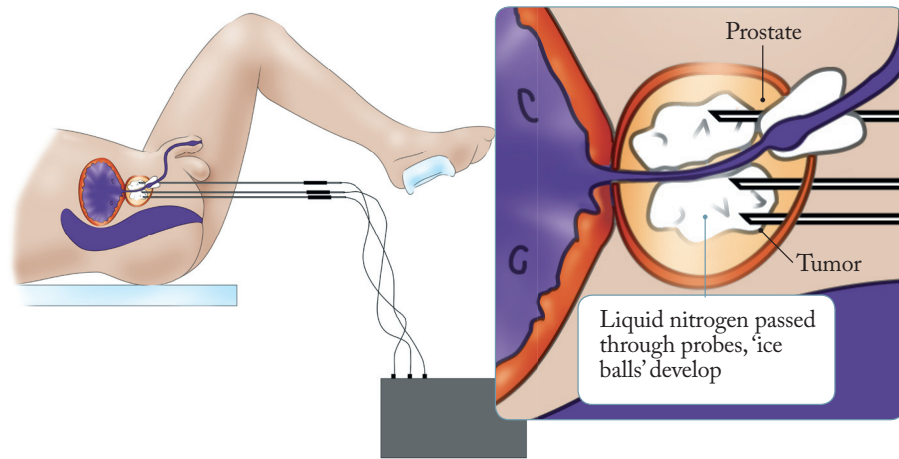


CRYOTHERAPY



the procedure, the probes are removed. While cryotherapy of the prostate does not have as long of a proven track record as radiation or surgery, the latest data from around the country shows excellent cancer cure rates. Because it is a simple outpatient procedure and has a favorable side effect profile, cryotherapy is rapidly growing in popularity among both urologists and prostate cancer patients alike.

Hormone Deprivation Therapy is a non-curative management option that seeks to control growth or spread of the prostate cancer by manipulating the patient's testosterone levels. Testosterone, the male sex hormone, is considered to be a "fuel" for prostate cancer. In most cases, if you take away this fuel, then the prostate cancer growth slows down. In many cases of prostate cancer, the cancer goes into a dormant state as evidenced by the PSA going to undetectable levels. Eventually, the cancer cells will develop growth potential in the absence of testosterone, but this may take years, even decades. This ability to control the prostate cancer growth may allow patients to live out their normal life expectancy without cancer ever threatening them. The basis of hormone deprivation therapy is to force the body to stop making testosterone. This is done with medications (Vantus, Lupron, etc.) or with surgical removal of the testicles. Hormone deprivation therapy brings on a male version of menopause, because there is no circulating testosterone. Usually the symptoms are mild, but may include hot flashes, moodiness, tiredness, and irritability. Longterm consequences may include

osteoporosis and muscle wasting. The general consensus among physicians regarding hormone deprivation therapy for prostate cancer is that the cancer control outweighs the treatment risks.

Watchful waiting is a non-curative management option designed for those individuals who may consider themselves too old or too ill for aggressive curative therapies. In many cases, prostate cancer is so slow growing, that it may take years before it ever even begins to cause problems. As an extreme example, an 85 year old man with prostate cancer may have other medical issues and only expect to live a few years related to those other problems. His prostate cancer may not ever get to a life threatening stage in his expected lifetime. Treatments for a cancer that would otherwise never threaten him could be more dangerous than the cancer itself in effect making "the cure more dangerous than the problem itself." As such, some patients elect to merely observe the cancer behavior untreated. In these cases of watchful waiting, a surveillance plan is developed and the PSA is monitored. If symptoms arise or if the PSA gets too high (suggesting imminent problems), then hormone deprivation therapy is begun. Otherwise, no treatments may be needed.

Complications

All treatments for prostate cancer can have side effects or complications. With any type of surgery, there can be bleeding or infection. Traditionally, radical surgery had the highest risk of bleeding,

with blood transfusions being commonly required during surgery. Today's refined surgical techniques and robotic applications have made the major concern of blood loss less worrisome. Radiation therapy, either external beam or seed therapy, can cause radiation injury to the bladder or rectum which sometimes can bleed. Cryotherapy, while not surgically removing the prostate gland, will cause destruction of the gland which can cause temporary bleeding.

Any manipulation of the urinary tract can cause infection. Usually, antibiotics are prescribed following prostate treatment, and the risk of major infection is low with all of these options.

Because the prostate gland is situated very near the rectum, injury to the rectum is possible. Whether it be surgery, radiation, or cryotherapy, if the rectum is injured, and abnormal connection to the urinary tract (called a fistula) can develop. If this develops, further surgery to correct the fistula will be required. Sometimes a colostomy (making the bowels empty onto the skin) is required to treat a fistula. Less than 3% of people undergoing prostate cancer treatment will develop a fistula.

Erectile Dysfunction and Incontinence are usually the major concern for patients faced with treating prostate cancer. All treatment options can effect sexual function and urinary control. For patients already having problems in these areas prior to treatment, the problem almost certainly will worsen. Return to preoperative status and function is the hope. Best results are achieved in younger patients with early cancer in general good health.

All cases involving general anesthesia have certain risks associated with being put to sleep for surgery. Most patients with significant pre-existing medical conditions will need to get evaluated by the internist or general medical doctor prior to surgery. Such evaluations can identify situations where the risk may outweigh the benefit of surgery. Even in ideal cases, however, problems can arise. While rare, we have to accept the chance that heart conditions or lung conditions may complicate the course of surgery and recovery. It is possible to have a heart attack, a stroke, a seizure, or another problem that might necessitate being on the breathing machine or in the Intensive Care Unit. Most of these situations, while complicated, are managed to recovery, but even death is a possibility. Assessing the health of every patient prior to treatment allows for the safest considerations.

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Prostate Cancer

By Robert S. Hollabaugh, Jr. MD

Introduction

The prostate gland is a focus of medical concern for all men after age 40. Both benign and malignant conditions can affect the gland. Benign enlargement of the prostate (BPH) can cause urinary difficulties, and will affect almost all men as they get older. Of even greater concern, 1 in 6 men will develop prostate cancer, making prostate cancer the second most common cancer and the second leading cause of cancer death in American men. While many statistics surround prostate cancer, it is still true that most men who have prostate cancer do not die from it.

The American Cancer Society estimated 192,000 new cases of prostate cancer were diagnosed in 2009 and more than 27,000 men died from the disease. The good news is that most cases are diagnosed while the cancer is still within the prostate (localized or organ confined). Cancer found at this early stage usually has a high cure rate. According to the most recent data, for all men with prostate cancer, the relative 5 year survival is nearly 100%, the relative 10 year survival is 91%, and the relative 15 year survival exceeds 76%.

Screening and Detection

As with many cancers, the most important aspect of prostate cancer is early detection. If the cancer is caught early, before it can spread, then cure rates are excellent. Early detection is accomplished by regular screening- a digital exam and a blood test called PSA. Both of these tests need to be done every year after age 40. African Americans and patients with a family history of prostate cancer have a higher risk for developing prostate cancer. Because early prostate cancer does not give any reliable signs or symptoms, annual screening is critical to detect the developing cancer. At the Conrad Pearson Clinic, our experienced urologists perform

annual exams and PSA bloodtests as a routine part of our practice. If there is any abnormality in the PSA or in the rectal exam of the prostate, it is critical to determine whether or not cancer is suspected, as some abnormalities may be due to other causes. For example, the PSA is notoriously affected by urinary infection. If the PSA is high and there is a urinary infection as well, then the infection should be treated and the PSA rechecked several weeks later. Clearly not every abnormal PSA means cancer. Make sure that you see an expert so that your test results can be interpreted accurately.

If suspicion of possible cancer persists, your urologist will perform a prostate biopsy. This is usually performed in the office or surgery center and consists of a small needle poking the prostate thru the rectum under ultrasound guidance. It sounds a lot worse than it actually is, and generally feels about like a bee sting in the bottom. The information obtained from these small tissue samples will tell whether or not there is cancer in the prostate. In addition, the details of the biopsy results will characterize the grade and stage of the cancer if it is present. The results of the biopsy are usually available one week later, and your urologist will go over these with you. If there is cancer, lots of information needs to be considered, and some additional tests may be ordered to further evaluate the extent of the cancer. Early stage cancers rarely spread. If prostate cancer does spread, it preferentially goes to the bones or lymph nodes. To assess these areas, bone scans and CT scans may be ordered; however, in many cases these are not needed. Based on all of this information, your urologist will sit down with you, consider a variety of treatment options, and decide what is best for your particular situation. The extent of disease is very important, but a patient's medical history and personal preferences need also be taken into

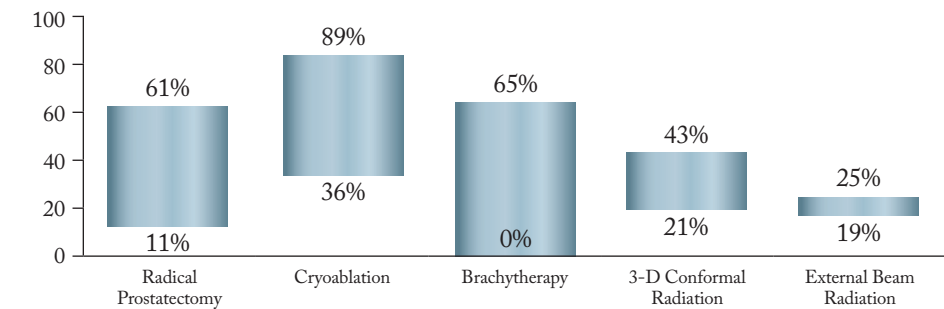
strong consideration. Clearly there is no single treatment that is best for all situations.

Decision Making

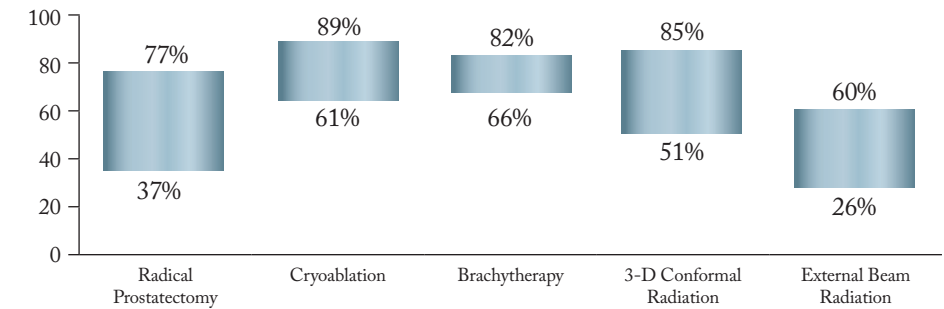
Lots of different factors are used in deciding what course of treatment is best for a particular case of prostate cancer. The doctor's assessment of the extent of disease is perhaps the most important initial consideration. Using the patient's test results and statistics, your urologist will try to determine if the cancer is confined to the prostate or not. If it is likely organ-confined, then all treatments can be considered legitimate options. If it is not organ confined, assessment must focus on whether the cancer is widespread or just locally advanced. Cases with widespread metastatic prostate cancer usually rely on hormone deprivation therapy or new chemotherapy regimens to treat the cancer. Metastatic prostate cancer is not curable with surgery, radiation therapy, or cryotherapy. In some cases the cancer may not be metastatic, but doctors think that the cancer is locally advanced; in other words, the cancer is growing thru the capsule of the prostate gland. In these circumstances, surgery may not be able to remove all of the cancer. Also, it may be difficult to safely deliver radiation to the areas outside the prostate gland. Cryotherapy also has certain limitations in treating areas outside the prostate capsule. In any case, statistics can shed light on the successes of treatment in these various circumstances.

The chances of treatment failure or success can be assessed by categorizing prostate cancer with regard to Stage, PSA level, and Gleason Score. Patients with (1) Early Stage (T1 or T2a), (2) PSA less than 10 ng/dl, and (3) Gleason 2-6 are considered "Low Risk" for treatment failure. If any one of these three criteria is not met, then the patient is "Moderate Risk." If any two

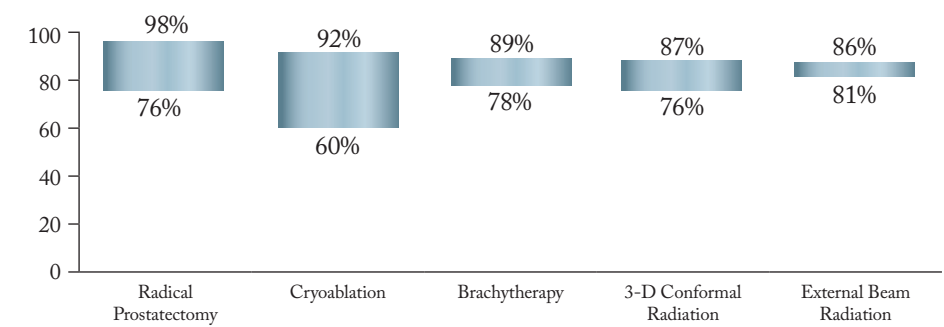
RANGE BIOCHEMICAL DISEASE FREE RATES REPORTED IN THE LAST 10 YEARS FOR **HIGH-RISK** DISEASE



RANGE BIOCHEMICAL DISEASE FREE RATES REPORTED IN THE LAST 10 YEARS FOR **MODERATE-RISK** DISEASE



RANGE BIOCHEMICAL DISEASE FREE RATES REPORTED IN THE LAST 10 YEARS FOR **LOW-RISK** DISEASE



of the criteria are not met, then the patient is “High Risk” for failure. While there are many other methods for risk stratification, this one is fairly simple and lots of statistical data regarding treatment failure has been reported using this methodology. The following tables show the cure rates of the different therapies based on the risk categories, as published in professional urology journals over the past 10 years. While this is not an absolute answer as to what therapy is best for a certain situation, it gives some assessment of relative cure rates for different circumstances and treatment options. The high and low percentages seen in each category represent the best and worst study results for the given type

of treatment. Obviously, most results were somewhere in between the high and low reports. As you can see, for low risk patients, all of the treatment choices have excellent cure rates.

Treatment Options

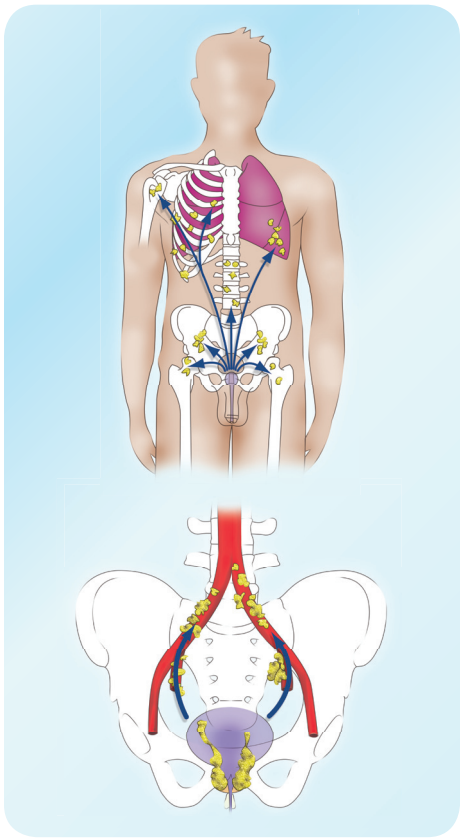
In deciding how to treat newly diagnosed prostate cancer, the first fork in the “decision tree” usually revolves around the decision of trying to either (1) cure the cancer, or (2) control the cancer. With most cancers, the patient’s main focus is on “cure”, but in many cases “control” may also be a good choice. In general, prostate cancer is a very slow growing cancer. It takes years, rather than days, for it to get to the problematic stages.

Knowing this, we can safely take our time and consider the various options and understand the risks and benefits of each.

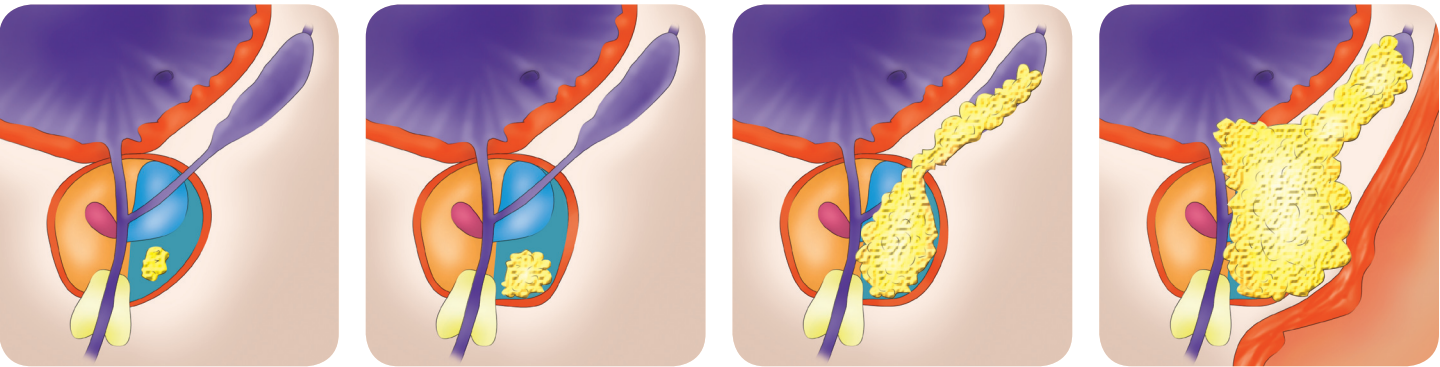
For many people, especially young individuals or those who have a life expectancy of greater than 10 years, curative therapy is recommended. For the elderly or those who have lots of medical issues, non-curative management options that control the cancer, but not cure it, may be reasonable options so that these individuals can live out their normal life expectancy while hopefully avoiding complications of the cancer as well as potentially risky cancer treatments. Curative treatment options include radical prostatectomy, radiation therapy, and Cryotherapy. Non-curative management options include watchful waiting and hormone deprivation therapy.

Radical Prostatectomy is perhaps the most well-known treatment for prostate cancer, and involves the surgical removal of the entire prostate gland. For decades this surgery required an incision in the lower part of the abdomen to allow access for the surgeon to remove the prostate. In recent years, advances in technology and instrumentation have led to a new treatment approach combining the benefits of open surgery

CANCER METASTATIC SITES



CANCER STAGES



with the benefits of less-invasive laparoscopic techniques. That approach, performed in Memphis by surgeons at the Conrad Pearson Clinic, is robotic-assisted laparoscopic radical prostatectomy, also called **da Vinci Prostatectomy**. Rather than a large incision, the robotic operation uses very small incisions where instruments and a camera are placed. The procedure is performed using the da Vinci Surgical System, a technologically advanced robotic system controlled by the surgeon. The surgeon’s hand movements are relayed to the instruments inside the patient, which enhances precision, eliminates hand tremor, and improves vision through magnification. During the operation, the surgeon is seated a few feet away from the patient at the da Vinci System console, and uses hand and foot controls to manipulate the robot’s three mechanical arms. These arms have a full range of motion that replicates the surgeon’s exact hand movements with tremendous precision. Compared to open radical prostatectomy, robotic prostatectomy offers quicker recovery and less blood loss, with the same rate of cancer control. Learning how to perform robotic prostatectomy requires taking advanced study courses and dedicating many hours to training, and competence is achieved only after performing the operation many times.

Not all cases of prostate cancer are best treated with radical surgery, and in fact, many cases need consideration for other therapies. The extent of the cancer or the overall health of the patient will have a major role in determining the best of many other treatment options. Radiation therapy, like surgery, offers excellent rates of cure for localized prostate cancer. **Radiation therapy** is available in two broad categories: External Beam therapy and Brachytherapy (radioactive seed implantation). Efficacy is virtually the same with each method, but the application is different. For **brachytherapy**, radioactive seeds are placed in the prostate tissue using a computer generated model that allows for delivery of radiation dosing for a

prescribed amount of time once implanted. The radioactive seeds are put in place using needle guides while the patient is under anesthesia. Each seed is about the size of a grain of rice, and do not have to be removed later. Usually about 70 seeds are placed, but that is determined by the actual size of the prostate. The procedure is performed in a hospital with patients usually going home the morning after surgery. External beam radiation therapy has a favorable longstanding track record and continues to have technological upgrades. Currently the most advanced form is called **Intensity Modulated Radiation Therapy (IMRT)**. IMRT uses computer models and CT scan technology to focus radiation dosing on the precise area of the prostate, avoiding radiation exposure to other nearby organs. Less exposure to neighboring organs means much less complications related to collateral radiation damage. The course of treatment is usually a 20 minute, daily regimen over a period of about 6 weeks. It requires no anesthesia, and patients are usually at near normal activity levels throughout the course of therapy. Statistics for success rates of either form of radiation therapy are excellent.

Comparing outcomes of radiation therapy to radical surgery, the cure rates are almost identical until about 10 years of follow-up. At 10 years, the cure rates for radiation begin a slight decline. Much research is underway to evaluate these late failure rates. The controversy focuses on whether the failure is (1) a recurrence of the original cancer or (2) development of a new, unrelated cancerous area. Because radiation therapy only kills the cancerous part of the prostate gland, the live prostate tissue that remains in a patient could degenerate into cancer again. If cancer reappears years after radiation treatment, a variety of options are still available to treat the ongoing cancer.

The newest of the curative treatment options available for prostate cancer is **Cryotherapy**, or freezing therapy of the prostate. This procedure, also called Cryoablation of the prostate, is usually performed in an outpatient setting, with patients going home the day after surgery. Under anesthesia, several needle-like probes are placed into the prostate gland which allow for precise freezing of the prostate tissue. This freezing process destroys the cancer cells. At the end of

BRACHYTHERAPY PROBES

