COMMON UROLOGIC PROBLEMS

John Weigel, M.D.

**Calculi**
Urinary tract calculi are a common and often severe problem - more common in men than women – formerly 3/1, probably 1.6/1 now – because of changes in female diets with more ingestion of meat and things of this sort that contribute to stones. About 2/3 of calculi are calcium oxalate – the oxalate is a “culprit.” It is important to get enough calcium in the diet to bind oxalate in the GI tract and prevent absorption of oxalates. The pain from renal calculi can be severe – it consists of colicky pain – these patients are unable to stay still in contrast to other intraabdominal sources of pain. Between colicky attacks, there is dull pain. As stones move down the ureter, the pain pattern can shift and can be referred to the lateral aspect of the genitalia and the inner aspect of the thigh. The larger the stone, the less apt it is to pass spontaneously. Most stones are radio opaque - uric acid stones are not. The best imaging study is a spiral or oblique CT. This will pick up uric acid stones. Indinavir stones in patients with HIV are radiolucent. Blood clots, sloughed papillae, and things of this sort are radiolucent and may mimic a stone. Most patients with calculi have hematuria, unless there is complete ureteral obstruction. These patients require strong analgesics. Flomax and similar alpha blockers are standard of care and can facilitate the passage of ureteral calculi.

Treatment long term is prophylactic and a urine output of 2-2.5 liters a day is essential and is the most important thing. Avoidance of high oxalate foods in patients with oxalate stones should be emphasized – chocolates, rhubarb, spinach, beets, and nuts contains high amounts of oxalates and should be avoided as much as possible. A combination of an obstructing stone and infection can be lethal and drainage must be obtained along with antibiotic coverage. Uric acid stones are associated with gout in about 20% of patient and vice versa. It is important for these patients to strain their urine and find the stone in send it for stone analysis.

**FOURNIER’S GANGRENE**
This is most common in alcoholics and diabetics. It has a mortality rate of over 30%. These patients can have a fulminating course – it usually begins with a red spot in the scrotum and black necrotic areas appear with redness up over the inguinal and lateral abdominal areas indicative of underlying necrotizing vasculitis. Mixed organisms are present. Wide spectrum antibiotic coverage and debridement are the treatments. About half of these are associated with other causes such as perianal abscess; some are idiopathic.

**HYDROCELE**
Hydroceles may be non-communicating or communicating. Sometimes a hernia coexists. These may mask a testis tumor. The treatment for hydrocele is surgical excision - aspiration can be of temporary help – there is always a risk for infection with this, and they rapidly recur.
TORCION OF THE SPERMATIC CORD
Torsion of the spermatic cord is another urologic emergency. This occurs in individuals with inadequate investment of tunics. This is more common from adolescents up into the 30s. The onset of pain is usually sudden and many of these patients will give a history of recurrent pain – torsion with spontaneous detorsion. If 360 degrees of twisting occurs, there is ischemia and risk of loss of testis. Some of these patients develop antisperm antibodies that are thought to possibly cause infertility. Physical examination is usually diagnostic – imaging can be done if it does not take up too much time – the “clock is ticking” in these cases. Doppler studies can show loss of blood supply. The treatment is surgical detorsion and if the testis is infarcted, orchiectomy. If viable, an orchiopexy procedure is done – this is done on both sides as the anatomy is usually abnormal on the contralateral side.

TORCION OF THE APPENDIX TESTES – APPENDIX EPIDIDYMIS
These are vestigial structures from the müllerian and mesonephric – Wolffian duct. These can torse – usually in prepubertal children. There is usually an inflammatory hydrocele, low grade fever, and sometimes a “blue dot sign” can be seen through the skin. Conservative therapy is indicated. If the parents are insistent, these appendages can be excised.

ORCHITIS
Most orchitis occurs a few days after the salivary gland involvement from mumps. Other viruses can cause this. With mumps prophylaxis, it is much less common. It is important that these patients be treated aggressively with scrotal elevation, ice bags, and possibly steroids. Testicular atrophy can result with infertility if bilateral. Atrophic testes have an increased risk for developing testis tumor later in life.

EPIDIDYMITIS
Acute epididymitis is common – often due to chlamydia. In past years it was more common in patients with gonorrhea – it still does occur in that disease. It can be of viral origin in children. These patients have pain which is relieved by elevation of the scrotum, Prehn’s sign. It begins in the tail or globus minor of the epididymis and that can result in extensive intrascrotal involvement with loss of intrascrotal architecture. Bedrest, scrotal elevation, ice bags, and appropriate antibiotic coverage are essential. Doxycycline may be the antibiotic of choice. Quinolones have been used – as have some of the penicillin compounds. Analgesics are important. These patients may develop an abscess, which can extend into the testes with resultant necessity for epididymo – orchiectomy. Chronic epididymitis is less common and may be due to AFB in some instances.
FRACTURED PENIS
It can occur during sexual activity – usually with "partner on top." This is the result of torsion or angulation and a tear in the tunics of one or both corpora cavernosa. It occasionally can extend down through the corpus spongiosum into the urethra with hematuria. These patients are best treated surgically with evacuation of the clot and repair of the tunics. Otherwise, angulation and sexual dysfunction may result.

UNDESCENDED TESTIS
Undescended testes needed to be treated. These testes are often dysplastic. There is increased risk for infertility with unilateral cryptorchidism and there is an increased risk for testis tumor on either side. The higher the undescended testis, the more dysplastic it tends to be. Orchiopexy should be done by age 18 months. This does not reduce the incidence of tumor, but does make the testis palpable and allows early diagnosis.

ANGIOKERATOMA OF THE SCROTAL SKIN
These are very common especially after about age 40 or so. These can bleed into underclothing and can be confused with hematuria. If extensive or troublesome, they can be cauterized or destroyed by other methods.

POSTERIOR URETHRAL VALVES
This is the most common cause of obstructive uropathy in the male infant. Many of these babies have severe renal damage as urine production begins early in fetal life. On rare occasions, intrauterine surgery is done if there appears to be damage that can be corrected – these are rare cases. It can be suspected on physical exam and by the history – a voiding contast study can confirm it. Passage of an infant feeding tube can relieve the obstruction until definitive treatment can be done. Some of these cases can be quite challenging.

SKIN LESIONS OF THE GENITALIA
It may be a forme fruste of systemic disease elsewhere – psoriasis is an example of this. Fixed drug reactions can occur usually in the glans penis – these are mostcommon with the tetracycline group of drugs and can also occur with aspirin and other medications. Balanoposthitis – inflammation of the glans and prepucce in uncircumcised patients is common. When this occurs in adults probably half or more of these patients are found to be diabetic and treatment obviously should be instituted. These lesions can be treated with hygiene – shower with the prepucce retracted, use a hair blower, apply an antifungal if it appears to be monilia or something like Neosporin ointment if it is nonspecific. If it does not clear, these patients should be circumcised. Any persistent skin lesion of the penis should be biopsied to rule out early cancer.
BALANITIS XEROTICA OBLITERANS (BXO)
It is an atrophic condition – can result in severe strictures of the meatus and this condition can extend up into the fossa navicularis and the distal urethra requiring extensive surgery in some cases. It is thought to be a possible premalignant lesion.

RENAL NEOPLASM
These are covered in detail in another lecture and only generalities will be listed here. About 85% of renal cancer in adults is adenocarcinoma or renal cell carcinoma. The remainder are mainly transitional carcinoma, which may involve ureter and bladder as well and there are occasional cases of adult Wilm’s tumor. Renal cell carcinomas can be huge before they are diagnosed. Many of these are picked up as incidental findings on abdominal imaging. The larger the tumor, the more likely it is to be metastatic. Pain, mass, and hematuria are signs of advanced tumor. Many of these patients have perineoplastic syndromes such as hypercalcemia, erythrocytosis, hepatic dysfunction, and other manifestations. The treatment is surgical. Patients with transitional cell carcinoma have about a 50% chance of showing up with similar tumors in the bladder at some point and require careful followup. There are carcinogens that are known – patients who work in the aniline dye industry, rubber tire industry, smokers, and probably patients exposed to pesticides and this sort of thing have an increased risk. Hematuria is the initial sign in most of these cases.

BLADDER CANCERS
Bladder cancers are mainly of three types – the vast majority are transitional cell carcinoma. About 5% of these patients develop upper tract problems. They require careful surveillance after treatment. Treatment is discussed in another lecture and will not be elaborated on. Basically, tumors are resected endoscopically and frequently bladder biopsies are done. Superficial tumors can be treated in this fashion. Tumors invading the muscularis propria usually require cystectomy and urinary diversion. Adenocarcinomas are less common as well as squamous cell carcinomas. Squamous cell tumors are frequently associated with bladder calculi or foreign bodies such as catheters. Patients with catheters long term or suprapubic tubes require periodic bladder examination and cytologies. Imaging studies plus minus contrast, endoscopic examinations and cytologies are basic in the workup of this group of patients.

URINARY DIVERSION
It is required after removal of the bladder and for other conditions. Ileal conduits have been around for over 60 years. Colon conduits are occasionally used. Neobladders are now being used more and more especially in younger patients.
PENILE CARCINOMA
Can either be ulcerative or exophytic. It is almost entirely confined to uncircumcised patients. There is frequently a long latent period before these patients come in – many occur in lower socio-economic groups. Primary treatment is partial or complete penectomy. Small early lesions may be treated with 5-FU cream – this is more for premalignant lesions. Sometime a “radical circumcision” can be done in very small preputial lesions. Extensive surgery involving inguinal and pelvic lymphadenectomy may be indicated in invasive tumors.

URETHRAL CARCINOMA
It is uncommon – it is more common in patients who have strictures. It may be manifested by hematuria, changes in voiding patterns and this sort of thing. These tumors can be invasive and vicious and often have a high mortality rate.

TESTES TUMOR
Testis tumor occurs mainly in patients between the ages of 17 – 36. Patients older than this often have lymphomas. There are several types of primary testis tumor - mainly seminoma, – embryonal carcinoma, teratocarcinoma, and choriocarcinoma. Self examination is important and any lump in the testis should be considered tumor until proven otherwise. They can have a rapid doubling rate and high fatality rates unless adequately treated. Most of these are very sensitive to platinum based chemotherapy and other treatment modalities may be utilized. Radical orchiectomy is the initial treatment in most cases. Important thing is early diagnosis.

HERPES
These lesions usually occur in the skin of the penile shaft in males. They are preceded by itching and possibly a small area of redness. Vesicles then appear. These convert to pustules, which ulcerate and eventually the lesions clear. It is important to treat both partners and these patients must use protected sex during treatment and certainly during any recurrent episode. There is no cure – this virus inhabits the axons. Patients under stress are apt to get a recurrence. The Acyclovir type drugs - there are several of these – are effective and increase the interval between attacks and lessen the length of acute recurrence. Females occasionally are seen with urinary retention problems secondary to this.
RENAL TRAUMA
It may occur secondary to blunt or penetrating injuries. A blow to the upper abdomen or lower thorax may result in renal injury. About 20-25% of the cardiac output goes to the kidneys and there is a potential for massive bleeding. Frequently other organ injuries are involved. The vast majority of these patients have microscopic or gross hematuria. In children, hydronephrosis or Wilms tumor may make these kidneys more vulnerable plus the fact that the children have far less protective tissue. History, physical examination, urinalysis and imaging are basic. CT studies plus minus contrast are the imaging study of choice. The vast majority of the patients with blunt renal trauma can be treated conservatively with bed rest until gross hematuria is cleared. No athletic activity until microscopic hematuria is cleared. Must be followed to include blood pressure determination – they may have elevated renins with severe hypertension. Additionally, it is a good idea to get a sonogram several weeks out to be sure that nothing bad is going on.

URETERAL INJURIES
These are uncommon - often occur during abdominal or pelvic surgery especially during Gyn surgery for cancer and general surgical procedures. These injuries are frequently missed. They may be manifested later by abdominal distention, urinoma, and low grade fever. These can be diagnosed with imaging, during surgery, by examining the ureter, with Indigo Carmine studies, and possible radiographic studies in the OR.

PENETRATING INJURIES OF THE KIDNEY AND URETER
In general they are handled surgically except in very minor renal injuries.

PELVIC TRAUMA
Pelvic fractures may be associated with bladder or urethral injuries or both. Bladder injuries if intraperitoneal must be repaired surgically. Extraperitoneal injuries may be managed with a Foley catheter if there is no urinary tract infection. Imaging studies are important. Pelvic fractures especially in MVAs can damage the urethra with resultant strictures, impotence, and other problems can occur. These patients frequently present with blood at the meatus. Retrograde urethrogram is the diagnostic treatment of choice along with CT scans to look for other organ injury. DRE may reveal a “mushy” hematoma and the prostate may be displaced superiorly in the event of complete transection of the urethra. It is important not to force Foley catheters in these patients, or a partial injury may be converted to a complete injury.
CATHETERIZATION INJURIES
These are frequent. It is important in the male to use an adequately lubricated catheter – it may be necessary to squirt surgical lubricant up into the urethra to distract the urethra, flatten out false passages and tears from prior instrumentation and this sort of thing. Reflecting the penis superiorly changes the S-shaped curve to a C-shaped curve. Never force a catheter. There may be temporary resistance at the level of the external sphincter – very gentle pressure will cause relaxation. If the catheter does not pass, further attempts should be discontinued and urologic consultation obtained. It is important in the male to be sure that the catheter is passed all the way up to the point where the “yoke” of the catheter is at the meatus. This insures that the balloon is within the bladder and that it does not get inflated in the prostatic urethra - the latter can result in severe bleeding and a lot of problems. The catheter should be secured so that there is not tension with pressure on the urethra, which could result in a stricture. It can be difficult in females sometimes to locate the meatus – sometime it is recessed. It may take an assistant to retract the labia on either side and provide adequate exposure. A lubricated finger in the vagina can insure that the catheter is in fact in the bladder and not in the vagina.

STRANGULATION INJURIES TO THE PENIS
Foreign bodies are sometimes placed around the penis. Some of these can be difficult to remove in the ER. A bolt cutter can sometimes be used or one of the orthopedic saws containing diamond teeth can cut through these. Sometimes, a hair is found to be wrapped around the distal penile shaft of infants and it can get buried in the skin. It is important to use a magnifying glass or Loupes if there is edema in this area to rule out this entity as it can cause erosion into the urethra and even loss of the glans penis.

PHIMOSIS AND PARAPHIMOSIS
Phimosis is present in many patients who are uncircumcised. If it becomes difficult or impossible to retract the prepuce, these patients should be treated with a circumcision. Otherwise, they can develop a penile carcinoma that is not visible until invasion has occurred necessitating future mutilating surgery. Paraphimosis is more common in patients with catheters in place - can usually be reduced manually. If not, a dorsal slit can be done under a local anesthetic – penile block. It is important to use absorbable suture in suturing any penile lacerations or injuries as it can be very difficult to remove permanent sutures – this is very painful and may require an anesthetic especially in a child.

REFLUX – REFLUX NEPHROPATHY
Vesicorenal reflux is more common in little girls than in boys. It can result in severe renal damage. This usually occurs before the age of 18 months and this was the origin of the term “The Big Bang Theory”. These infants often present to the ER with FUO and it can be difficult to determine what is going on. An infant feeding tube can be used to obtain urine to determine if there is infection in a febrile child.

In general, renal infections are much more apt to present with fever as opposed to bladder infections. Findings in infants are often nonspecific - they cannot communicate and tell us where the pain is.

Diagnosis of reflux is done with a voiding cystourethrogram and antireflux procedures are done when indicated.
PENILE TRAUMA
“Power take off injuries” can occur in males who have loose clothing standing by machinery or equipment that can catch and engage clothing and avulse the skin of the penis and sometimes the scrotum. These are treated in general with skin grafts. Intrascrotal contents are usually not involved. Conservative debridement is done in more severe genital wounds, similar to that for facial and hand trauma.

VARICOCELES
These appear at puberty and they are present in about 25% or so of males. They are normally on the left, but can be bilateral. They may be associated with testicular atrophy – surgery is indicated for those – they may be associated with infertility. Again, these are normally treated surgically. May simply present with some dull discomfort and that is usually relieved by wearing good support type underclothing. Occasionally thromboses can occur - conservative therapy with aspirin and sitz baths usually result in resolution - they do not normally embolize. They can be graded 1, 2, and 3, depending on the severity. Varicoceles normally decompress when the patient is in a supine position. Varicoceles on the right which do not decompress are suspect for vena caval compression from some sort of tumor.

Most varicocele surgeries are done for infertility. They are thought to result in decreased sperm motility, “stress patterns,” and reduction in sperm count. Surgery consists of ligation of these veins – most of this is done currently as microscopic surgery using an infrapubic approach.

HYPOSPADIAS
This is frequently undiagnosed or misdiagnosed in the newborn males. All male infants have prepuce covering the glans normally. If it is not present, there may be hypospadias. All male infants have a dimple in the end of the glans penis caused by an ectodermal plug. Hypospadiac patients have a midline meatus, which is often very tiny, somewhere more proximal - it may be subglandular, along the midshaft, or even further back. The more proximal, the more apt these babies are to present with ambiguous genitalia. It is essential not to circumcise these babies – the perputial skin is used for urethral and penile reconstruction.

Epispadias is much less common and is more readily apparent and can be very challenging surgically.
FEMALE URETHRAL PROBLEMS
The female urethra is subject to estrogenic changes – atrophy can occur postmenopause. These patients can get frequency, may develop bleeding and may develop caruncles - these are small purple colored lesions at 6 o’clock at the meatus which can bleed. They respond to estrogen cream.

Infection of the periurethral glans in females is fairly common. This can usually be detected on pelvic exam as tenderness. It usually responds to antibiotic treatment. Occasionally, women develop urethral diverticula, which can be excised surgically. These may be detected again on physical examination or by imaging studies. Support of the bladder neck in females is not very tight – this is why women can have babies, but it also leads to stress incontinence along with other problems.

Pelvic fractures are less apt to cause urethral trauma in females than in males because of these anatomic differences.

URETHRITIS
Urethritis often is from Chlamydia – sometimes ureaplasma – two weks treatment with Doxycycline or with Cipro is usually effective. G.C. urethritis is becoming more drug resistant – currently Rocephin and Zythromycin are often used.

CONDYLOMA ACUMINATA
Condyloma acuminata are due to HPV viruses. They can be transmitted and are STD’s. Small lesions can be destroyed by fulguration, cryotherapy, chemical obliteration, and some by CO2 laser. Protected intercourse is very important as they can be transmitted back and forth during the healing phase with recurrence. In males, about 6% of the patients have intraurethral involvement. It is usually at the meatus at about 6 o’clock and can be detected by spreading the meatus and close examination. Sometimes, more proximal lesions are present. They can be detected and treated with endoscopy.

GENITAL TRAUMA IN INFANTS:
Genital trauma in infants may be a manifestation of child abuse – it is difficult to get a good history.

FOREIGN BODIES IN THE URETHRA – BLADDER
These are occasionally found. These patients do not always give a reliable history. They can be detected endoscopically or by imaging and removed endoscopically – they sometimes require open surgery.