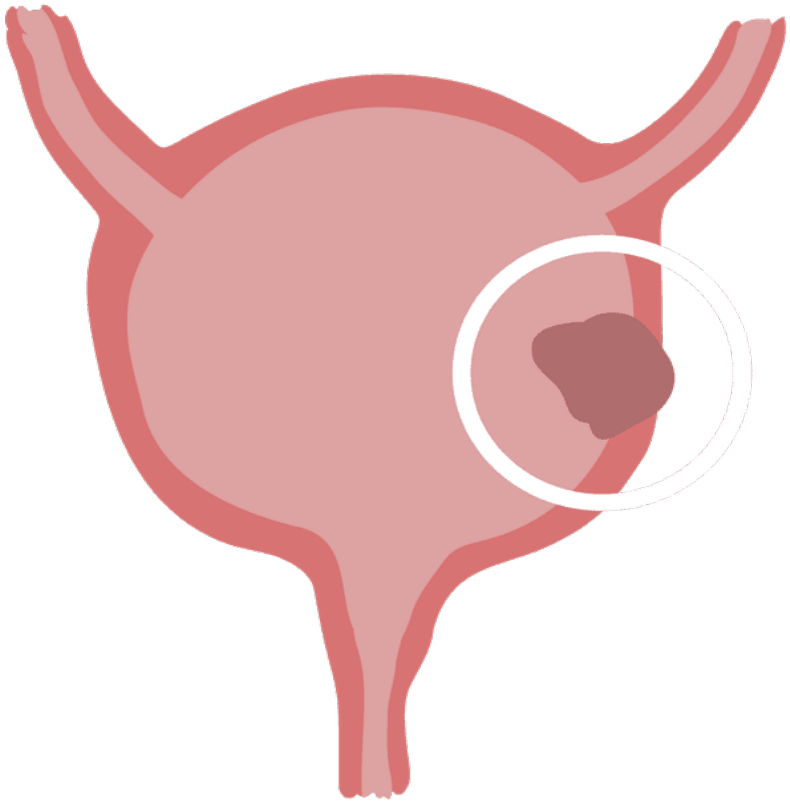
Bladder Cancer



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Normal bladder

bladder is a hollow muscular organ in the lower abdomen

The wall of the bladder has four main layers:

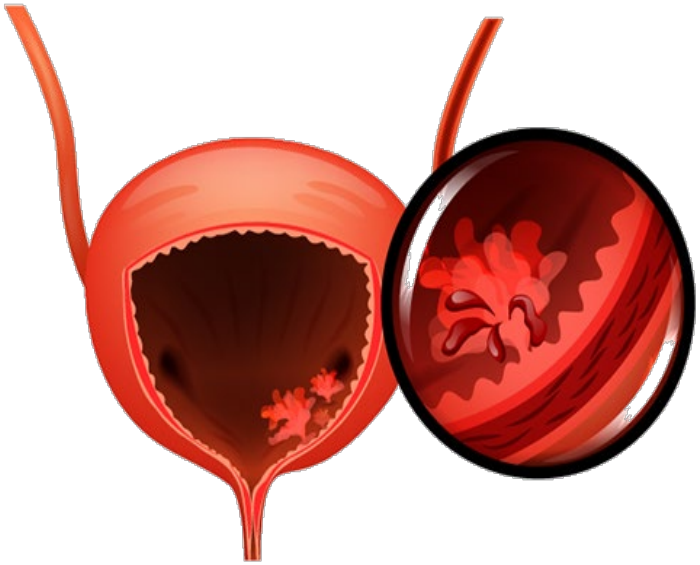
1- The inner layer is called the lining. This lining is made up of cells called urothelial or transitional cells. This layer is called the urothelium or transitional epithelium.

2- Under the urothelium is a thin layer of connective tissue, blood vessels,and nerves, which is called the lamina propria.

3-Next is a thick layer of muscle called the muscularis propria.

4- Outside of this muscle, a layer of fatty connective

Bladder cancer is the **second most common urological malignancy.**



Risk factors

Men are 2.5 times more likely to develop the disease than women, may be associated with greater urin residuals in the bladder.

Age increases risk , most commonly diagnosed in the 8th decade and rare <50 years.

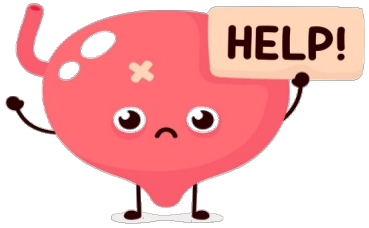
Racially, Black people have a lower incidence than White people, but inexplicably they appear to carry a poorer prognosis.

Environmental carcinogens found in urine, are the major cause of bladder cancer.

Chronic inflammation of bladder mucosa: bladder stones, long-term catheters

Smoking is the major cause of bladder cancer in the developed world

Occupational exposure to carcinogens, in particular aromatic hydrocarbons like aniline



Drugs: phenacetin and cyclophosphamide.

Pelvic radiotherapy.

Types of Bladder Cancer :

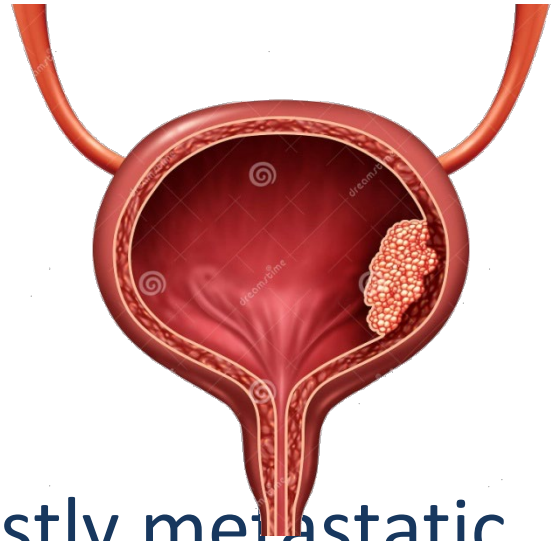
1-Transitional cell (urothelial) carcinoma

2-Flat carcinomas

3-Squamous cell carcinoma

4-Adenocarcinoma

5-Sarcoma



Secondary bladder cancers are mostly metastatic **adenocarcinoma from gut, prostate, kidney, or ovary**

1-1-Transitional cell (urothelial) carcinoma

. This is the most common form of bladder cancer. It represents roughly 95% of bladder cancers

Bladder cancer can be described as superficial or non-muscle invasive

2-Flat Carcinomas

Do not grow toward the hollow part of the bladder. It is a flat tumor. You may also hear it :called

carcinoma in situ (CIS)

The cells are poorly cohesive, up to 100% of patients with CIS exhibiting positive urine cytology

untreated CIS lesions will progress to muscle invasive UC, making CIS the most aggressive form of superficial UC.

3-Squamous cell carcinoma

-Roughly 1% to 2% of bladder cancers are squamous cell carcinomas. Nearly all squamous cells are **solid or ulcerative and muscle-invasive**

-SCC in the bladder is associated with chronic inflammation and In Egypt, 80% of SCC is induced by the ova of Schistosoma haematobium

-long-term catheters develop SCC.

-Smoking is also a risk factor for SCC.

-The prognosis is better for bilharzial SCC than for non-bilharzial disease, probably because it tends to be lower grade and metastases are less common in these patients

Tumour spread :

Direct tumour growth to involve the detrusor muscle, the ureteric orifices, prostate, urethra, uterus, vagina, perivesical fat, bowel, or pelvic side walls.

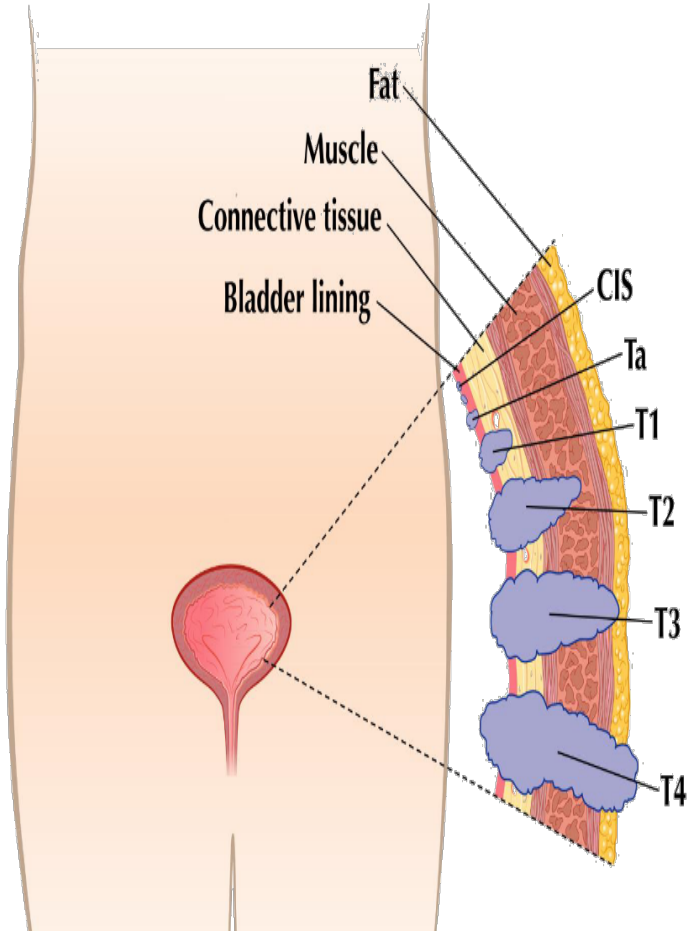
Implantation into wounds/percutaneous catheter tracts.

Lymphatic infiltration of the iliac and para-aortic nodes.

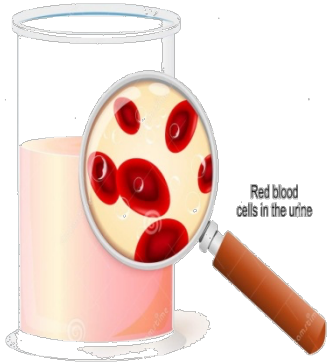
Haematogenous, most commonly to liver (38%), lung (36%), adrenal gland (21%), and bone (27%). Any other organ may be involved.

Table 6.8 2002 TNM staging of bladder carcinoma

Tx	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary carcinoma
Tis	Carcinoma in situ
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades muscularis propria (detrusor): T2a inner half; T2b outer half
T3	Tumor invades beyond muscularis propria into perivesical fat: T3a = microscopic; T3b = macroscopic (extravesical mass)
T4a	Tumor invades any of prostate, uterus, vagina, bowel
T4b	Tumor invades pelvic or abdominal wall
Nx	Regional (iliac and para-aortic) lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in a single lymph node <2 cm in greatest dimension
N2	Metastasis in a single lymph node 2–5 cm or multiple nodes <5 cm
N3	Metastasis in a single lymph node or multiple nodes >5 cm in greatest dimension
Mx	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis present



Bladder cancer: presentation



Symptoms

The most common presenting symptom (85% of cases) is **painless haematuria**. This may be initial or terminal if the lesion is at the bladder neck or in the prostatic urethra. 35% of patients >50 years and 10% <50 years with macroscopic haematuria have bladder cancer. History of smoking or occupational exposure is relevant.

Asymptomatic microscopic haematuria, found on routine urine stick-testing. Up to 16% of females and 4% of males have stick-test haematuria: less than 5% of those <50 years, while 7-13% of those >50 years will have a malignancy.

Pain is unusual, even if the patient has obstructed upper tracts, since the obstruction and renal deterioration arise gradually, Pain may be caused by locally advanced (T4 disease).

Filling-type lower urinary tract symptoms, such as urgency or suprapubic pain. There is almost always microscopic or macroscopic haematuria. This so-called malignant cystitis is typical in patients with CIS.

Recurrent urinary tract infections and pneumaturia due to malignant colovesical fistula, though less common than benign causes (diverticular and Crohn's disease).

More advanced cases may present with **lower-limb swelling** due to lymphatic/venous obstruction, bone pain, weight loss, anorexia, confusion, and anuria (renal failure due to bilateral ureteric obstruction).

Urachal adenocarcinomas may present with **a blood or mucus umbilical discharge or a deep subumbilical mass** (rare).

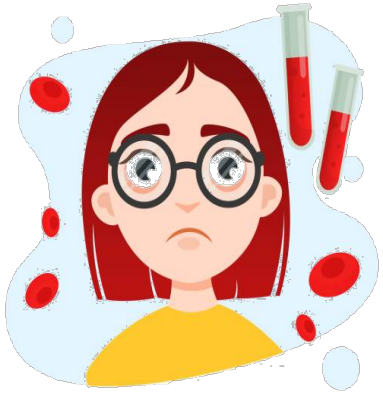
*the urachus, a fibrous remnant of the allantois that extends from the bladder to the umbilicus

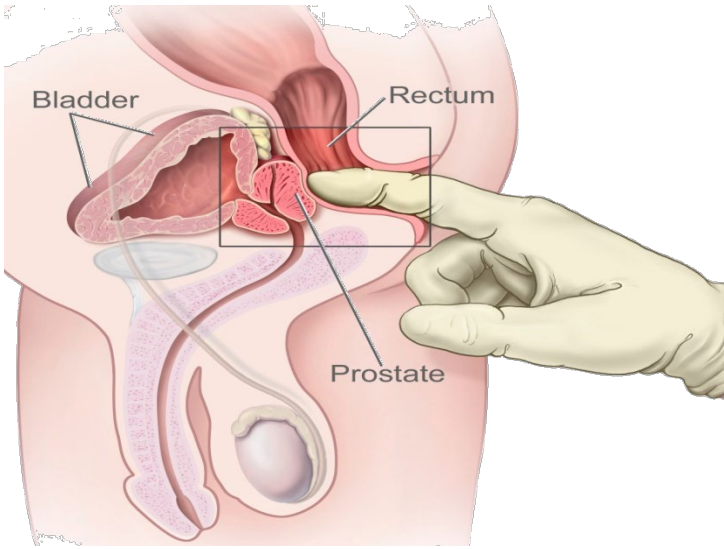
Signs

_ General examination may reveal pallor, indicating anaemia due to chronic renal impairment or blood loss.

_ Abdominal examination may reveal a suprapubic mass in the case of locally advanced disease.

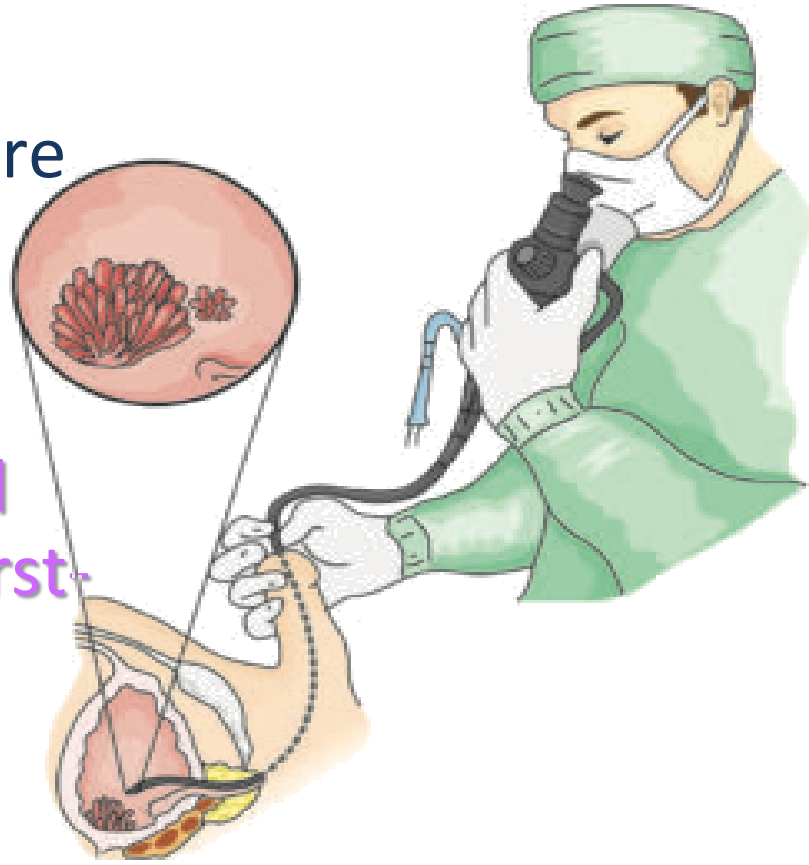
_Digital rectal examination may reveal a mass above or involving the prostate.



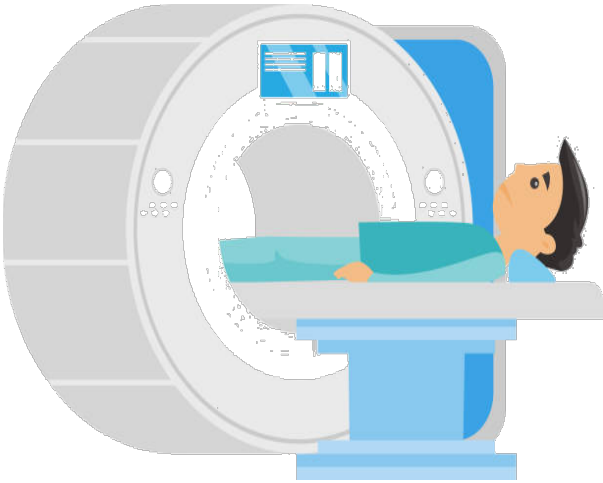


Bladder cancer: diagnosis and staging

After a urinary tract infection has been excluded or treated, all patients with microscopic or macroscopic haematuria require investigation of their upper tracts, bladder, and urethra. Usually, renal ultrasound and flexible cystoscopy, performed under local anaesthesia, are first-line investigations.

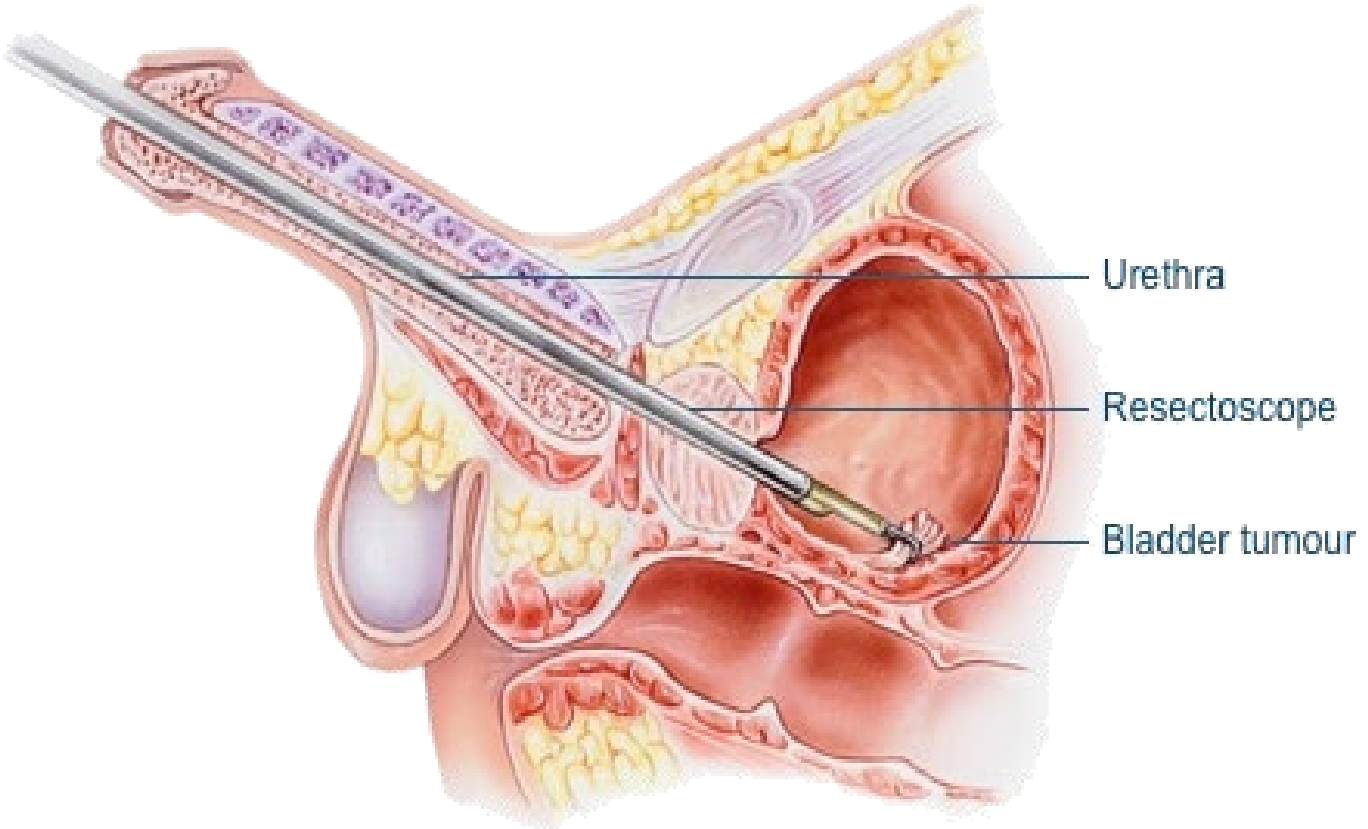


CT scan before and after IV contrast is becoming the first-line radiological investigation of haematuria.



False -ve cytology is frequent (40-70%) in patients with papillary TCC, but more sensitive (90-100%) in patients with high-grade TCC and CIS. False +ve cytology can arise due to **infection, inflammation, instrumentation, and chemotherapy**.

Transurethral resection of bladder tumour (TURBT)



Staging investigations

are usually reserved for patients with biopsy-proven muscle-invasive bladder cancer unless clinically indicated, since superficial TCC and CIS disease are rarely associated with metastases.

Pelvic CT or MRI may demonstrate extra-vesical tumor extension or iliac lymphadenopathy, reported if >8mm in maximal diameter.

Chest X-ray

Isotope bone scan is obtained in cases being considered for radical treatment.

Staging lymphadenectomy(open or laparoscopic) may be indicated in the presence of CT-detected pelvic lymphadenopathy if radical treatment is under consideration.

TCC MANEGMENT

Bladder cancer (non-muscle invasive TCC): surgery and recurrence
TURBT

As a primary treatment, a visually complete tumour resection is adequate for 70% of newly presenting patients with Ta/T1 superficial disease. The remaining 30% of patients experience early recurrence, 15% with upstaging.
Because of this, it is standard care that all new patients receive adjuvant treatment with a single dose of post-operative intravesical chemotherapy (usually mitomycin). *Complications* of TURBT are uncommon, including bleeding, sepsis, bladder perforation, incomplete resection, and urethral stricture.

Alternatives to TURBT

Transurethral cystodiathermy or laser are accepted, quicker and less morbid

procedure for ablating small superficial recurrences when obtaining

tissue for histology is not considered necessary

Follow-up after TURBT

Second resection: an early repeat TUR (within 2–6 weeks) should be undertaken:

(a) if the first resection was incomplete

, **(b)** when the pathologist reports that the resected specimen contains no muscularis propria, or

(c) if a high-grade, but apparently non-invasive, T1tumour has been reported since perhaps 10% (3–25%) of these G3pT1tumours are understaged T2 tumours. This strategy improves recurrence-free survival and prognosis while complications include bladder perforation.

ADJUVANT THERAPY

Intravesical chemotherapy (e.g. mitomycin C (MMC)

For many patients at low risk of recurrence, the risk reduction seen with single-dose chemotherapy is equivalent to that seen using weekly instillations for 6 weeks, commencing up to 2 weeks post-TURBT. Such longer courses are still recommended for patients at higher risk of recurrence or who have multifocal recurrences, excluding those with high-grade Ta/1 TCC or CIS

ADJUVANT THERAPY

Intravesical BCG: BCG produces complete responses in 60–70% of patients. It is as effective as chemotherapy for adjuvant treatment of low- and intermediate risk G1/2, Ta/1 TCC, therefore, is not often used (except as second-line)because of the additional toxicity.

Contraindications to intravesical BCG include:

- Immunosuppressed patients.
- Pregnant or lactating women.
- Patients with haematological malignancy.
- Following traumatic catheterization

Radical cystectomy with:

- Ileal conduit urinary diversion.
- Ureterosigmoidostomy urinary diversion.
- Continent urinary diversion.

Table 7.11 5y survival rates for cystectomy alone

Stage T1/CIS	90%+
Stages T2,T3a	55–63%
Stage T3b	31–40%
Stage T4a (into prostate)	10–25%
Stage TxN1–2	30%
Salvage T0	70%
Salvage T1	50%
Salvage T2, 3a	25%

Palliative treatment

RT is effective for *metastatic bone pain* or to palliate symptomatic (bleeding) local tumour.

Intractable haematuria may be controlled by intravesical formalin or a Alum, hyperbaric oxygen, bilateral internal iliac artery embolization or ligation, or palliative cystectomy/diversion.

Ureteric obstruction may be relieved by percutaneous nephrostomy and antegrade .

Involvement of the palliative care team can be very helpful to the patient and family.

THANK YOU