TUMOURS OF URINARY BLADDER

	Benign	Malignant
• **Epithelial:**	▪ Villous papilloma ▪ Adenoma	▪ Carcinoma ▪ 2ry: From surroundings
• **C.T.:**	▪ Angioma	▪ Rhabdomyosarcoma

Carcinoma of the Urinary Bladder

★ Incidence:

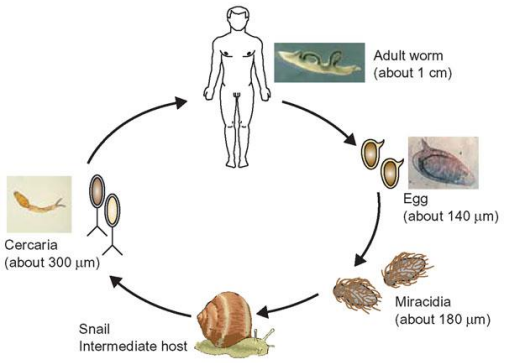
- It is the commonest urological malignancy .
- More common in males (male :female ratio = 4:1) .
- A peak age incidence is 40-60 years .

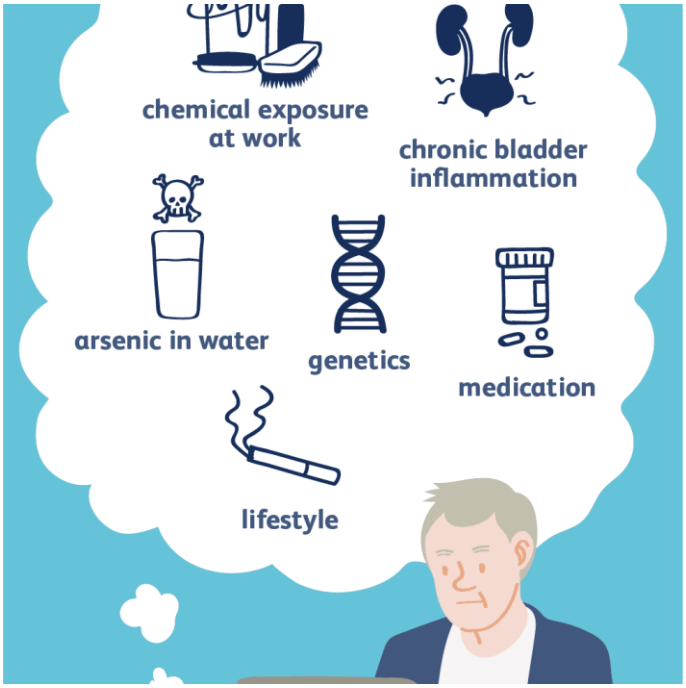
★ Classification:

1. **Transitional cell carcinoma:** (55%) .
2. **Squamous cell carcinoma:** (40%) : This high incidence in Egypt is usually due to Bilharziasis
3. **Adenocarcinoma:** (5%) : usually in the trigone .

	I) Squamous Cell Carcinoma(SCC)	II)Transitional Cell Carcinoma(TSC)
★ **Predisposing Factors:**	**1) Bilharzial SCC**: Only in endemic areas, long standing Bilharzial cystitis which is complicated by secondary bacterial cystitis . **2) Non-Bilharzial SCC :** Chronic cystitis & chronic calcular disease of the bladder	1. Use of **tobacco products is the most important.** 2. Occupational exposure to industrial **carcinogens** in air or water as aniline dye. 3. Pelvic **irradiation** 4. Cyclophosphamide 5.**Genetic** :Somatic mutation in chromosomes 9,11,13 and over expression of epidermal growth factor receptor

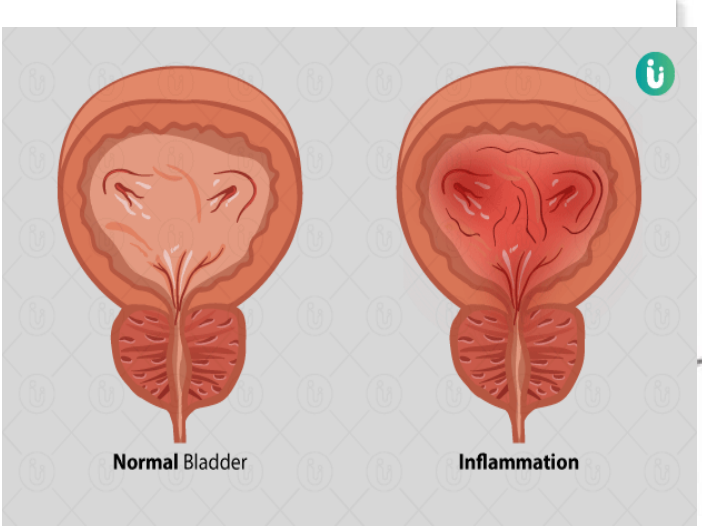
★ **Pathology :** • **Site :**	• Arise in any part of the bladder .	• More common in the trigone .
• **Gross picture**	1-**Nodular** fungating mass is the commonest. 2- Malignant **ulcer** (mention it) 3- **Papillary villous** tumor is rare	1-**Papillary villous** tumour (the commonest) 2- **Nodular** fungating mass or Malignant **ulcer** are rare .
• **Microscopic appearance**	• Masses of central concentric Keratin pearls surrounded by malignant cells called cell nests . • Malignant cells shed in urine & can be detected cytologically in most patients.	• Masses of malignant transitional cells & according to degree of differentiation, it is classified into: ➢ **Grade 1:** Well differentiated. ➢ **Grade II:** Moderately differentiated. ➢ **Grade III:** Poorly differentiated.
• **Associated pathology**	• **Squamous metaplasia** : transitional epithelium is replaced by non keratinizlng squamous epithelium. • **Leukoplakia :** Well defined, thick & raised white patches. There are squamous metaplasia with marked keratinization, cellular atypia & dysplasia. • Usually in endemic areas , there are **Bilharzial lesions** & **Precancerous Bilharzial lesions** (see Bilharzial cystitis) .	a)The epithelium of the bladder may show **carcinoma in situ** as erythematous , oedematous & velvety appearance. b) The tumour in frequently **multifocal.** c) According to **depth** of invasion, TCC is **classified** into: ➢ **Superficial** tumours: There is no muscle invasion. ➢ **Invasive** tumours: There is muscle invasion.

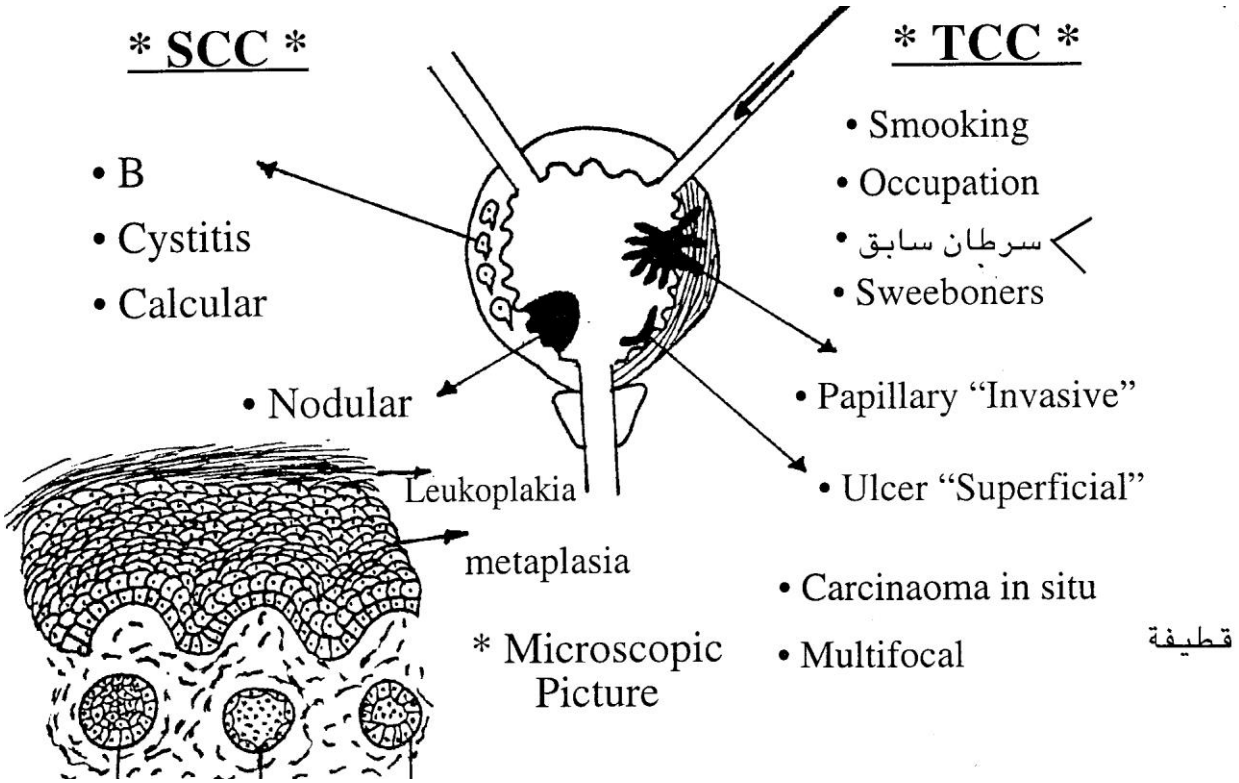

Adult worm
(about 1 cm)
Egg
(about 140 µm)
Miracidia
(about 180 µm)
Snail
Intermediate host
Cercaria
(about 300 µm)

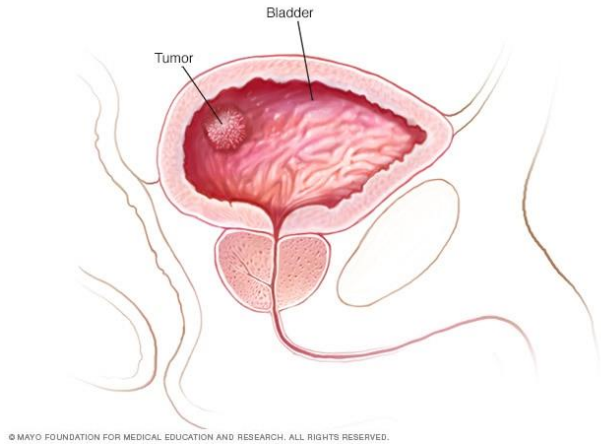

chemical exposure at work
chronic bladder inflammation
arsenic in water
genetics
medication
lifestyle


depositphotos


Industrial Wastewater


Normal Bladder
Inflammation

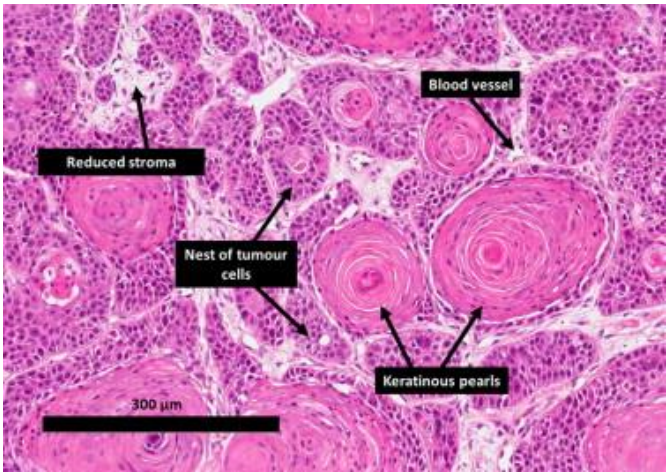


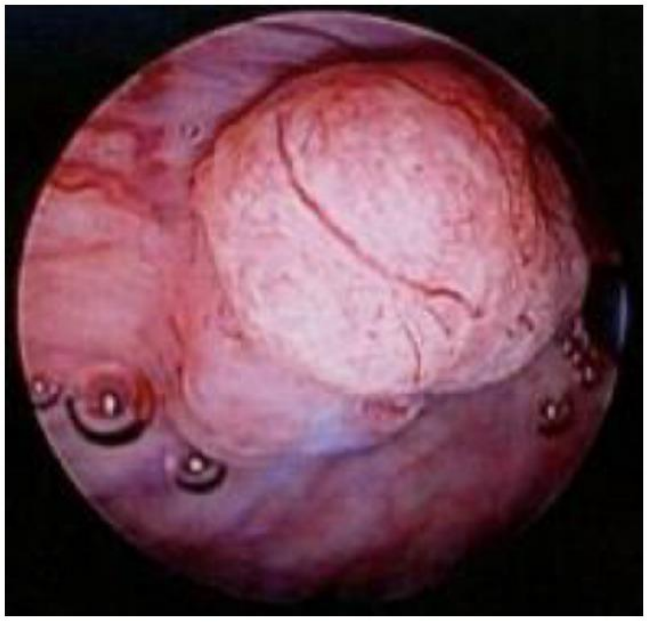


Nodular fungating mass tumour **Papillary villous**

SCC

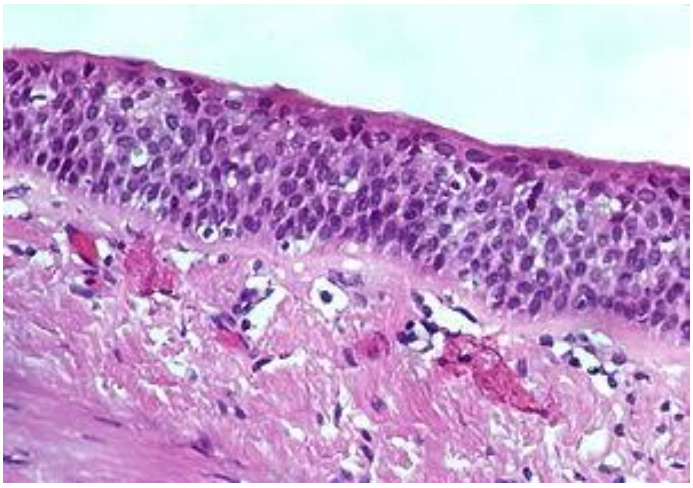
(cell nests and keratin pearls)



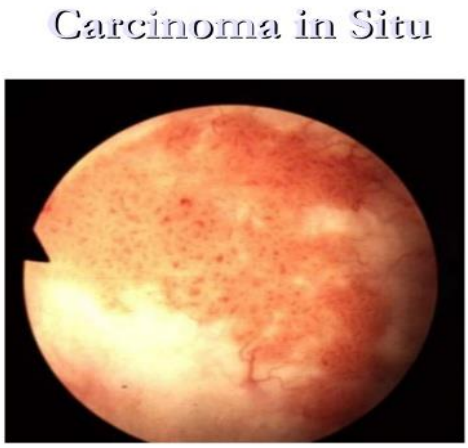


Cystoscopic view show nodular mass malignant ulcer

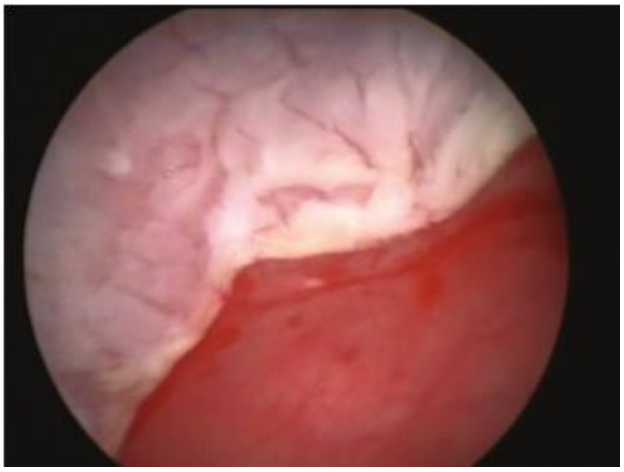
Cystoscopic view show

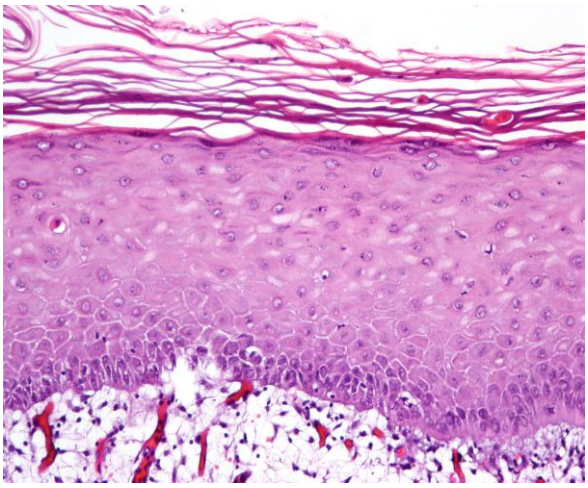


Squamous metaplasia

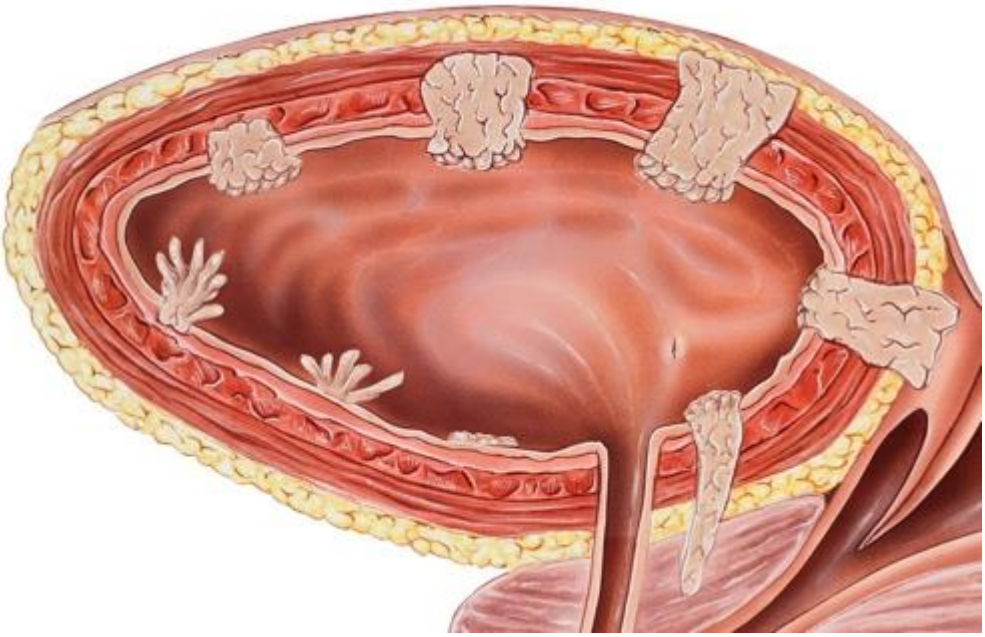


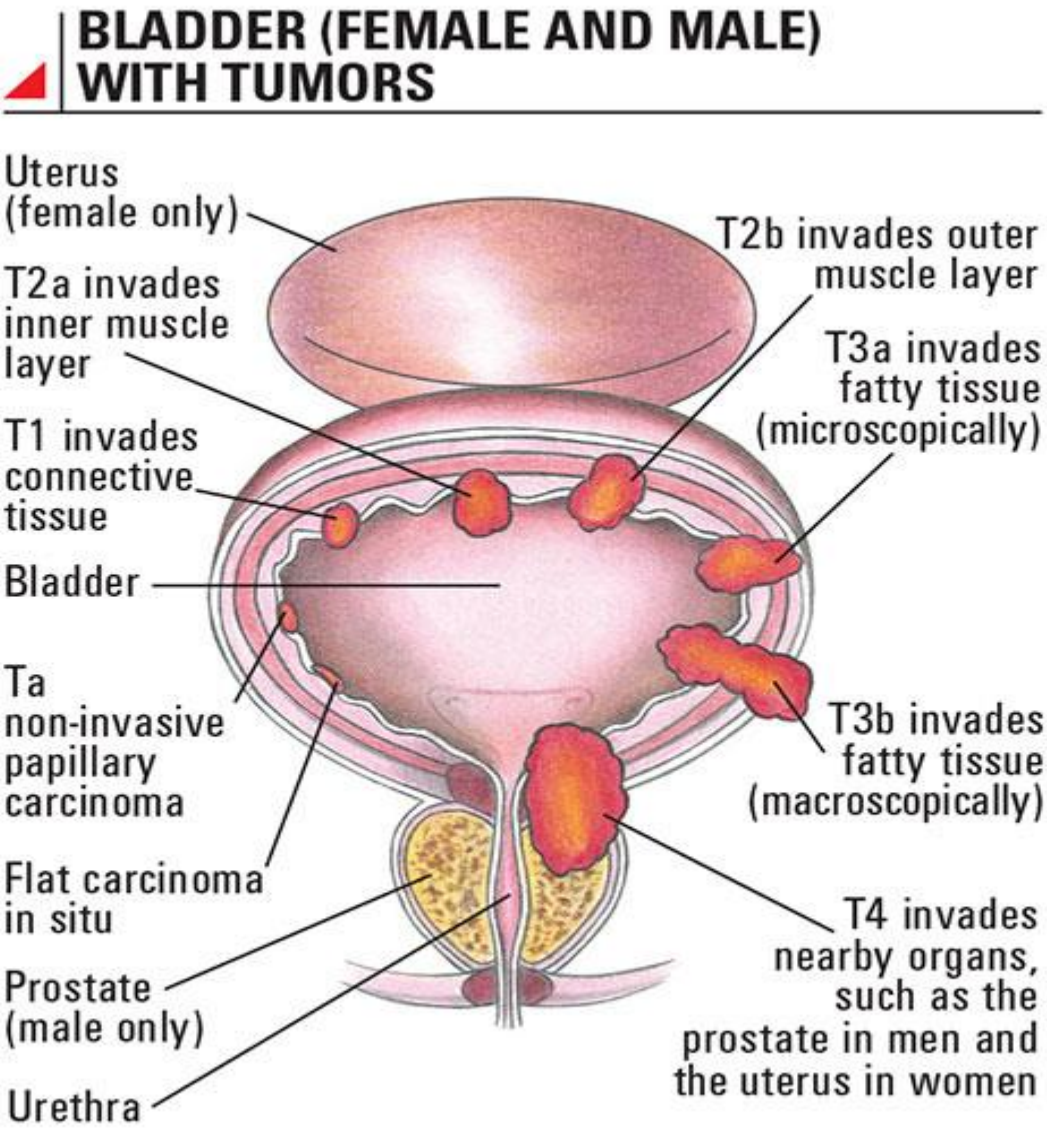
Leukoplakia

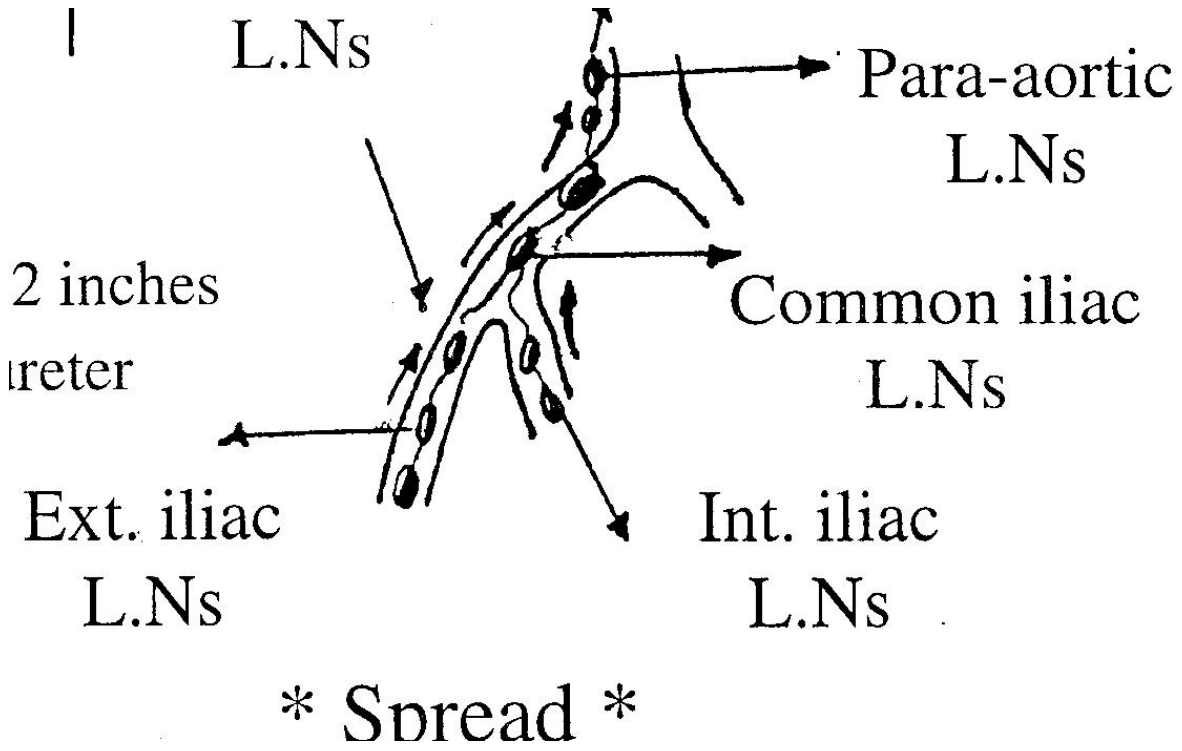




<table>
<tr><td>• Staging</td><td colspan="2">• T : 1ry tumor
-Tis: Carcinoma in situ -T1: invasion of submucosa
-T2a: Superficial muscle invasion. -T2b: Deep muscle invasion.
-T3a:microscopic invasion of perivesical fat .
-T3b:macroscopic invasion of perivesical fat .
-T4a: Invasion of near by organ e.g. prostate.
-T4b: Fixity to pelvic or abdominal wall.
• N : lymph nodes metastases .
-No: no node affection -N1: one node metastasis
-N2:more the one node metastases
-N3 : affection of nodes outside the pelvis (common iliac nodes) .
• M : distal metastasis
-Mo: no distal metastasis - M1: presence of distal metastases</td></tr>
<tr><td>★ Complications</td><td colspan="2"></td></tr>
<tr><td>1- Spread :</td><td>• Usually delayed due to :
➢ Low grade malignancy.
➢ Chronic cystitis → Fibrosis & calcification in the bladder, perivesical tissues, lymphatics & L.Ns and blood vessels .</td><td>• Usually early as it is highly malignant with no previous fibrosis or calcification.</td></tr>
</table>



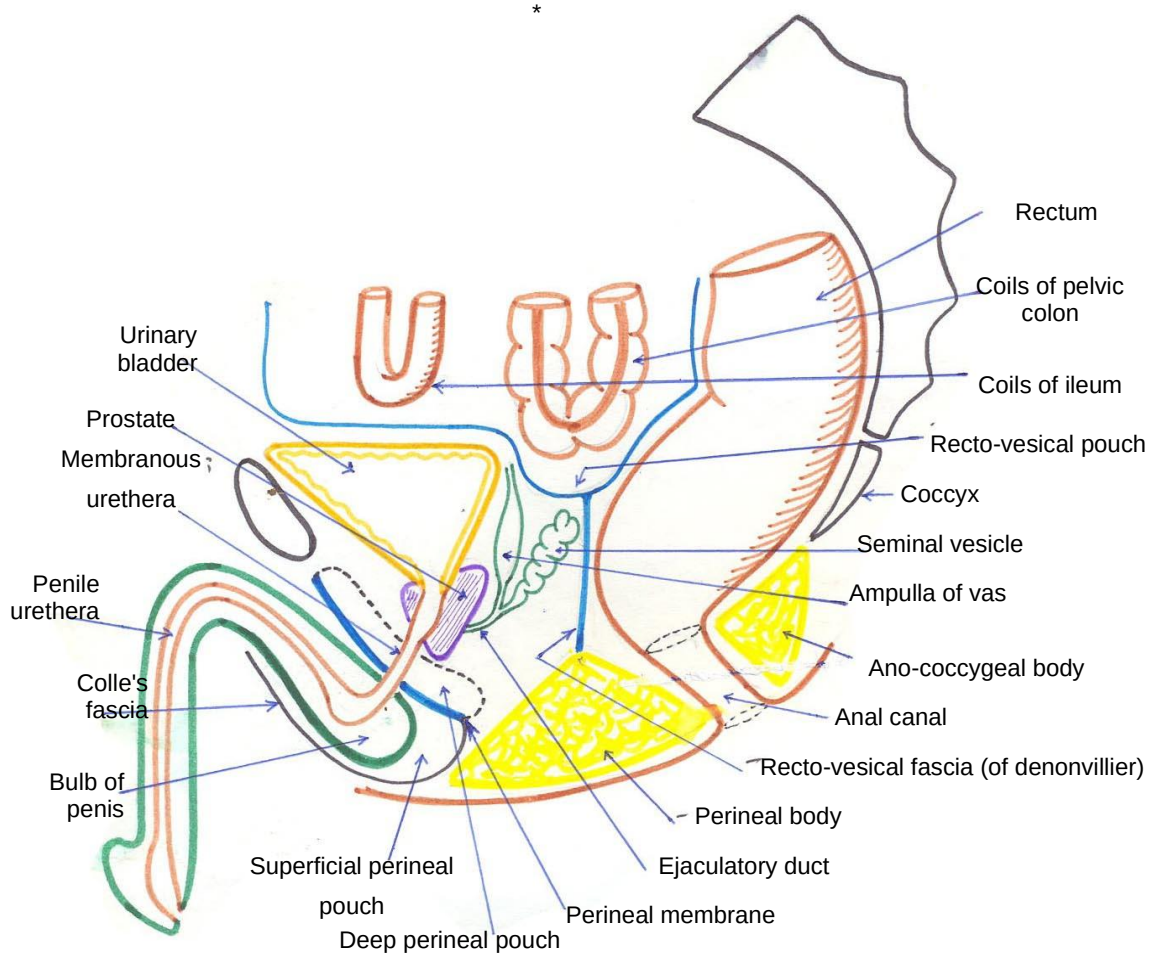

BLADDER (FEMALE AND MALE) WITH TUMORS
Uterus (female only)
T2a invades inner muscle layer
T1 invades connective tissue
Bladder
Ta non-invasive papillary carcinoma
Flat carcinoma in situ
Prostate (male only)
Urethra
T2b invades outer muscle layer
T3a invades fatty tissue (microscopically)
T3b invades fatty tissue (macroscopically)
T4 invades nearby organs, such as the prostate in men and the uterus in women
©Patient Resource LLC

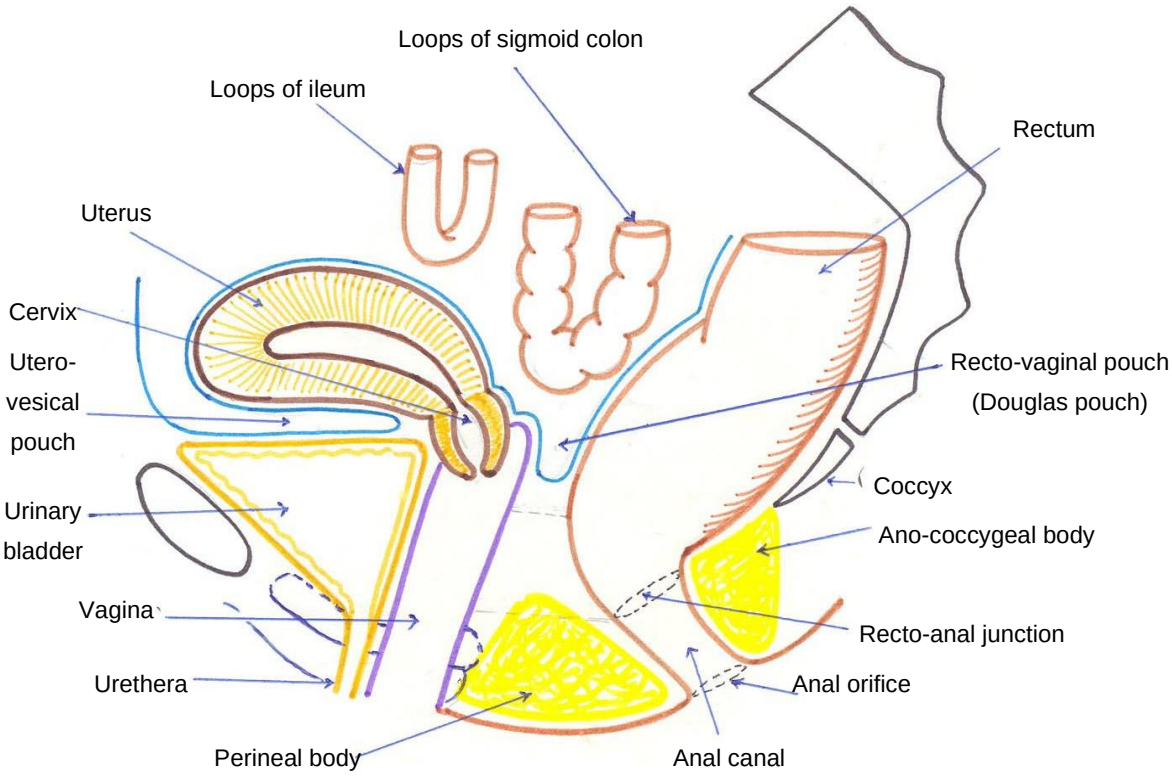


Lymphatic Spread

Sagittal section in Male Pelvis:

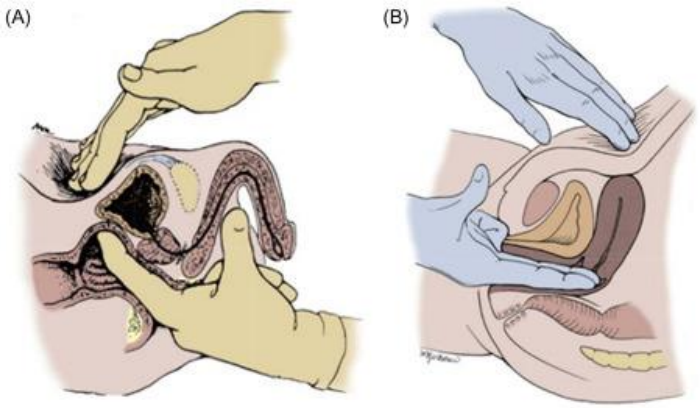
*





<table>
<tr><td></td><td colspan="2">a-Direct spread: surrounding structures e.g to vas , seminal vesicles & prostate in males or to vagina & uterus in females or peritoneum, pelvic wall, rectum and sacral plexus.
▪ Posterior spread to the rectum is delayed in male due to presence of rectovesical fascia .
b- Lymphatic spread: Perivesical L.N → external & internal iliac and obturator L.N.s. → common iliac L.Ns. → para-aortic L.Ns → thoracic duct →Virchow's glands .
c- Blood spread: late , mainly to the bone (spine) , less common to lungs , brain and rarely liver.</td></tr>
<tr><td>2- Obstruction</td><td colspan="2">• Backpressure →hydroureter, hydronephrosis or retention of urine.</td></tr>
<tr><td>3-Infection :</td><td colspan="2">• Cystitis , urethritis , ascending pyelonephritis → renal failure</td></tr>
<tr><td colspan="3">4- Haemorrhage → haemturia , anaemia , cachexia and death</td></tr>
<tr><td rowspan="3">★ Clinical Picture:</td><td>• Gradual onset.</td><td>• Rapid onset.</td></tr>
<tr><td>• The earliest presentation is recent aggravation of chronic cystitis (suprapubic pain, frequency, dysuria i .e painful buring urination , pyuria).
• Recurrent attacks of painful haematuria.</td><td>• Cystitis is late due to secondary infection of the tumor .
• Painless haematuria is the earliest symptom which may be continuou or intermittent.</td></tr>
<tr><td colspan="2">• Necroturla: The urine contains necrotic whitish shaggy tissues
• Pain: in advanced cases due to :
1. Dull aching suprapubic pain due to cystitis
2. Sciatica due to infiltration of the sacral plexus.
3. Deep seated pelvic pain due to infiltration of the surrounding.</td></tr>
</table>

	4. **Renal** pain or colic due to hydronephrosis , pyonephrosis or pyelonephritis. 5. Pain **referred to** the urethra, perineum, anus, groin and thighs due to infiltration of sacral plexus or obturator nerve. • **Examination:** **a. General:** May show manifestations of uraemia , metastasis (mention), anaemia & cachexia. **b. Abdominal:** May show renal mass (hypdronephrosis or pyonephrosis) or suprapubic mass. **c. Bimanual examination:** May show hard irregular ill-defined mass, size , extent and mobility of tumor.
★ **Investigations**	**1- Urine examination:** a. The urine may show haematuria, necroturia, pyuria, offensive odour b. Urine cytology may show malignant cells. c. Culture and sensitivity is essential. **2- Renal function tests:** impaired in late cases **3- Plain X-ray:** Only in Bilharzial carcinoma, there is erosion of Bilharzial bladder calcification opposite the tumour. **4-Ultrasonography** (External abdominal & pelvic , transrectal , transvaginal or transurethral) . **5-I.V.U.:** Shows irregular filling defect in the urinary bladder. **6. Ascending cystography:** Done if the renal function is impaired, it shows irregular filling defect. **7- C.T. scan is** very important to detect the depth of invasion of primary tumour , affection of L.Ns , accurate staging . **8-Cystoscopy and Biopsy: The most important investigation ,** visualizes the tumor as an irregular mass with ulcers. 9- Investigations to detect **metastases:** (see cancer breast). **10. General assessment** of the patient before operation: HB%, E.C.G. ....etc.



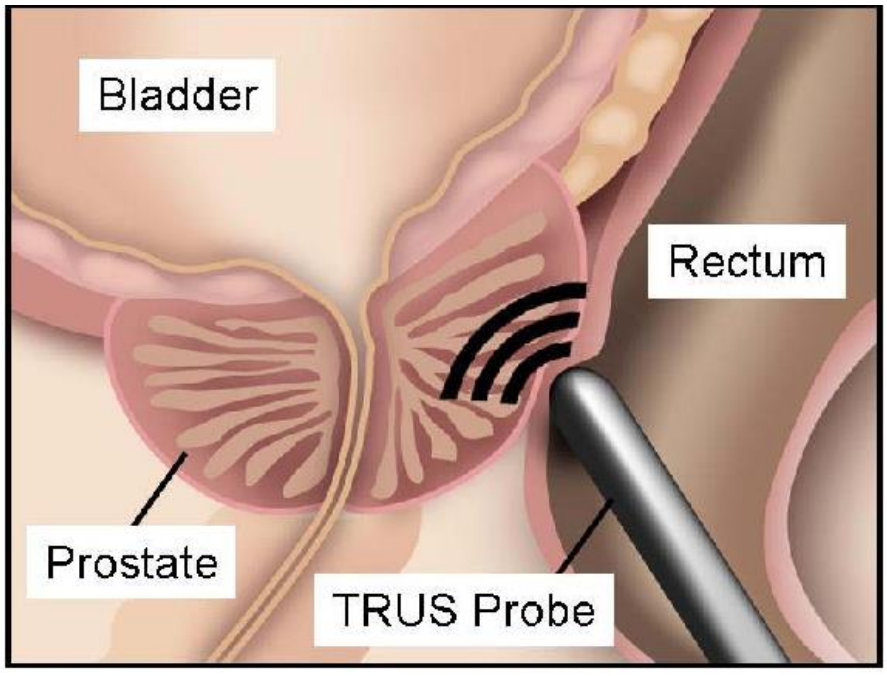
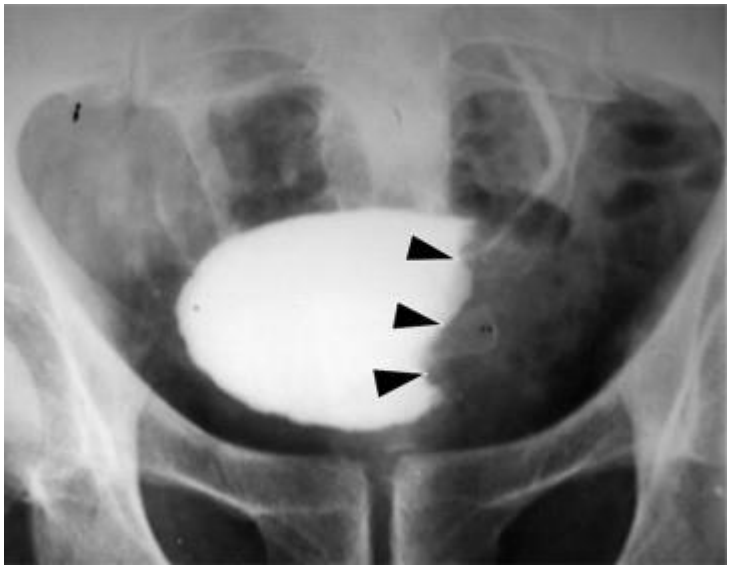
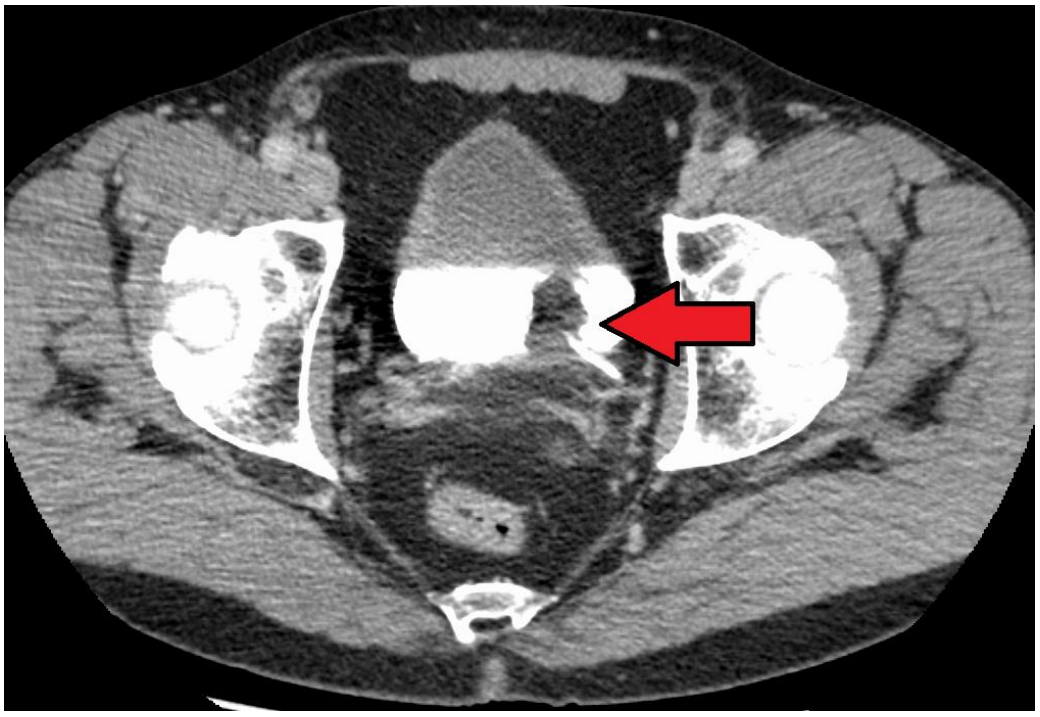
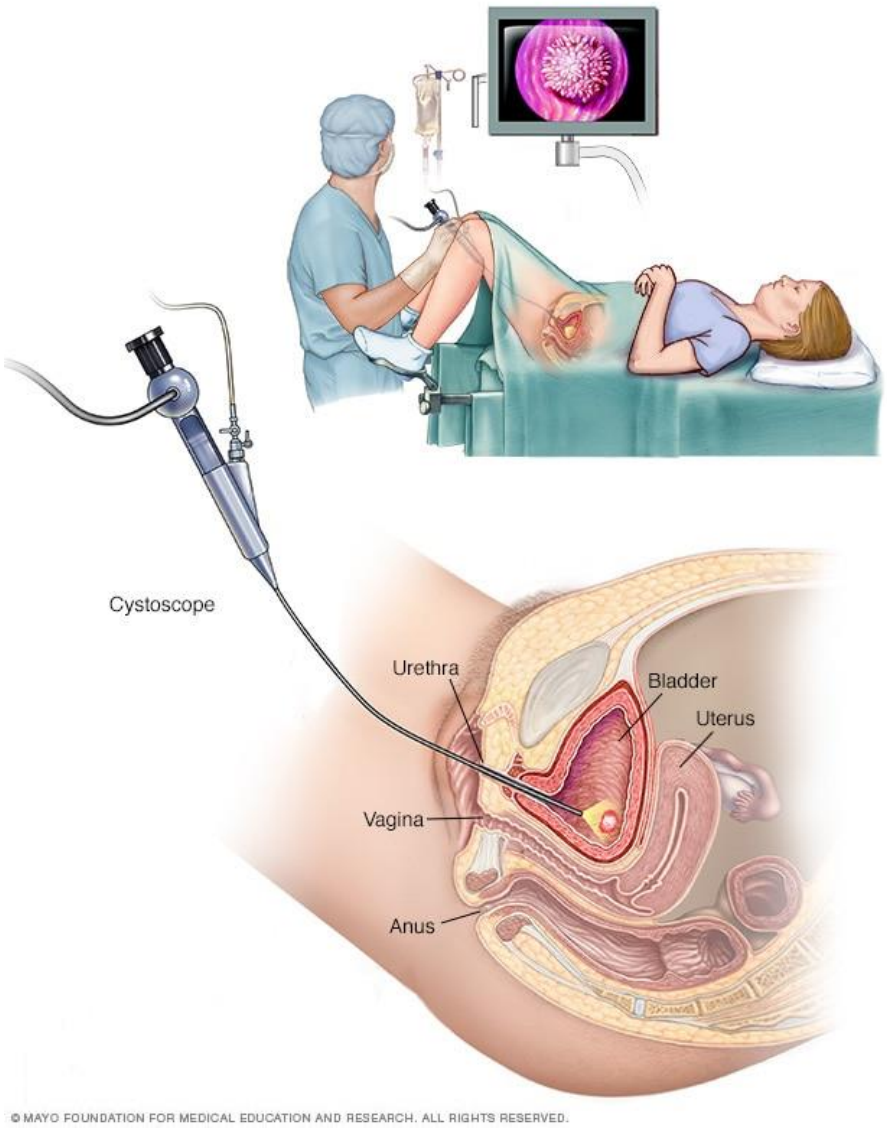


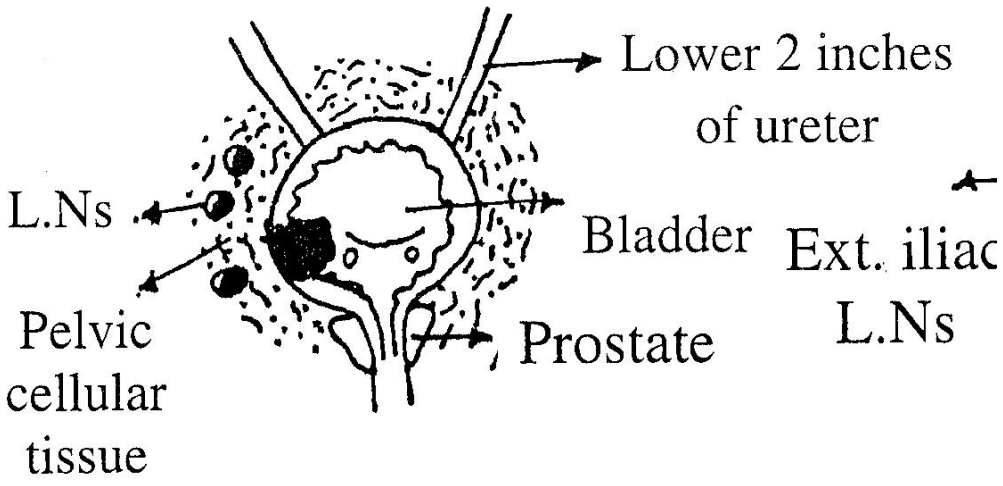
Fig. 1. Transducer placement during transrectal ultrasound (TRUS

Figure 68-22 Bilharzia. Bladder calcification.



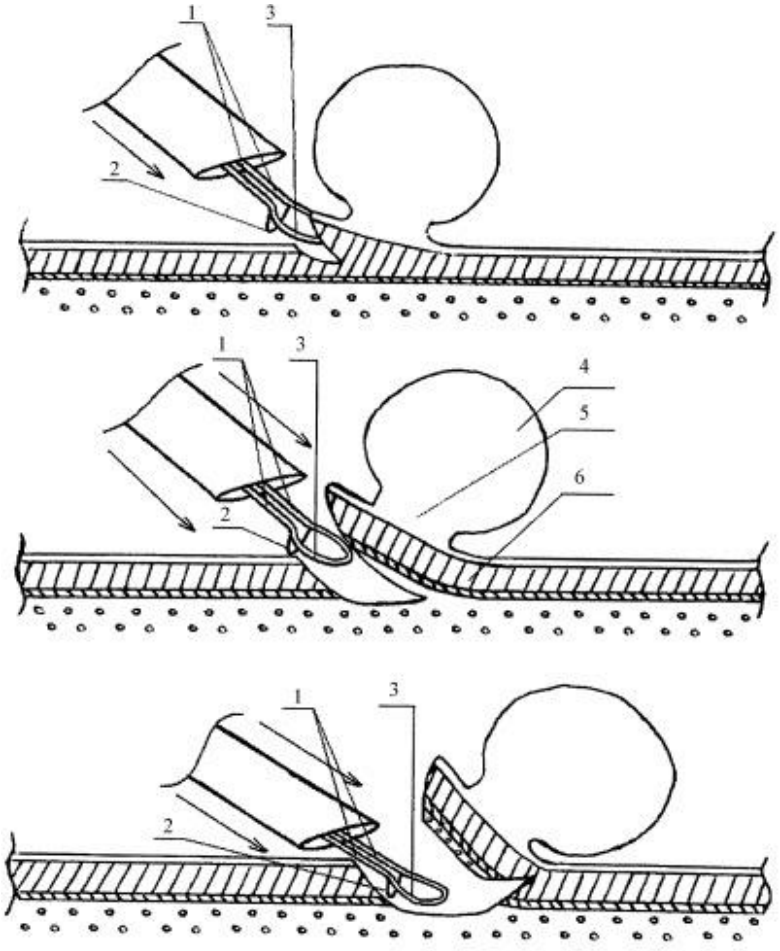






*** Total Radical cystectomy ***

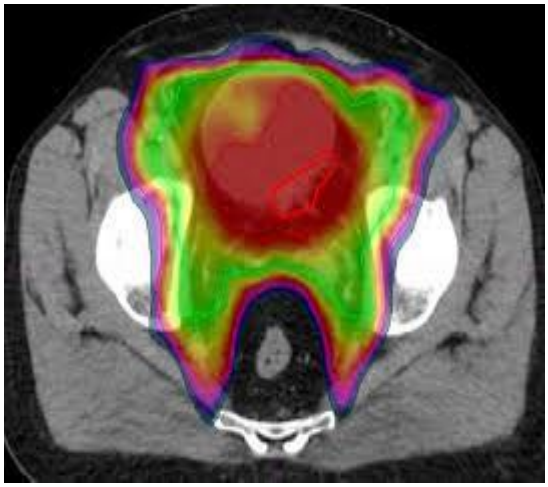
TUR



ФИГ. 1

<table>
<tr><td colspan="3">★ D.D : Other causes of haematuria.</td></tr>
<tr><td>★ Prognosis :</td><td colspan="2">• Better in TCC due to early diagnosis .</td></tr>
<tr><td>★ Treatment</td><td colspan="2">I) Operable cases :</td></tr>
<tr><td></td><td colspan="2">• Features :Mobile tumor , localized to bladder , no distal metastases
• Methods :</td></tr>
<tr><td></td><td>▪ Total radical cystectomy for all cases of SCC which is resistant to chemo & radiotherapy and usually associated with cystitis , ureteric stricture, contracted bladder & BNO.
▪ Removal of the bladder with the overlying peritoneum, perivasical fat, lower 2 inches of ureters, prostate , seminal vesicles & obturator , internal & external iliac L.Ns.
▪ In females, remove the uterus, the tubes & the anterior vaginal wall.
▪ Urine diversion is</td><td>A) Superficial tumours: (no muscle invasion i.e Tis or T1)
1-Endoscoptic transurethral resection (TUR) of the tumour with underlying muscle with multiple randum biopsies , to exclude multicentric tumours, followed by regular cystoscopic follow up for 5 years to detect any recurrence .
2- Endoscoptic transurethral laser ablation therapy .
3- Post-operative intravesical chemotherapy & immune-therapy (BCG) to prevent recurrence
4- Total radical cystectomy (as before) with urine diversion
▪ Indications: Repeated recurrence
B) Invasive Carcinoma: (muscle invasion occurs).
1- Total radical cystectomy:</td></tr>
</table>

	then performed	• **Indications:** a- It is the treatment of choice in invasive carcinoma. b- Associated chronic cystitis or B.N.O ***2- CT scan guided radiotherapy:*** is inferior to surgery. • **Indications :** patients unfit or . patient refusing surgery . • **Advantage:** Bladder sparing with no need for urine diversion .
	II) Inoperable cases : • **Features :** fixed tumor or distal metastases • **Methods :** 1-**Palliative cystectomy** if the condition allows. 2- **Palliative Endoscoptic transurethral laser ablation therapy** 3-**Palliative diversion of urine**: If there is BNO. 4- **Palliative radiotherapy & chemotherapy**: for TCC only	



•Methods for urine diversion after total cystectomy:

1-Continent orthotopic urine diversion:

- **Method :**
  - A segment of the intestine (ileum or colon) is mobilized with its blood supply intact and change it configuration from a tube to a sac to store urine .
  - The ureters are implanted in one end and the other end is anastomosed to the urethra.
- **Indication :** Nowadays , it is the standard urine diversion whenever possible as the patient is continent and it preserve normal pattern of urination .

2-A **continent cutaneous urine diversion:** is also called a continent diversion with catheterizable cutaneous stoma.

- **Method :**The surgeon creates a pouch using ileocaecal region . The pouch is attached to a stoma is made in the skin . Urine is drained from the pouch by inserting a tube into the opening every 4 to 6 hours.

3- Ureterocolic implantation:

- **Method :**The ureters are implanted into sigmoid colon.
- **Advantages:** The patient is continent, simple and rapid.
- **Disadvantages:** Ascending infection, impairment of renal function, hyperchloraemic acidosis, hypokalaemia & predispose to cancer colon .

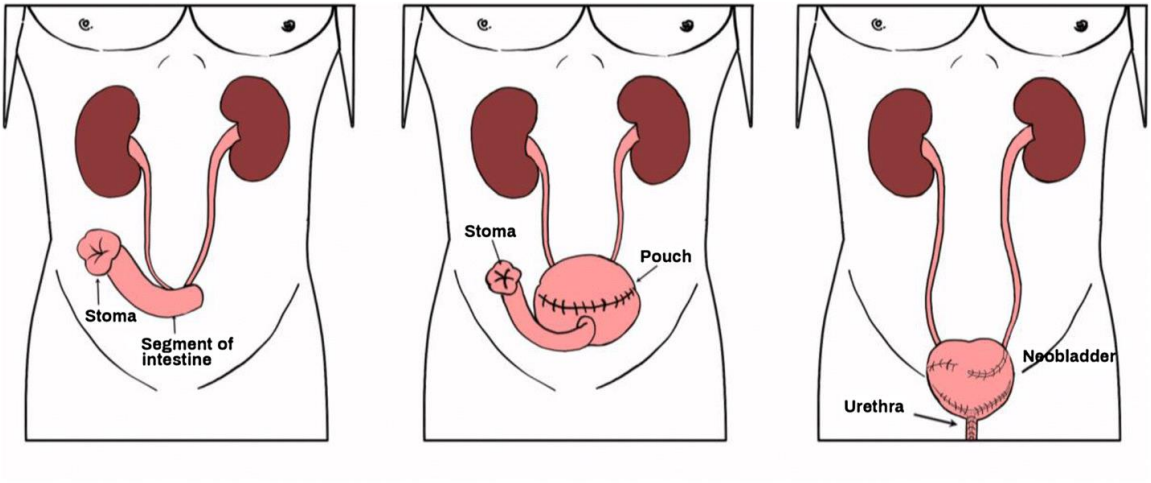
3- Rectal bladder:

- The rectosigmoid junction is divided, its proximal end is brought out as a colostomy and the ureters are implanted in the distal part thus urine comes from the anus under control of anal sphincter.
- **Advantage:** Easy & the patient is continent for urine.
- **Disadvantage:** Presence of colostomy.

4- Ileal or colonic conduit:

- **Method :** A loop of ileum or sigmoid colon is mobilized with its blood supply intact , the ureters are implanted in the loop then one end of the loop is closed & the other end is brought out on the skin with ostomy appliance to collect urine .

- **Advantage :** Ascending infection & deterioration of renal function is less than ureterocolic implantation .
- **Disadvantage :** The patient is incontinent .



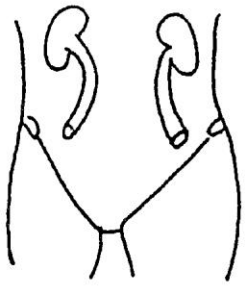
ILEAL CONDUIT (incontinent diversion to skin)

CONTINENT CUTANEOUS RESERVOIR (continent diversion to skin)

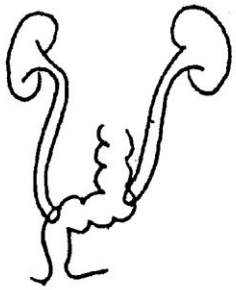
ORTHOTOPIC NEOBLADDER (continent diversion to urethra)

27

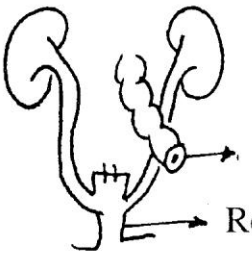
* Urine Diversion *



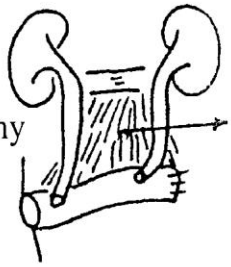
• Ureterocutaneous



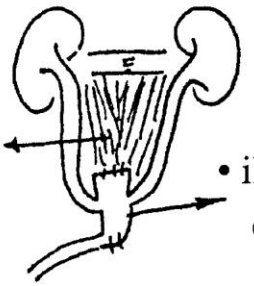
• Uretero-Colic implantation



• Rectal Bladder



• Ileal Bladder



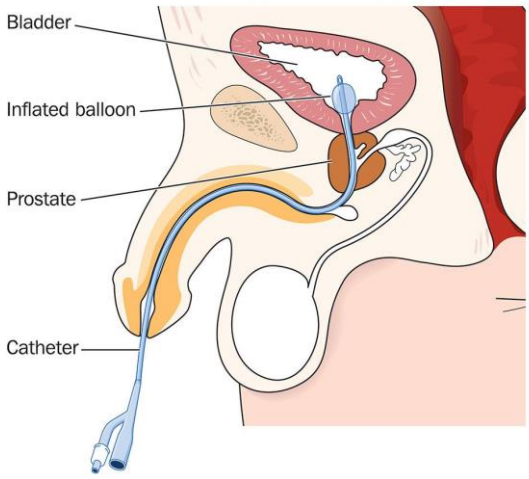
• Continent Urine Diversion

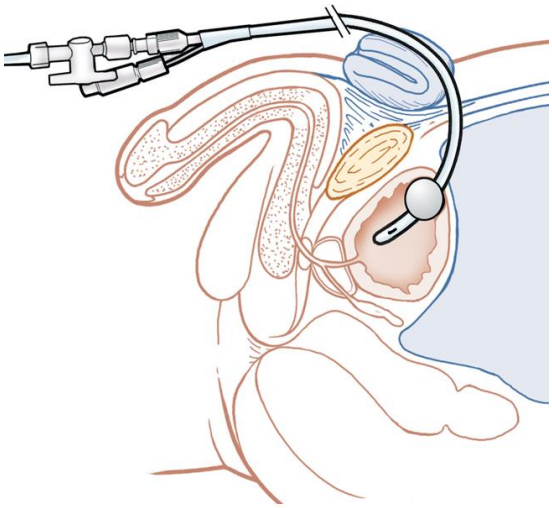
- **Other methods of urine diversion not used after cystectomy :**

1-Ureterocutaneous implantation: not performed nowadays.

- **Disadvantages:**
  - Sloughing of ureter proximal to stoma.
  - Continuous soiling with skin excoriation & ammoniacal odour.
  - Ascending infection with impairment of renal function.
  - Stricture formation.

2- Urethral catheterization , suprapubic syctostomy and nephrosotomy





Source: Reichman EF: *Emergency Medicine Procedures, Second Edition:* www.accessemergencymedicine.com