a prostate biopsy, but do not wish to undergo the procedure under local anaesthetic.

•If you have a raised PSA or other risk factors for developing prostate cancer, but your prostate biopsy or biopsies have not detected any cancer so far.

Precision risk stratification:

•If you have had a prostate biopsy which has already shown low risk prostate cancer which may be suitable for active surveillance and wish to have greater certainty about whether this is the correct option for you. In other words, you wish to make sure that the prostate biopsy has not missed areas of higher Gleason grade tumors or missed other areas of prostate cancer which would mean that active surveillance is not a good option for you.

•If you have had a prostate biopsy which has already shown moderate risk prostate cancer of Gleason 3+4=7 or 4+3=7 and/or high volume of prostate cancer in the gland. You are not keen on having radical treatments. You wish to find out if the prostate biopsy may have over-called the prostate cancer as a higher risk than it actually is and you may actually be suitable for active surveillance.

•If you have had a prostate biopsy which has already shown moderate or high risk prostate cancer of Gleason 3+4=7, 4+3=7 or 4+4=8 and/or high volume of prostate cancer in the gland. There is a possibility that the prostate biopsy has over-called the Gleason score of the prostate cancer and the amount of prostate cancer present in the prostate. You wish to avoid treatments such as radical radiotherapy and radical surgery and wish to be considered for newer treatments such high intensity focused ultrasound treatment (HIFU) or cryosurgery.

•If you have had a prostate biopsy which has already shown moderate or high risk prostate cancer of Gleason 3+4=7, 4+3=7 or 4+4=8 and/or high volume of prostate cancer in the gland. There is a possibility that the prostate biopsy has over-called the Gleason score of the prostate cancer and the amount of prostate cancer present in the prostate. You wish to avoid treatments such as radical radiotherapy and radical surgery and wish to be considered for clinical trials that are looking at destroying only the areas of prostate cancer (focal therapy) rather than the whole prostate. Such treatments may lead to less side-effects, although these are trials so the outcome is not certain.

(See treatment section).

What happens on the day of the procedure?

The procedure is carried out under general anaesthetic. You will be admitted to hospital for 1 or 2 days depending on when during the day the procedure is scheduled. You will be asked to not eat anything for at least 6 hours before the procedure and not drink anything for at least 4 hours before the procedure. You will be given a phosphate enema 1 or 2 hours before hand to clear the back passage of faeces, so that the prostate can be scanned by the ultrasound clearly. You will be assessed by a Consultant Anaesthetist who will discuss the anaesthesia. A plastic tube called a catheter is inserted through the penis into the bladder so that the water passage can be seen properly throughout the procedure and avoided. After the biopsies have been taken, the catheter is removed.

The procedure lasts for 30 to 45 minutes and involves taking 30-50 biopsies through the skin that lies in front of your back passage rather than through the back passage. Antibiotics are given before the start of the procedure through a vein and antibiotic tablets and pain killers will be given for 7 days after the procedure. A thick padding will be placed over the area of skin that the needle has gone through to prevent a lot of bruising. This padding should be left for at least 6 hours.

How are prostate mapping biopsies carried out?

Am ultrasound probe is inserted into the back passage and the prostate is scanned. Using a grid with holes placed every 5mm, a biopsy needle is inserted through each hole and the prostate is sampled every 5mm. Each biopsy we take is placed in a separate pot for a Consultant Histopathologist to examine each one separately under the microscope. A report is given telling us whether each biopsy has cancer in it or not. Other information is also given such as whether the tissue looked inflamed or whether there are other features such as precancerous areas in the prostate.

What are the potential side effects of prostate mapping biopsies?

Transperineal biopsies carry no extra risk than a normal prostate biopsy carried out through the rectum. Complications of both include:

•bruising of skin in all men and occasionally bruising that spreads to the scrotum

•prostatitis (inflammation or infection of the prostate) in some men

•temporary discomfort or pain in the back passage area (most men)

•bloody urine for the first few hours to a maximum of 2 days in most men

•bloody semen in most men lasting for up to 3 months in a few men

•retention of urine requiring a temporary catheter (2-10 in 100)

•infection (requiring admission and intravenous antibiotics, 0-1 in 100)

•a few men have experienced temporary poorer erections

What happens after the procedure?

One of the doctors will call you on the day following your discharge from hospital to see how you are doing. The prostate mapping biopsies results will be available in about 2-4 days. You will be able to check your results on a secure online server, so that you can view your results immediately and print out a copy of the multisequence-MRI and the prostate mapping biopsies. These reports will indicate where the cancer is, how much cancer and how aggressive it is by denoting the Gleason score of each focus and also tell you how many biopsies were positive in each location.

Prostate Cancer Information

How do I work out how serious my cancer is?

There are several considerations:

•the underlying risk of the cancer affecting your quality of life

•your general health

The underlying risk of the cancer is determined principally by:

•Gleason Score: this is a measure of how aggressive the cancer is. The two commonest patterns of cancer are each graded from 1 to 5. The two grades are summed and the total is known as the Gleason score. Therefore, this ranges from 2 to 10. Most cancers have a Gleason Score of 6: the most serious is 10 and the best is 2.

•Cancer Stage: This refers to how far the cancer has spread and can be determined partially by prostate examination with a finger, and sometimes with transrectal ultrasound at the time of prostate biopsies, a bone scan or magnetic resonance imaging (MRI) scan. If the cancer is confined to the prostate, the stage is 'T1' or 'T2', if it is outside the prostate it is 'T3' or 'T4'. Bone scans indicate whether there is cancer in the bones. Sometimes, the lymph nodes in the pelvis are sampled laparoscopically to determine if cancer is present there.

•PSA: the higher the PSA, the more likely the cancer is outside the prostate; the faster the rate of change, the more likely serious cancer is present

Other bits of information can be used and relate often to the information gained from the prostate biopsies: the proportion of positive biopsies, the length of cancer in the biopsies or the percentage of the core with cancer.

It is important to know how the cancer was detected i.e. by screening with a PSA test or because of symptoms. Most of our knowledge is based on prostate cancer detected in patients with urinary symptoms. If the cancer was detected early because of PSA testing, the time between diagnosis and the development of symptoms from the cancer is likely to be longer than if the cancer was detected because of urinary symptoms or another medical reason.

What additional tests or scans are necessary now I have prostate cancer?

These tests relate mostly to determining if the cancer is confined to the prostate and what chance there is that treatment will fail after a few years. It is possible to combine the information to calculate whether the cancer has spread outside or the chance that the cancer will return after treatment. The information required is

•PSA

•Gleason Score

•Clinical stage determined by examination of the prostate by a finger

•the proportion of positive biopsies, the total length of biopsy cores with prostate cancer and without cancer in the biopsies

The following web sites contain 'calculators' enabling you estimate your risk. This information should be interpreted with a doctor who understands prostate cancer.

•the Sloane Kettering Nomogram

•The European Association of Urology Nomogram

Other investigations, such as magnetic resonance imaging (MRI) can help tell if the cancer is has spread outside the prostate and give information about your anatomy relevant to treatment and side-effects. For this test, you enter a scanning machine, which makes a lot of noise, and produces high quality images of the prostate. It may help determe if the lymph nodes ('lymph glands') contain cancer or not. Sometimes, lymphotropic superparagmagnetic particles are used (this is still under trial). The best way to tell is by laparoscopic lymph node sampling, which is a keyhole procedure for obtaining tissue to examine under the microscope. This is a highly specific test for the identification of cancer in the lymph nodes.

What are my choices?

Depending on your individual situation you might choose

•active monitoring

•radical radiotherapy (external beam)

•radical prostatectomy (either open, laparoscopic or robotic)

•brachytherapy

•cryotherapy

•high intensity focused ultrasound (HIFU)

•hormone therapy

The situation is often difficult and experts frequently disagree. A careful decision needs to be made usually in conjunction with consultants in radiotherapy and urology.

Part of the problem is that early prostate cancer grows slowly and so treatments are for problems that will often not present for several years. Having said that, the opportunity for curative treatment is available only when cancer is confined to the prostate and has not spread elsewhere.

What is active monitoring?

The prostate cancer is monitored to determine whether it is progressing or not. The implication is that if the prostate appears to be growing and is at risk of causing problems, then a treatment option will be undertaken. To do this, the tumour should be of loss risk of progression anyway. There are no universally accepted criteria for this and a discussion is necessary with an experienced prostate cancer doctor. In patients less than 70 years of age in good health, few doctors would recommend active monitoring especially if the cancer was detected because of urinary symptoms, the Gleason score was 7 or more, or if the PSA was 15 ng/ml or more, or if both sides of the prostate contained cancer (stage T2b or higher). If these conditions do not apply, then active monitoring may be appropriate.

Active monitoring involves regularly measuring the PSA and seeing how it changes. Some people perform prostate examinations regularly and repeat prostate biopsies annually. The idea is to look for evidence that the disease is advancing. Provided it does not advance too far, curative treatment might still be possible or not be necessary! This is becoming a more acceptable way to manage people with prostate cancer. Probably the best strategy is to incorporate all pieces of information regarding the disease and your overall health.

It is possible to calculate the rate at which PSA changes. The faster the PSA increases, the more likely it will be a problem. More than 2 ng/ml in the year per year is thought to be serious. The slower the PSA doubles, the less likely the tumour will affect the individual with it. Conversely, the faster the PSA doubles, the more likely the prostate cancer will cause problems. Men with low grade cancer rarely develop problems until the PSA is greater than 50 ng/ml. If the cancer is high grade, a long or slow PSA doubling time is unreliable although a short doubling time indicates treatment is probably necessary.

The advantage of this option is that the prostate is preserved and the side-effects of treatment are avoided. The disadvantages are that the opportunity for curative treatment might be missed and that our ability to make an accurate estimate of whether a cancer is 'safe' or not is not reliable enough on an individual person basis.

Even older men may benefit from intervention, based on recent evidence (Wong 2006 JAMA)

What is a radical prostatectomy?

A radical prostatectomy is the operation to remove the prostate. At the same time the seminal vesicles, which are attached to the prostate, are removed occasionally with the lymph nodes, which are specialised tissue to which the prostate drains. This procedure can be performed by an incision through the lower belly or by key hole techniques ('laparoscopic' or 'endoscopic' or 'robotic'). The advantages are

•the prostate gland with its cancer and surrounding tissue is removed offering what many doctors believe to be the best chance of preserving length of life. This is believed to be most accurate when the cancer is detected because of 'prostate' (urinary) symptoms, the cancer can be felt with a finger, or the cancer is Gleason score 7 or more.

•the prostate can be examined completely and a more accurate prediction made of the likely outcome

•the PSA should fall to almost unrecordable values making it much easier to determine if the disease has unfortunately recurred

•additional treatment such as radiotherapy can be given with fewer side-effects

•a short hospital stay (3 to 7 days) is necessary rather than regular attendance

•urinary symptoms (weak or slow flow etc) due to the prostate are usually eliminated completely

The disadvantages are

•it is a major operation

•a blood transfusion may occasionally be necessary

•control of urine is less good in some after surgery and pads may be required. About 1 in 20 men have problems with leakage and it is more common in men over 70 years of age

•erections may be weaker or non existent although good sexual activity can be had with Viagra, Cialis or Levitra

•additional treatments may be required if the prostate cancer returns

There is strong evidence that radical prostatectomy reduces the chance of dying from prostate cancer by about 50% compared to watchful waiting and deferred androgen deprivation. The evidence comes from a randomised study published in one of the world's most prestigious medical journals. However, the results are most applicable to men with cancer detected because of symptoms, with a PSA around 12 ng/ml, prostate cancer that can be felt with a finger when examined, and Gleason score 6 or 7. Nowadays, many men have few urinary symptoms, PSA values around 5 to 8, Gleason score 6 and impalpable cancer ie the cancers are detected earlier in their history. This is not to say that surgery is not effective just that to benefit one has to wait longer.

The procedure can be performed through a traditional incision in the lower abdomen or through 5 very small incisions ie endoscopic or laparoscopic surgery. The advantages of laparoscopic surgery include improved view allowing more precise surgery, shorter hospital stay (2-3 days) and earlier return to leisure activities and work. It is technically difficult to and specialised training is required.

What is radiotherapy?

The prostate is treated by radiotherapy given whilst lying in a machine at a special hospital. Usually, one attends on week days for 6 to 7 weeks for a short time for the treatment. This treatment is sometimes accompanied or preceded by hormonal therapy to block the effects of testosterone, which is the male hormone that drives prostate growth. The advantages are

•the prostate cancer is treated and is less likely to recur or cause symptoms

•there is a much lesser chance of incontinence compared to radical prostatectomy or brachytherapy, but frequency or urgency may be worse

•radiotherapy can be given to the side walls of the pelvis which may be important if the cancer has spread.

•HIFU or cryotherapy can be used if radiotherapy fails

•surgery is avoided

There are disadvantages too:

•many doctors believe that radiotherapy is probably a less effective treatment than surgery when compared over long periods of follow up

•side-effects include diarrhoea, and blood in the stools

•erections become weaker over time

•it is more difficult to use the PSA to determine if the treatment has been successful or not

•if treatment fails, cryotherapy or surgery is associated with more side-effects such as worse incontinence

What is brachytherapy?

Seeds with radiotherapy energy are placed systematically in the prostate under a general anaesthetic. Patients stay in hospital usually overnight. This is done either in one or two stages depending on the set up.

The advantages are

•this can be a day case procedure so patients can often leave the same day

•it is possible to have additional therapy, usually external beam therapy, if there is disease recurrence

•incontinence of urine is less likely

The disadvantages include

•urinary symptoms often become significantly worse after surgery and sometimes a catheter is required for a period to empty the bladder

•the treatment is probably less effective than surgery regarding cancer cure

•weakness of erections occurs, although possibly less commonly than after surgery or external beam radiotherapy

What is cryotherapy?

The prostate and its cancer can be killed by freezing the cells. To give this therapy, a general anaesthetic is necessary and a catheter needs to be placed for several days.

The main advantage is that it can be given after radiotherapy if it is not effective. It can also be repeated. However, it almost always causes erectile dysfunction. Expertise with its use is limited in the UK.

What is hormonal therapy?

This usually refers to reducing testosterone levels in the body and is usually known as androgen deprivation, androgen suppression or castration. Testosterone with its derivative dihydrotestosterone is the male hormone that drives prostate growth. Rather than reduce the levels of testosterone, its action can be blocked by drugs and this is known as androgen blockade.

This form of therapy is usually used with or without radical radiotherapy, and sometimes after radical surgery but not before. The prostate cancer tends to be more advanced than early.

The side effects of this include hot flushes, tiredness, anaemia, and in the long term osteoporosis.

How do I decide what to do?

You have to trade-off the advantages over the disadvantages of each option. It depends on the relative values of each. This is best done by discussing the issues with a doctor and close family. In general, if the thought of having cancer and not doing the most possible to get rid of it dominates your thinking, then you should choose an interventional treatment. There is no caste iron evidence to indicate one treatment is better than another, but many doctors believe that radical prostatectomy offers the best chance of prolonging life. It becomes more important to maximally remove the cancer if it is high risk or there are many years of life possibly ahead. On the other hand, active monitoring may be the best option if quality of life is more important than preserving a few years of life especially if there is uncertainty over the benefit of treatment and the cancer does not seem obviously to be high risk. A second opinion is often helpful.

Several websites offer details and on-line help in making decisions including:

• American Cancer Society

• National Cancer Institute

• Michigan Cancer Consortium

• The Prostate Cancer Charity

About prostate cancer

PSA

PCA3 Score

Prebiopsy MRI

Prostate biopsies

Template Biopsies

Prostate Cancer Risk

Treatment Options

Robotic Prostate Surgery

Patient Experiences

Robotic Prostatectomy (dVP)

Prostate Cancer Links

Robotics News

Robotic prostate surgery

Robotic prostate surgery - why choose this option? Robotic prostatectomy is also known as da Vinci prostatectomy and has become the most popular way of performing a radical prostatectomy as a treatment for prostate cancer in the USA. People don’t like traditional open surgery for reasons that are obvious. However wouldn’t it be great to achieve the benefits of surgery without the side-effects? To get rid of the cancer, but maintain near-normal erections and be dry?

No-one can guarantee the above, but if you believe that removing the prostate with its cancer and keeping other options open is the best strategy then, total or radical prostatectomy is the procedure of choice. After surgery, the PSA should fall to almost unrecordable levels and no additional treatment should be necessary in most men, depending on the risk before treatment and the success with which the surgery is performed.

Laparoscopic prostatectomy

In the 1990’s, some highly-skilled surgeons performed laparoscopic (key-hole) surgery to remove the prostate. This was highly popular because there was less pain, reduced need for blood transfusion, better cosmetic appearance, fewer infections and faster return to normal activities than after conventional surgery. Although it had tremendous advantages, it was technically difficult to perform and the instruments did not match the natural movements of the human hand.

da Vinci Surgical System

At the turn of the century, a company (Intuitive Surgical) in the US created the da Vinci Surgical System which allowed surgeons to perform keyhole surgery in a way that mimicked or even improved on the movements of the human hand. This system preserved the keyhole nature of the surgery, and improved other aspects allowing the surgery to be performed with greater precision. The goal was to improve cancer cure as well as maintain all the other benefits of keyhole surgery.

More recently, the da Vinci Surgical System has been upgraded to the da Vinci S Surgical System. This has high definition vision in 3D and other functional improvements.

The bladder is the name for a structure in the body that stores urine, which is made by the kidneys. Simply speaking, the bladder is a bag that expands as it fills with urine and contracts when it is full to empty. The middle part of the wall of the bladder is a muscle that can contract urine out from the bladder - this muscle is called the detrusor muscle. The bladder has an inner lining known as 'urothelium'. In women, urine is passed from the bladder to the outside world through the urethra. In men, the prostate sits between the bladder and the urethra, and the urethra is much longer in men than in women.

The bladder is behind the pubic bone, which is the firm structure that can be felt in the lower abdomen, and in front of the vagina in women or the rectum in men. As it fills, there is a sensation for the need to pass urine felt in the lower belly/abdomen. In women, the bladder and urethra are supported by muscles and the pelvic floor. These muscles help women stay dry and. In men, there are additional muscles present at the junction of the bladder and prostate, and the prostate and urethra.

Women can have problems relating to staying dry either because the bladder muscle (detrusor) contracts and squeezes urine out of the bladder ('detrusor over activity') or because the support for the bladder and urethra is not sufficient to withstand pressure from coughing and lifting ('stress urinary incontinence'). Women may suffer from recurrent cystitis (urinary tract infections) or bladder discomfort and frequent urination with infection ('interstitial cystitis a.k.a. chronic pelvic pain syndrome).

What is urinary incontinence?

This means that urine leaks out at times when it shouldn't. It is a common problem affecting many women sometimes several or more times a week. It can be so bad that underwear needs to be changed during the, pads have to be worn to keep dry and daily activities like lifting, dancing or going on long journeys have to be restricted.

Why talk about bladder control?

Women, and some men, have bladder control problems. it is a very common problem affecting women of all ages. In young women, urine leakage can occur after giving birth to a child. Sometimes it occurs after periods stop (menopause) or in older women in their 70s.

Incontinence is not something to be ashamed and affects many women. Urine leakage is not normal and can be successfully treated in the majority of women.

Why do I leak when I cough, exercise, laugh or sneeze?

Activities such as these increase the pressure on the bladder literally forcing urine out of the bladder. Usually, the muscles in the pelvis support the bladder and urethra (water pipe) prevent urine from coming out. These muscles can be weakened by pregnancy, obesity, menopause or an inherited tissue weakness. This is usually known as 'genuine stress incontinence'. Sometimes, the problem is due to a weakness in the wall of the urethra (water pipe) rather than the bladder or urethral support.

Less commonly, coughing, exercise, laughing or sneezing can stimulate the bladder muscle to contract and that causes urine to leak. This is known as Valsalva induced detrusor overactivity

Why do I need to rush to the toilet when I feel the need to pass urine?

Normally, the bladder muscle should contract only when you pass urine. Sometimes, the bladder muscle contracts before it is full and when you would rather not go to the toilet. If you don't reach the toilet on time, you might leak. During the day and night, the urge to pass urine may be overwhelming and so you go to the toilet more than other people. If you don't make it to the toilet on time, incontinence may occur. If the bladder muscle itself is contracting inappropriately, this condition is often known as 'detrusor overactivity'. Sometimes, there are important causes for this problem, but often no specific cause is found.

How does bladder control normally occur?

The bladder is like an expandable bag that holds urine as it fills. When the bladder is full, the pelvic floor relaxes, the bladder muscle ('detrusor') contracts and urine is passed. Urine passes from the bladder through a tube called the urethra (water pipe) to the outside world. Usually, the desire to pass urine occurs when the bladder is almost completely full, but in some people, the bladder muscle (detrusor) contracts far too early. This gives rise to an urgent desire to pass urine that can sometimes be too strong to stop resulting in a leak. This is often called detrusor overactivity. Thus, normal bladder filling occurs with the detrusor (bladder muscle) remaining relaxed and not overactive.

As the bladder becomes full, coughing, lifting and other activities do not usually cause urine leakage because the urethra (water pipe) is supported. The support comes from the pelvic floor, which is a layer of muscle under the bladder. Lack of urethral support results in urine leakage with stressful activities. Urethral support can be improved by pelvic floor exercises, losing weight, drugs and new procedures that can be performed as day cases or with an overnight stay.

For bladder control to be effective, the nervous system has to be working normally.

How do you work out why bladder control is poor and urine leakage occurs?

In the majority of women, the cause is principally either of the two problems listed above ie stress incontinence or detrusor overactivity. It can be difficult to distinguish between the two from symptoms alone, as they can often overlap in 3 in 10 cases.

Symptoms that suggest that detrusor overactivity is present include the sudden urge to pass urine (urgency) that occurs day and night, together with urine leakage that occurs with urgency ('urge incontinence'). Urine is passed frequently and often in large amounts when the strong urge is present.

Stress incontinence usually occurs with activity and the leakage is usually only a few drops only. Urine leakage rarely occurs at night except in the worst cases.

Symptoms and the findings on physical examination can help sometimes. The 'cough test' determines whether leakage occurs on coughing or not. However, often it is difficult to reliably rule out one or other condition. If the symptoms do not resolve after simple help, additional tests are required. These include

•urodynamics (pressure/flow studies): This is a test in which a narrow tube is placed in the bladder and rectum ('backpassage') so that the pressure in each can be recorded.

•ultrasound of the bladder

•frequency/volume chart (voiding diary/log)

What can I do myself to reduce urine leakage?

There are simple things one can do: pelvic floor exercise and lose weight.

Can pelvic floor exercises and physiotherapy help?

Providing the exercises are done, they will help, and they will need to be done for the rest of one's life. They can be performed by oneself or taught with the aid of a physiotherapist. Please see Pelvic Floor Exercises.

They help urinary leakage that occurs due to stress incontinence as well as due to detrusor overactivity (urge incontinence).

There are additional aids that one can use to improve the efficacy of pelvic floor exercises. These include biofeedback machines. Again, these have to be performed regularly like any exercise programme.

Can drugs or medicines help?

For women with stress incontinence, Yentreve or duloxetine is a new drug that helps women by reducing the number of times incontinence occurs. It is not a complete cure, but does make some women better and maybe usefully combined with pelvic floor exercises. The feeling of nausea may occur, but usually ameliorates after the first few weeks. This drug should only be taken on the advice of a doctor who knows your medical history well.

For women with urge incontinence or detrusor overactivity, drugs such as Detrusitol (tolterodine), Lyrinel (oxybutynin), Regurin (trospium), propiverine, or solifenacin may help. To some extent these can give rise to a dry mouth or constipation. These medications should be combined with changes in drinking habits such as reducing caffeine and alcohol consumption.

Aren't there procedures or operations that can help?

It is possible to improve the urethral support that has become weak resulting in stress incontinence. There are three ways that this can be done:

•placing a tape under the urethra to support the urethra when there is stress - TVT or transobturator tape (eg MONARC)

•fixing the bladder in a higher position by stitches placed at an operation (eg Burch colposuspension) - this is the traditional way to treat stress incontinence

•injecting agents to increase the bulk of the urethral wall

Of all these, many prefer the first option nowadays. More is described in the section on transobturator tapes. In some cases, these can improve symptoms of urgency or urge incontinence, but you need to have a careful discussion with your doctor.

What about the new transobturator tapes?

Urinary leakage occurs in part because the support of the urethra is inadequate. A tape or hammock can be placed under the urethra to provide additional support. The number of times urinary leakage occurs is reduced and it is possible to enjoy a better quality of life as a result. You have to come in to hospital for up to 24 hours and normal activities can be resumed after a month or so. More details are on the MONARC page.

To some extent, this problem can also be ameliorated by placing a tape to support the urethra, but a specific operation may be needed to correct this itself. This is usually assessed at the time of investigation of incontinence.

Urinary incontinence is the inability to control urination. This can occur temporarily if there is a short-term problem such as a urinary infection and this can usually be resolved promptly. Longer term (more than 3 months) often indicate an underlying problem.

Stress urinary incontinence is the name for incontinence most commonly due to lack of support for the bladder structures. People who suffer from overactive bladder, or urinary incontinence, can't hold their urine -- they wet themselves. (Leaking urine is normal only in infants; it is not a normal result of aging). If you have this problem, you may be too embarrassed or upset to ask for help. Don't be.

Symptoms aren't reliable in making a diagnosis for the absolute cause for urinary leakage, but can give an indication. If you leak most often with physical activity (e.g. coughing, sneezing, lifting or exercise), then stress incontinence is likely to be present. If you leak when you have a strong desire to empty your bladder, but can't reach the toilet fast enough, then urge incontinence is present. Urge incontinence may be due to the bladder muscle contracting when you don't want it to do so ('detrusor instability'). Sometimes, both stress and urge incontinence can exist together, and this is known as mixed incontinence.

Please read the frequently asked questions on incontinence. Available now are simple approaches that help the majority of women and new minimally invasive procedures (eg transobturator tapes) that can keep women dry.

It is helpful if you can complete a questionnaire on the severity of urinary incontinence as this helps doctors to make decisions on the need for investigations or treatment. The following Adobe PDFs can be downloaded and printed:

•ICIQ (questionnaire on severity of incontinence)

•UDI-6 and IIQ-7 (questionnaire on severity of incontinence)

•Bladder diary (frequency/chart: a record of the time and amount of urine passed)

Instructions on pelvic floor exercises can be found on this website and downloaded also: pelvic floor exercises

Why exercise pelvic muscles?

Life's events can weaken pelvic muscles. Pregnancy, childbirth, and being overweight can do it. Luckily, when these muscles get weak, you can help make them strong again.

Pelvic floor muscles are just like other muscles. Exercise can make them stronger. Women with bladder control problems can regain control through pelvic muscle exercises, also called Kegel exercises.

Pelvic Fitness in Minutes a Day

Exercising your pelvic floor muscles for just 5 minutes, three times a day can make a big difference to your bladder control. Exercise strengthens muscles that hold the bladder and many other organs in place.

The part of your body including your hip bones is the pelvic area. At the bottom of the pelvis, several layers of muscle stretch between your legs. The muscles attach to the front, back, and sides of the pelvis bone.

Two pelvic muscles do most of the work. The biggest one stretches like a hammock. The other is shaped like a triangle. These muscles prevent leaking of urine and stool.

How do you exercise your pelvic muscles?

Find the right muscles.

This is very important. Your doctor, nurse, or physical therapist will help make sure you are doing the exercises the right way.

pelvic diagram

You should tighten the two major muscles that stretch across your pelvic floor. They are the "hammock" muscle and the "triangle" muscle. Here are three methods to check for the correct muscles.

Try to stop the flow of urine when you are sitting on the toilet. If you can do it, you are using the right muscles.

Imagine that you are trying to stop passing gas. Squeeze the muscles you would use. If you sense a "pulling" feeling, those are the right muscles for pelvic exercises.

Lie down and put your finger inside your vagina. Squeeze as if you were trying to stop urine from coming out. If you feel tightness on your finger, you are squeezing the right pelvic muscle.

Don't squeeze other muscles at the same time.

Be careful not to tighten your stomach, legs, or other muscles. Squeezing the wrong muscles can put more pressure on your bladder control muscles. Just squeeze the pelvic muscle. Don't hold your breath.

Repeat, but don't overdo it.

At first, find a quiet spot to practice—your bathroom or bedroom—so you can concentrate. Lie on the floor. Pull in the pelvic muscles and hold for a count of 3. Then relax for a count of 3. Work up to 10 to 15 repeats each time you exercise.

Do your pelvic exercises at least three times a day.

Every day, use three positions: lying down, sitting, and standing. You can exercise while lying on the floor, sitting at a desk, or standing in the kitchen. Using all three positions makes the muscles strongest. Image of the bladder, and the related muscles used in the urination process.

Be patient. Don't give up. It's just 5 minutes, three times a day. You may not feel your bladder control improve until after 3 to 6 weeks. Still, most women do notice an improvement after a few weeks.

Exercise aids. You can also exercise by using special weights or biofeedback. Ask your health care team about these exercise aids.

bladder diagram

Hold the Squeeze 'til After the Sneeze

You can protect your pelvic muscles from more damage by bracing yourself.

Think ahead, just before sneezing, lifting, or jumping. Sudden pressure from such actions can hurt those pelvic muscles. Squeeze your pelvic muscles tightly and hold on until after you sneeze, lift, or jump.

After you train yourself to tighten the pelvic muscles for these moments, you will have fewer accidents.

Points to Remember

•Weak pelvic muscles often cause bladder control problems.

•Daily exercises can strengthen pelvic muscles.

•These exercises often improve bladder control.

•Ask your doctor of nurse if you are squeezing the right muscles.

•Tighten your pelvic muscles before sneezing, lifting, or jumping. This can prevent pelvic muscle damage.

Pelvic Floor Exercise Diary - print out this chart and use it to record your exercises

What is a urodynamic test?

This is the name for a test performed as an outpatient to determine how the bladder works. It takes about one hour to do. The aim is to understand the activity of the bladder whilst it is filling with urine and during activity. To do this, a very narrow tube has to be passed into the bladder through the urethra. The procedure is usually well tolerated. Sometimes, it is combined with x-rays and is known as videourodynamics. Local anaesthesia may be used, but not general anaesthesia. Pressures are measured in the rectum (the 'back passage') at the same time through a separate tube.

This test is also known as videourodynamics, pressure flow studies or cystometrogram.

Why am I having this test?

Urodynamics.jpg

The test can determine the cause of urinary symptoms such as:

•urine leakage (incontinence) that occurs on activity (e.g. coughing, lifting, sneezing, laughing) or without activity but associated with an urgent desire to pass urine

•increased frequency of passing urine during the day and night

•slow flow, stopping and starting, and the need to dribble to finish passing urine

It can also help predict whether drugs or surgery are likely to have a good result for;

•stress incontinence in women

•overactivity of the bladder (also known as detrusor instability or overactivity)

What should I do before this test?

It is not necessary to fast the night before or take laxatives. As long as the urine test is normal, the study is very safe and can be performed with minimal discomfort. It is important to arrive with a full bladder since it may be necessary to pass urine into a special machine ("urinary flow rate test") before the formal urodynamic test and for a test by the nurse to determine if an infection is present. Usually, a nurse and an x-ray technician will be in the room during the test.

If you are having a period (menstruating), it is still possible to perform the test, but it may be more comfortable to delay the test to a day when you are not.

If you are taking medication such as Detrusitol (tolterodine), Lyrinel (oxybutynin), Regurin (trospium), propiverine, or solifenacin (Vesicare), please stop these about 1 week before the test. Continue taking other medication including aspirin, clopidogrel (Plavix) and warfarin unless you are told otherwise. You can restart them after the test. If you are not sure whether you should stop these drugs, please ask your doctor first. This is especially important if you are taking Yentreve (duloxetine) and you should not stop this drug without discussing with your doctor how to do it.

What will happen during the test?

You will need to undress and put on a gown. Local anaesthetic jelly will be placed in the urethra (the water-pipe from the bladder). A narrow tube (catheter) will be placed by a doctor or nurse through the urethra ('water pipe') into the urinary bladder. In addition, another narrow tube will be placed in the rectum (the 'back passage'). The study can be performed standing or sitting. A computer will record all of the measurements and produce a record of the events during the test.

Your doctor may be present during the study or later when the results are available for analysis. He will evaluate and interpret the study based on the recordings and x-ray tests if they have been performed.

What happens after the test?

Half an hour after the test, you will be able to go home. You may experience some burning when passing urine for a few days and this is normal. There may be some blood in the urine, but as long as large clots are not formed, the bleeding will settle if you drink plenty of fluid. You can resume regular diet, medications, and normal activity levels after you leave.

Antibiotics are often prescribed for three days afterwards.

Your results and their analysis will be discussed in a clinic in outpatients.

What is a transobturator tape?

This is a narrow strip of synthetic material placed in your body to support the urethra. The 'Monarc subfascial hammock' is a brand name for such a tape made by a company called American Medical Systems (AMS). The hammock cradles your urethra and gives it a solid point to rest on and press against. This helps the urethra close more tightly at times of stress.

You can download documents from NICE (National Institute for Clinical Excellence) and the companies that make the product from here.

• NICE advice to patients on the transobturator tape for incontinence

• AMS (American Medical Systems) Monarc patient information 1

• AMS (American Medical Systems) Monarc patient information 2

How likely is it that a transobturator tape will cure incontinence?

In women who have incontinence due to weakness in the pelvic floor and poor support of the urethra (i.e. "genuine stress incontinence"), 8 or 9 out of 10 women should be completely dry or much better after surgery than before. Nine out of every 10 women are able to be as active as they like after placement of a transobturator tape e.g. lift children, dance or exercise. As a result, 19 out of every 20 women are satisfied by the results of the procedure.

No-one can guarantee that everyone will be cured and about 1 in 20 women are not satisfied by the operation. If the bladder is overactive as well, then the success rate is less and fewer women are satisfied. In addition, side-effects are always possible and it is important to think carefully about the advantages, alternatives and risks of any procedure before going ahead.

How long does it take for a transobturator tape to work?

In general, you will be dryer once the catheter is removed. The full improvement may take several weeks to be noticed.

How is a transobturator tape placed in the body?

You have either a general anaesthetic so you are asleep or the lower half of the body is made to feel numb by a spinal anaesthetic. A small incision (about 1 to 1.5 inches, 3 cm) is made in the vagina just below the opening of the urethra (water pipe), and two 1/4 inch (0.5 cm) incisions in the inner thigh. The tape (e.g. Monarc) is positioned under the urethra and the incisions are the closed with stitches. These stitches will dissolve spontaneously. During the procedure, a telescope may also be passed through the urethra (water pipe) to examine the inside of the bladder (cystoscopy). The whole operation takes about 30 minutes.

Are there alternatives to a transobturator tape?

In general, it is wise to try simple remedies as these may be successful and make surgery unlikely. Pelvic floor exercises can help in many cases. When taught by a physiotherapist, these can work very well. Like any exercise programme, it is necessary to keep doing them for them to work.

In addition, it is possible to try a drug called duloxetine. The trade name for this drug is "Yentreve". It needs to be taken twice a day indefinitely. It may be used in combination with physiotherapy. It is not as effective as a surgical procedure, needs to be taken twice a day and has side-effects. In some situations, it may be preferable in some cases.

Another operation was used in the past. This was called the Burch colposuspension and to many is still the gold standard by which all other procedures are judged. As it involves an incision made in the lower belly and requires several days in hospital, many people have chosen not to have this procedure because newer procedures require less time in hospital and are equal effective.

More recently, the TVT has been introduced as an innovative procedure for incontinence. The original TVT was placed behind a bone (pubis) in front of the bladder felt in the lower abdomen. As the approach required the passage of needles behind this bone, injuries that occurred from time to time to the bladder or bowel. The newer transobturator approach is much less likely to cause such problems and is preferable.

There are different forms of the transobturator tape. I prefer to use the Monarc, because it appears to be safer (click here).

What happens after the transobturator tape has been placed?

When you return to the ward, there may be a catheter present. This is a tube draining the bladder. If there is a catheter, this is usually removed after a few hours. If your bladder does not empty properly, it may be necessary to have a catheter for a longer period of time, but this is unusual. After you have passed urine, you can leave the ward and go home. This may be the same day, or sometimes the day after the operation. If the operation has been combined with a procedure for prolapse, you will probably be in hospital for a longer period of time.

You may need to take antibiotics for a while to prevent infection, and apply oestrogen cream (e.g. Vagifem tablets) to the vagina to promote healing.

The stitches present in the vagina and thigh dissolve spontaneously over a few weeks.

After 4 to 6 weeks, you should be reviewed by your doctor who may want to test the rate at which you pass urine and how effectively you empty your bladder. These tests are simple and are not invasive. After that you will probably be reviewed between 6 and 12 months after the operation.

When can I have sex after a transobturator tape and will it be different?

You should not have sex for four to six weeks after the operation. Some women may experience discomfort with sexual intercourse after the procedure.

When can I start dancing, heavy lifting or rigorous exercise?

Again, you should avoid such activities for about 4 to 6 weeks.

What are the side-effects or risks of a transobturator tape?

Every operation has risks and these need to be weighed against the advantages. Fortunately, the side-effects are relatively uncommon:

•Of every 10 women, about one may experience difficulty passing urine, the urinary flow is slower and it takes longer to empty the bladder - this is usually transient and gets better over several weeks. Rarely, this requires temporary use of a catheter or another operation

•Of every 10 women, two may experience bleeding. Usually, this can be controlled relatively easily, but rarely this may need additional treatment

•Of every 10 women, two might have a urine infection that would require antibiotics

•Of every 10 women, one could develop new symptoms such the need to pass urine more frequently during the day and night, or have to rush to the toilet to pass urine when they feel the need to empty their bladder

•Of every 100 women, one or two may have damage to the urethra (water pipe) or bladder. This may need a specific repair by further surgery

•Of every 100 women, about 2 may have damage to the vagina ("erosion"). The chance of this is less if antibiotics are taken. After the menopause, oestrogen cream in the vagina before and after surgery can also make this less likely. If damage to the vagina is substantial, the tape may have to be removed either partially or completely by another operation.

•Of every 100 women, about 2 might have severe pain felt in the vagina or thigh that might last one week

•Of every 100 women, a severe infection is possible - this is avoided and treated by giving antibiotics. If it is extremely severe, a further operation may be necessary.

In general, these risks are greater in women who are obese, diabetic or with lung disease.

Can I become incontinent again after a transobturator tape?

If you become pregnant, it is possible that incontinence can return. Therefore, it is preferable to wait until your family has been completed before undergoing the procedure.

Incontinence can also occur later in life after such procedures. About 7 out 10 women will still be dry 5 to 10 years after surgical procedures. Failure is more likely if the bladder is overactive. This can often be treated successfully by medication.

Over what period of time will the benefits of a transobturator tape last?

Transobturator tapes have been in existence for about 3 years. The materials used for the procedure have been in existence for considerably longer. What is relatively new, is the technique for inserting the tapes beneath the urethra. It is thought that continence will be preserved for many years after insertion of the tape. Until there are people who have had transobturator tapes for that long, this will not be known.

For people who suffer with a strong urge to pass urine that does not respond to simple drugs and medication, BOTOX injections can significantly relax the bladder easing such symptoms. It is a well tolerated procedure, but needs to be repeated every 4 to 9 months.

What is Botox?

Botox is the brand name for botulinum toxin. Botox is used to relax muscular tissue and is commonly used for wrinkles on the face. In the bladder, it can relax the bladder muscle. This results in a reduction in the need to visit the toilet as frequently as one did before.

Who is suitable for treatment with Botox?

Men or women who have to pass urine too frequently or rush to the toilet to pass urine, especially during the day and night may be suitable for Botox. A test called urodynamics is performed first to determine whether the bladder muscle ('detrusor') contracts inappropriately i.e. when the bladder is meant to be storing urine. If the bladder is proven to be contracting inappropriately, drugs are tried first to calm the bladder muscle. These drugs are known as anticholinergic drugs and include tolterodine (Detrusitol), solifenacin (Vesicare) and oxybutynin (Lyrinel). If the medications do not work, then it is necessary to know whether the bladder has a reduced physical size. This is determined by filling the bladder up under a short general anaesthetic and seeing how much it can hold. There are no cuts or incisions when this is done. If the bladder is of normal size, then Botox can be performed. If not, it may be better to have an operation to enlarge the size of the bladder.

As Botox weakens the bladder muscle, I usually recommend that people learn how to pass a specially designed catheter themselves before Botox is given. This is because the bladder may temporarily be unable to completely empty and this occurs in about 1 in 10 to 1 in 20 people. may be the easiest way to empty the bladder. A catheter will not be needed forever, as Botox wears off after 4 to 9 months anyway. The technique is known as intermittent self catheterisation (ISC or CISC) and is tolerated very well by the majority of people who do this. If ISC is not possible for whatever reason, it may not be sensible to perform Botox for the bladder.

Typically, people with an overactive bladder due to detrusor instability or a neurological problem such as multiple sclerosis or a stroke are suitable providing the conditions described above are met.

How is Botox given?

The procedure is a day case procedure, so patients are admitted onto the ward on the day that Botox is administered. No drinking or eating is allowed 5 hours before the procedure. No other special preparation is necessary.

Botox can be given either when asleep ('general anaestheisa') or with the bladder made numb ('local anaesthesia') Under a general anaesthetic, a telescope examination of the bladder is performed ('cystoscopy'). The telescope is passed through natural passage ways in the bladder, so there are no incisions. The bladder is examined carefully. Botox is injected into the bladder wall through a special needle passed through the telescope directly. The bladder is emptied afterwards. Sometimes, a catheter is placed to empty the bladder - this is a small tube to drain the bladder that is removed on the ward.

What should I expect after Botox has been given?

It is possible to eat and drink shortly after the Botox has been given, and you should be able to go home the same day.

You should notice a reduction in the urgency and frequency of going to the toilet to pass urine about 5 days after it has been given. If leakage occurred before Botox, there should be no leakage afterwards. The maximum benefit is obtained about two weeks after the administration of Botox and the total effect lasts for between four and nine months.

What are the side-effects of Botox?

There are few reported side-effects.

Blood may be seen in the urine after injections of Botox, as a needle penetrates the bladder wall. The blood may appear for a few days, but always wears off after a while. An infection may develop in the urine, but antibiotics are given to avoid this.

About 1 in 10 to 1 in 20 people describe a difficult in completely emptying the bladder. In some of these people, it may be necessary to pass a catheter intermittently (ISC). This is well tolerated by most and is not necessary for more than a few weeks in the vast majority.

Allergic reactions are reported, but again these are very rare.

Very rarely, if Botox is injected directly into a blood vessel, breathing might stop. This would not occur immediately, but be noticed slowly over the next few weeks usually within time to act. Appropriate treatment would be administered.

What are the alternatives to Botox?

The alternatives include:

•cystoscopy and hydrodistension: this means stretching the bladder under general anaesthetic by trying to overfill it with water. This is well tolerated in the majority and rarely causes problems. This can be tried a few times, but does not last very long.

•bladder augmentation: this means that the bladder is physically made larger. To do this, a segment of intestine is reshaped and fitted onto the bladder to increase its size. This is a fairly big operation, although it can be performed using key-hole techniques.

•Take no action: as this is not a life-threatening problem, treatment is not necessary to prolong life, although it may improve the quality of life.

What is Peyronie's disease?

It most commonly occurs in middle aged men but can occur in both younger and older men. It occurs in upto 3-9% of men but most people have never heard of it.

In Peyronie's disease, a plaque, or hard lump, forms on the upper or lower side of the penis in the layers containing erectile tissue. It begins as a localised inflammation and can develop into a hardened scar. It is benign but can grow and cause pain.

Symptoms

Usually the plaque forms on the top of the shaft, making the penis bend upward. But if the plaque is on the underside it will bend downward. In some cases, the plaque develops on both top and bottom, leading to indentation and shortening of the penis.

In the worst cases, the hardened plaque reduces flexibility and causes so much pain, bending and emotional distress that sex becomes impossible.

Causes and risk factors

The cause of Peyronie's disease isn't fully understood. There's a link to fibrosis or scarring of other tissues in the body such as a condition known as Dupuytren's contracture of the hand. There's also a mild family tendency to the disease. It is also found to be associated with Diabetes in 30% of cases.

Many researchers believe the plaque or lump in Peyronie's disease develops following repeated trauma such as hitting or bending that causes localised bleeding inside the penis. This leads to injury of the elastic lining of chambers inside the penis.

Ageing increases the risk as a general reduction in elasticity of the body's tissues increases the chances of injury. If the damaged area heals slowly, the plaque undergoes fibrosis, or formation of tough fibrous tissue, and even calcification (formation of calcium deposits) resulting in a long-term problem.

But this theory doesn't explain those cases which develop slowly, or why similar conditions such as Dupuytren's contracture don't seem to result from severe trauma.

Treatment and recovery

Peyronie's disease often occurs in a mild form that stops progressing without treatment after six to 18 months. However, for some men the problem is severe and disabling with regards to erections.

The main aim of treatment is to help the man stay sexually active. We try to avoid medical treatment as there is no strong evidence to show that any treatment other than surgery is effective. For many patients information and reassurance from an expert may be all that is required.

Surgery is usually performed after 12 months when the disease is stabilised and the deformity prevents intercourse. Because the symptoms of Peyronie's disease can improve without treatment, it is important to wait at least 6-12 months to allow the disease to stabilise before attempting to correct it surgically.

Other currently unproven treatments available include: •Vitamin E tablets.

•Para-aminobenzoate tablets.

•Injections of chemical agents such as collagenase, steroids and calcium channel blockers directly into the plaques (the most promising being collagenase, an enzyme that attacks collagen, the major component of Peyronie's plaques).

•Shockwave lithotripsy therapy has also been used but, while it can reduce pain, the results have been very variable.

Surgery

We offer the following surgical operations for Peyronie’s disease: •If there is a deformity of greater than 45 degrees; incision or expansion of the plaque followed by placement of a patch of vein or collagen matrix (‘Lue’ procedure). This has a higher rate of maintaining the length of the penis. However, it can involve partial loss of erectile function, especially rigidity, and has a higher rate of complications than the Nesbit operation (see below).

•If the deformity is less than 45 degrees; removal or pinching of tissue from the side of the penis opposite the plaque, which cancels out the bending effect (‘Nesbit’ procedure). This invariably causes a shortening of the erect penis. After operative intervention, the deformity can sometimes recur and then a Lue procedure may need to be performed.

If there is significant erectile dysfunction (that cannot be improved with medical therapy) associated with penile deformity, implantation of a penile implant device that increases rigidity of the penis. In some cases, an implant alone will straighten the penis adequately. In other cases, implantation is combined with a technique of incisions and grafting or plication (pinching or folding the skin)

The kidneys remove waste and extra water from the blood to form urine. Urine flows from each kidney through a tube called the ureter to the bladder where it is stored until it is convenient to pass urine. From there, urine passes to the outside world through the prostate and urethra in men or the urethra alone in women.

The kidneys are bean-shaped organs, and are about the size of a fist. They are located near the middle of the back, just below the rib cage. Each day, your kidneys process about 180 litres of blood to sift out about 1.5 litres of waste products and extra water. The waste and extra water become urine.

The wastes in your blood come from the normal breakdown and repair of bodily tissues and from food. Your body uses the food for energy and self-repair. After your body has taken what it needs from the food, waste is sent to the blood. If your kidneys did not remove these wastes, the wastes would build up in the blood and damage your body.

Problems that can affect the kidneys includes:

◦urinary stones (calculi).

◦cancer (kidney or PUJ).

◦pelviureteric junction obstruction (also known as PUJ obstruction.

Pelviureteric (PUJ) obstruction is the name given to a condition in which the flow of urine from the kidney is slowed down leading to pain in the back. Please click the links on the left to find out more about the condition and the operation to fix it.

To download information to print on PUJ obstruction and laparoscopic pyeloplasty, click here:

• NICE guidance on laparoscopic pyeloplasty

• PUJ obstruction and laparoscopic pyeloplasty patient information

What are alternative names for PUJ obstruction?

Pelviureteric junction obstruction, ureteropelvic junction obstruction, PUJ obstruction, UPJ obstruction

What is PUJ obstruction?

A blockage of the flow of urine from part of the kidney known as the renal pelvis to the ureter, which is the tube that carries urine onwards to the bladder

What causes PUJ obstruction?

There is usually an abnormality in the structure of the wall of the PUJ. This can exist from birth or develop later in life secondary to other causes such as stones or, very rarely, cancer. In about one in three cases to two in three cases, the PUJ passes over a blood vessel known as a ‘crossing vessel’ and this may cause the obstruction sometimes also. Even if PUJ obstruction is present in birth, symptoms may not occur until later in life.

What are the symptoms or features of PUJ obstruction?

In adolescents or adults, PUJ obstruction can cause pain on in the side of the back, and the pain can be worse after drinking. Other symptoms include

•kidney infection: high fevers, rigors, and pain in the loin

•stones: pain, blood in the urine and infection

Occasionally, PUJ obstruction is eventually found after tests are made because blood is in the urine. None of these symptoms are specific for PUJ obstruction and the symptoms may be caused by other problems. Therefore, more action will be necessary to make a correct diagnosis.

What findings are made when an examination is made?

Rarely are any specific findings made. Occasionally, there may be swelling felt in the abdomen, or tenderness in the side of the back when the obstruction is significantly worse.

What tests can be done for this problem?

Tests are performed to show the changes characteristic of PUJ obstruction. These changes include an enlarged kidney and a delay in the passage of urine across the PUJ.

•Ultrasound might show an enlarged kidney (‘hydronephrosis’ or ‘pelvicalyceal dilatation’) and this may also be shown on an

•Intravenous urogram (IVU, IVP or intravenous pyelogram). An IVU is a special x-ray test in which multiple pictures are taken of the kidney after a dye (‘contrast’) is given through a vein. The contrast demonstrates the narrow region of the PUJ, but the IVU does not always demonstrate PUJ obstruction.

•Diuretic renogram: This is a kidney scan and is usually necessary to prove PUJ obstruction really is present. There are two main types of diuretic renogram – either MAG3 or DTPA. For these, an injection of a chemical is given into the blood and pictures taken of the kidney.

Why and when is treatment needed?

Reasons for treatment include

•symptoms associated with obstruction (pain)

•reduced kidney function

•development of stones or

•infection

•high blood pressure (rarely).

What treatments are available?

The obstruction needs to be removed so that urine can pass freely from the kidney down to the bladder. This can be accomplished by several means:

•Cutting out the PUJ obstruction and joining the kidney onto the ureter (‘pyeloplasty’).

•Pyeloplasty i.e. cutting out the obstruction has the best results and lasts for the longest period. This can be achieved through a traditional surgery (‘open pyeloplasty’) or by keyhole surgery (‘laparoscopic pyeloplasty’).

•Making a cut in the PUJ obstruction so that it splits open and becomes wider that way (‘endopyelotomy’).

•A cut in the PUJ obstruction (‘endopyelotomy’) is less effective than cutting it out altogether, but is possibly better than bursting it with a balloon. In some situations, it is dangerous because of neighbouring blood vessels.

•Bursting the obstruction with a balloon (‘balloon dilatation’)

Bursting the obstruction with a balloon is quick, the least invasive but is less effective and lasts for the shortest period. Furthermore, it produces scarring that can make corrective surgery more difficult. For some patients it is the best option because poor health makes other treatment dangerous.

What is laparoscopic pyeloplasty surgery?

This is a key hole method for correcting the PUJ obstruction that avoids a large incision.

What is laparoscopy?

This is a technique to reach parts of the body without the use of large incisions. Instead, a narrow telescope and instruments are inserted through small incisions allowing surgery to be performed. The intention is to achieve the same results as would be obtained by conventional surgery.

What are the advantages of a pyeloplasty performed laparoscopically?

The advantages are multiple and include the following:

•smaller skin incision - four 1 cm incisions rather than a 30 cm incision

•better view because of the magnification of the system

•less pain because the incisions are smaller and the muscles are parted rather than cut

•2 to 4 days in hospital compared to a week or longer by open surgery

•less blood loss and reduced need for a blood transfusion

•the ability to return to work in 2 to 4 weeks compared to 6 or more weeks after traditional open surgery

What are the disadvantages of a pyeloplasty performed laparoscopically?

As the hands are not directly in the body, it is less easy to feel what is happening compared to open surgery. In some situations, the tactile feedback can be important and if that becomes true, it would be necessary to make an incision to carry on. This is extremely rare. Other disadvantages include the increased length of time necessary for the operation, the significantly increased cost of the equipment and the necessity for the surgeon to be experienced in laparoscopy before being able to perform the operation.

How is a laparoscopic pyeloplasty performed?

After a general anaesthetic has been given, a telescope is placed through the urethra into the bladder. A little tube (stent) is placed in the ureter, which is the tube that connects the kidney to the bladder.

Afterwards, incisions are made in the side of the abdomen. Typically, there are about 3 or 4 incisions between 0.5 cm and 2 cm just below the ribs on the side of the problem. The narrow part of the junction between the renal pelvis and the ureter is excised. A new ‘join’ between the kidney and ureter is constructed. The operation lasts for about 2 hours to 3 hours. If there is a crossing vessel, the join is made on the other side of the crossing vessel and this makes the operation take a longer time to complete. At the end of the procedure, there is usually a tube left inside the body near the site of the operation and this comes out through the skin (‘drain’). This is removed when fluid stops draining, which is usually after a day or so. There is another tube (‘catheter’) coming out from the bladder through the urethra and connected to a ‘catheter bag’. This is removed after a day or so also. The ‘stent’ placed internally between the kidney and the bladder remains at the end of the operation and is removed later under local anaesthetic about 6 weeks after surgery.

What are the side-effects of the laparoscopic pyeloplasty?

There are some risks associated with laparoscopy alone and some with the surgery. The common or serious risks of pyeloplasty include

•The operation does not work. This occurs in 5 to 10% of patients and would need a second procedure to correct. The risk of this is similar to that when performed by traditional open surgery

•A drain is required for a longer period than normal. In general, a drain is required for a day after the operation. If urine leaks for longer than expected, a drain may be necessary for a longer period

•Infection: this occurs rarely because of antibiotics, but the urine or wound can still become infected requiring further or different antibiotics

•Injury to other structures in the body. This is a risk of all surgery, but slightly higher when performed laparoscopically. Rarely, the kidney may have to be removed altogether

•Conversion from keyhole (laparoscopic) to traditional open surgery: if there is substantial difficulty performing the operation, then a traditional or larger incision may be required to complete the operation

•Bleeding may occur and a blood transfusion may have to be given. Rarely, the kidney may need to be removed or the bleeding controlled by special techniques

The risks of laparoscopy relate to the use of the small incisions and working with small instruments. These are rare include

•Entry into the abdomen instead of staying in retroperitoneum

•Gas entry into the skin around the incisions. This can result in the skin feeling crackly after surgery, but is short-lived

•Damage to nearby structures, which may include bowel or other organs in the abdomen. If this occurs, a large incision is necessary into the abdomen to fix this

Are there any problems urinating after treatment?

Immediately after treatment, there is usually a catheter in place. This is a tube that drains the bladder. After a day or so, the catheter may be removed if all is well and passing urine may be uncomfortable for a short period.

What can I expect post-operatively?

The drain and catheter are usually removed on the first or second day after surgery. You can usually go home between the second and fourth day of the operation. After 2 to 4 weeks after the operation, it may be possible to return to work. People vary and it depends on the degree of physical activity necessary to be performed and how you feel.

You can drive when you are able to brake safely, and this usually takes several weeks.

The internal tube (‘stent’) between the kidney and bladder is usually removed between three to six weeks after the operation. The stent can cause discomfort include pain on passing urine that may be felt in the back on the side of the operation, lower abdomen or tip of the penis. There may also be some blood in the urine. These problems can be worse if you are more active, but not always. The stent can usually be removed easily under a local anaesthetic by a special telescope inserted down the urethra i.e. the tube through which urine passes out of the bladder. This means coming into hospital for a morning or afternoon only and is performed as an outpatient procedure. Antibiotics will need to be taken for 3 days after the stent has been removed.

Three months later, another diuretic renogram (MAG3 study) is performed. This is another test performed as an outpatient, and will probably be similar to a test performed to help substantiate the diagnosis of PUJ obstruction in the first place. This is to determine whether obstruction is still present or not. Another study may be performed one year later.

Drink more fluid

Try and drink enough fluid during the day to keep the urine as transparent as possible. This is the most effective way to reduce the risk of stone formation. Ten to 12 cups (3 litres) per day may be necessary. Drinking should be spread during the day. Remember to drink 2 hours after meals and at night (eg midnight or 2am or when you go to bed). About half the fluid should be water. Try not to drink too much alcohol.

Reduce table salt intake

Table salt (sodium chloride) increases the chance of stones. Reduce that risk by avoiding adding salt at the table and don't add salt when preparing and cooking. Some food is rich in sodium such as:

•processed meats (ham, hot dogs, sausage, luncheon meat)

•convenience food (regular, canned or boxed soups, noodle or rice mixes)

•snack food (crisps, crackers, pretzels, popcorn)

Try and pick food without salt supplementation or low salt alternatives.

Avoid Red Meat

Protein in red meat has been shown to increase the risk of stones so choose white meat alternatives where you can. Try to eat less than 2 servings of meat per day.

Minimise food that can increase 'oxalate' and uric acid production in the urine.

These include:

•chocolate

•rhubarb

•greens (spinach, collard, beet and turnip greens)

•berries

•peanuts

•asparagus

•tea

•anchovies

•caviar

•herring

•scallops

•mussels

•organ meats (liver, kidneys, brains)

•meat extracts (broth, bouillon, consommé, gravy)

For more details, download this PDF on a low oxalate diet from the University of Pittsburgh.

Eat normal or reduced amounts of calcium each day

The amount of calcium that should be consumed in a day depends on the amount of calcium present in the urine. This is determined by collecting a 24 hour sample and determining the amount present. Contrary to what you might think, reducing calcium intake alone results in more not less stones unless oxalate in the diet is reduced also.

If the amount of calcium in the urine is more than normal, then decreasing the amount of consumed calcium and oxalate is helpful.

If the amount of calcium excreted in 24 hours is normal, eat a normal amount of calcium a day. Don't aim to increase calcium intake as that may make matters worse.

Do not use vitamin C and vitamin D supplements

Excess vitamin C and vitamin D supplements increase the chance of new stones, so please don't use these.

Drink orange or grapefruit juice in preference to cranberry or lemon juice

Orange juice is the most effective way to keep stones from forming. This is because it increases the alkalinity, and so the potassium and citrate content of the urine. Grapefruit, pineapple, and apple juice also help, but not quite as much as orange juice. Cranberry and lemon juice do not increase the citrate content, although they may reduce the rate that stones form.

JJ srents

A JJ stent is a specially designed hollow tube, made of a flexible plastic material that is placed in the ureter. The ureter is the natural tube that transmits urine from the kidney to the bladder. The length of the stents used in adult patients varies between 24 to 30 cm.

There are different types of stents, and some of these differences allow a stent to provide different benefits depending on the situation of the .

**What's the reason for having a JJ stent?**

A JJ stent may be placed for several reasons.

It allows urine to flow from the kidney to the bladder even when the ureter is blocked for one reason or another. This way, the kidney keeps working and is not damaged by being obstructed and avoids the severe pain that can occur when a kidney does not drain properly. The chance of an infection is also reduced significantly.

A stent protects the ureter and allows the ureter to heal even when damaged. If a stent is not placed and the ureter is hurt in some way or other, it can become too narrow when it heals forming what is called a stricture. Having a stent can prevent that from happening and makes it more likely that the ureter will work well afterwards.

Sometimes, a stent is placed because it makes a narrow ureter wider over a period of time. This can be important when access through the ureter is needed to pass instruments or remove stones. This would typically occur when an attempt to go up the ureter to get a stone has failed because it was too narrow. Inserting a stent makes it more likely that later attempts to get up the ureter will be successful.

**What are the disadvantages of having a JJ stent?**

It is not possible to predict who will or will not have side-effects with a stent. Some people tolerate stents without problems. Others find they have problems described below. Such problems may be present only at the beginning of having a stent and resolve over a few days or weeks. Other people may find their symptoms persist through out the period of the stent being present.

Stents can cause blood to appear in the urine at various times. Usually, physical activity of one kind or other results in movement of the stent inside the body. This can give rise to blood in the urine. Pain may be felt in the back (loin), bladder area, groin, penis in men or urethra in women, and sometimes the testicles. The discomfort or pain may be more noticeable after physical activities and after passing urine.

The stent can cause irritation of the bladder and so make it necessary to pass urine more frequently including the need to get up at night to pass urine. These symptoms can sometimes be improved by medication. Rarely, a stent may cause a woman to leak urine.

Once the stent has been removed, these side-effects go away.

**What problems can arise with a stent?**

Sometimes, stents can become calcified and develop a coating similar to stones. Stents can also move out of position. When this happens, the stent usually moves into the bladder causing a deterioration in bladder symptoms i.e. going to the toilet to pass urine more frequently, discomfort in the area of the bladder and perhaps blood in the urine.

**How does a stent interfere with daily life?**

You can still go to work and play sports when you have a stent in place. However, you may feel more tired and experience discomfort during the day limiting your performance. In addition, you may need to visit a toilet more frequently and so need convenient access to a toilet.

Travel is possible, although medical attention may be required rarely. As stents can have side-effects, your ability to enjoy yourself may be limited as a result.

There are no restrictions on sexual activity, although there may be less enjoyment as a result of the side-effects described above.

**What additional care is necessary when a stent is in place?**

* drink at least 1½ to 2 litres (approximately four pints) of fluids a day
* discuss with your doctor if you have troublesome side-effects

**When might it be necessary to call a doctor?**

You should contact a doctor if

* constant and unbearable pain related to the stent
* symptoms of a urine infection (fever, rigours, feeling unwell and pain passing urine
* the stent falls out
* if there is a significant increase in the amount of blood in the urine

**How is a stent inserted?**

A stent is inserted usually under a general anaesthetic often in combination with another procedure depending on the reason for the stent. A telescope called a cystoscope is passed through the urethra (water pipe) and into the bladder. The stent is passed through the cystoscope and into the ureter. The position of the stent is checked with x-rays.

**What alternatives are there to a JJ stent?**

Sometimes, it may be reasonable not to leave a JJ stent if obstruction is likely to be transient. This may be risky and depends on the circumstances. If several procedures have been performed, there is often swelling making obstruction and pain a distinct possibility.

Occasionally, it may be possible to place a tube internally draining the kidney that comes out through the urethra (water pipe). This can simply be removed by pulling it out without needing a further procedure of any kind. The disadvantage is that it can remain for only a day or so.

Another alternative is to have tube placed directly through the skin and into the kidney. This is called a 'nephrostomy'. This is placed under guidance by ultrasound and the kidney has to be distended to get into the correct place without difficulty. As this is outside the body, it is slightly more inconvenient and can sometimes get pulled out by accident. Its advantage is that it usually drains better than a JJ stent which can be important if there is infection with obstruction of the kidney ('pyonephrosis').

**How is a stent removed?**

A JJ stent is removed with a cystoscope performed under local or general anaesthetic. A special flexible telescope is passed through the urethra. The stent is picked up and removed. Please see flexible cystoscopy.

ESWL

## Overview of ESWL

Extracorporeal shock wave lithotripsy (ESWL) uses sound waves or shock waves to break stones into small fragments that can pass spontaneously. It is performed usually as an outpatient procedure whilst awake or sometimes with sedation. Usually, you can go home immediately after, although it may need to be repeated.

## What are the reasons for having ESWL?

Usually, there is a stone present within the kidney or upper part of the ureter that will not pass by itself. The stone may sometimes cause pain or sometimes no pain at all, although it may impede the passage of urine from the kidney down to the bladder. Usually, the stone will be less than 2 cm in size, although sometimes larger. Stones present in the ureter may be treated where they are or sometimes pushed up into the kidney before treatment. To do this, a procedure under general anaesthetic would normally be required before the ESWL itself.

## What are the advantages of ESWL?

There are several advantages of ESWL over other treatments for stones. These include:

* outpatient procedure that takes 1 hour
* reasonably successful
* no cutting or invasion of the body at all
* low risk of infection from hospital bacteria

## What are the risks of ESWL?

About 1 in 10 people experience a problem. The main risks are:

* the treatment does not break the stone
* pain as fragments of stone pass down the ureter
* blocked urine flow if stone fragments cannot pass down the ureter
* urine infection
* bleeding around the outside of the kidney

What are the alternatives to ESWL?

Depending on the qualities of the stone and the individual with the stone, it may be possible to consider:

* watchful waiting (i.e. waiting for the stone to pass by itself)
* ureteroscopy or uretero-renoscopy: a procedure under general anaesthetic to find and break the stone by passing a telescope through the water pipe ('urethra'), bladder and up the ureter to the kidney. Usually, a day in hospital is required.
* PCNL: a procedure under general anaesthetic to remove the stone by placing a tube directly through to the kidney. Usually, several days in hospital are required. It is more likely to be successful than ESWL for stones in the kidney.
* Surgical removal: under general anaesthetic, an incision to remove the stone either directly or through telescopes (laparoscopes). Usually, a few days in hospital are required. It is more likely to be successful than ESWL, but is quite invasive.

## Can everyone with a stone have ESWL?

ESWL may not be possible for patients with the following characteristics

* severe skeletal deformities
* weight over 300 lbs (136 kg),
* abdominal aortic aneurysms,
* uncontrollable bleeding disorders
* pregnancy
* cardiac pacemakers should be evaluated by a cardiologist familiar with ESWL. A cardiologist may need to be present during the ESWL procedure in the event the pacemaker needs to be overridden.

## What do you have to do before ESWL treatment?

You will usually be asked eat a light breakfast or lunch before the procedure.

If you take regular medicines, you should ask your doctor if they are safe to take before the procedure. For instance, you may be asked to stop taking aspirin or clopidogrel, and other drugs (e.g. warfarin) that interfere with blood clotting several days before.

On the day of the procedure, you should wear comfortable clothes that are easy to remove, as you will have to change into a surgical gown.

Someone should be available to drive you home in case you have received medication that has made you feel drowsy or if you have pain afterwards.

## How is ESWL performed?

When you arrive, you may need to change into different clothes. Sometimes, it is necessary to have another x-ray before treatment. After you enter the room with the ESWL machine, you will be asked to lie down on the treatment table. If the stone is in the kidney, you are usually asked to lie face down, but if the stone is in the ureters, you will probably be asked to lie on your back. Once you are comfortable on the treatment table, the stone will be located either by X-ray or ultrasound. During this time, it is important to stay as possible during this time. This is important so that the shock waves can be accurately focused on the stone. Movement and deep breathing will make it difficult for the shock waves to hit the stone. Before we put the Lithotripter treatment head (a cushion with water inside) to your back/front we will put. Some ultrasound jelly is applied to the skin and then a cushion containing water is positioned to allow the shock waves to be delivered to the stone. The jelly is water-based and will wash off.

The treatment usually lasts between 20 and 40 minutes; you will hear a “clicking” noise and feel something like a “flicking” on your back/front. Some people have said that it feels a bit like a small electric shock. The power or intensity may increase during the procedure so that the stone can be completely broken. It may feel uncomfortable but should be bearable and additional pain killers can be given.

## What to expect after ESWL?

After passing urine, it should be possible to go home. Someone may need to drive you home. In some cases, it may be necessary to take antibiotics for a few days. You should large volumes of water to increase urine flow and help flush stone fragments through.

You should be able to resume normal activities the day after treatment.

You may see blood in your urine after the treatment. This is not important, unless the urine is completely opaque because of blood. A bruise may appear on the back where the treatment head was placed Small fragments of stone may pass giving pain sometimes as bad as renal colic.

## When should I contact a doctor?

If you have the following, you should contact a doctor:

* a fever
* if you cannot pass urine or if you find it difficult to pass urine
* severe pain in the back or surrounding area

## How often does ESWL need to be repeated?

Often only 1 treatment is required, but large stones in difficult locations may require multiple treatments over weekly or more intervals.

* What happens if ESWL doesn't work?

One of the alternative options listed above may be needed i.e. either uretero-renoscopy or PCNL.

Nephrectomy

## What is a nephrectomy?

Nephrectomy is the name for a surgical procedure to remove the kidney.

## What types of nephrectomy are there?

This can refer to how much of the kidney is removed:

* Partial: only a small amount of the kidney is remed
* Simple: the whole kidney is removed
* Radical: the whole kidney, surrounding fat and sometimes the adrenal gland also
* Nephroureterectomy: the kidney and its ureter, which is the tube that carries urine from the kidney down to the bladder
* Donor: a kidney with its blood vessels and ureter is removed to give to another person.

...and to whether the operation is performed by traditional open means or by newer, key hole approaches (laparoscopic nephrectomy).

## Why would you want to remove a kidney?

Kidneys are removed because of

* cancer
* poor function associated with recurrent urinary tract infection or stones
* kidney transplantation
* serious kidney disease

## Are there different ways to perform a nephrectomy?

A kidney is removed either through a large skin incision necessary for traditional open surgery or by minimally invasive surgery - laparoscopic nephrectomy. There are significant advantages for laparoscopic nephrectomy over traditional surgery. Recently, it has become possible to destroy small tumours by freezing (cryoablation) without removing them surgically.

## Can you function normally with one kidney?

The kidneys are part of the urinary system, and are just above the level of the waist in the back. In general, there are two kidneys but not always. Their main purpose is to clean the blood and get rid of toxins in the urine. Fortunately, kidney cancer usually affects only one organ. People can function well with just one kidney if a one needs to be removed. In a few cases where overall kidney function is not so good, minor dietary restrictions may be recommended. In rare cases, lifelong dialysis or a kidney transplant may be needed.

## How is a nephrectomy performed?

In traditional open surgery, the anaesthetist gives a general anaesthetic and the surgeon makes an incision on the side or front of the abdomen or sometimes through the ribs and chest. Muscle, fat, and tissue are mobilised or divided to expose the kidney. The blood vessels supplying the kidney are tied or clipped and then divided. Depending on the type of nephrectomy procedure being performed, the ureter, adrenal gland, and/or surrounding tissue may also be cut. The ureter is tied off, the kidney removed and the incision is sewn up (sutured). The surgical procedure can take up to three hours, depending on the type of nephrectomy being performed.

However, it generally takes five to six hours from the time you leave the ward until you arrive in the recovery room. You will be unable to see your family for an additional two hours whilst patients are in recovery.

A laparoscopic nephrectomy is performed differently from open surgery and has significant advantages. Please see [laparoscopic nephrectomy](http://www.windsorurology.co.uk/Clinical_Information/Kidney/Laparoscopic_Nephrectomy.aspx).

## Will I need to be in the Intensive Care Unit (ICU) or High Dependency Unit (HDU)?

A short time in a high monitoring environment such as a high dependency unit (HDU) or intensive care unit (ICU) is usual after nephrectomy. The length of time necessary increases if there is underlying medical unfitness or complex surgery.

## What are the risks of nephrectomy?

Every operation has some risk. A nephrectomy should be performed if the advantages outweigh the disadvantages and this most importantly relates to quality of life.

Potential problems include bleeding requiring blood transfusion, infection of the wound or lungs, injury to surrounding tissues (i.e. intestines, liver, spleen, pleura), the need for further procedures, blood clots, and the risks of anaesthesia (heart attack, stroke, blood clots, and death). Kidney failure is always a possible outcome, although rare.

Some operations may have specific additional complications. These include urine leakage, significant bleeding or tumour recurrence after partial nephrectomy.

## What limitations will I have after I go home?

During your first week at home you should take it very easy. The onset of pain should be the guide to limiting your activities. After one week, you should gradually be able to increase the level of your activity until returning to work six weeks after open kidney surgery. During this period you should avoid vigorous exercise and lifting heavy objects.

## How much time off work is necessary?

Most people recover quite rapidly from their surgery. Some begin working after only a few days or weeks. Nonetheless, because recovery can be variable, you should forewarn your employer that you will be absent from your job for two to four weeks after laparoscopic nephrectomy and six weeks after open kidney surgery.

## How important is the delay between diagnosis and nephrectomy for kidney cancer?

The speed at which kidney cancer grows varies from person to person. A few weeks between a diagnosis of cancer and surgery is usually insignificant as the cancer has probably been present for some time and rarely advances significantly within a short period. Nevertheless, a nephrectomy should be performed as soon as it is safe providing it is appropriate if kidney cancer is diagnosed.

## When can I travel after a nephrectomy?

Sometimes blood clots can develop in the leg veins which can sometimes be dangerous after a nephrectomy and so it is prudent to wait at least three weeks after a nephrectomy before flying. Otherwise, the major limitations to travel involve physical discomfort.

Laparoscopy

## What is laparoscopy?

This is a technique to reach parts of the body without the use of large incisions. Instead, a narrow telescope and instruments are inserted through small incisions allowing surgery to be performed. The intention is to achieve the same results as would be obtained by conventional surgery.

## What are the advantages of a nephrectomy performed laparoscopically?

The advantages are multiple and include the following:

* smaller skin incision - four 1 cm incisions rather than a 30 cm incision
* better view because of the magnification of the system
* less pain because the incisions are smaller and the muscles are parted rather than cut
* 3 to 5 days in hospital compared to a week or longer by open surgery
* less blood loss and reduced need for a blood transfusion
* the ability to return to work in 2 to 4 weeks compared to 6 or more weeks after traditional open surgery

There are no differences in the chance of cancer cure whether the surgery is performed by traditional open means or laparoscopically.

## What are the disadvantages of a nephrectomy performed laparoscopically?

As the hands are not directly in the body, it is less easy to feel what is happening compared to open surgery. In some situations, the tactile feedback can be important and if that becomes true, it would be necessary to make an incision to carry on. Other disadvantages include the increased length of time necessary for the operation, the significantly increased cost of the equipment and the necessity for the surgeon to be experienced in laparoscopy before being able to perform the operation.

## How is the operation performed?

Small incisions are made in the side of the abdomen. Typically, there are about 3 or 4 incisions between 0.5 cm and 2 cm just below the ribs on the side of the problem. The operation lasts for about 2 hours to 3 hours. Through instruments passed through small holes (ports), the kidney is isolated from the rest of the body. At the end of the procedure, an incision is made in the lower abdomen (belly) below the belt line, which is 5 to 7 cm in length, allowing the kidney to be removed from the body. There is usually a tube left inside the body near the site of the operation and this comes out through the skin (‘drain’). This is placed to allow fluid that is produced by the body to be expelled. The tube is removed when fluid stops draining, which is usually after a day or so. The incision sites are stitched. There is a tube (‘catheter’) coming out from the bladder through the urethra (water pipe) and connected to a ‘catheter bag’. This is removed after a day or so.

## What can I expect after the operation?

The drain and catheter are usually removed on the first or second day after surgery. You can usually go home between the second and fourth day of the operation. The stitches or clips in the skin are usually removed after 10 to 14 days. In some situations, the stitches will dissolve spontaneously. Your doctor will advise you.

After 2 to 4 weeks after the operation, it should be possible to return to work. People vary and it depends on the degree of physical activity necessary to be performed and how you feel. You can drive when you are able to brake safely, and this usually takes several weeks.

## What are the risks of the operation?

Every operation has risks. These risks are rare but include the following:

* the need to convert from laparoscopic ('keyhole') to traditional open surgery by making a large skin incision
* significant bleeding that requires a blood transfusion
* a drain that is required for more than a few days possibly due to excess bodily fluid production
* infection of the incision sites, urine, lungs or elsewhere in the body. This would normally need antibiotics alone, but rarely may require additional treatment
* injury to other nearby bodily structures. These include the spleen, bowel, liver, pancreas or large blood vessels. In general, such injuries would require conversion from laparoscopic to open surgery
* recurrent tumour if the operation is performed for cancer
* general risks of all surgery: clots in the leg, stroke, heart attack

## What is HIFU?

High Intensity Focused Ultrasound (HIFU) is the name for a technique to treat prostate cancer. Like a magnifying glass focuses light rays to a focal point, HIFU concentrates sound waves on a precisely targeted, tiny area of diseased tissue. HIFU heats the tissue to about 100°C degrees and destroys it.

The advantage of visually Directed HIFU over conventional HIFU is that the surgeon uses real-time feedback to adjust the amount of energy needed to ensure eradication of the diseased tissue whilst protecting healthy tissues. The active involvement of the surgeon in the planning and treatment achieves a higher rate of success.

HIFU is a relatively new treatment that has become popular as it is minimally invasive with few side effects.

## What is Robotic Surgery?

Robotic Surgery offers minimally invasive robot assisted laparoscopic. The main benefits to the patient may include, reduced pain and trauma to the body, less anesthesia, less blood loss and need for transfusions, less post-operative pain and discomfort, less risk of infection, shorter hospital stay, less scarring and improved comesis, faster recovery and return to normal daily activities.

The use of Robotics also offers benefits to the surgeon in enhanced 3-D visualization, improved dexterity, greater surgical precision, improved access and an Increased range of motion

Robotic Surgery’s computer-enhanced technology integrated with the surgeon’s expertise, enables surgeons to perform extremely delicate and precise minimally invasive surgery. Reducing trauma to the patient by allowing surgery to be performed through small ports or "keyholes" rather than large incisions, resulting in shorter recovery times, fewer complications and a reduced hospital stay.

## What are Minimally Invasive Treatments?

## Tapes

These are tapes that support bladder control and are applied using tiny incisions. The procedure is generally completed as a day patient. Normal activity can be resumed almost immediately and the benefits of the treatment are apparent for many years.

## What is laser treatment?

Lasers are the most remarkable tools that have are extremely important in urological treatments. They are used to treat kidney stones, using a tightly directed ‘beam’ they vaporise the stone(s).

Lasers are also used in the treatment of men when an enlarged prostate affects the process of passing urine. The treatment if very effective in returning this function back to normal.

## Erectile Dysfunction

## What are LUE procedures?

This treatment is used for men with bending of the penis or without strong erection. In the past treatments for this condition have resulted in loss of length of the penis.