



Radical Prostatectomy - A Patient Guide

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Overview

A *radical prostatectomy* is a surgical procedure whereby the *prostate gland* is removed. *Lymph nodes* near the prostate can be removed at the same time. Radical prostatectomy is one option for men with clinically localized prostate *cancer*. Potential advantages include the following:

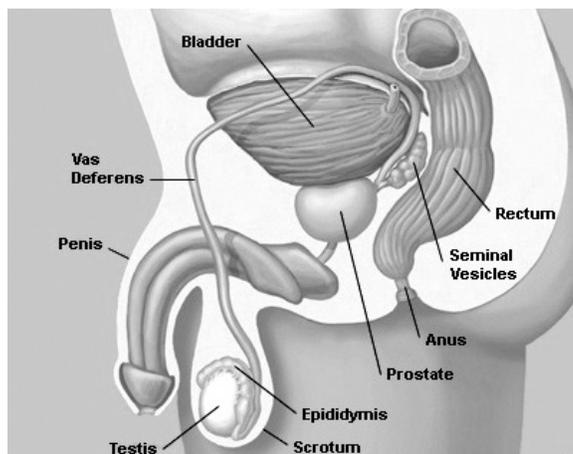
- 1) removal of the prostate and analysis by a pathologist allows accurate assessment of cancer aggressiveness (stage and grade);
- 2) after surgery the serum PSA (*prostate specific antigen*) level should be undetectable, and recurrence of cancer is relatively easy to detect because of this. Ultra sensitive PSA is also required to detect sensitivity;
- 3) radiation treatments can be given after surgery, if necessary, with a relatively low risk of any additional side effects;
- 4) surgery appears to be associated with a very limited risk of late (i.e. beyond 5 years) local recurrence which can be detected with appropriately timed ultra-sensitive PSA testing;
- 5) Information gained from the radical prostatectomy specimen (stage and grade) can be used to direct the need for any secondary treatments;
- 6) For higher-risk prostate cancer, surgery is often combined with other treatments which may be associated with better long-term survival than other management strategies.

Men with prostate cancer who are in good health and have a life expectancy > 10 years, are candidates for radical prostatectomy. The procedure is associated with potential side effects, although major complications are rare. Many men may be candidates for a "nerve-sparing" radical prostatectomy whereby sexual function may be maintained by preserving the nerves that control erections.

What is a radical prostatectomy?

A radical prostatectomy is surgery to remove the entire prostate gland and *seminal vesicles* after a diagnosis of prostate cancer is made. Radical prostatectomy is one of many options for the treatment of prostate cancer. You should discuss all options with your physician.

Radical prostatectomy can be done with *laparoscopy* ("laparoscopic radical prostatectomy"); through an open approach via an incision made in the abdomen ("radical retropubic prostatectomy"); or in the perineum, the area between the scrotum and the anus ("radical perineal prostatectomy"). Laparoscopy is a technique in which surgery is performed by making small incisions and passing specially designed telescopes and instruments into the body. Laparoscopic radical prostatectomy may result in less discomfort, less blood loss, fewer complications and earlier return to work. At UCSF we perform laparoscopic radical prostatectomies using a robotic surgical system called the da Vinci® robot. The system features high definition magnification and surgical precision in 3 dimensions. Outcomes in terms of cancer control, urinary function and sexual function are at least as good as a radical retropubic prostatectomy. The robotic approach has been modified based on our large experience with open surgery in order to optimize outcomes. The subtle differences between the procedures can be discussed with your surgeon.



Purchased from iStock

In addition to removing the prostate gland, the lymph nodes draining the prostate may be removed as well. This is done to determine if the prostate cancer has spread to the lymph nodes. This procedure is called "*pelvic lymph node dissection*." The risk of having cancer in the lymph node can be estimated and only men with higher risk cancers need to undergo pelvic lymph node dissection.

What will happen before surgery?

Before surgery, a number of tests will be performed to determine the extent of the disease. These tests include blood tests and a *transrectal ultrasound*. Some patients coming to UCSF have already had many of these tests and therefore may not need to have them repeated. Pathology slides from a *biopsy* done at an outside hospital will be reviewed at UCSF for a second opinion to confirm the grade and extent of prostate cancer. In selected patients, a *bone scan* and/or a CT or MRI scan of the abdomen and pelvis may be done. A physical examination will be performed and you will discuss the various types of anesthesia with an anesthesiologist. This visit will be arranged by your provider and will likely occur the week before surgery. You will be admitted to the hospital on the day of your surgery. However, you may begin a "bowel prep" at home on the day before your surgery. This is done to cleanse the bowel and may consist of a clear liquid diet, medication to promote bowel movements, and/or an enema. This is a routine preparation done before many types of abdominal and pelvic surgery.

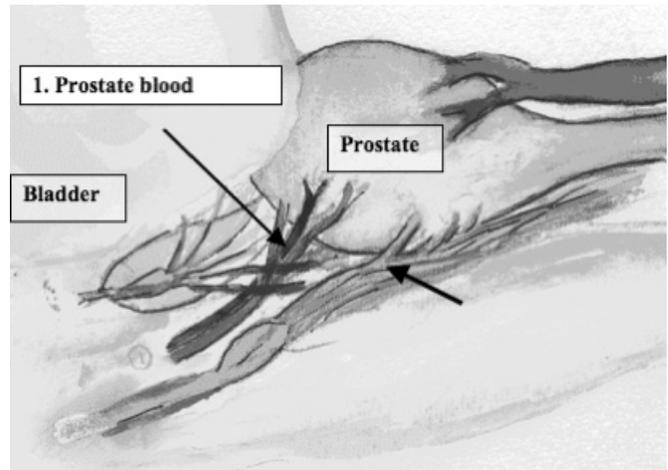
What type of anesthesia should I have and do I need to donate blood?

General anesthesia is utilized for this procedure. You will meet with your anesthesiologist to discuss a plan. It is very important to let them know if you have ever had vomiting, nausea or motion sickness after surgery. If this is the case, then it would be ideal for you to start a medication the night before to prevent post operative nausea and vomiting.

Donation of autologous blood (your own blood) usually is not necessary given the limited amount of blood loss noted by most experienced surgeons. Blood loss tends to be even less with laparoscopic (robotic-assisted) surgery and the chance of needing a blood transfusion are low. If you do wish to donate blood, 1 to 2 units of blood can be stored and used at the time of surgery. This needs to be arranged at a minimum of three weeks prior to surgery.

What happens during surgery?

At the time of radical prostatectomy, the entire prostate gland and seminal vesicles are removed. The seminal vesicles are glandular structures lying next to the prostate, which may be invaded by prostate cancer. Once the prostate gland and seminal vesicles are removed, the bladder is reattached to the urethra. A catheter is left in the bladder to allow drainage of urine while healing takes place. At times your surgeon may leave a "drain" (tube that drains fluid accumulations) in place for one or two days.



Courtesy of D. Skarecky, University of California, Irvine

Nerve-sparing radical prostatectomy

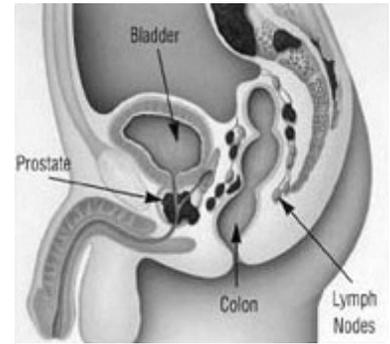
The nerves and blood vessels ("neurovascular bundles"), which allow the penis to become erect, run on either side of the prostate. The figure shows a diagram of the prostate gland. The arrows note the neurovascular bundles. These bundles may each be partially or completely spared during radical prostatectomy, thereby preserving sexual function in some men. Either one or both bundles can be spared. The best results are achieved if both bundles can be spared. Young men who are sexually active and report currently having good erections are most likely to benefit from preservation of the bundles. Older men and men who report limited erections may be less likely to benefit. In some cases, preservation of the bundle may not be advised due to the location or extent of the cancer. As the nerves run very close to the prostate, preservation of the bundles in some men may risk leaving cancer behind. The risks and benefits of nerve-sparing surgery should be discussed with your provider.

Sexual function returns more gradually in men who have undergone nerve-sparing radical prostatectomy. Little or no function is noted immediately after surgery in most men. Erections show more substantive improvement in the first six months, and may continue to improve up to 18 to 24 months after surgery. Return of erections may be facilitated by early use (even before surgery) of oral drugs (Viagra/Levitra/Cialis), penile injection therapy, or other treatments. You should discuss these and other options with your provider.

Please see the Your Health Matters document *Managing Impotence- A Patient Guide*, for more information (http://urology.ucsf.edu/patientGuides/pdf/Manage_Impotence.pdf).

Lymph node dissection (biopsy)

When prostate cancer spreads (*metastasizes*), it often does so into the lymph nodes in the area of the pelvis. For this reason, the lymph nodes draining the prostate may be removed to check for tumor spread. Lymph nodes may be removed during either open or laparoscopic (robot-assisted) surgery and will be performed at the same time as prostate removal using the same incision(s). There is little additional surgical risk due to lymph node dissection.



Credit Singapore General Hospital

What should I expect after surgery?

Eating and drinking

You will begin to drink fluids shortly after the procedure and will be allowed to eat solid food thereafter, usually by the following morning.

Duration of hospitalization

The four goals, which must be met in most cases before you may return home after surgery are:

- Pain control with oral medications
- Tolerating solid food
- Walking unassisted
- Adequate knowledge of the management of Foley catheter

After prostatectomy most men are well enough to go home the next day after surgery.

Drains and dressings

Abdominal incisions are usually closed with absorbable suture, so no sutures or clips need to be removed. The incisions are covered with a bio-glue or band-aids instead of traditional bandages. The glue will gradually wear away, within a week or two.

Managing pain

Both open and laparoscopic (robot-assisted) prostatectomies are generally tolerated with relatively little pain. After surgery you may receive an anti-inflammatory medication called ketorolac (Toradol), which is similar to ibuprofen (Motrin). Unless you have a history of stomach ulcers or kidney dysfunction, Toradol will be a great option for good pain relief while in the hospital. For some men, this is sufficient. If you do have pain, you may receive oral narcotic tablets. If your pain is more severe you can receive an intravenous narcotic. Both oral and intravenous narcotics can cause nausea and drowsiness, and tend to slow bowel function, so you should use only as much of these medications as you need. On the other hand, it is important to make sure your pain is well controlled so you are able to walk adequately, cough, take deep breaths, and do what's necessary to keep you healthy after surgery. It is easier to stay ahead of postoperative pain rather than to try to catch up once you're in severe pain, so make sure you ask for pain medicine early, if needed. The same guidelines apply when you go home with medication for pain. As your pain improves, gradually reduce the dose and frequency of the narcotic to wean off of them comfortably. If you are able to take Tylenol or ibuprofen, this can help wean off of the narcotic earlier. If you feel you are not getting adequate pain relief, please feel free to discuss this with your nurse or provider. Each person's experience of pain is different, and although we may not be able to completely eliminate all of your discomfort, we want you to be as comfortable as possible after your surgery.

Bathing

Your nurse will assist you with a daily sponge or bed bath. Showers are usually permitted after 24 hours. Do not take a bath or swim until the Foley catheter is removed, which is likely within 7-10 days from surgery.

What you can do to help

To prevent complications, such as pneumonia and blood clots, you will be encouraged to do three things as soon as possible after surgery: walk, use your incentive spirometer (a small disposable device which encourages deep breathing) and wear your compression stockings while in bed. The nurses will instruct you on how to use the incentive spirometer and wear your compression stockings, and will assist you in walking after surgery until you can manage on your own. It is important to try to do your first walk as soon as possible. If possible, we recommend that you do a supervised walk with your nurse on the same day of your surgery. In addition, you may be prescribed an injectable blood thinner to help reduce the risk of blood clots.

Going home: what to expect

Diet and exercise

It is normal to feel tired for several weeks after your surgery. You **MUST** have someone drive you home from the hospital. Get plenty of rest, eat a well-balanced diet with plenty of protein and iron, and do some light exercise (such as walking) every day. You should drink enough to keep your urine clear. It is best to monitor the color of the urine in the catheter tubing, and not the urine in the bag. Urine that sits out for any length of time will get more concentrated, and have more sediment in it. The urine (in the catheter tubing) should be clear or light yellow. If the color is dark yellow or light red, you should drink more fluids.

Important activity limitations are the following: no driving while Foley catheter is in-place, do not lift anything heavier than 10 pounds for four weeks following your surgery, no exercises requiring excessive stress on your abdominal muscles or perineum (area near rectum) for six weeks. Examples of exercises to avoid are sit-ups, vigorous cardiovascular exercise, and upright bicycling. Light exercises, such as swimming, walking, jogging and stretching, can be done initially after the Foley catheter is removed. Golf can be played within four weeks after surgery. It is important to remember, if you feel like a particular activity is causing either pain, blood in your urine, or causing more *incontinence* during or after an activity, it is likely something you should avoid at that time. Cycling is safe 8 weeks after surgery but cyclists should use a split-channel seat to alleviate pressure on the perineum.

Driving

Driving is usually permitted after the catheter is removed. It is safe to resume driving once you have met all of the following criteria: you are comfortable with twisting your torso quickly so you can look over your shoulder when driving, Foley catheter is removed, and you are off narcotic pain medication.

Caring for the incision

The incision for an open prostatectomy runs from above the base of the pubic area to below the navel. You will be able to shower for the first time on post-operative day #2. Following laparoscopy, you will have more incisions (5 to 6) but they are much smaller. They should be cared for similarly. You may also have a drain site after this surgery, and it also will likely be removed prior to your discharge. This drainage will also resolve within 3-5 days after the drain removal.

Once you leave hospital the key words here are "clean" and "dry," showering once a day should do it.

No baths or swimming is allowed until 3 weeks after surgery. If you notice extreme or increasing tenderness, progressive swelling, more than a small amount of drainage (i.e. teaspoon) or any pus or redness at the incisions, notify your provider right away.

Going home with a catheter

You will be discharged from the hospital with a catheter in place to drain urine from the bladder into a bag. The balloon port of the catheter should be secured to the leg with a Stat-lock at all times. Should the catheter fall out or malfunction, contact the urology practice immediately. ***Do not allow an emergency department, or another non-urology physician to replace, or manipulate the catheter without the urology practice being notified.*** A large bag should be used at night and while at home to allow for better drainage. The leg bag can be used when out and about, but no longer than 4 hours at a time because the drainage is less than ideal with the leg bag. The Foley catheter will be removed at the urology practice or other physician within 7 to 14 days.

Be sure to clean the catheter where it exits your penis twice a day with soap and water, and apply a small amount of water-based lubricant (Surgilube, KY, etc.) where the catheter inserts into the penis (meatus) to minimize irritation. It's important to empty the bag frequently. The bag should always be positioned lower than your bladder (i.e. secured to your leg or on the floor at the side of the bed). A small amount of redness at the tip of the penis and/or discharge around the catheter is usually a sign of mucosal irritation, not pus, and is a sign that the catheter should be cleaned and/or lubricated more often.

On occasion, the catheter may irritate the bladder, causing "bladder spasms" which can be quite uncomfortable. Bladder spasms can feel like pelvic pressure or an intense sensation to urinate or have a bowel movement. To help alleviate the spasms while in the hospital, your nurse will give you an oral medication called Ditropan. Oral Ditropan will also be prescribed for you at time of discharge. It is important that you stop taking Ditropan 24 hrs before your catheter is removed. This will help prevent urinary retention. The common reasons for bladder spasms are the following:

- the misalignment of the Foley catheter which can create an air lock that prevents good drainage of urine;
- kinks in the catheter tubing that may obstruct flow;
- using the leg bag for a too long of duration since the leg bag drains slower than the big bag;
- over-activity causing the catheter to irritate the bladder.

Using the large drainage bag while at home and keeping the bag on the floor to facilitate drainage by gravity are ways to avoid this problem. To avoid infection it is best to put your bag within a bag. Leakage of urine around where the catheter exits the penis can be managed by wearing incontinence pads. However, if the urine is leaking and little or none is draining into the bag you should call your provider. It is normal for you to have intermittent cloudiness of urine for a few weeks after surgery. Occasionally, bleeding may occur around the catheter or be noticed within the urine. This is also common. If passage of large clots, more than an inch in length, is noted or if the catheter becomes plugged, contact your physician. No anesthesia is required for catheter removal and little discomfort is experienced by most patients beyond mild burning with the first few voids.

Managing incontinence

After your bladder catheter is removed, you may have leakage of urine ("incontinence"). Initially, the leakage may be significant (leakage all the time). Your provider or nurse will teach you exercises which you can do to strengthen your *sphincter muscle*. These are called *Kegel* exercises and they can be done anytime: when lying down, sitting, standing or walking. It is very easy for men to ensure they are doing Kegel exercises appropriately. You should see a slight lifting up movement in the penis when contracting your pelvic muscles. It's the same movement you would see when you abruptly stop urinating. Initially, the quality of the Kegel exercises is more important than the quantity. You should do each Kegel exercise by holding the squeeze for 10-15 seconds and then relaxing for the same duration. You should do this 15-20 times to complete one set of Kegels. We recommend you do 3-4 sets over the course of each day. These exercises will tend to decrease the amount of time it takes you to recover continence. Do not practice your Kegel exercises while you have your Foley Catheter inserted, it can cause some discomfort, and trigger bladder spasms. Men can also begin practicing their Kegel exercises before surgery to strengthen their pelvic floor.

At your local pharmacy you can buy incontinence pads such as "Attend" or "Depend" to protect your clothing and waterproof underpads to protect bedding. These can be obtained without a prescription and are available in a variety of sizes and absorbencies. Please bring one or two pads to your physician's office the day your catheter is to be removed. Your ability to maintain bladder control should improve significantly with time. Normally, continence returns in three phases: Phase I -you are dry when lying down; Phase II- you are dry when walking; Phase III- you are dry when you rise from a seated position, cough or exercise. Most patients regain very good control by 3-6 months. However, it may take more time for some patients. If adequate urinary control does not return by 12 months, consult your provider. If you believe that the force or diameter of your urinary stream is slow or narrow, or if you have any difficulty or pain on urinating, notify your provider immediately. Rarely, scarring may cause blockage to the normal flow of urine. Most often, this can be treated easily by dilating the urethra.

Skin care

If you have any incontinence, your skin may become irritated (depending on the amount of urinary leakage). You may need to protect your skin with a barrier such as Desitin or A&D ointment. If you develop a rash, notify your provider.

Managing constipation

Constipation is a common side effect of pain and bladder spasm medications. During the time that you are taking them, be sure to increase your fluid intake (at least eight glasses of water a day), take stool softeners, and eat lots of fiber (whole grains, fruit and vegetables). Avoid cruciferous vegetables immediately after surgery as they tend to cause gas. Use the laxative and stool softener prescribed at time of discharge until you are off all medications that can contribute to constipation, and your Foley catheter is removed. It is better for stools to be a bit loose, than being constipated since straining with bowel movements, aggressive laxatives or enemas are discouraged after surgery.

Medications

You will go home with the following medications:

1. An anti-inflammatory medication (e.g., ibuprofen or naproxen) which reduces both pain and inflammation. You should take this for at least a few days after you go home, or until you are free of significant pain. It is best to alternate this with Tylenol to maximize the affect of the anti-inflammatory and minimize the side effect of both medication.
2. A narcotic pain medication (e.g., hydrocodone, Percocet or oxycodone), which you should take, one to two tablets every four hours as needed. These can cause nausea and constipation.
3. A medication for bladder spasm (e.g., ditropan/oxybutynin), which you can take up to every eight hours as needed. This can also cause constipation and drowsiness, as well as dry mouth. Stop taking ditropan 24 hours before your catheter is due to be removed.
4. A stool-softener (colace/docusate) which should be taken as long as you are taking narcotic pain or bladder spasm medication, unless you develop severe diarrhea.
5. A mild laxative (senna) which should be taken as long as you are taking narcotic pain or bladder spasm medication, unless you develop severe diarrhea.
6. An elective laxative (MiraLAX®) which should be taken only if a bowel movement has not occurred within a 3 day period of time. You can combine with colace and senna.
7. A 3-day coverage of antibiotics that you must start the day prior to your Foley catheter removal to help prevent a urinary tract infection.
8. A medication for erectile restoration (Viagra, Levitra or Cialis). These medications work by increasing the flow of fresh blood to the penis, which in turn may facilitate nerve recovery. For Viagra and Levitra, you should take a half a pill on an empty stomach two times a week starting immediately after surgery or after the catheter is removed. If you have no side effects to the half tablet, then you should take the full tablet 2-3 times per week. Stimulation works best with this type of medication. Viagra and Levitra usually will take affect within one hour, while Cialis takes a little longer to work and lasts longer. It is best to start it once you feel back to normal, and you do not have any post-operative side effects. The medications can have the following side effects: change in vision, headache, stuffy nose, flushed face, and even palpitations. If you experience bothersome side effects, contact your urologist's office. You should not expect to have erections, although they may occur. Taking these pills early after surgery is meant to improve the likelihood that you will have good recovery of function later.

9. A neuro-protective medication (Trental, otherwise known as Pentoxifylline) that has been shown in some studies to help decrease injury to nerves and facilitate nerve recovery.
10. A medication to help prevent blood clots. This will generally be enoxaparin (Lovenox) or dalteparin (Fragmin). Both are administered once daily at home as a shot under the skin. You will be taught how to do this prior to discharge from the hospital. It is generally recommended to continue this medication for a month after surgery.

POD=Post Operative Day

POD 0 Surgery Day	POD 1 Discharged Home!	POD 2 Start Showering!!	POD 3	POD 4	POD 5	POD 6
Colace Senna Tylenol Ibuprofen Lovenox	Colace Senna Tylenol Ibuprofen Lovenox	Colace Senna Tylenol Ibuprofen Lovenox	Colace Senna Tylenol Ibuprofen Lovenox	Colace Senna Cialis/Levitra/ Viagra Pentoxifylline Lovenox	Colace Senna Pentoxifylline Lovenox	Colace Senna Pentoxifylline Lovenox
POD 7*	POD 8*	POD 9*	POD 10*	POD 11 Day Prior to Foley Removal	POD 12 Foley Catheter Removal!!!	POD 13
Colace Senna Pentoxifylline Lovenox	Colace Senna Pentoxifylline Lovenox	Colace Senna Cialis/Levitra/ Viagra Pentoxifylline Lovenox	Colace Senna Pentoxifylline Lovenox	Colace Senna Pentoxifylline START Ciprofloxacin STOP Ditropan Lovenox	Colace Senna Pentoxifylline Ciprofloxacin Lovenox Get lab draw: Creatinine	Colace Senna Pentoxifylline Ciprofloxacin Lovenox

*See medication instructions for POD 11 and POD 12 if having early removal of Foley Catheter.

If you take aspirin or anti-platelet agents such as Plavix, these can be resumed 2 weeks after surgery unless your physician informs you otherwise.

What about sex?

Erectile dysfunction (ED), “the consistent or recurrent inability of a man to attain and/or maintain a penile erection sufficient for sexual performance,” is a common result of prostatectomy. The level of ED that results after surgery depends on the degree of nerve-sparing surgery that was achieved as well as other factors: age, other medical conditions, medications, lifestyle, depression and anxiety. Unassisted sexual function may not begin until six months or more after surgery; however, it usually continues to improve over the next two to three years. Some men may not recover sufficient function for 18 to 24 months, some even longer. Your provider will discuss available treatments for erectile dysfunction. These include oral medications, intra-urethral suppository (MUSE), penile injections, vacuum devices, and penile prosthesis.

Keep in mind that libido (sex drive), sex, erections, ejaculation, orgasm, pleasuring, cuddling, and love are mutually INDEPENDENT.

What about work and other activities?

The amount of time before you can return to work will depend on the nature of your job and your recovery progress. For office jobs, a period of 2-3 weeks after surgery is common, assuming the same criteria described for driving have been met. For jobs requiring more physical exertion, a longer time will be needed. It is common to resume relatively sedentary activities such as dining out and going to movies within 2-3 weeks after surgery, once again depending on your recovery progress. More strenuous activities will require a longer recovery time.

What about fertility?

After radical prostatectomy men are no longer able to ejaculate since there is no longer a connection between the testicles and penis through which sperm normally travels. However, men continue to make normal sperm in their testes throughout their life. For men interested in protecting their ability to father children after treatment we offer a full range of fertility preservation services. In conjunction with the urology oncology group our male reproductive health team provides counseling and treatment. For further information please refer to http://coe.ucsf.edu/ivf/fertility_preservation.html or call 415-353-9115 for concerns or questions about fertility.

Is there anything else I should know?

Swelling and bruising of the abdomen, penis and scrotum occur commonly after radical prostatectomy. This is temporary and should resolve within two to three weeks. Swelling of the arms, legs, and even in the scrotum is common initially after surgery. Patients typically gain 10-20 pounds of fluid weight from surgery that usually resolves within 1 to 2 weeks after surgery. If you have unequal swelling or pain in your arms or legs, call your urologist since this is abnormal, and the possibility of a post-operative clot needs to be evaluated.

What is the pathology report and how do I interpret it?

Once the prostate gland and lymph nodes are removed, a pathologist will coat the removed tissues surrounding the prostate with ink and fix all the tissues in substances that preserve the architecture of the tissues and allow the pathologist to detect the extent of the cancer using the microscope. The specimen is coated with ink to allow the pathologists to determine how close any cancer comes to the edge of the specimen. There are at least three features which are important in the pathology report: cancer grade, cancer stage, and margin status. The pathology report generally takes 1-2 weeks to come back. Your provider will review it with you.

Cancer grade

Cancer grade refers to how malignant cancer *cells* look through the microscope. Most often grade is assessed using the *Gleason grading* system named after the pathologist who developed it. Gleason grade is a numerical value given to prostate cancers that measures tumor grade. Grades are assigned to the most common pattern of cancer as well as the second most common. Grades for each pattern range from 3 to 5. A grade of 3 denotes a cancer that is relatively non-aggressive. A grade of 5 is assigned to cancers that appear aggressive and differ significantly from benign tissue. Therefore two grades are given: a primary and secondary grade. When added together, a total sum or Gleason sum is obtained. This sum can range from 6 to 10.

Cancers with both primary and secondary grades of 3 tend to have a better outcome (lower chance of recurrence), compared to cancers of higher grades. Cancers with grades of 4 and 5 (sum of 7 to 10), tend to have a higher chance of recurrence. A word of caution about Gleason sum 7 cancers (3+4 or 4+3): Gleason grade 3+4 cancers are associated with a lower risk of recurrence compared to grade 4+3 cancers.

Cancer stage

Cancer stage is a measure that defines the extent of a tumor. T2 cancers are those completely confined to the prostate. T3 cancers are those that have gone beyond the prostate, either through the capsule of the prostate, (T3a), or into the seminal vesicles, (T3b). T4 cancers are rare and include those which have invaded nearby organs such as the bladder. Patients with T3 cancers are at an increased risk of cancer recurrence compared to those with T2 cancers.

Margins

It is the goal of surgery to remove all the cancer. A positive margin means that the pathologist notices that cancer cells are at the very edge of the specimen, touching the ink that was applied during initial processing of the specimen. The pathologist will note the number and location of any positive margins. Those patients with positive surgical margins are at an increased risk of cancer recurrence as this may be an indication that some cancer may be left in the body. Patients with more than one positive margin are more likely to have the cancer recur compared to those with a single positive margin. Patients with an extensive positive margin (large area where the cancer is in contact with the edge of the specimen) are more likely to have recurrence of their cancer compared to those with a very small area (focal positive margins) where the cancer just touches the edge.

It is important to note that most patients with focal positive margins are cured by prostatectomy alone and do not require further treatment. Depending on the number and extent of margins, your physician may recommend post-operative radiation to decrease the risk of recurrence.

Assessing Risk

A major challenge in prostate cancer is determining which men need more or less aggressive treatment of their disease. UCSF developed a version of the widely used Cancer of the Prostate Risk Assessment (CAPRA) score to be used after surgery by adding surgical pathology data from radical prostatectomy to predict recurrence and mortality. This score is called CAPRA-S, and it can help us identify patients who may benefit from more aggressive treatment.

The CAPRA-S risk score is computed from diagnostic PSA plus the final Gleason grade, stage, surgical margin and nodal status after RP. Patients with multiple “adverse” pathologic characteristics—such as high grade cancer (3+4 or higher), positive surgical margins, extension of the cancer outside the margins (pT3 stage) or into the lymph nodes—are usually at greater risk of recurrence and in some cases will require additional treatment at some point. In fact, for many men with aggressive prostate cancers, the best treatment approach may be a combination of surgery, radiation, and other treatments.

The timing and the type of additional treatment vary and it can be difficult to determine what the best treatment regimen will be for a given patient. Emerging tests based on specific cancer-related genes may be able to help. UCSF has become a leader in validation studies for candidate biomarkers. We helped validate two studies: Prolaris (Myriad Genetics) and Decipher (Genomedx Biosciences), which add genetic information to the surgical pathology characteristics. We found that using these tests plus CAPRA-S can more accurately predict whether recurrence will occur compared to using CAPRA-S alone.

Do I need any additional treatment?

Usually, you will not need any additional treatment after a radical prostatectomy. You and your physician will make a decision on the need for additional treatment based on the pathology report and your ultra-sensitive PSA level after surgery. Your ultra-sensitive PSA should drop to undetectable levels after surgery. It is important when getting your ultra-sensitive PSA drawn that you go consistently to the same lab since different labs can have different capabilities in how sensitive they can test for PSA.

Depending on cancer risk, radiation, hormonal therapy or any one of a number of new agents being evaluated in clinical trials may be given if the cancer removed was extensive or recurs in the future. All patients should have regular check-ups including PSA blood tests, and in very selected cases, imaging tests (bone scan, *CT scan*, MRI, etc.).

How often do I need to see my provider?

You will see your provider initially 8 to 10 weeks after surgery. You will review with your provider your pathology and ultra-sensitive PSA results, and as well as review your continence and erectile function after surgery. The frequency of provider visits and serum ultra-sensitive PSA tests will be determined based on the risk of cancer recurrence. Most often, ultra-sensitive PSA is obtained at three to six month intervals for the first three years (depending on the risk of cancer occurrence). Ultra-sensitive PSA is measured less frequently thereafter.

A final note

The diagnosis of prostate cancer and its treatment evokes strong emotions in patients and their loved ones. It is important that you share your concerns, fears and frustrations with your provider and those around you. Good communication is important to recovery. Visit the UCSF Cancer Resource Center for helpful information on a wide range of topics. You may find participation in a support group very helpful. Information on support groups, including ones close to you, can be obtained from the Cancer Resource Center.

The Symptom Management Service at UCSF offers treatment and counseling for physical and emotional symptoms of cancer. Assistance includes help with pain, fatigue, depression, anxiety, advanced-care planning and spiritual issues. Treatments integrate medical, psychological, social work and spiritual approaches, which are offered along with regular cancer care. Care is coordinated with cancer treatments and with the support of patients' providers. They can be reached by calling 415-885-7671.

Osher Center for Integrative Medicine is another resource at UCSF. By joining modern medicine with established practices from different disciplines around the world, integrative practitioners are better able to relieve suffering, reduce stress and maintain the well-being of their patients.

Glossary of Common Terms

Biopsy: Sampling of tissue.

Bone scan: A radiologic imaging study that utilizes a radioactive compound that is injected into a vein to identify abnormalities in the skeleton.

Cancer: A condition of unregulated cell growth. Cancer cells, unlike benign cells, exhibit the properties of invasion and metastasis.

Catheter: Small tube inserted to drain or instill fluid.

Cell: Any one of the minute protoplasmic masses that make up organized tissue. A cell is the fundamental structural and functional unit of living organisms.

CT scan (Computerized tomography): A radiologic imaging study in which cross-sectional images of the body are obtained using x-rays.

Drain: A tube used to drain fluid accumulations after surgery.

Gleason grade: A numerical value given to prostate cancers that measures tumor grade. Grades are assigned to the most common pattern of cancer as well as the second most common. Grades for each pattern range from 3 to 5. A grade of 3 denotes a cancer that closely resembles benign or normal tissue. A grade of 5 is assigned to cancers that appear aggressive and differ significantly from benign tissue.

Impotence: Inability to get a natural erection.

Incontinence: Uncontrolled loss of urine.

Kegel exercises: Exercises designed to strengthen the muscles around the bladder and bladder opening. The exercises can be done anywhere or anytime. They are done by tightening and then relaxing the pelvic floor muscles.

Laparoscopy: A surgical technique in which small incisions are made in the body in order to introduce specially designed telescopes and instruments. In some cases a surgical robot can be used to facilitate laparoscopic surgery. The robotic system at UCSF is called da Vinci and facilitates robot-assisted laparoscopic radical prostatectomy.

Lymph node: The main source of lymphocytes of the peripheral blood. In addition, lymph nodes serve as a defense mechanism by removing noxious agents such as bacteria, toxins and cancer cells.

Metastasis: The transfer of disease from one organ or part to another not directly connected to it. The capacity to metastasize is a characteristic of all malignant tumors.

MRI Scan: An imaging study in which cross-sectional images of the body measure how different types of body tissue respond to a magnetic field.

Pelvic lymph node dissection: Removal of the lymph nodes adjacent to the prostate.

Prostate gland: A gland in the male which surrounds the neck of the bladder and urethra. The prostate contributes to the seminal fluid.

Prostate specific antigen (PSA): A protein that is specifically manufactured by prostatic epithelial cells. The level of PSA often correlates with the likelihood and extent of prostate cancer and the size of benign prostatic enlargement or BPH, as well as infection.

Radical prostatectomy: A surgery in which the entire prostate gland and seminal vesicles are removed.

Seminal vesicles: Glands located on either side of the prostate that secrete substances to nourish sperm.

Sphincter muscle: The muscle used to control the flow of urine from, and hold urine in, the bladder.

Transrectal ultrasound: A radiologic imaging test in which an ultrasound probe is placed into the rectum to image the entire prostate. This test facilitates prostate cancer staging and prostate biopsy.

Urethra: Canal that drains urine from the bladder. It passes through the center of the prostate gland.

Important Phone Numbers

UCSF Helen Diller Family Comprehensive Cancer Center: 415/353-7171. This is a 24-hour number. Normal office hours are 9 AM to 12 PM and 1 PM to 5 PM. After hours, either your provider or the provider on call can be contacted for questions.

Reviewed by health care specialist at UCSF medical center

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