THE UROLOGY GROUP

www.urologygroupvirginia.com

1860 Town Center Drive · Suite 150/160 · Reston, VA 20190 · 703-480-0220
19415 Deerfield Avenue · Suite 112 · Leesburg, VA 20176 · 703-724-1195
224-D Cornwall Street, NW · Suite 400 · Leesburg, VA 20176 · 703-443-6733
24430 Stone Springs Blvd · Ste 100 · Dulles · VA 20166

TESTICULAR CANCER

Testicular cancer is a common urologic condition, and is the most common type of cancer in men aged 15 to 34.

ANATOMY OF THE TESTICLE

To understand testicular cancer, it helps to start with a description of the testicular anatomy. The male anatomy is shown in the adjacent picture. The scrotum or sac contains a testicle on each size. The testicle has two functions. It makes **testosterone**, the male hormone, which is carried from the testis through the blood stream. It also makes **sperm**, which travels from the testicle into a series of tubes which collectively form the epididymis.

The **epididymis** sits to the side and in back of the testis. Sperm leaves the epididymis by way of the **vas deferens** (this is the tube that is divided during a vasectomy), which then joints the seminal vesicles and prostate. The vas deferens travels through a structure known as the **spermatic cord**, which also includes the artery and vein that provide the blood supply to the testis and the lymphatic vessels that drain the testis. Sperm delivered from the vas deferens, mixes with fluid from the **seminal vesicle** and **prostate** to produce the semen, which is the fluid that comes out from the penis at the time of ejaculation.

WHAT IS A TESTICULAR TUMOR?

The term “testicular tumor” is used to describe a mass or growth within the testicle itself. Oftentimes this mass is noted by the patient, or it may be detected by a health care provider during a physical exam. There are a variety of other conditions which can cause a lump in the scrotal contents – not all lumps are testicular tumors. Some of these conditions include **hydrocele** (fluid around the testicle), **spermatocele** (a cyst in the epididymis), nodule or inflammatory change in the epididymis, and **varicocele** (a dilation of the veins around the testis).

HOW IS TESTICULAR CANCER DIAGNOSED?

When there is a mass identified within the testis itself, further diagnostic studies include scrotal ultrasound, and blood tests to check the levels of the tumor markers: beta hCG, alpha-fetoprotein and LDH. A **scrotal ultrasound** (sonogram) can confirm that the mass is within the testis itself. The tumor markers can be useful to guide subsequent treatment decisions. They are

not by themselves diagnostic - they may be normal even when cancer is present. **CT scan** of the abdomen and pelvis is carried out to assess for enlargement of the lymph nodes. If testicular cancer spreads beyond the testis, it often involves an area called the retroperitoneal lymph nodes, which are the lymph nodes in back of the abdominal cavity.

HOW IS TESTICULAR CANCER TREATED?

When a solid mass is present in the testicle, the next step is **inguinal** (**radical orchiectomy**). Over 95% of solid masses in the testis are malignant (cancerous), and less than 5% are benign (non-cancerous). A biopsy is not carried out for several reasons – the biopsy may not show cancer even if cancer is present, and if cancer is present, biopsy may introduce the possibility of cancer spread. Inguinal orchiectomy (through an incision in the groin) rather than scrotal orchiectomy (through an incision in the scrotum or sac) is carried out so the spermatic cord can be removed along with the testis. Surgery is typically carried out under general anesthesia in an outpatient setting.

Hazards of surgery include the general risks of infection or bleeding, and issues related to anesthesia. Some men notice some numbness in the scrotum or thigh following orchiectomy.

After surgery, the genital area looks the same. The scrotum is unchanged. The remaining testis is able to provide adequate testicular function. The testosterone level remains normal, and sexual function remains the same. In the past, some patients opted for insertion of a testicular prosthesis, which was made of silicone, to replace the removed testis, but current practice does not favor placement of a prosthesis. The removed testis is examined to determine the type of cancer.

WHAT ARE THE TYPES OF TESTICULAR CANCER?

In broad terms, testicular cancers are divided into two categories – seminoma and nonseminoma (which includes choriocarcinoma, embryonal cell carcinoma, yolk sac tumor and teratocarcinoma).
There are a variety of different treatment options for subsequent treatment of testicular cancer, which depend on the stage of the cancer (see Table 1) and the cell type.

WHAT ADDITIONAL TREATMENT IS NEEDED AFTER SURGERY?

Treatment options include active surveillance, chemotherapy, radiotherapy and further surgery with retroperitoneal lymph node dissection (RPLND).
Treatment for testicular cancer is typically carried out by a combination of doctors, including the urologist, a medical oncologist (a physician who specializes in the treatment of all types of cancer), and may include a radiation oncologist (a physician who specializes in the use of radiation to treat cancer).

Fortunately, most men with testicular cancer do extremely well with treatments. The overall survival rate is 98%. Although the initial diagnosis of testicular tumor and cancer can be

daunting, men who have testicular cancer can be optimistic that with appropriate treatment, there is the prospect for a favorable long-term outcome.

Table 1

TNM staging testicular CA

Primary tumor (T)*•	
pTX	Primary tumor cannot be assessed
pT0	No evidence of primary tumor (eg, histologic scar in testis)
pTis	Intratubular germ cell neoplasia (carcinoma in situ)
pT1	Tumor limited to the testis and epididymus without vascular/lymphatic invasion; tumor may invade into the tunica albuginea but not the tunica vaginalis
pT2	Tumor limited to the testis and epididymis with vascular/lymphatic invasion, or tumor extending through the tunica albuginea with involvement of the tunica vaginalis
pT3	Tumor invades the spermatic cord with or without vascular/lymphatic invasion
pT4	Tumor invades the scrotum with or without vascular/lymphatic invasion
Regional lymph nodes (N)	
Clinical	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis with a lymph node mass 2 cm or less in greatest dimension; or multiple lymph nodes, none more than 2 cm in greatest dimension
N2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or multiple lymph nodes, any one mass greater than 2 cm but not more than 5 cm in greatest dimension
N3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
Pathologic (pN)	
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis with a lymph node mass 2 cm or less in greatest dimension and less than or equal to five nodes positive, none more than 2 cm in greatest dimension
pN2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than five nodes positive, none more than 5 cm; or evidence of extranodal extension of tumor
pN3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
Distant metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis
M1a	Nonregional nodal or pulmonary metastasis
M1b	Distant metastasis other than to nonregional lymph nodes and lung
Serum tumor markers (S)Δ	
SX	Marker studies not available or not performed
S0	Marker study levels within normal limits
S1	LDH <1.5 x N **and** hCG (mIU/ml) <5000 **and** AFP (ng/ml) <1000
S2	LDH 1.5-10 x N **or** hCG (mIU/ml) 5000-50,000 **or** AFP (ng/ml) 1000-10,000
S3	LDH >10 x N **or** hCG (mIU/ml) >50,000 **or** AFP (ng/ml) >10,000