INTRODUCTION

Cancer bladder is the most common malignant tumor **amoung** our egyptian patients. The operation of total radical cystectomy which is done for these patients is followed by some sort of diversion of urine.

Since our patients (most of them) come from rural areas and they have no facilities for taking care of their diversions , rectal bladder is found to be the most suitable method of diversion, (El-Sebai and Ghoneim.,1983).

Aim of work:-

Some patients in the immediate post-operative period complain from passage of mucous like discharge with the urine, but when following up such cases it is usually noticed that the amount of mucous like fluid begins to decrease gradually and in the majority of cases it disappears completely after a variable time to an extent that the patient himself stated that no mucous passes with the urine.

Our aim in this study is to identify pathological changes in the mucosa of the rectum which may accompany this phenomenon in its different stages.

ANATOMY OF THE URINARY BLADDER

Gross Appearance:-

The urinary bladder is a musculo membranous sac that serves as a receptacle for urine. Its shape; size and position depend on the following factors: age, sex, the amount of urine it contains, and the size of the uterus and rectum.

Internal Appearance:-

Internally, the bladder in both sexes and at all ages is a closed sac except for two ureteral openings and one urethral opening. These three ostia are situated in the inferior and posterior portions of the vesicle, where they form a small triangular area called the "trigone". The anterior angle of the trigone is represented by the urethral orifice and the two posterolateral angles by the ureteral orifices. A ridge-composed of mucosa covering a muscle band called the "torus uretericus" or "interureteric ridge" - stretches between the two ureteral orifices. Lateral continuations of this ridge-produced by the terminal portion of the ureters-form the plicae uretericae.

The ureteral orifices are slit, like in form, when the bladder is contracted, they are separated from each other and from internal urethral orifice by a distance of 2.5 cm.; but when the bladder is distended may measure 5 cm. The internal urethral orifice is crescntic in form and located in the most dependent portion of the bladder. Just proximal to it, in the male, there is a slight elevation produced by the middle lobe of the prostate that is called the "vesical uvula", in the trigonal area; the mucous membrane is closely attached to the underlying muscle and is always smooth. Elsewhere it is loosely attached, smooth when the bladder is distended and wrinkled when the bladder is contracted.

Microscopic Appearance:-

Histologically the bladder consists of four layers from within out - mucosa, submucosa, muscle, and serosa:-

The mucosa is composed of transitional epithelium and generally is six to eight cell layers thick.

The submucosa, it is a well-developed layer formed largely of connective and elastic tissues.

The muscle of the bladder is of an unstriped or smooth variety. It consists of loose anastomosing strands separated by bundles of connective tissue and elastic fibres which are continuous with those of the tunica propria. Although not distinctly lamminated, the muscles can nevertheless, be divided into three distinct coats - inner longitudinal, intermediate circular, and outer longitudinal.

The serosa is derived from the peritoneum and therefore, it does not form a complete investment. It covers only the superior surface and the superior portions of the lateral surfaces, hence it is reflected onto the abdominal and pelvic walls.

Bladder Body:-

The smooth fibres of the bladder body were described to be arranged into three layers, an external longitudinal, a middle circular and an internal longitudinal layers. (Donker, Droes and Ulden.,1976).

As early as 1891, Griffith denied the existence of separate strata and described the muscular bundles as running from plane to another and to become circular and

oblique in the region of the bladder neck. Hunter (1954) also noted this decussation. Woodburne (1960) described the muscular wall of the bladder as a meshwork. It may be concluded that in the body of the urinary bladder, muscle fibres are intermingled and the muscular wall of the bladder may be considered as continoum of smooth musculature, the vesical detrusor.

The Bladder Base And The Bladder Neck:-

The bladder base in the following discussion means the distal one inch of the bladder just above the bladder neck and the trigonal structures together with the proximal urethra.

The presence and the structure of a bladder neck sphincteric mechanism have been a matter of confusion and debate over the years. On one hand, some authors described the presence of a definite sphincteric muscle that completely surrounding the bladder neck (Unlenhuth et al.,1953). Others deny the presence of a specialized sphincter and consider the continence is maintained simply by direct continuation of detrusor muscles into the urethra (Griffiths 1891, Lapides 1958). Woodburne (1960) was in agreement with this latter

group and stressed the significance of dense elastic fibres present in the area of the bladder neck. The third group believes in the presence of a complex sphincteric mechanism composed of loops and arcs oriented in different planes around the posterior urethra. (Tanagho and Smith 1966, Gill Vernet 1968, Hutch 1972, Donker and Van Ulden1976). These authors agree on the broad outline of muscle arrangement but differ in the details of anatomical structure and more apparently on the embryological origin of this urethral sphincter. While some consider them as direct continuation of the detrusor (Tanagho and Smith,1966) others consider them as entirely independant muscular structures (Donker, Droes and Van Ulden 1976).

As the detrusor approaches the urethra, its fibres become more prominently arranged into 3 layers, an inner and an outer longitudinal and a middle circular layer.

The inner longitudinal layer is in direct continuation with the superficial trigone. The middle circular layer stops at the inner urethral orifice, becomes markedly thickened forming a ring which was described by Heiss (1915) as Heiss ring and then Ulenhuth and associates (1953) as the Fundus ring. Hutch (1972) included it as the anterior part of the base plate.

The outer longitudinal layer is more complex. Its anterior part is inserted into a fibromuscular structure that Gil Vernet (1968) called the transverse precervical arc. The posterior segment was devided into 3 parts , a median group and 2 lateral groups (Tanagho and Smith 1966. Hutch 1972 and Donker, Droes and Val Ulden 1976). The median group inserts into the apex and posterior surface of the deep trigone, while the 2 lateral groups form loops then run ventrally around the urethra. These loops were first described by Heiss (1915) as the detrusor loop and were later emphasized by Tangho and Smith (1968) Hutch (1972) and Donker, Droes and Van Ulden (1976).

Smooth Muscles Of The Female Bladder Neck And Urethra:-

As in the male, the musculature forming the detrusor in the female is morphologically distinct from the smooth muscles within the wall of the bladder neck and urethra. However, marked sex differences do exist concerning the orientation of this bladder neck smooth muscles (Goslin 1979). Thus, unlike the arrangement in the male, a well defined circular component is absent from this region in the female. The bladder neck and urethral smooth muscles consist of small bundles which run an oblique or longitudinal

course in the urethral wall. Traced distally, this muscle coat fades out in the connective tissue surrounding the external meatus. Clearly, this arrangement does not support the view that the female possesses a powerful sphincteric muscle mechanism located in the region of the bladder neck and proximal urethra; however since the normal female urethra is unequivocally water tight in this area, it seems that other tissues such as striated muscles, elastic tissues and even a vascular component must contribute to the functional competence of the bladder neck (Turner-warwick,1979).

The Trigone:-

Superficial trigone:-

The superficial trigone lies in the floor of the bladder in the triangular area between the two ureteral orifices and the urethral orifice. Bell's muscle forms its lateral border and Mercier's bar forms its superior. It lies on the deep trigone and directly under the bladder mucosa at a level corresponding to the inner longitudinal layer, to which it is fused along its superior and lateral border. It is a thin structure and near the bladder neck it is adherent to the mucosa and the deep trigone. It crosses

the bladder neck and continues into the urethra as the crista urethralis . Near the ureteral orifices the superficial and deep trigones dissect easily from each other, so that for a distance of about 1 to 2 cm. Below the ureteral orifice, the lateral border of the superficial trigone (Bell's muscle) lies on but is not connected to the deep trigone. Above the ureteral orifice the superficial trigone acquires a lumen and continues upward as the intravesical and extravesical ureter. It leaves the bladder encased in Waldeyer's sheath (Hutch 1971).

Deep trigone:-

The deep trigone is a tough, thick structure lying in the floor of the bladder in the triangular area between the two ureteral orifices and the bladder neck and at a depth corresponding to the middle circular layer. It lies between the superficial trigone internally and the outer longitudinal layer externally. Laterally, it fuses imperceptibly into the middle circular layer, the smooth muscle rings of which form the fundus ring of the base plate. Tanagho 1963 and Pugh demonstrated that at each craniolateral border, the deep trigone rolled into a tube - Waldeyer's sheath - and that the ureter left the bladder through this sheath.

The studies show that caudally the deep trigone is not limited to the bladder but continues directly across the bladder neck to form the posteror wall of the urethra. It is this continuity between the deep trigone and the wall of the urethra that keeps the urethra firmly attached to the bladder (Hutch 1971).

Arteries:-

The arterial supply of the urinary bladder is derived from the internal iliac artery.

The superior vesical artery arises from the unobliterated portion of the foetal umbilical artery, passes medially to the base of the bladder, connects with the other superior vesical artery and passes down behind the bladder in the lateral true ligaments, anastomosing with branches of the inferior vesical and middle haemorrhoidal arteries.

The inferior vesical arteries arise from the anterior division of the internal iliac. They furnish a constant supply to the inferolateral parts of the anterior surface of the bladder.

The vesiculo-deferential artery usually arises in the angle between the umbilical artery and the terminal part of the anterior division of the internal iliac artery.

This vessel supplies an area on the posterior aspect of the bladder and trigone as well as branches to the vas deferens, seminal vesicle and terminal ureter.

Veins:-

These do not accompany the arteries but drain anteriorly into the pudendal plexus of santorini and the lateral prostato vesical plexus on either side. They eventually empty into hypogastric veins. The vesical veins are arranged into anterior, lateral and postero, inferior groups.

Lymphatics:-

The lymphatics of the bladder drain into the vesical, external iliac, hypogastric, and common iliac lymph nodes.

Innervation of the urinary bladder:-

The principle functions of the urinary bladder are:-

1) Storage of urine.
2) Evacuation of intra-vesical contents by a coordinated series of neural and muscular events.

Storage of urine and micturition require the integrity of a complex nervous control and the processing of signals from almost every level of the nervous system.

Neuro-anatomic pathways:-

Can be divided into:- Central & peripheral.

Central pathways:-

These include frontal lobe centers, the thalamus, basal ganglia, limbic system, the hypothalamus, the cerebellum brain stem reticular formation and the spinal cord.

Peripheral pathways:-

- The hypogastric sympathetic nerves.
- The pelvic parasympathetic nerves.
- The pudendal somatic nerves.

Bladder supports:-

In the male, the bladder is held in position by means ofthe prostate and urethra at the neck, the recto, vesical pouch and seminal vesicles behind, and by the true and false ligaments.

In the female, the fascial support is essentially similar to that of the male. The pelvic fascia forms a hammock, like support to the base and neck of the bladder, with firm fixation of the membranous urethra to the under surface of the symphysis pubis. Posteriorly the bladder recieves support from the utero, vesical pouch.