*SURGICAL ANATOMY OF THE BLADDER*

It is the reservoir of urine lies extraperitoneal in the pelvis, cover by parietal peritoneum on the dome of it, and function for storage of urine and voiding.

• It is lined by transitional epithelium covering the connective

Tissue lamina propria, external to it a smooth muscle (detrusor muscle). Around the male bladder neck is the smooth muscle internal sphincter innervated by adrenergic fibers.

The distal urethral sphincter (external sphincter) is a horseshoe-shaped mass of Striated muscle that lies anterior and distal to the prostate, or, in the proximal two-thirds of the female urethra. It is distinct from the pelvic floor and is supplied by S2–S4 fibers via the pudendal nerve.

***Arteries:***

The superior and inferior vesical arteries are derived from the

anterior trunk of the internal iliac artery. Branches from the

Obturator and inferior gluteal arteries (and from the uterine and vaginal arteries in females) also help to supply the bladder.

***Veins:***

The veins form a plexus on the lateral and inferior surfaces of

the bladder. In the male, the prostatic plexus is continuous with

the vesical plexus, which drains into the internal iliac vein. In

the female, similar large veins are continuous with the vaginal

Plexus.

***Lymphatics:***

To nodes along the internal iliac vessels and then to the obturator and external iliac chains. Some lymphatics pass to nodes that are situated posteriorly to the internal iliac artery (hypogastric nodes).

***INNERVATION:***

The parasympathetic input: mainly through S2 and S3.

The pelvic plexus can be damaged during deep pelvic operations.

The sympathetic input:arise from T11-L2

Somatic innervation:only to external sphincter through pudendal N. ,and fibers that pass through the inferior hypogastric plexus

***That’s mean the whole urinary bladder with internal sphincter autonomic supply, only the external sphincter motor supply.***

***CONGENITAL DEFECTS OF THE BLADDER***

***Bladder exstrophy:***

Clinical features:

Bladder exstrophy occurs in 1:50 000 births (male–female ratio

4:1), In the male, the penis is broad and short, and

Bilateral inguinal hernias may be present. There is separation of

the pubic bones .although in the female the clitoris is bifid.

Treatment:

The bladder should closed surgically in the first year of life, in one stage ,may followed by bladder neck reconstruction for continence , may need augmentation of bladder, because it may be very small ,some time, urinary diversion can be carried out.

BLADDER TRAUMA (Bladder rupture):

Two type:

\* ***intraperitoneal*** (20 per cent)

\****extraperitoneal*** (80 per cent)).

***Intraperitoneal rupture*** is usually secondary to a blow or fall on a distended bladder,

More rarely to surgical damage.

While ***extraperitoneal rupture*** is caused by blunt trauma or surgical damage, mostly associated with pelvic bone fracture, it may be similar to post. Urethral injury.

Gross hematuria can be absent. It may be difficult to distinguish extraperitoneal rupture from rupture of the post. urethra (membranous urethra).

Intraperitoneal rupture is associated with sudden severe pain in

The hypogastrium, often accompanied by syncope. The shock

Subsides and the abdomen distends and there is no desire to

micturate. Peritonitis does not follow immediately if the urine

is sterile; varying degrees of rigidity are present on exam.

Investigation:

Computed tomography (CT) with contrast is ideal. Plain erect x-rays may show a ground-glass appearance (fluid). Intravenous urography (IVU) may confirm a leak. Retrograde cystography will confirm the diagnosis. It is important to image the patient after drainage of contrast as the full bladder may mask extravasation

Bladder trauma Intraperitoneal or extraperitoneal

­ suspected if there is trauma and damage to the pelvis.

***Treatment***:

Intraperitoneal rupture: need surgical intervention by laparotomy should be performed; to repair the bladder

A suprapubic and a urethral catheter are place. Laparoscopic

Approaches are also now being used.

Extraperitoneal injury: may need drainage by folly’s if mild or exploration and suprapubic drainage with or without urethral catheterization.

***Injury to the bladder during operation***:

The bladder may be injured in:

(1) Inguinal or femoral herniotomy;

(2) Hysterectomy;

(3) Excision of the rectum.

If the injury is recognized, the bladder must be repaired, with catheterization maintained for 7-10 days.

If it is not recognized, the treatment is similar to that of rupture of the bladder by exploration and repair.

When accidental extraperitoneal perforation of the bladder,

Occurs during endoscopic resection: urethral catheter and the administration of antibiotics usually suffice. If a mass of leaked fluid is present it is best to place a small drain through a stab incision. Laparotomy will usually be required if an intraperitoneal perforation is caused by transurethral resection.

***So in Summary:***

***Management of bladder trauma***

***­ Extraperitoneal injury – catheter drainage for 10 days***

***­ Intraperitoneal injury – laparotomy, repair and bladder***

***Drainage.***

***URINE RETENTION:***

***1. Acute retention:***

It is inability to pass urine and inability to do so (mean full bladder and can’t pass urine) There are many possible causes of acute retention of urine,

In Male:

­ Bladder outlet obstruction, mostly by prostate enlargement (the commonest cause)

­ Urethral stricture

­ Acute urethritis or prostatitis

­ Phimosis

In Female:

­ Retroverted gravid uterus

­ Bladder neck obstruction (rare)

Both (male and female):

­ Blood clot

­ Urethral calculus

­ Rupture of the urethra

­ Neurogenic (injury or disease of the spinal cord)

­ Smooth muscle cell dysfunction associated with ageing

­ Faecal impaction

­ Anal pain (haemorrhoidectomy)

­ Intensive postoperative analgesic treatment

­ Some drugs: as anticholinergics, antidepressant…..

­ Spinal anesthesia

***Clinical features:***

• No urine is passed for several hours.

• Pain is present.

• The bladder is visible, palpable, tender, and dull to percussion.

• Potential neurological causes should be excluded by checking

Reflexes in the lower limbs and perianal sensation.

***Treatment:***

Treatment is to pass a fine urethral catheter suitable size for age (14F – French gauge as average for adult, and arrange urological management. Occasionally, in postoperative retention a warm bath can help.

***Urethral catheterization***:

After consent of the patient or the relative, take the patient in isolated room, and if female better to accompanied by her relative or nurse, following a thorough hand wash, sterile gloves are donned. The genitalia are cleaned using soapy antiseptic. Lignocaine gel is inserted into the urethra, warning the patient that this may create stinging. The jelly should be massaged posteriorly in an attempt to anaesthetize the sphincter region. An appropriate size Foley catheter should be passed while the penis is held taut. In a female patient, the labia should be parted using the middle and index fingers of the left hand, which should not be moved once cleaning has been performed. The catheter should pass freely. Once urine begins to drain, it is wise to pass a few more centimeters of catheter into the bladder before the balloon is inflated to avoid inflation in the prostate. Force must not be used

Following catheterization, Record the volume of urine drained

­ Examine the abdomen to exclude other pathology (rupture

of an aortic aneurysm, ureteric colic or diverticulitis can

Cause confusion).

If the catheter will not pass, it is usually due to poor technique,

lack of anesthesia, traumatization of the urethra or a urethral

Stricture. Occasionally, a large prostatic middle lobe may

Prevent the catheter entering the bladder. If a catheter cannot be passed the following plan should be pursued.

\*Suprapubic puncture

\*If these devices are not available, a catheter can be placed in

The bladder under direct vision through a small incision under

Local anesthesia (formal).

\*Urethral instrumentation, especially for patient with urethral stricture.

***Chronic retention:***

In chronic retention there is no pain. There is residual urine in the bladder 150-200ml of urine these patients are at risk of upper tract dilatation because of high intravesical tension, may with renal impairment.

They require urgent urological evaluation.

Such patient need careful monitoring, they are also at risk of hematuria as the distended urinary tract empties rapidly ***so it is advised to evacuate the bladder gradually or slowly***.

The patient, may present with overflow incontinence. Also there is high incidence with upper tract infection that decrease by using catheter.

Acute retention due to drugs:

A number of drugs can induce retention, including antihistamines, Anti-hypertensive, anti-cholinergic and tricyclic antidepressants.

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