Patrick M. Bennett, M.D.
Gary D. Grossfeld, M.D.
Harry Neuwirth, M.D.

marin urology

1000 South Eliseo Drive
Suite 201
Greenbrae, CA 94904
Tel (415) 461-4000
Fax (415) 461-6907
www.marinurology.com

TRANSRECTAL ULRASOUND AND PROSTATE BIOPSY

Transrectal Ultrasound

Ultrasound involves the use of sound waves and their echoes to produce images. Ultrasound technology is used in the medical field to produce images of many internal organs. Transrectal ultrasound (TRUS) is a specific type of ultrasound that is most often used to produce images of the prostate. During a TRUS, a narrow probe or wand is inserted into the rectum and high frequency sound waves bounce off the prostate. The echoes created by these sound waves are processed by a computer and used to create an image of the prostate on a small screen. TRUS provides a fairly high quality image of the prostate that can be used by a urologist to examine the prostate, measure the prostate and guide biopsies of different regions of the prostate.

Prostate cancer may be identified on TRUS as a "hypoechoic" area (darker than the normal prostate tissue). However, only 60% of prostate cancers appear hypoechoic on TRUS. Because other disease processes, such as benign prostatic hyperplasia (BPH) and prostatitis (inflammation of the prostate) can have a similar appearance to prostate cancer, urologists cannot rely on TRUS alone to diagnose prostate cancer. The most important role for TRUS in prostate cancer detection, therefore, comes from its usefulness in guiding prostate biopsy in patients who have an elevated serum PSA, an abnormal digital rectal examination, or both.

TRUS is an outpatient procedure that lasts approximately 15 minutes. It is usually performed in the doctor's office. You will be asked to use a cleansing enema at home before you come to the doctor's office for the procedure to reduce interference with the ultrasound image and decrease the risk of infection if a prostate biopsy is performed. Antibiotics will also be prescribed when a biopsy is to be performed along with the TRUS.

At the time of the procedure, your urologist will perform a digital rectal examination with anesthetic jelly. This allows the urologist to confirm any abnormalities in the prostate gland, exclude any rectal disorders that may interfere with the procedure, and anesthetize the anal opening to facilitate placement of the ultrasound probe. The patient

typically lies with his left side down and his knees drawn up into his chest. After placement of the probe in the rectum, the urologist takes pictures of the prostate and the seminal vesicles (glands behind the prostate) to determine if any abnormalities exist. The urologist will also measure the prostate to obtain an accurate size.

Prostate Biopsy

Prostate biopsy is the most reliable way to determine if prostate cancer is present. Biopsy involves removing a piece of tissue from the body and then examining the tissue under a microscope. A specially trained doctor known as a pathologist examines the tissue. After the pathologist obtains the tissue sample, he/she must process the tissue before a diagnosis can be made. As a result, it usually takes 2-3 days until biopsy results are available.

Prostate biopsy is best performed under TRUS guidance using a spring-loaded biopsy gun. The biopsy gun contains a small needle that removes a cylinder of tissue from the prostate that measures about 1/2 inch long and 1/16 inch wide. Tissue is removed in a fraction of a second, minimizing patient discomfort. Your urologist may also inject lidocaine (an anesthetic) into the tissue surrounding the prostate to numb the area and minimize pain. This is similar to what is done to minimize pain during dental procedures.

TRUS allows for accurate needle placement and tissue sampling. Rather than just sampling an abnormal area on the basis of digital rectal examination, systematic biopsy strategies have been developed which improve cancer detection and "map" the prostate. Traditionally, six (sextant) biopsies have been taken from top (base), middle (midgland) and bottom (apex) of each side of the prostate. Recently, studies have shown that a larger number of biopsies will improve prostate cancer detection by about 20%. As a result, most urologists will now take 12 biopsy specimens. These specimens are usually taken from the edge and middle of the apex, midgland and base of the right and left lobes of the prostate.

Although TRUS guided prostate biopsy is usually very well tolerated, most patients will experience some discomfort. Blood in the urine and/or bowel movements may occur and last for 1-2 days. Blood in the semen is common and can last for a few weeks. In order to minimize bleeding, patients are asked to stop any blood thinners, including aspirin and anti-inflammatory medications (ibuprofen, naprosyn) for at least one week before the procedure. Fever and infection can occur in 1% of patients. Oral antibiotics and a cleansing enema are prescribed to reduce this risk (see above). If you experience a fever, you should notify your doctor immediately. You should plan to avoid strenuous activity for a day or so after your biopsy.

Even though prostate biopsy is the most reliable way to detect prostate cancer, you should be aware that a negative prostate biopsy does

not completely exclude cancer. One out of three patients with an initially negative biopsy may be found to have cancer on subsequent biopsy.