

# UROLOGY

## Cystoscopy

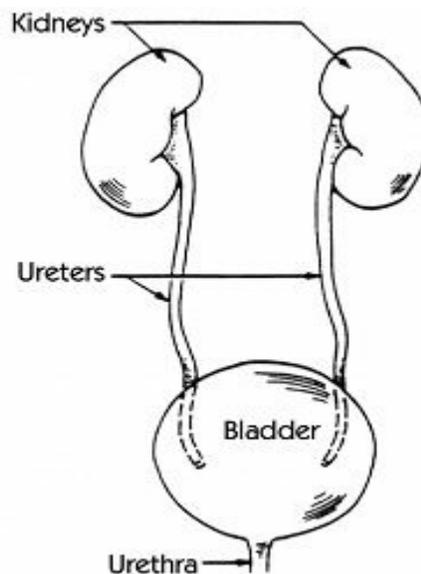
Cystoscopy is endoscopy of the urinary bladder via the urethra. It is carried out with a **cystoscope**. There are two main types of cystoscopy - flexible and rigid - differing in the flexibility of the cystoscope. The surgeon will gently insert the tip of the cystoscope into the urethra and slowly glide it up into the bladder. A sterile liquid (**saline, or glycine solution**) will flow through the cystoscope to slowly fill the bladder and stretch it so that the doctor has a better view of the bladder wall. Sometimes the surgeon will introduce instruments through a **working channel** to use once inside the bladder.

## Resectoscope:

A resectoscope is also endoscopic. It's a surgical instrument used to remove tissue from the uterus, prostate, bladder, or urethra. Unlike the cystoscope which is used primarily for viewing, this instrument combines a camera and instrumentation to resect so the surgeon can view a surgical site *and* perform surgery.

## Direct Visualization Internal Urethrotomy (DVUI)

DVUI is the repair of a narrow segment (stricture) of the urethra. A small scope is placed into the urethra, and a cut is made in the stricture.



## **TURP-Transurethral resection of the Prostate**

Most common surgical method of treating patients with **BPH Benign Prosthetic Hypertrophy**, a condition of prosthetic hyperplasia that can compress the urethral canal to cause partial, or sometimes complete, obstruction of the urethra, which interferes with the normal flow of urine. It leads to symptoms of urinary hesitancy, frequent urination, dysuria (painful urination), UTI's and urinary retention. Patient with BPH are initially treated with alpha-antagonists such as Flomax or alpha A1 reductase inhibitors such as Proscar and Avodart. Once patients' symptoms are refractory to oral meds, a TURP is often indicated.

The procedure is performed by visualizing the prostate through the urethra with a **cystoscope** and removing tissue. There are many different modalities to accomplish this. A patient's insurance, their surgeons training, the size of the patient's prostate and availability of resources usually determines which modality the surgeon will use.

- 1.) **Conventional (Monopolar) TURP:** utilizes a hot **wire loop** with electrical current flowing in one direction (monopolar) through the resectoscope to cut the tissue. A grounding pad and irrigation by a nonconducting fluid (glycine) is required to prevent this current from disturbing surrounding tissues.
- 2.) **Bipolar TURP:** a newer technique that uses bipolar current to remove the tissue. Bipolar TURP allows saline irrigation and eliminates the need for a grounding pad. The Bipolar method we use here at Gramercy eliminates tissue through plasma vaporization and it called the **Button Procedure**
- 3.) **Laser Prostate Surgery:** a fiber optic cable pushed through the urethra is used to transmit high power lasers to eliminate the tissue. The Laser method we use here is called **Greenlight Laser**

## **TURBT-Transurethral resection of bladder tumor**

This is a surgical procedure for patients with known **Bladder Cancer**. The most common complaint of a patient with a bladder tumor is hematuria. Just as in TURPs, the bladder is visualized through the urethra with a cystoscope. Tumors are usually removed or "scraped" with a **hot wire loop** therefore needing electrical current, a grounding pad and nonconducting fluid such as glycine. Once the tumor is resected, the specimen is usually evacuated out of the bladder through irrigation (**via Elick**) and sent for pathology.

## **Bladder Biopsy**

A bladder biopsy is taken when there are areas of suspicious tissue on the lining of the bladder. A biopsy is taken with a **cold biopsy cup** instead of a hot loop in order to preserve the integrity of the tissue for the pathologist to examine. After the biopsy has been taken out of the bladder the surgeon may also burn away any remaining cancer cells in a process called **fulguration**. Fulguration uses an electrode "**Bugbee**" and therefore needs electrical current, a grounding pad and glycine.

## **Circumcision**

Male circumcision is the surgical removal of some or all of the foreskin (prepuce) from the penis. There are several indications for circumcision. **Phimosis** and persistent **balanitis** are the most common medical reasons for circumcision in this country.

-Personal Preference

-**Phimosis** is a condition where, in men, the foreskin cannot be fully retracted over the glans penis

-**paraphimosis** is a condition where, the foreskin is incapable of being pulled forward

-**balanitis** Inflammation of the glans penis

-Torn or tight **frenulum**

## **Hydrocelectomy**

A **hydrocelectomy** is performed to correct a hydrocele and prevent its recurrence. A **hydrocele** is an accumulation of peritoneal fluid in a membrane called the **tunica vaginalis**, which covers the front and sides of the male testes. Hydroceles occur because of defective absorption of tissue fluid or irritation of the membrane leading to overproduction of fluid.

During the procedure an incision is made on the side of the affected scrotum. The incision is carried down through the various connective layers to the layer of the hydrocele sac. The accumulation of fluid is suctioned and the hydrocele sac is excised in order to prevent reoccurrence of the hydrocele. The excised hydrocele sac is then sent for pathology

## **Varicocelectomy**

A **varicocele** is an abnormal enlargement of the vein that is in the scrotum draining the testicles.

**Varicocelectomy** is by far the most commonly performed operation for the treatment of **male infertility**. The testicles are located in the scrotum because they need to be cooler than the rest of the body. Varicoceles make the testicles too hot, and this heat impacts the testicles' ability to produce healthy sperm. The goal of treatment of the varicocele is to obstruct the refluxing venous drainage to the testis while maintaining arterial inflow and lymphatic drainage. A small incision is made in the abdomen close to where the testicles originally descended through the abdominal wall. The veins that produce the varicocele are identified and cut to eliminate blood flow to the varicocele.

## **Vasectomy**

**Vasectomy** is a surgical procedure for male sterilization and/or permanent birth control. During the procedure, the vasa deferens of a man are severed, and then tied in a manner such to prevent sperm from entering into the ejaculate. Vasectomy essentially ensures that the patient will be sterile after surgery. The procedure is regarded as permanent because vasectomy reversal is costly and often does not restore the sperm count and/or motility to pre-vasectomy levels.

## **Vasovasectomy**

A **microsurgery** by which vasectomies are partially reversed. In most cases the vas deferens can be reattached but, in many cases, fertility is not achieved. There are several reasons for this, including blockages in the vas deferens, and the presence of autoantibodies which disrupt normal sperm activity. Only two conditions must be satisfied for sperm to be returned to a patient's semen with vasectomy reversal by vasovasostomy. First, the patient must have sperm available to pass through at least one reconnection. The second condition is that each reconnection must be as watertight as possible. The surgeon's goal is to achieve a very precise circumferential reconnection of the sperm canal edges by using meticulously placed microsurgical sutures.

## **Penile Prosthesis**

Is another treatment option for men with erectile dysfunction or impotence. Erectile dysfunction is initially treated with Phosphodiesterase type 5 inhibitors such as Viagra and Cialis. Once these medications have failed, a penile prosthesis is considered. The majority of the patients who have an insertion of a penile prosthesis here at GSC are diabetic. The causes of erectile dysfunction in men with diabetes are complex and involve impairments in nerve, blood vessel, and muscle function. To get an erection, men need healthy blood vessels, nerves, male hormones, and a desire to be sexually stimulated. Diabetes can damage the blood vessels and nerves that control erection.

There are two types of devices, malleable (bendable) or inflatable. Almost all current devices perform satisfactorily for a decade before needing replacement.

Infection is the most feared complication of penile prosthesis insertion. Bacterial adherence to the material of the penile prosthesis is the first step in colonization and subsequent infection during this procedure. Maintaining sterility in the OR is imperative, especially between the time that the prosthesis is taken out of the package to closing of the patients wound.

## Orchiectomy

Orchiectomy is the surgical removal of one or both testicles, or testes. An orchiectomy is done to treat cancer or, for other reasons, to lower the level of testosterone, the primary male sex hormone, in the body. Surgical removal of a testicle is the usual treatment if a tumor is found within the gland itself. Testicular cancer frequently occurs in younger men; in fact, it is the most common cancer diagnosed in males between the ages of 15 and 34

An orchiectomy may also be performed to treat prostate cancer or cancer of the male breast, as testosterone causes these cancers to grow and metastasize.

A bilateral orchiectomy is commonly performed as one stage in male-to-female (MTF) gender reassignment surgery.

In an orchiectomy, the scrotum is cut open, and the testicle covering is cut to expose the testis and spermatic cord. The cord is tied and cut, removing the testis and the wound is repaired

## Inguinal hernia Repair

An **inguinal hernia** is a protrusion of abdominal-cavity contents through the inguinal canal. There are two types; indirect and direct

**Indirect inguinal hernia:** An indirect hernia follows the pathway that the testicles made during fetal development, descending from the abdomen into the scrotum. This pathway normally closes before birth but may remain a possible site for a hernia in later life. Sometimes the hernia sac may protrude into the scrotum. An indirect inguinal hernia may occur at any age.

**Direct inguinal hernia:** enters through a weak point in the fascia of the abdominal wall. It rarely will protrude into the scrotum. Unlike the indirect hernia, which can occur at any age, the direct hernia tends to occur in the middle-aged and elderly because their abdominal walls weaken as they age.

There are various surgical strategies which may be considered in the planning of inguinal hernia repair. These include the consideration of mesh use (e.g. synthetic or biologic) open repair vs. laparoscopically ect.

**Open repair :** The most commonly performed inguinal hernia repair today is the Lichtenstein repair. A flat mesh is placed on top of the defect.

**Tension repairs:** It is a "tension-free" repair that does not put tension on muscles

## **Ureteroscopy**

**Ureteroscopy** is an examination of the upper urinary tract, usually performed with an endoscope that is passed through the urethra, bladder, and then directly into the ureter. The procedure is useful in the diagnosis and the treatment of disorders such as kidney stones.

## **Litholapaxy**

The procedure of crushing of a stone in the bladder and washing out the fragments through a catheter. Litholapaxy is used almost exclusively in the bladder, and refers to mechanical or physical destruction of the stone either through

- 1.) EHL Electrohydraulic Lithotripsy (Olympus ACMI or AMS)
- 2.) Pneumatic Stone Breaker (Cook Medical)

## **Uretero Laser Lithotripsy**

A urologist inserts a scope into the affected ureter. A laser fiber is inserted through the **working channel** of the scope, and laser is directly emitted to the stone. The stone is disintegrated and the remaining pieces are washed out of the urinary tract.

## **Extracorporeal shock wave lithotripsy (ESWL)**

ESWL is a non-invasive treatment of kidney stones-using an acoustic pulse. The lithotripter attempts to break up the stone with minimal collateral damage by using an externally-applied, focused, high-intensity **acoustic pulse**. A fluoroscopic x-ray imaging system is used to locate the stone and aim the treatment which fragments the stones into smaller pieces that then can easily pass through the ureters. The process takes about an hour. A **ureteral stent** (a kind of expandable hollow tube) may be used at the discretion of the urologist. The stent allows for easier passage of the stone by relieving obstruction and through passive dilatation of the ureter.

## **Prostate biopsy**

is a procedure in which small samples are removed from a man's prostate gland to be tested for the presence of cancer. It is typically performed when the scores from a **PSA (prostate specific antigen)** blood test rise to a level that is associated with the possible presence of prostate cancer. The procedure may be performed transrectally, or through the perineum.

The most common procedure is transrectal, and may be done with tactile finger guidance or, more commonly and precisely, with ultrasound guidance. About a dozen samples are taken from the prostate gland through a thin needle - about six from each side. If the procedure is performed transrectally, antibiotics are prescribed to prevent infection. An enema may also be prescribed for the morning of the procedure. In both the transrectal and the transperineal procedure, the doctor inserts an ultrasound probe into the rectum to help guide the biopsy needles. A spring-loaded prostate tissue collection needle is then inserted into the prostate, through the rectum (or more rarely through the perineum), about a dozen times. It makes a clicking sound,

## **Radioactive Seed Implantation**

Radioactive seeds implantation into the prostate is a type of Brachytherapy used for the treatment of prostate cancer. Brachytherapy is a form of radiotherapy where a radiation source is placed inside or next to the area requiring treatment. A key feature of brachytherapy is that the irradiation only affects a very localized area around the radiation sources. Exposure to radiation of healthy tissues further away from the sources is therefore reduced. This procedure is performed by a Radiation Oncologist

Brachytherapy instead involves the precise placement of short-range radiation-sources (radioisotopes) directly at the site of the cancerous tumor. These are enclosed in a protective capsule or wire which allows the ionizing radiation to escape to treat and kill surrounding tissue, but prevents the charge of radioisotope from moving or dissolving in body fluids. The capsule may be removed later, or (with some radioisotopes) it may be allowed to remain in place.