GU Oncology

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- Renal Tumors
- Bladder Tumors
- Prostate Tumors
- Testis Tumors
- Adrenal Tumors

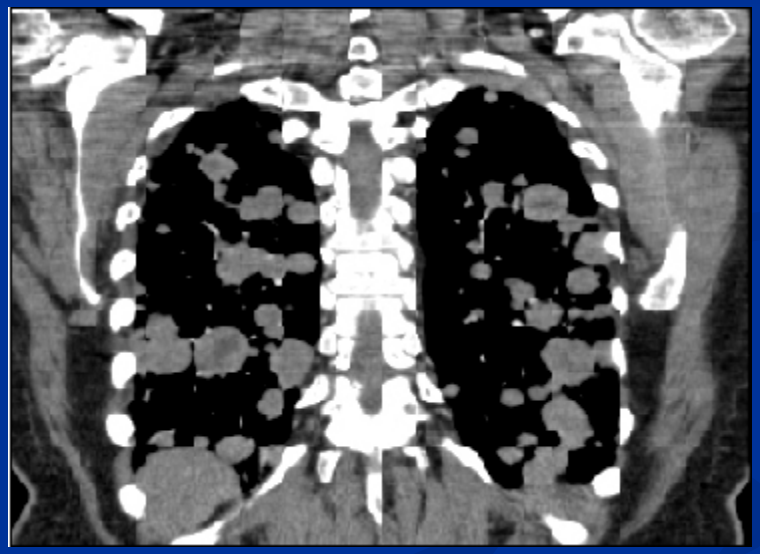
Renal Tumors

Renal Tumors

- Benign tumours of the kidney are rare
- All renal neoplasms should be regarded as potentially malignant
- Renal cell carcinomas arise from the proximal tubule cells

- Male : female ratio is approximately 2:1
- Increased incidence seen in von Hippel-Lindau syndrome.
- Pathologically may extend into renal vein and inferior vena cava
- Blood born spread can result in 'cannon ball' pulmonary metastases

‘Cannon Ball' Pulmonary Metastases



Clinical features

- 10% present with classic trial of haematuria, loin pain and a mass.
- Other presentations include (Paraneoplastic Syndrome-PNS).
- Pyrexia of unknown origin, hypertension, Stauffer's syndrome.
- Polycythaemia due to erythropoietin production.
- Hypercalcaemia due to production of a PTH-like hormone → Can be treated medically.
- Other PNS, → Treatment usually nephrectomy.

Investigations

- Diagnosis can often be confirmed by renal ultrasound
- CT scanning allows assessment of renal vein and caval spread
- Echocardiogram should be considered if clot in IVC extends above diaphragm

RCC with IVC thrombus

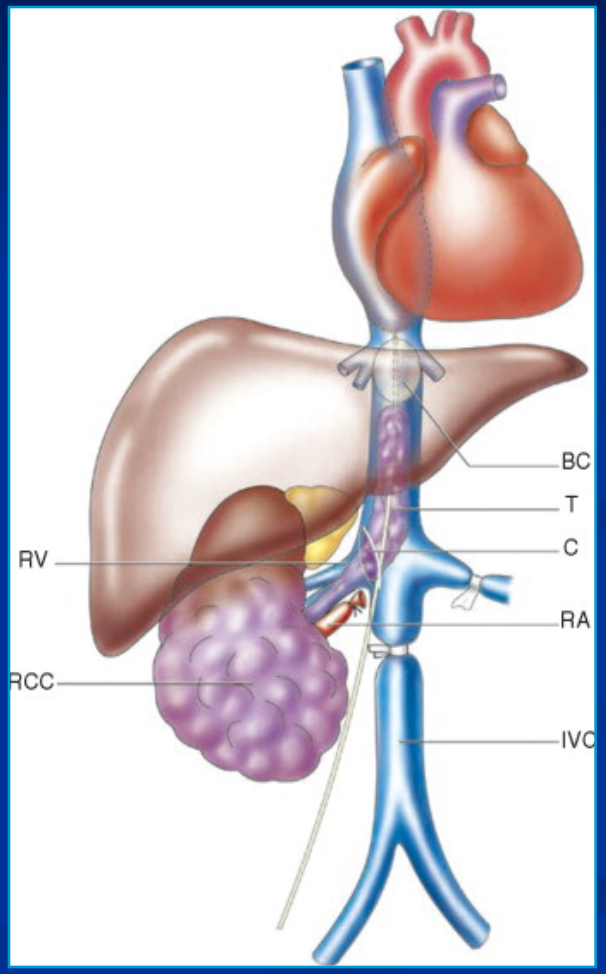
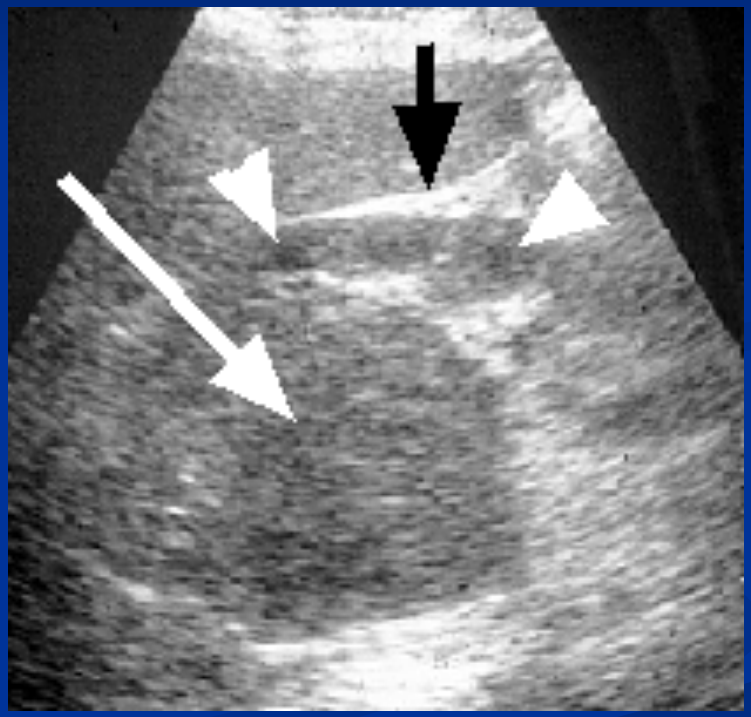
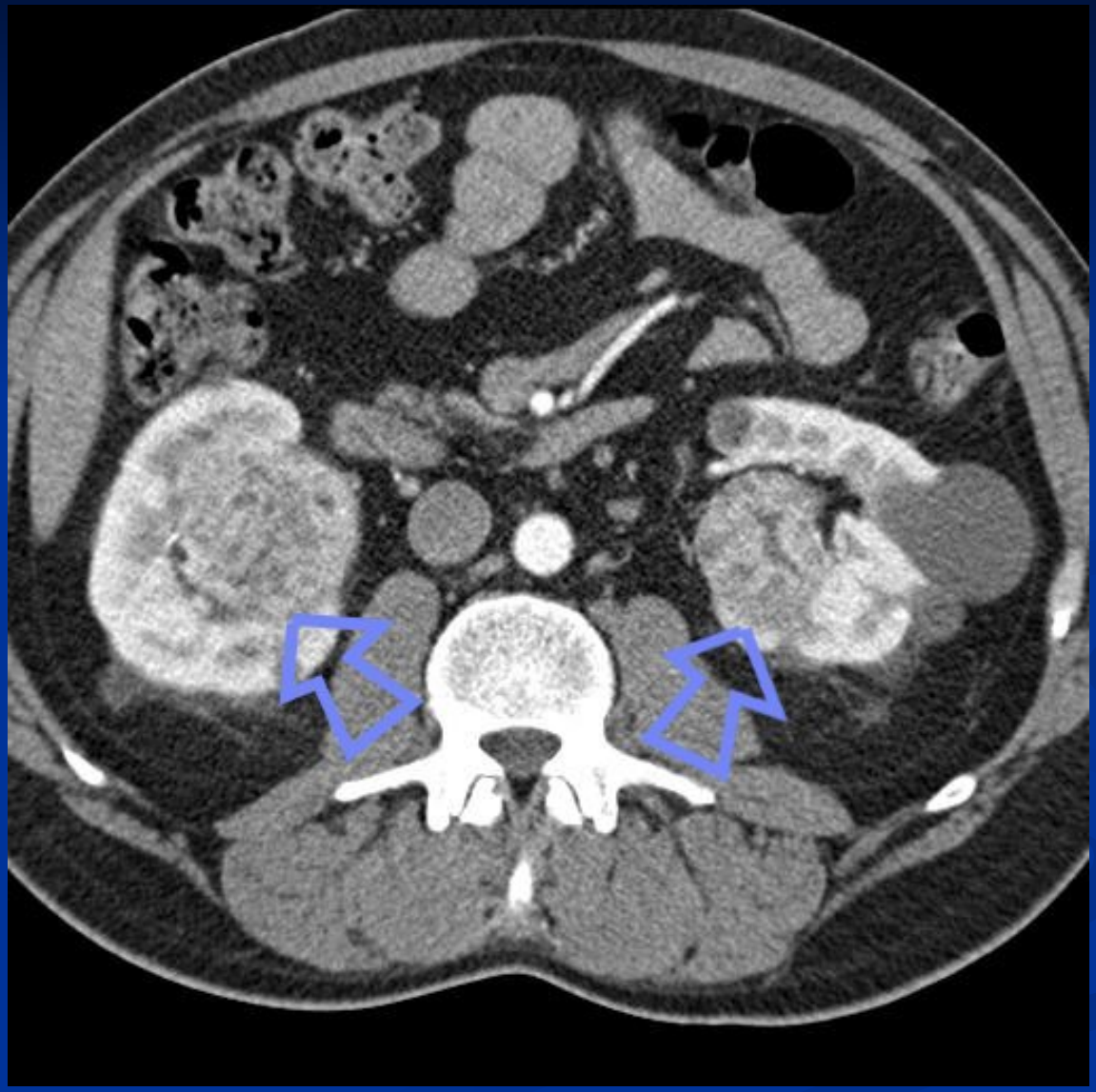
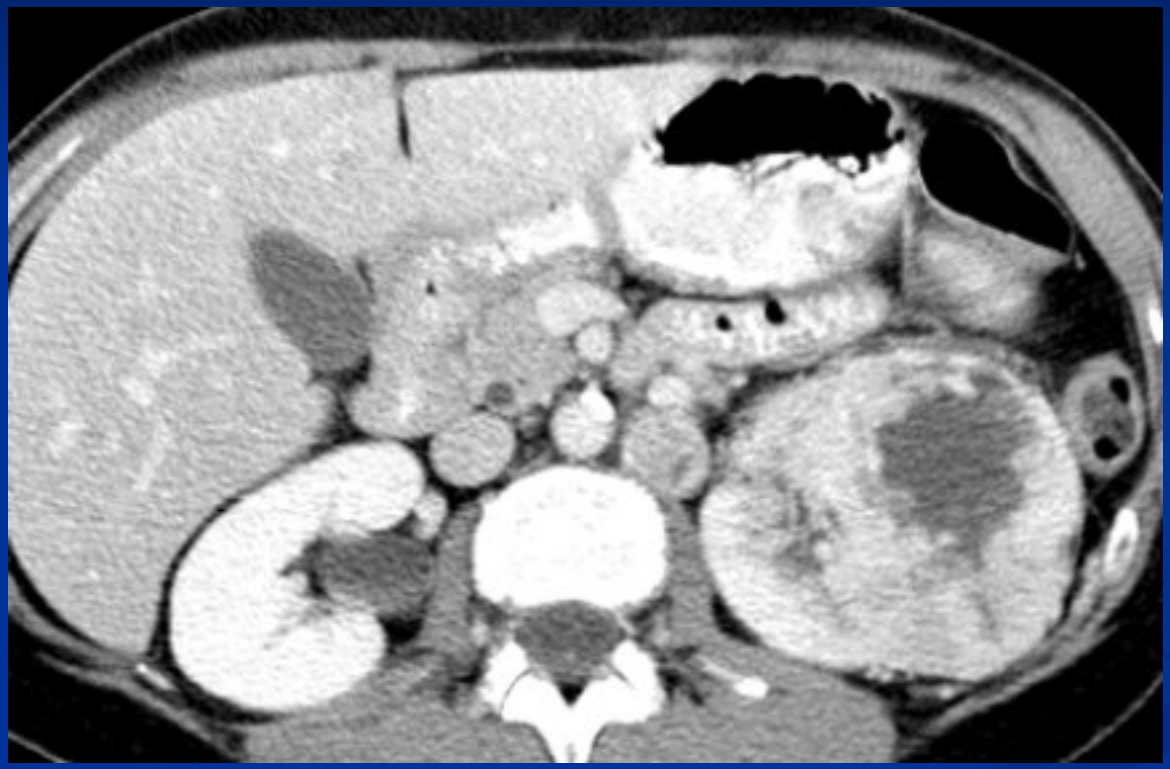


Figure 1: Computed tomography scan of patient's chest when he was first diagnosed with intracardiac extension of disease.



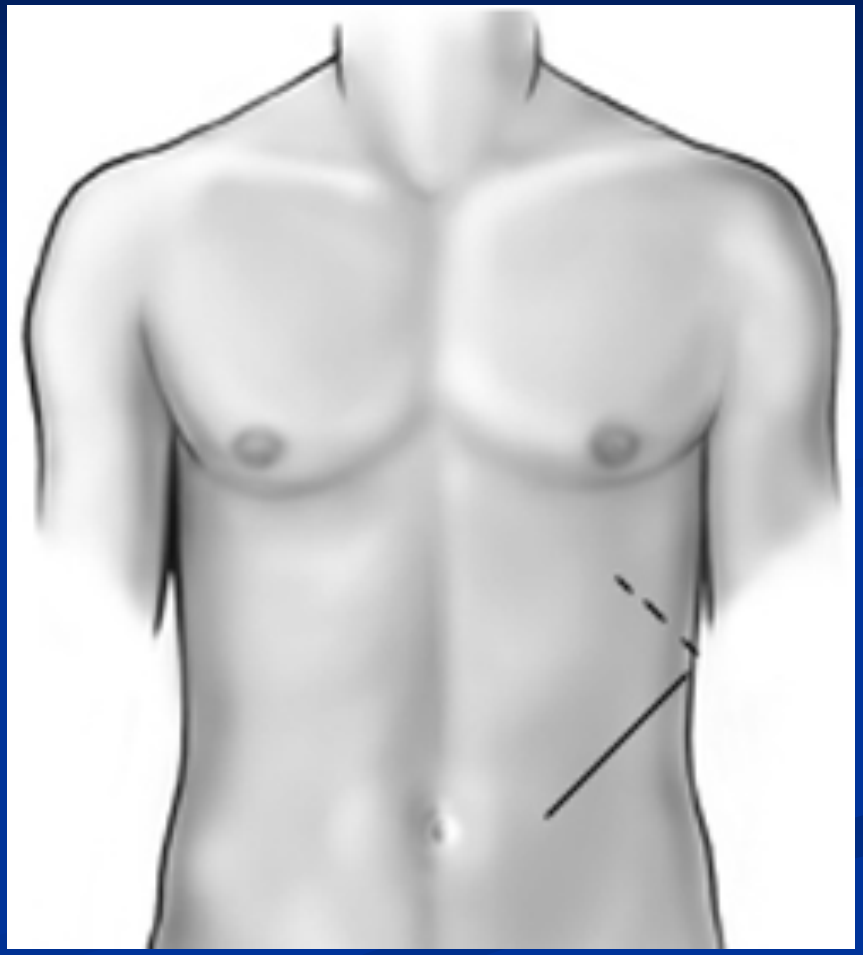




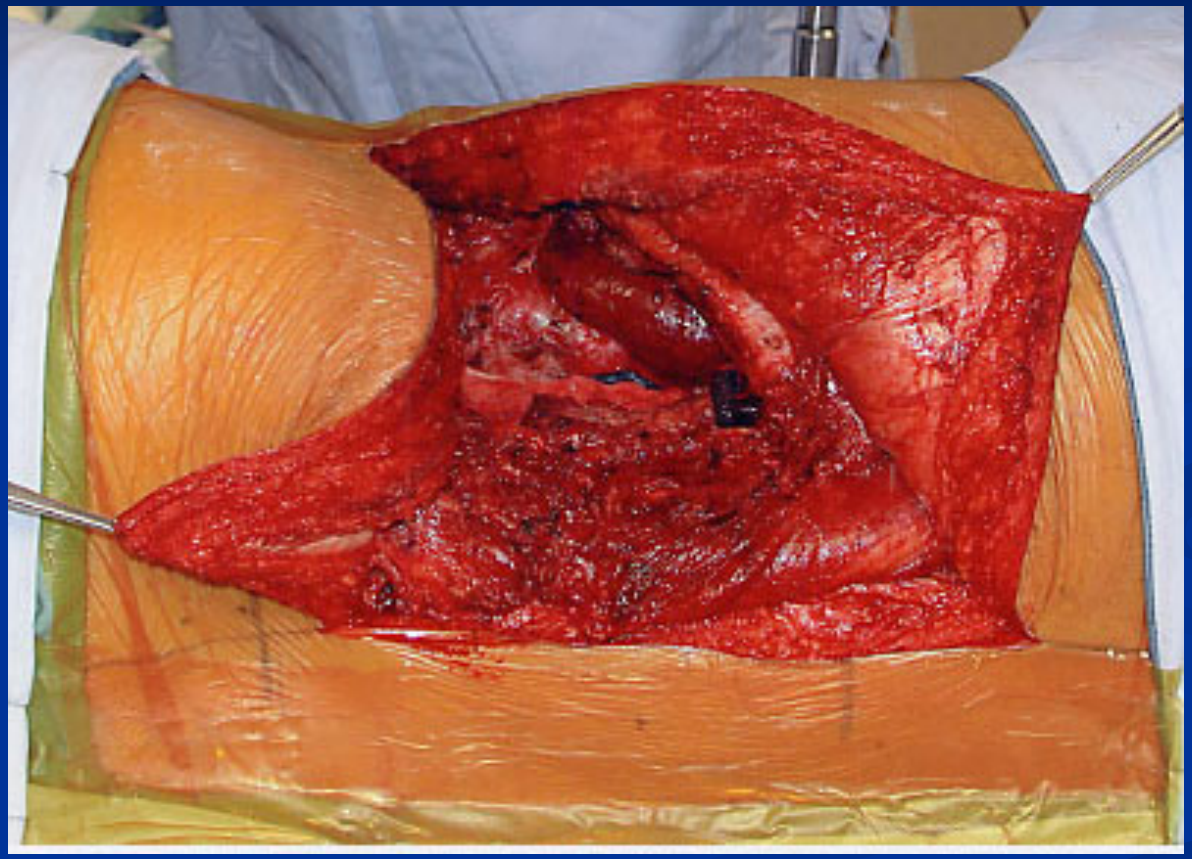
Management

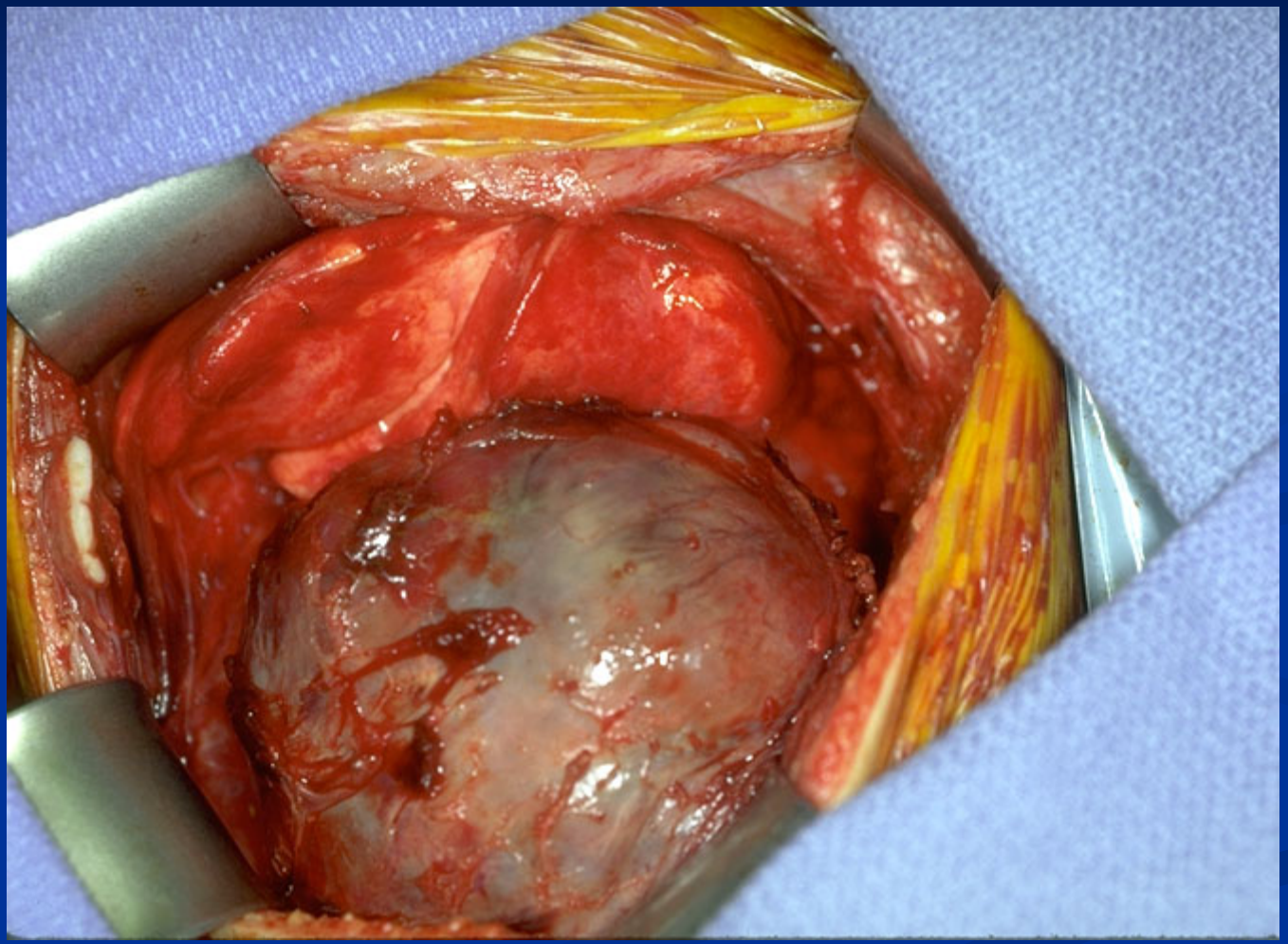
- Unless extensive metastatic disease it invariably involves surgery
- Surgical option usually involves a radical nephrectomy
- Kidney approached through either a transabdominal or loin incision
- Renal vein ligated early to reduce tumor propagation
- Kidney and adjacent tissue (adrenal, perinephric fat) excised

Open Radical Nephrectomy

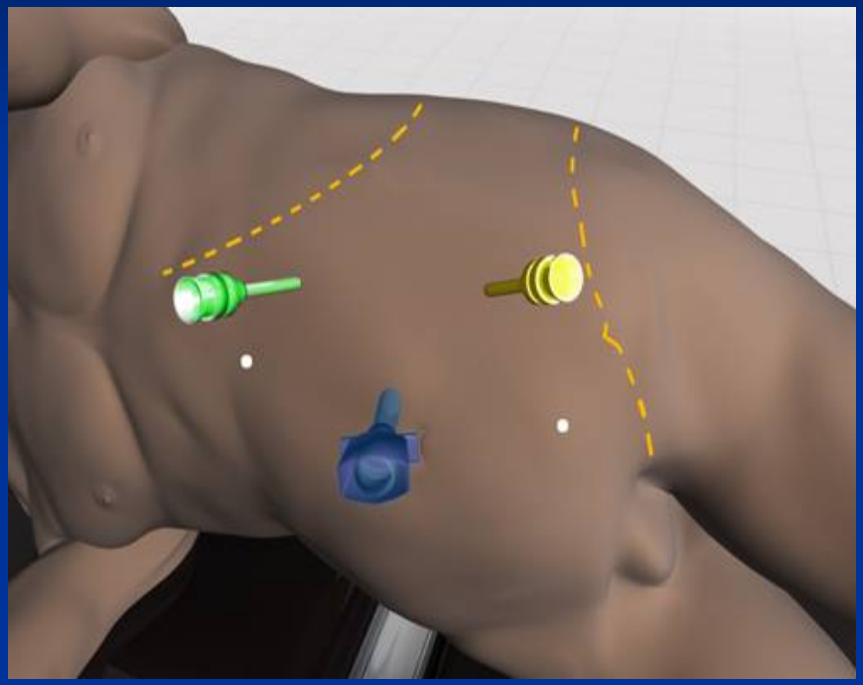


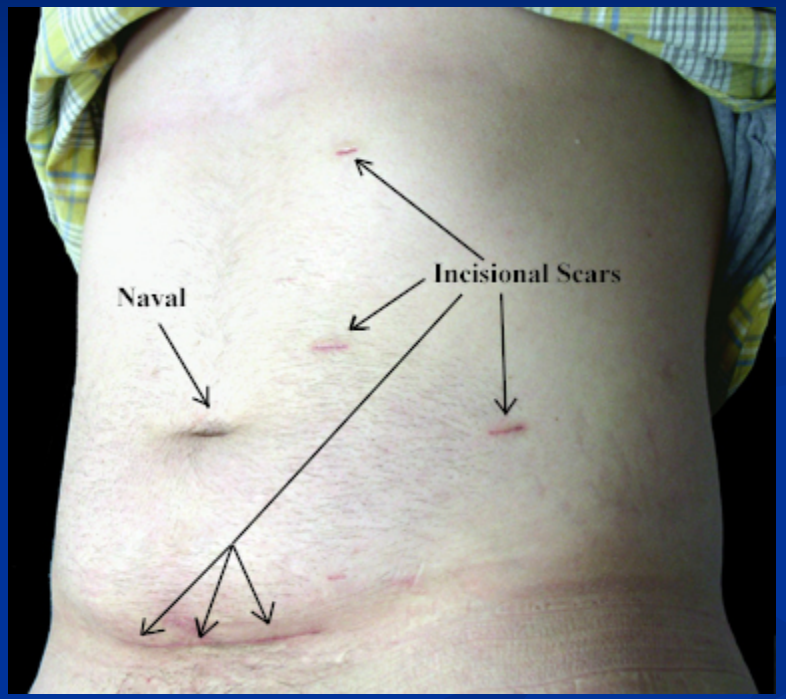
Open Radical Nephrectomy

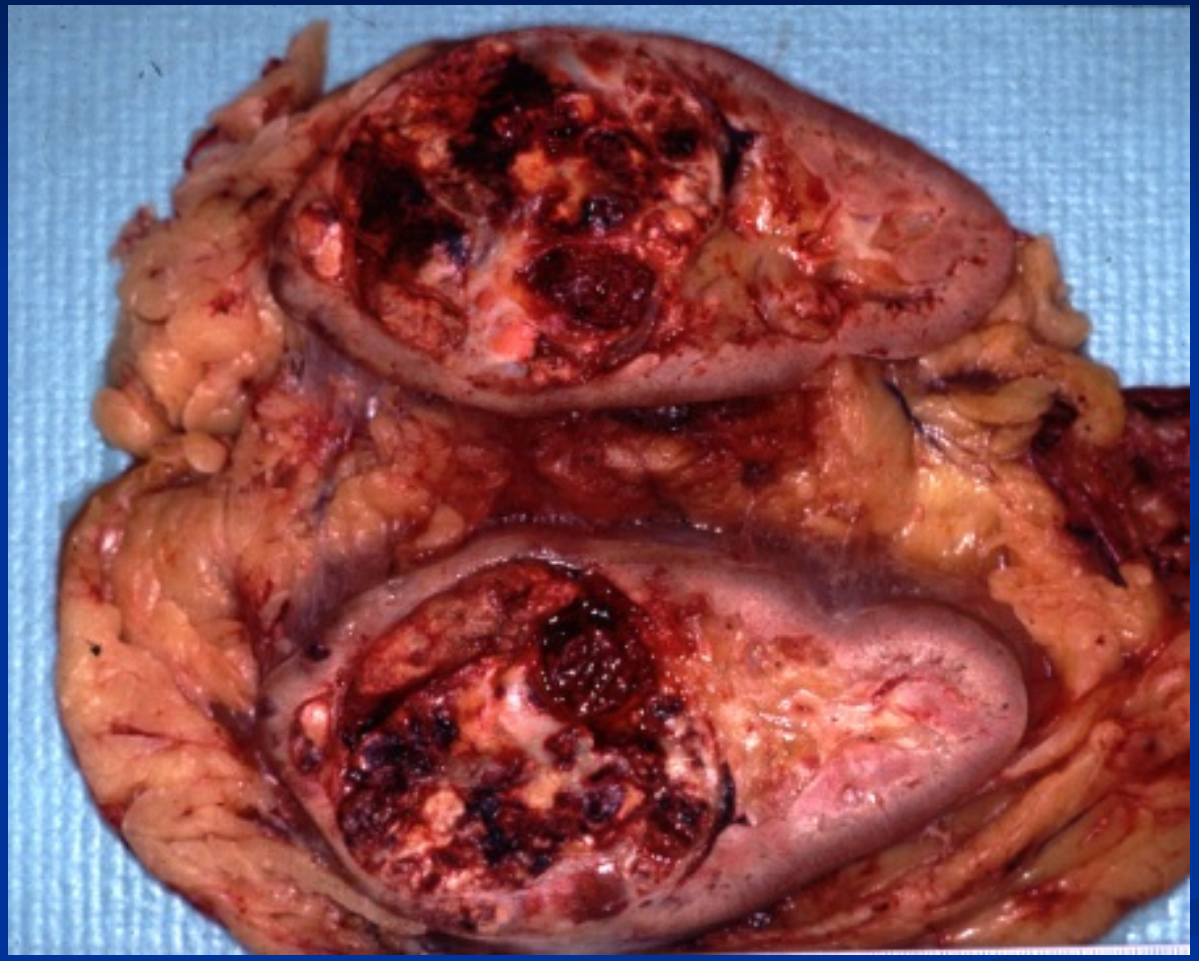




Laparoscopic Nephrectomy








SPECIMEN S78-9888
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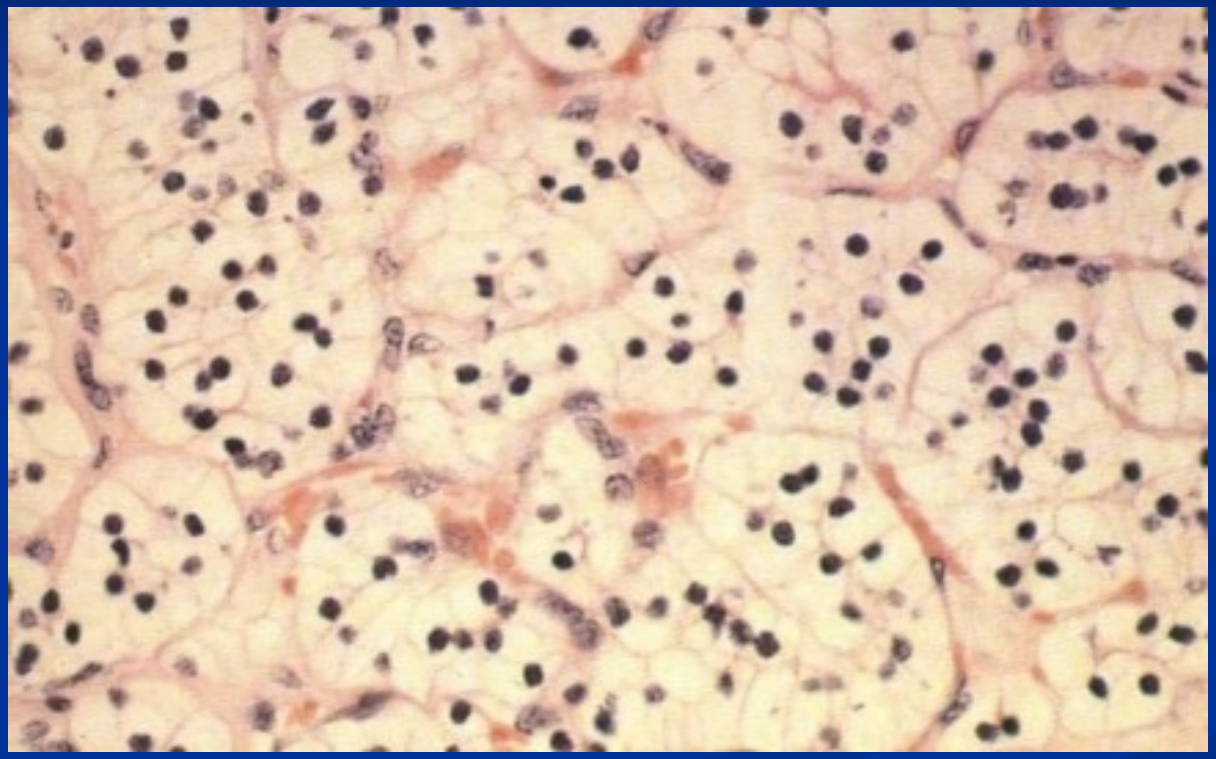
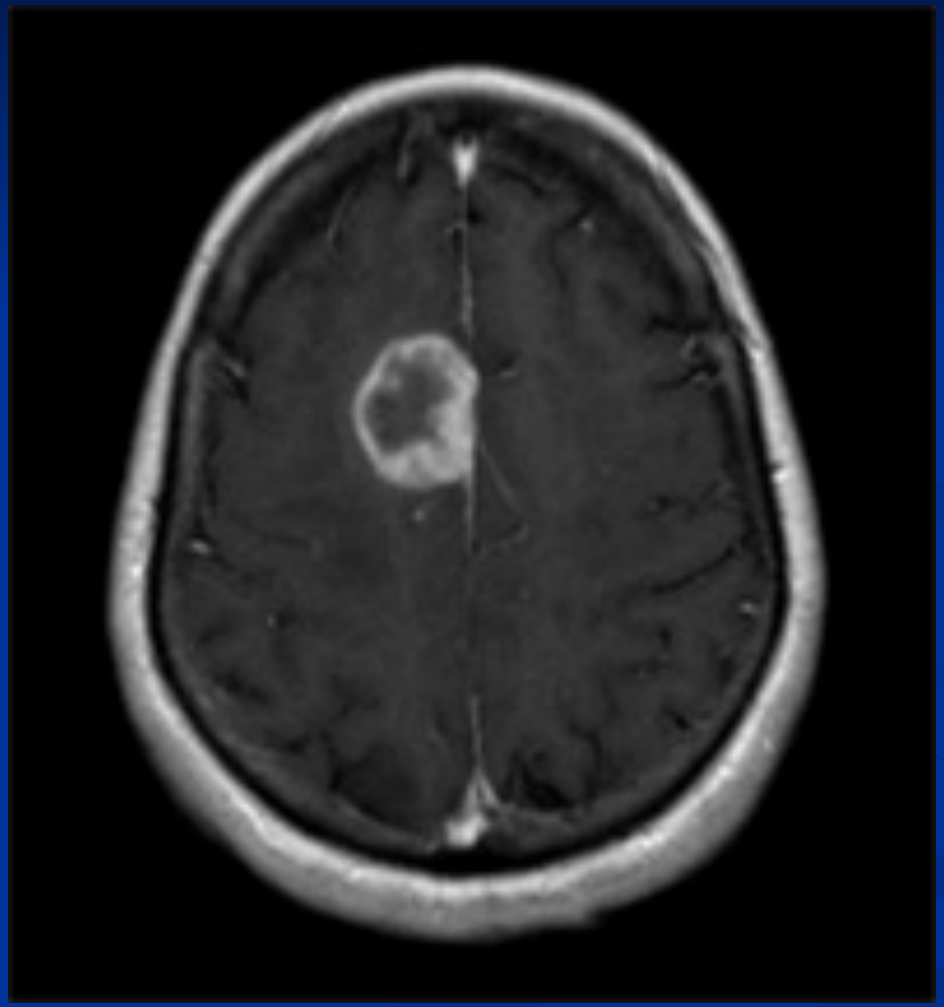
Microscopic CRCC



Metastasis Rx

- Lymph node dissection of no proven benefit.
- Solitary (e.g. lung metastases) can occasionally be resected.
- Radiotherapy and chemotherapy have **No** role.
- Immunotherapy can help (Performance status).



Bladder Tumors

Pathology

- Of all bladder carcinomas:
  - 90% are transitional cell carcinomas
  - 5% are squamous carcinoma
  - 2% are adenocarcinomas
- TCCs should be regarded a 'field change' disease with a spectrum of aggression
- 80% of TCCs are superficial and well differentiated
  - Only 20% progress to muscle invasion
  - Associated with good prognosis
- 20% of TCCs are high-grade and muscle invasive
  - 50% have muscle invasion at time of presentation
  - Associated with poor prognosis

Etiological factors

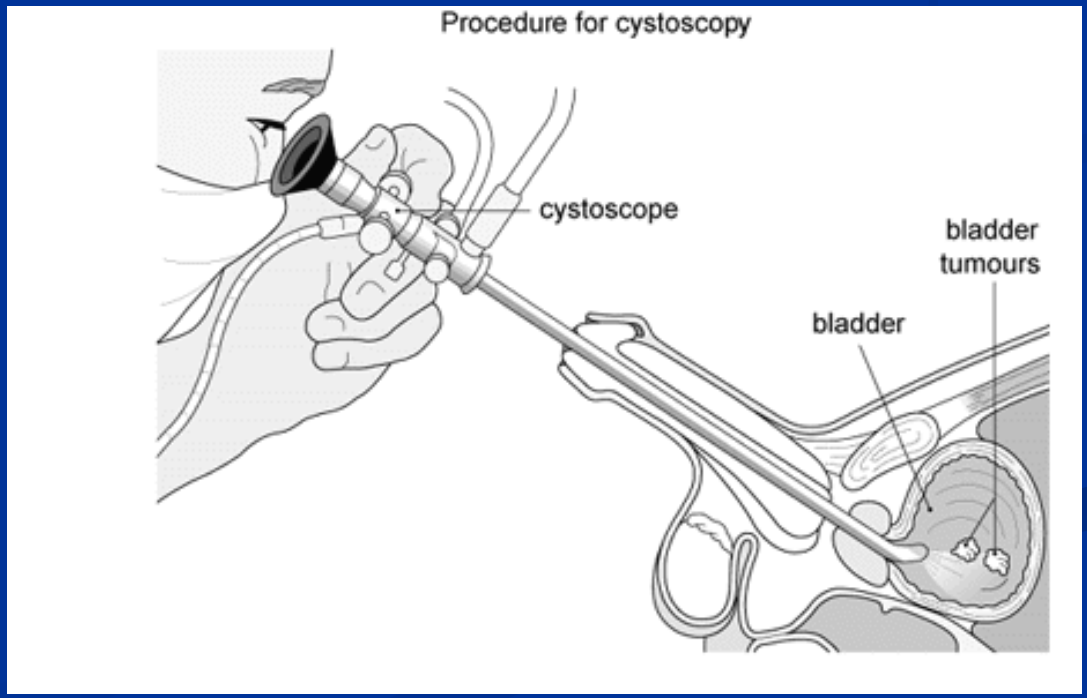
- Occupational exposure
- 20% of transitional cell carcinomas are believed to result from occupational factors
- Chemical implicated - aniline dyes, chlorinated hydrocarbons
- Cigarette smoking
- Analgesic abuse e.g. phenacitin
- Pelvic irradiation - for carcinoma of the cervix
- *Schistosoma haematobium* associated with increased risk of squamous carcinoma

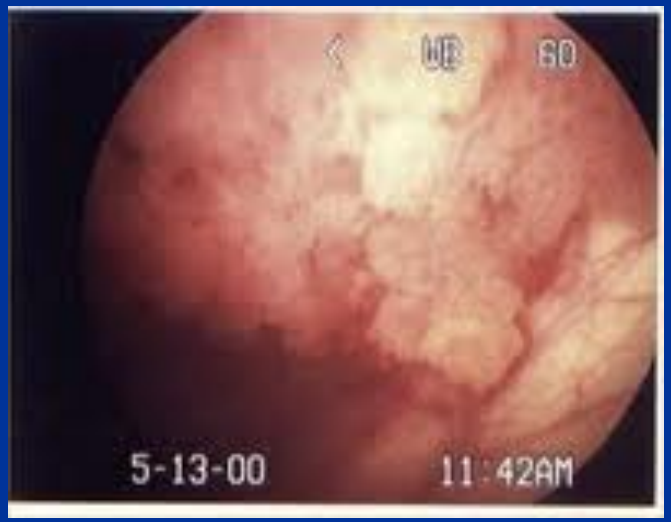
Presentation

- 80% present with painless hematuria.
- Also present with treatment-resistant infection or bladder irritability and sterile pyuria.

Investigation of Painless Haematuria

- Urinalysis
- Ultrasound - bladder and kidneys
- KUB - to exclude urinary tract calcification
- Cystoscopy
- Urine Cytology
- Consider IVU- CT scan if no pathology identified


Procedure for cystoscopy
cystoscope
bladder tumours
bladder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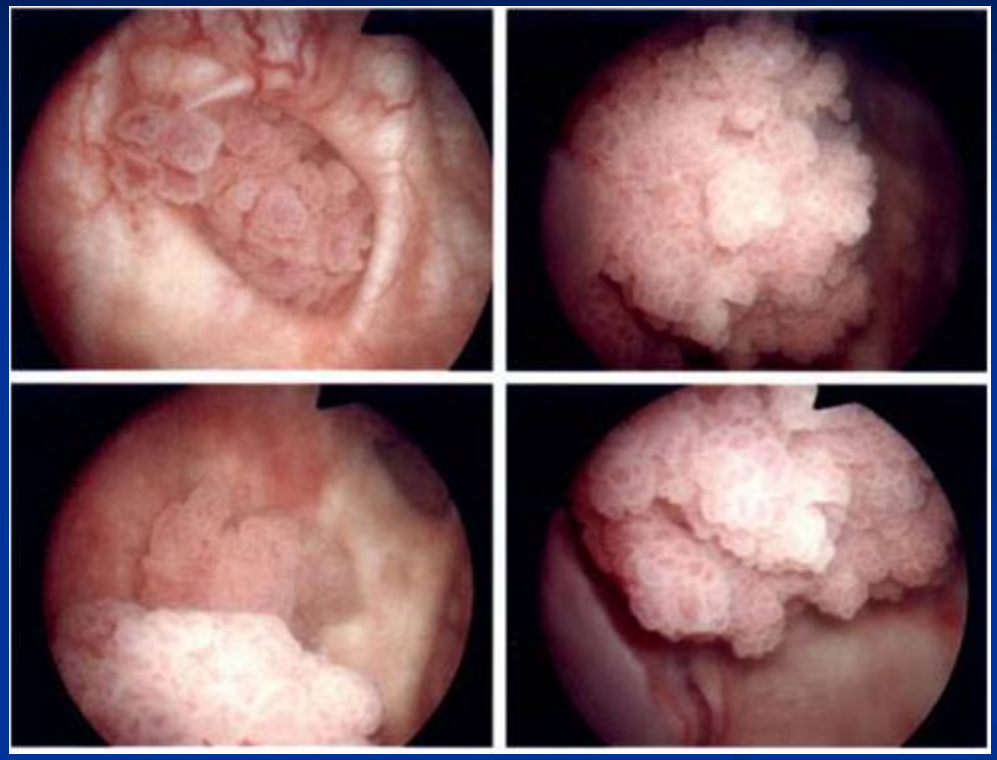
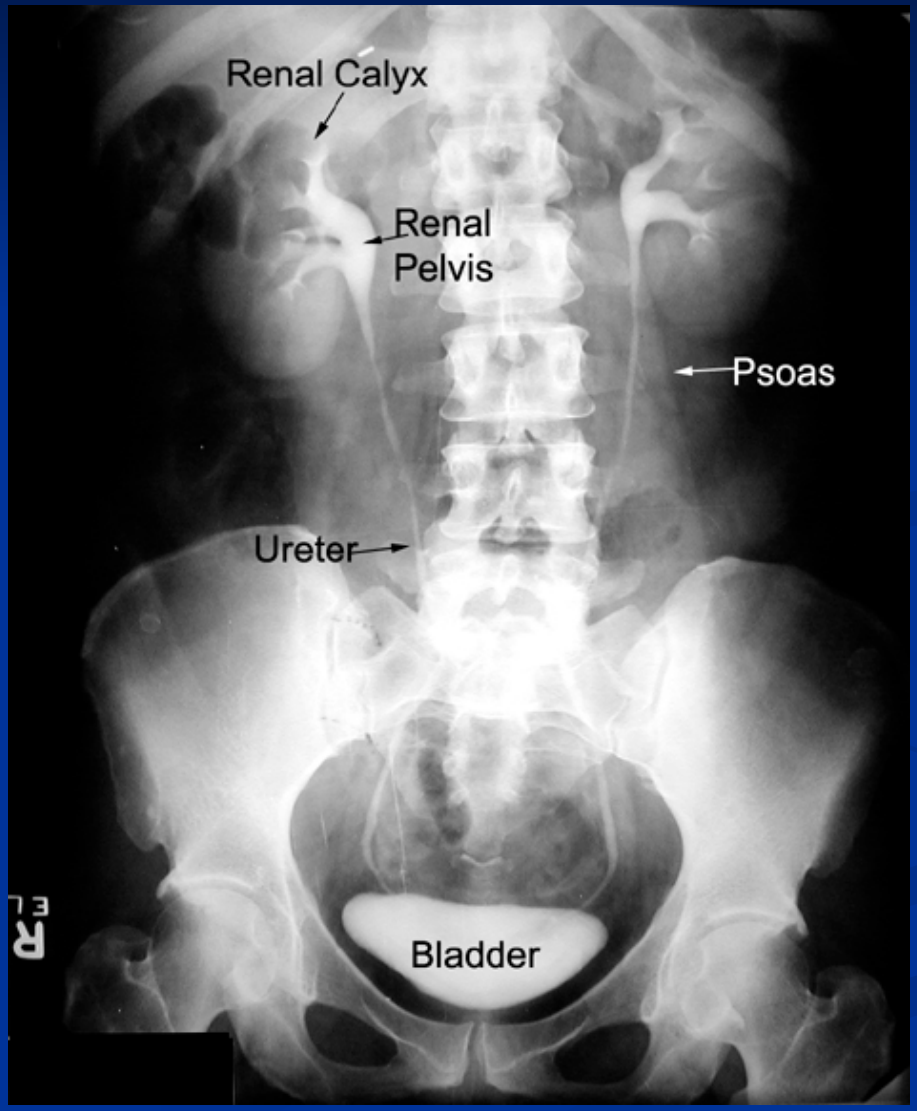


IVP



IVP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H ALQAHTANI, , , HAIF, , SHAYE
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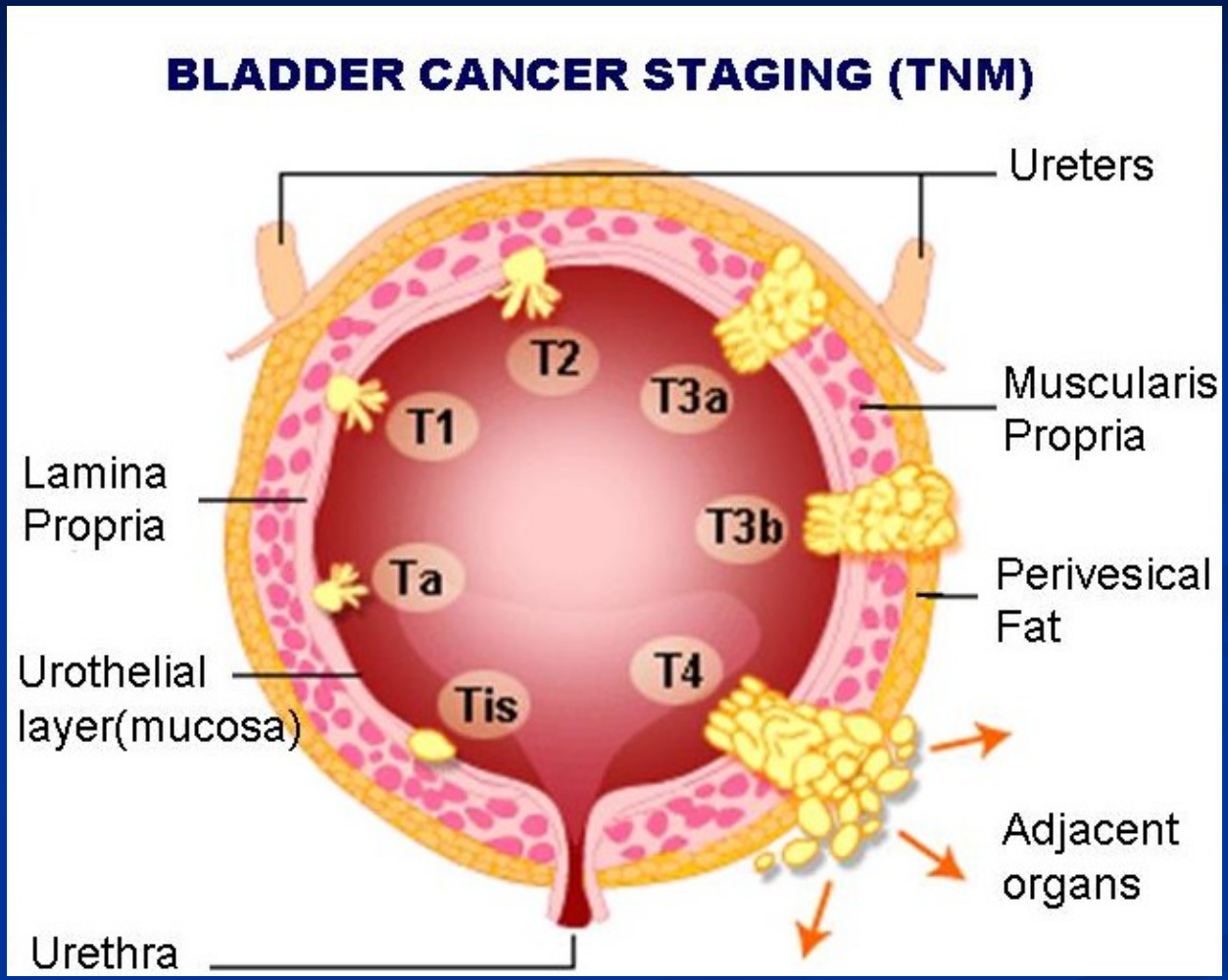

BLADDER CANCER STAGING (TNM)
Ureters
Muscularis Propria
Perivesical Fat
Adjacent organs
Urethra
Lamina Propria
Urothelial layer(mucosa)
T2
T3a
T1
T3b
Ta
T4
Tis

Pathological staging

- Requires bladder muscle to be included in specimen
- Staged according to depth of tumor invasion

- Tis In-situ disease
- Ta Epithelium only
- T1 Lamina propria invasion
- T2 Superficial muscle invasion
- T3a Deep muscle invasion
- T3b Perivesical fat invasion
- T4 Prostate or contiguous muscle

Grade of Tumor

- G1 Well differentiated
- G2 Moderately well differentiated
- G3 Poorly differentiated

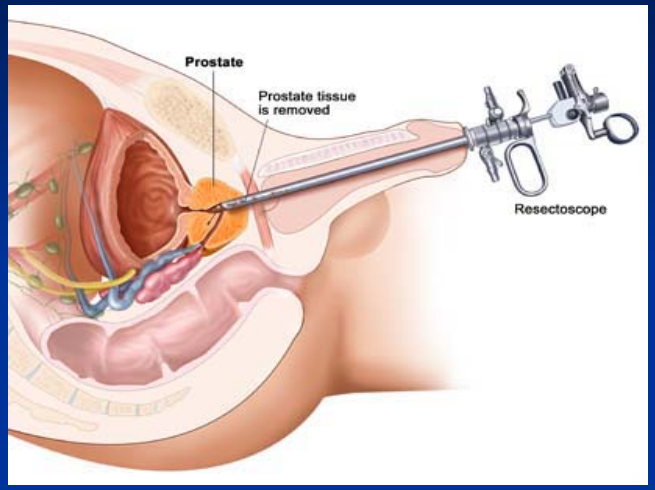
Carcinoma in-situ

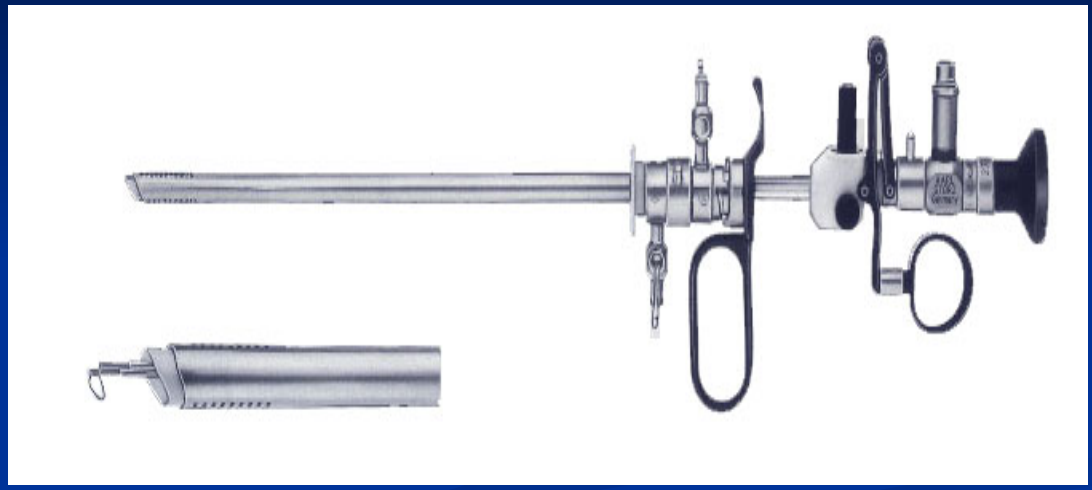
- Carcinoma-*in-situ* is an aggressive disease
- Often associated with **positive cytology**
- 50% patients progress to muscle invasion
- Consider immunotherapy
- If fails patient may need radical cystectomy

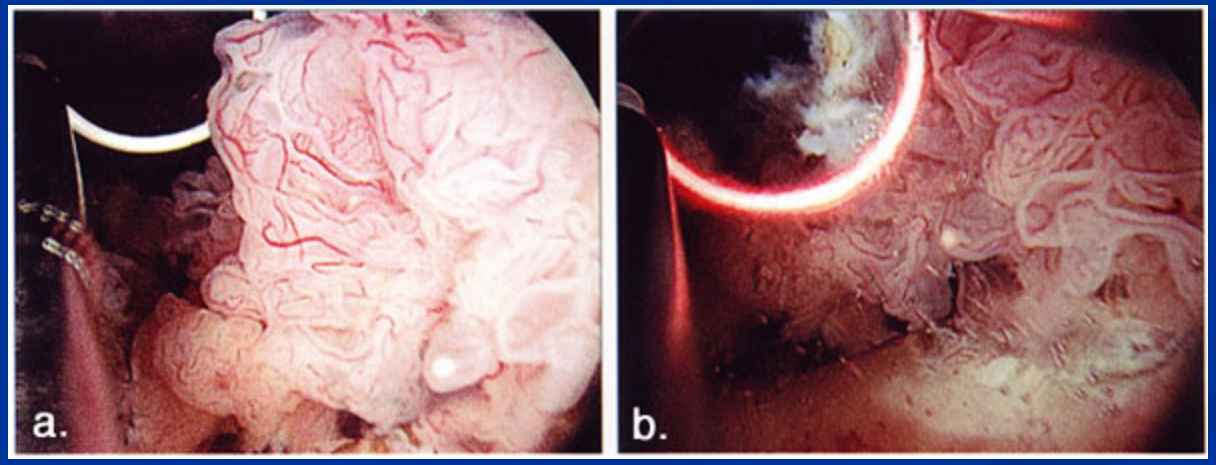
Treatment of bladder carcinomas Superficial TCC

- Requires transurethral resection and regular cystoscopic follow-up
- Consider prophylactic chemotherapy if risk factor for recurrence or invasion (e.g. high grade)
- Consider immunotherapy
- BCG = attenuated strain of *Mycobacterium bovis*
- Reduces risk of recurrence and progression
- 50-70% response rate recorded
- Occasionally associated with development of systemic mycobacterial infection

TURBT

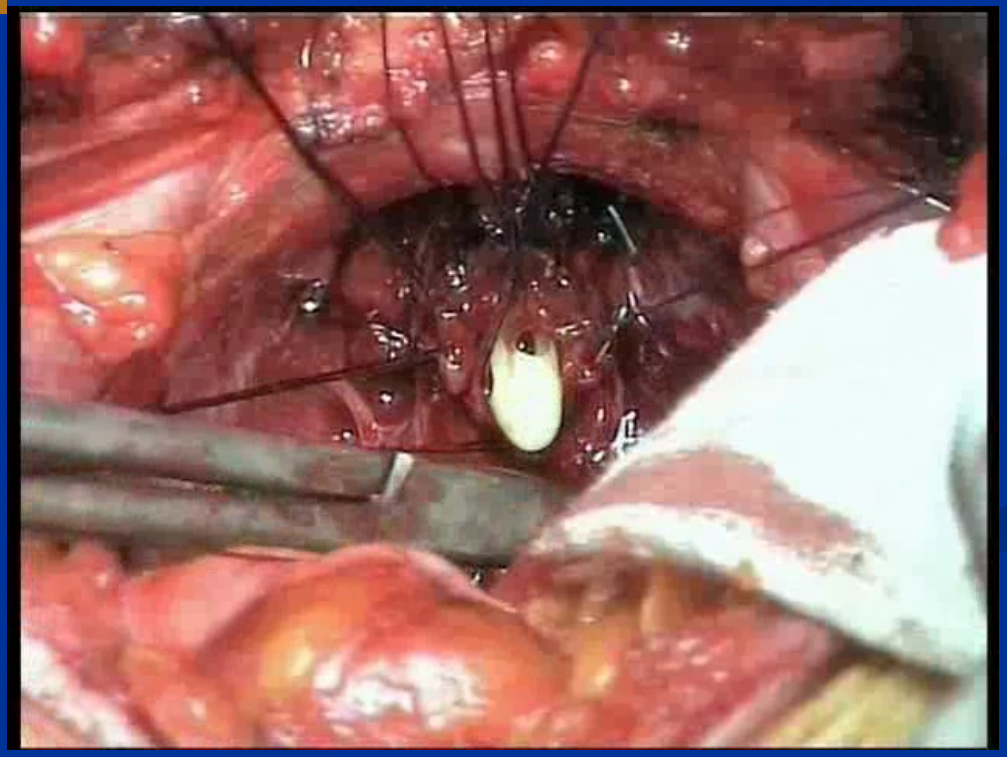




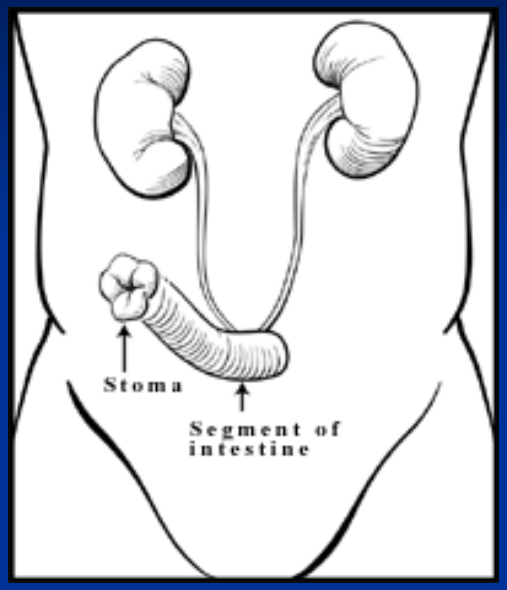


Rx: Invasive TCC

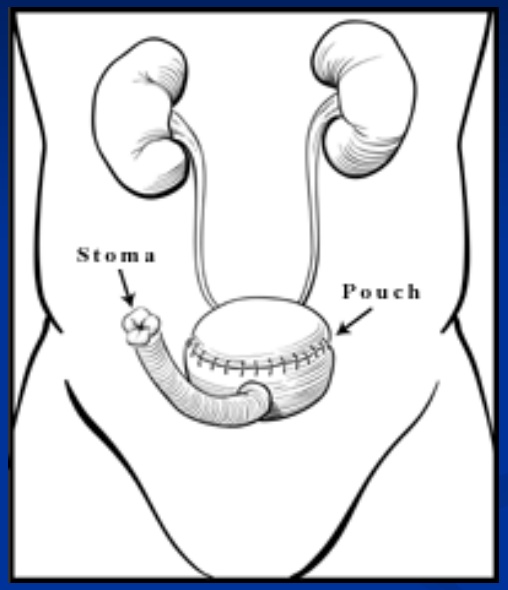
- Radical cystectomy has an operative mortality of about 5%
- Urinary diversion achieved by:
  - Ileal conduit
  - Neo-bladder
- Local recurrence rates after surgery are approximately 15% and after radiotherapy alone 50%
- Pre-operative radiotherapy is no better than surgery alone
- Adjuvant chemotherapy may have a role



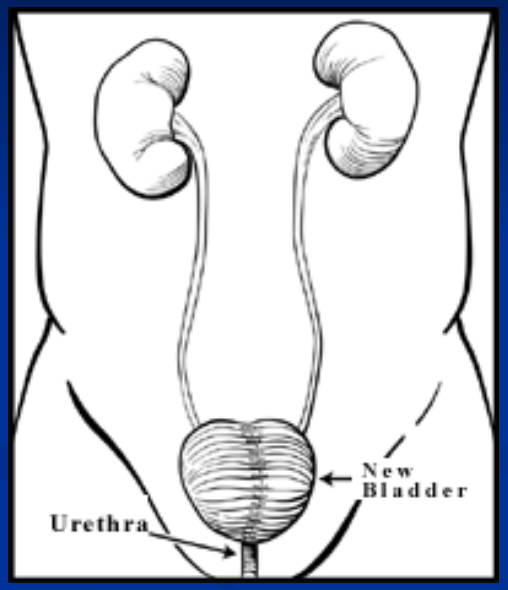
Types of Urinary Diversion



ILEAL CONDUIT
(incontinent diversion to skin)

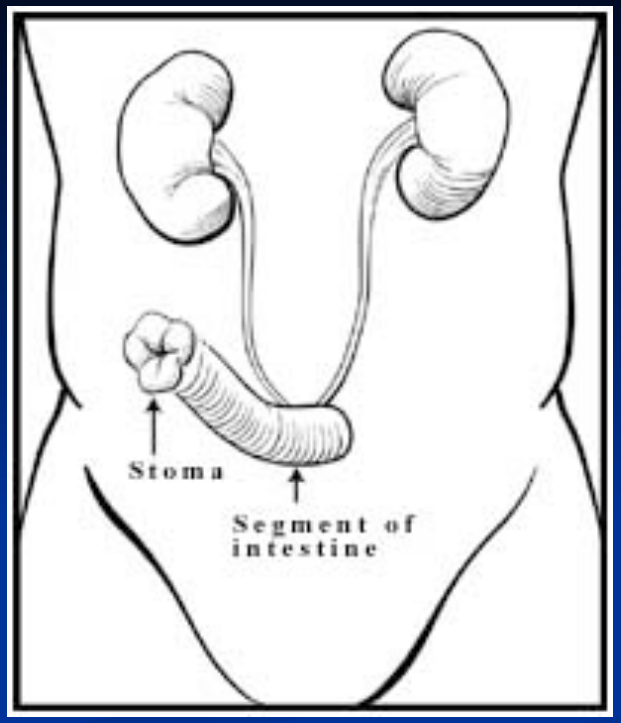


CONTINENT CUTANEOUS RESERVOIR
(continent diversion to skin)



ORTHOTOPIC NEOBLADDER
(continent diversion to urethra)


SCIENCEphotoLIBRARY


Stoma
Segment of intestine


Medscape

Prostate Tumors

Prostate cancer

- Commonest malignancy of male urogenital tract
- Rare before the age of 50 years
- Found at post-mortem in 50% of men older than 80 years
- 5-10% of operation for benign disease reveal unsuspected prostate cancer

Pathology

- The tumours are adenocarcinomas
- Arise in the peripheral zone of the gland
- Spread through capsule into perineural spaces, bladder neck, pelvic wall and rectum
- Lymphatic spread is common
- Haematogenous spread occurs to axial skeleton
- Tumours are graded by Gleeson classification

Clinical features

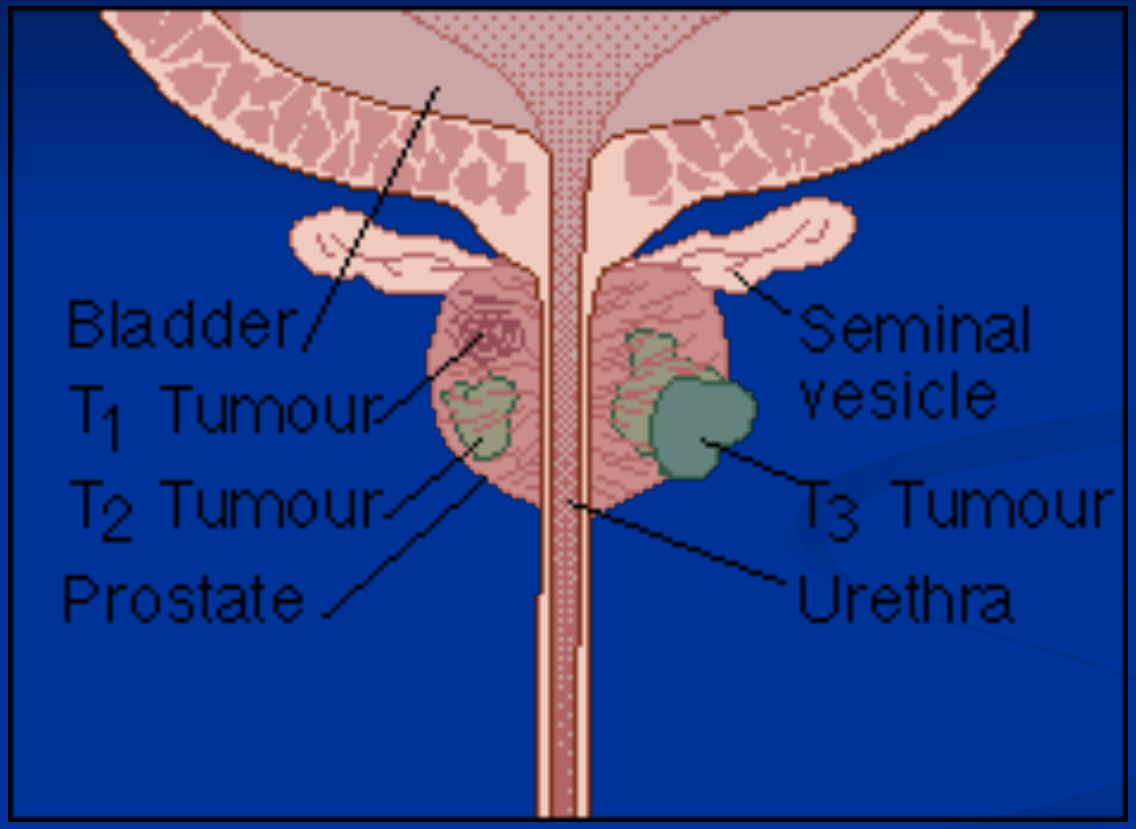
- Majority these days are picked up by screening
- 10% are incidental findings at TURP
- Remainder present with bone pain, cord compression or leuco-erythroblastic anaemia
- Renal failure can occur due to bilateral ureteric obstruction

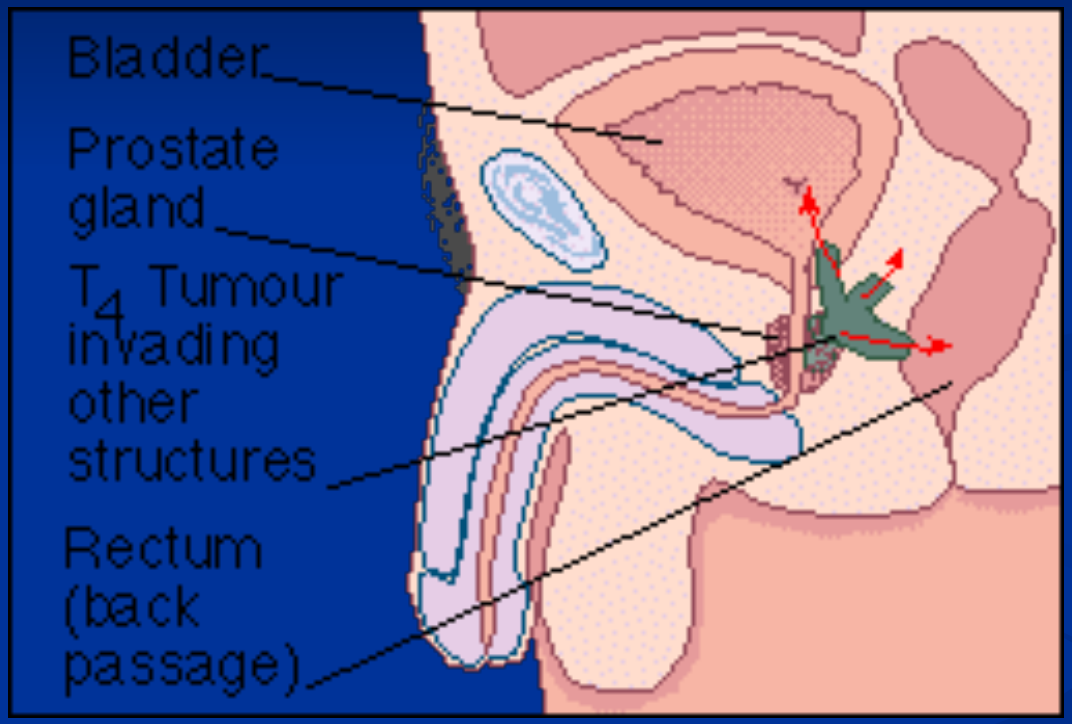
Diagnosis

- With locally advanced tumors diagnosis can be confirmed by rectal examination
- Features include hard nodule or loss of central sulcus
- Transrectal biopsy should be performed
- Multi-parametric MRI maybe useful in the staging of the disease
- Bone scanning may detect the presence of metastases
- Unlikely to be abnormal if asymptomatic and PSA < 10 ng/ml

Serum prostate specific antigen (PSA)

- Kallikrein-like protein produced by prostatic epithelial cells
- 4 ng/ml is the upper limit of normal
- >10 ng/ml is highly suggestive of prostatic carcinoma
- Can be significantly raised in BPH
- Useful marker for monitoring response to treatment

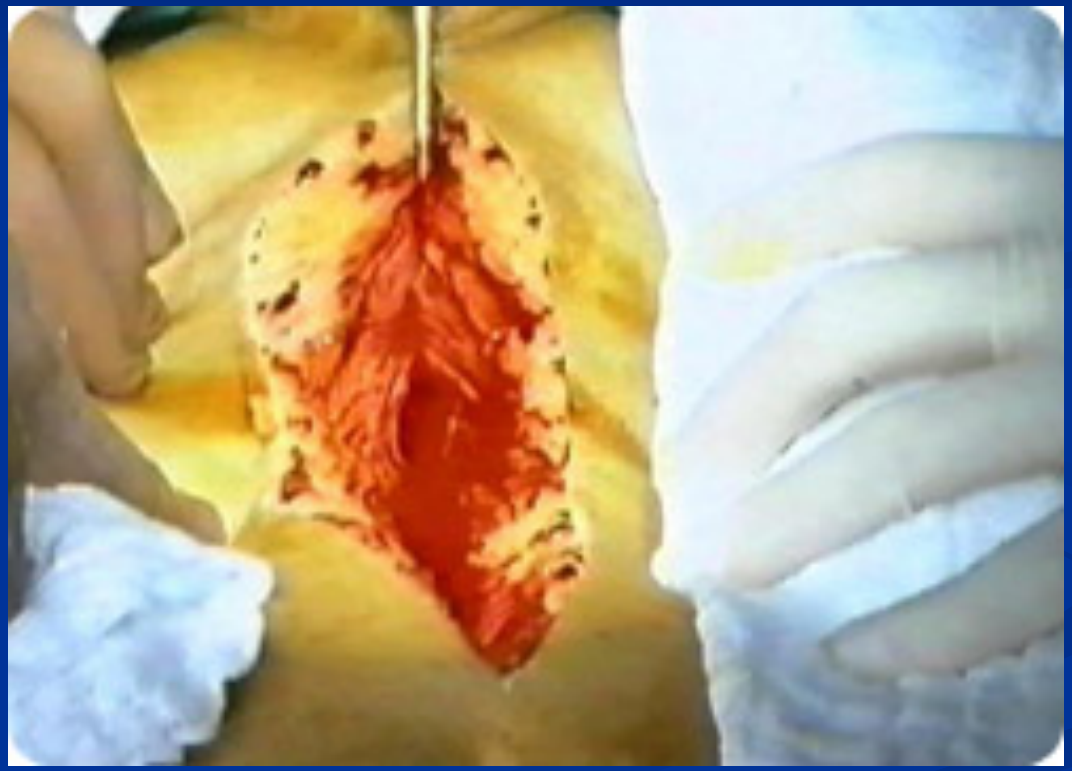

Bladder
T1 Tumour
T2 Tumour
Prostate
Seminal vesicle
T3 Tumour
Urethra


Bladder
Prostate gland
T4 Tumour invading other structures
Rectum (back passage)

Treatment

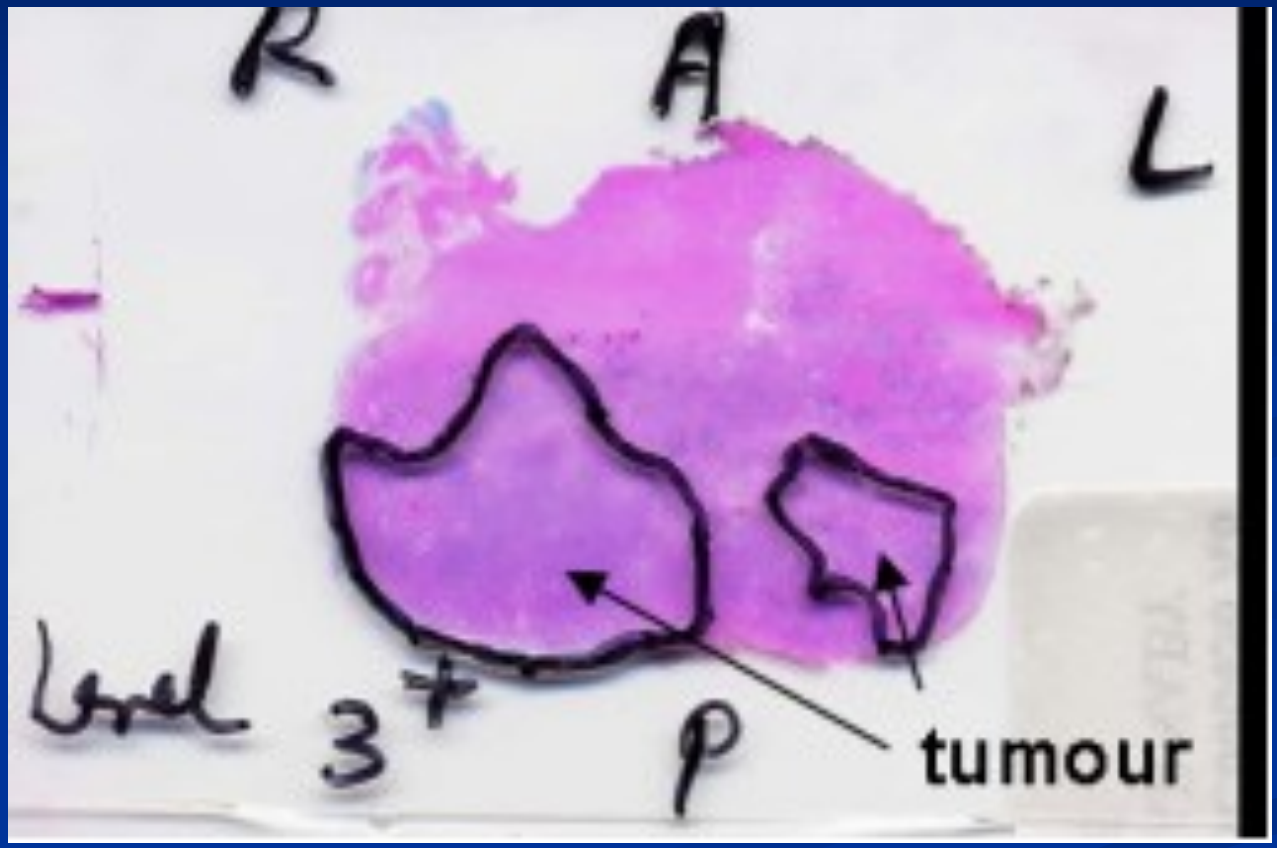
- More men die with than from prostate cancer
- Treatment depends on stage of disease, patient's age and general fitness
- Treatment options are for:
- Local disease
  - Observation
  - Radical radiotherapy
  - Radical prostatectomy
- Locally advanced disease
  - Radical radiotherapy
  - Hormonal therapy
- Metastatic disease
  - Hormonal therapy

Open

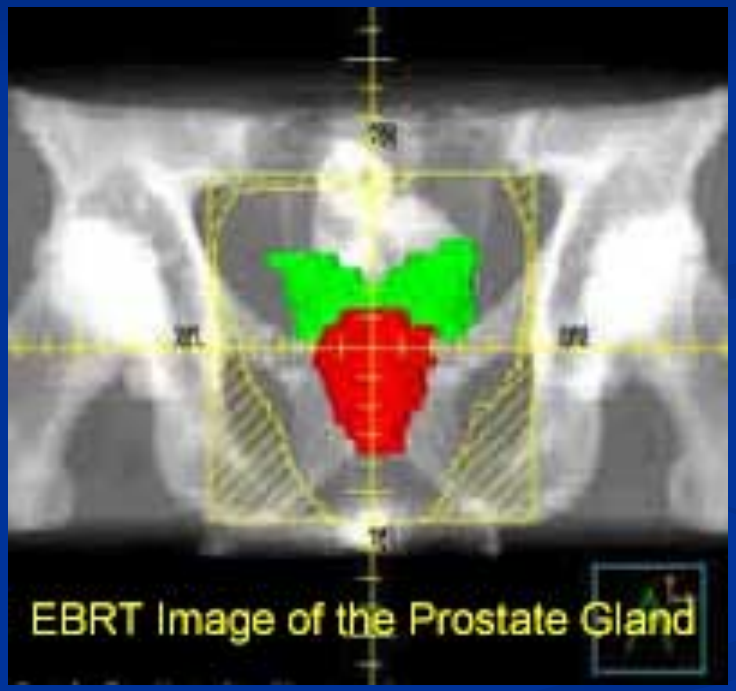


Laparoscopic

Robotic

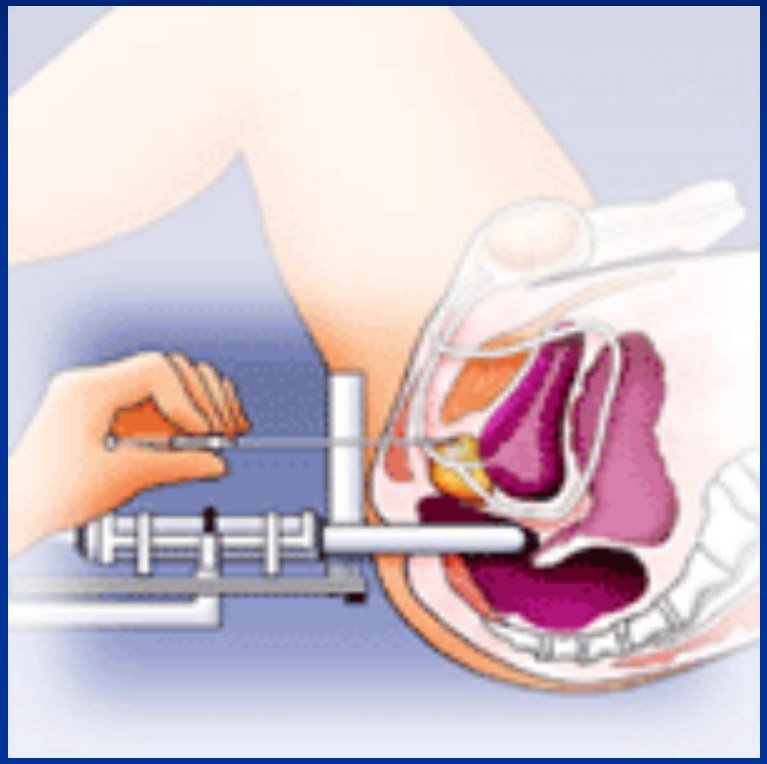

R
A
L
3
P
tumour

EBRT



EBRT

Brachytherapy



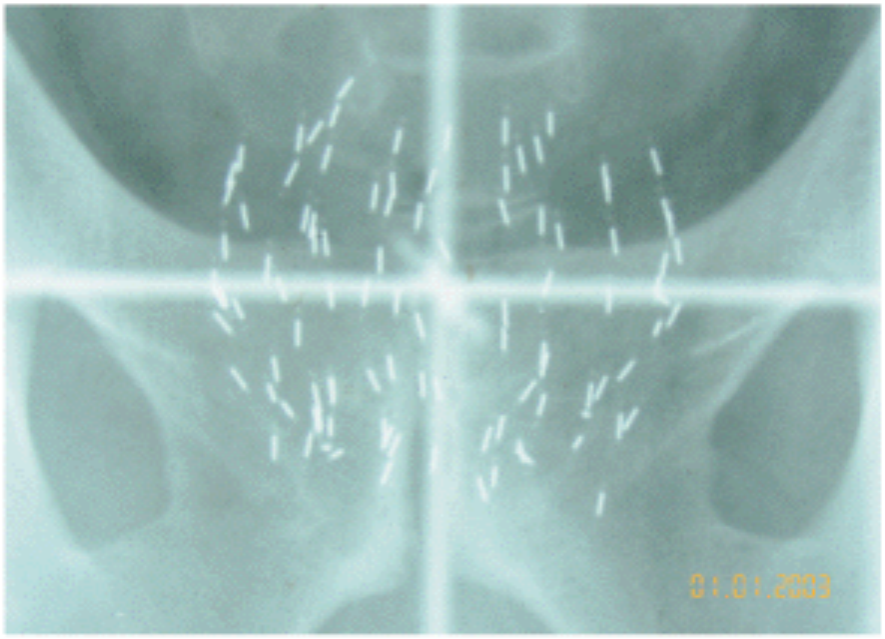
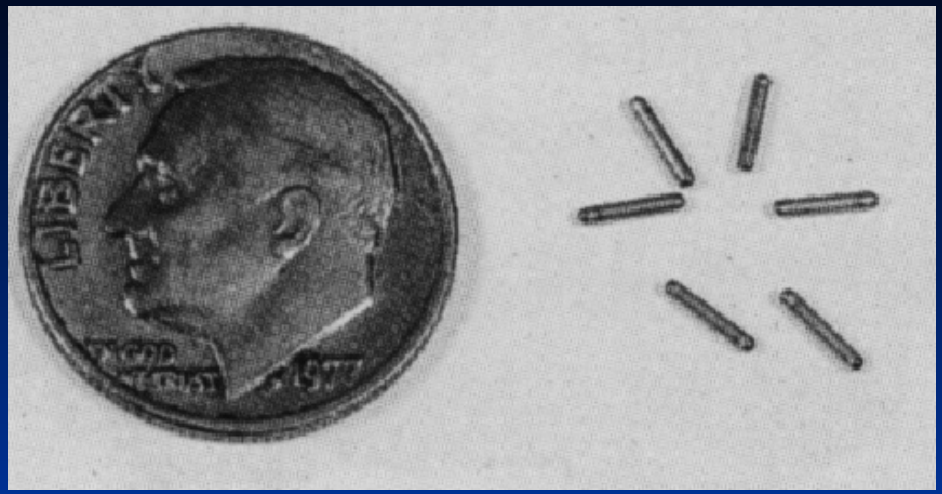
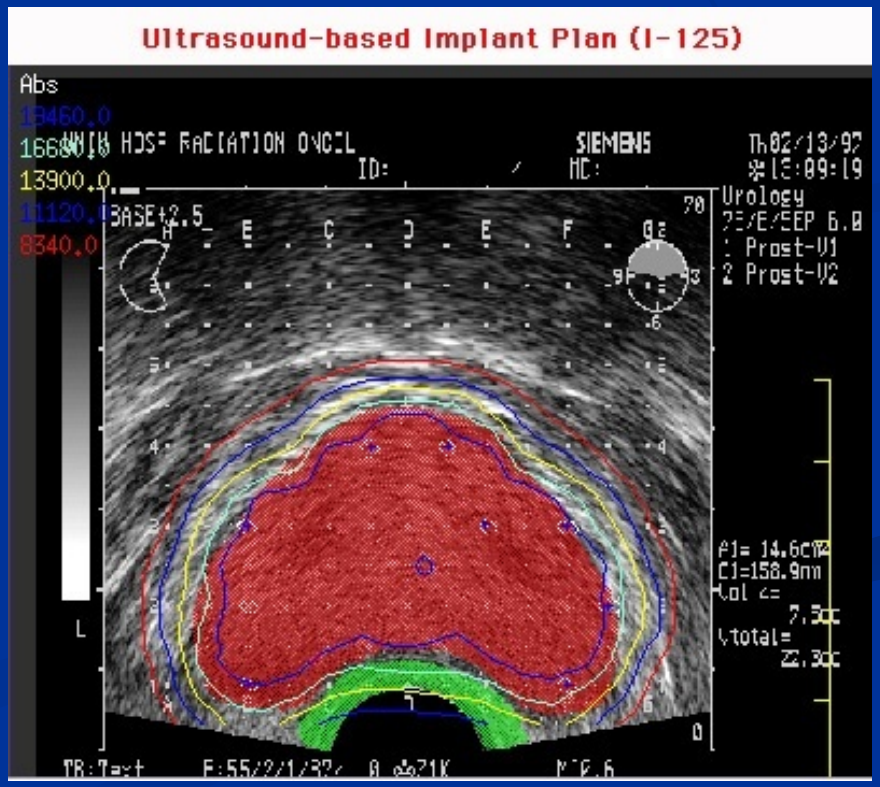
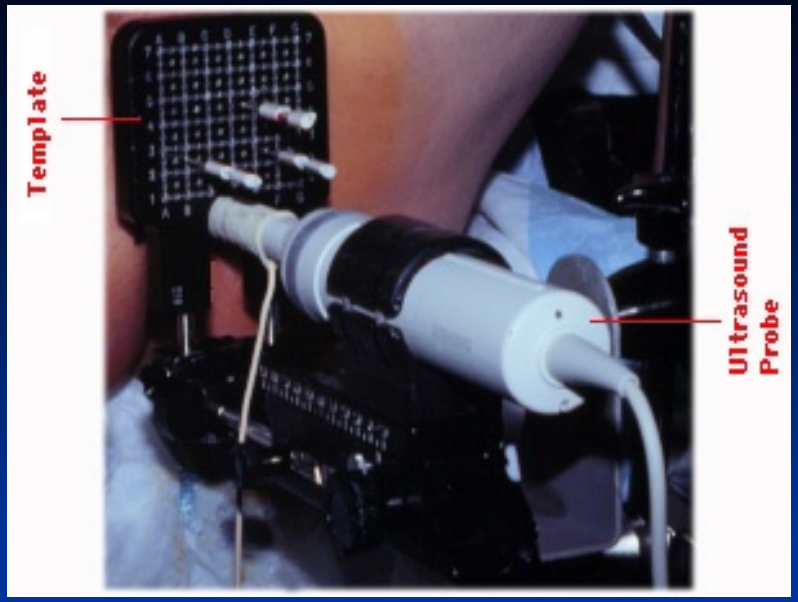


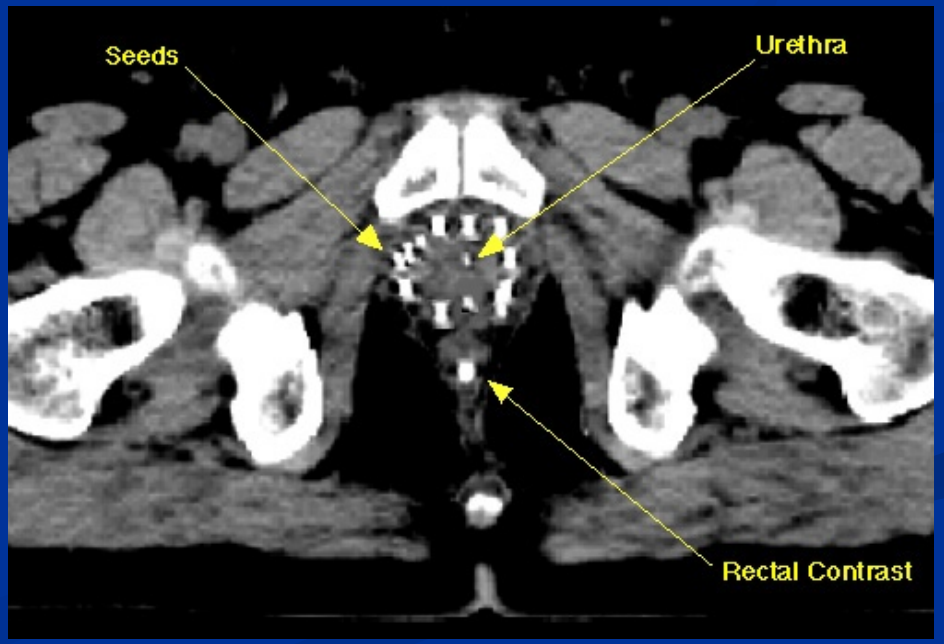
Figure 1. Location of radioactive seeds used in brachytherapy of prostate gland.

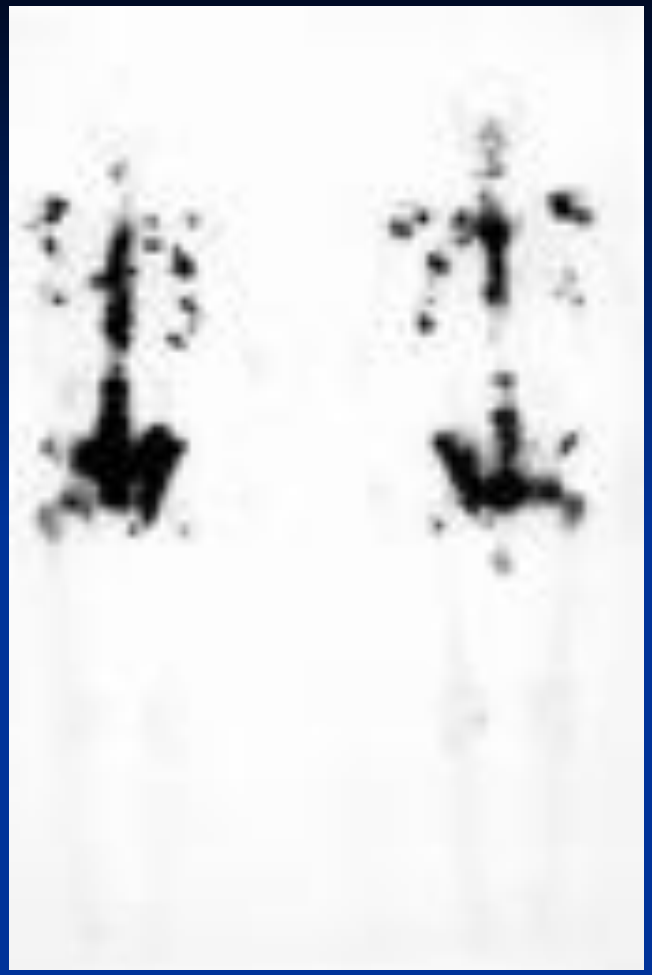
Photos courtesy of Russell Greene, MD, Stormont-Vail Regional Health Center, Topeka, Kan.

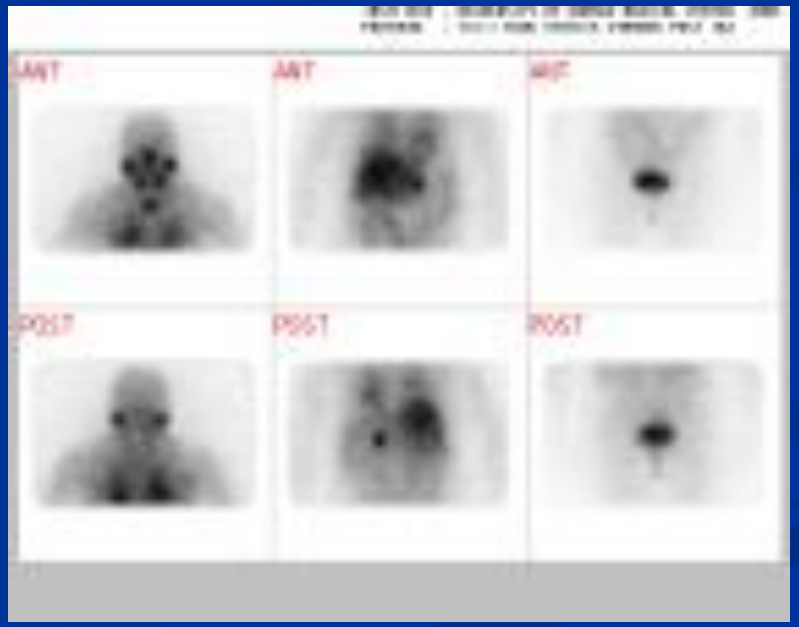



Ultrasound-based Implant Plan (I-125)
Abs
SIEMENS
Urology
Prost-V1
Prost-V2
TR:Text


Template
Ultrasound Probe


Seeds
Urethra
Rectal Contrast

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Hormonal therapy

- 80-90% of prostate cancers are androgen dependent for their growth
- Hormonal therapy involves androgen depletion
- Produces good palliation until tumours 'escape' from hormonal control
- Androgen depletion can be achieved by:
  - Bilateral orchidectomy
  - LHRH agonists - goseraline
  - Anti-androgens - cyproterone acetate, flutamide, Biclutamide
  - Complete androgen blockade

Testicular Tumors

Testicular Tumors

- Commonest presentation: testicular swelling on the side of the tumor.
- Commonest malignancy in young men
- Highest incidence in Caucasians in northern Europe and USA
- Peak incidence for teratomas is 25 years and seminomas is 35 years
- In those with disease localized to testis more than 95% 5 year survival possible
- Risk factors include cryptorchidism, testicular and Klinefelter's syndrome

Classification

- Seminomas (~50%)
- None- Seminoma (~50%)
  - Teratomas
  - Yolk sac tumors
  - Embryonal
  - Mixed Germ cell tumor

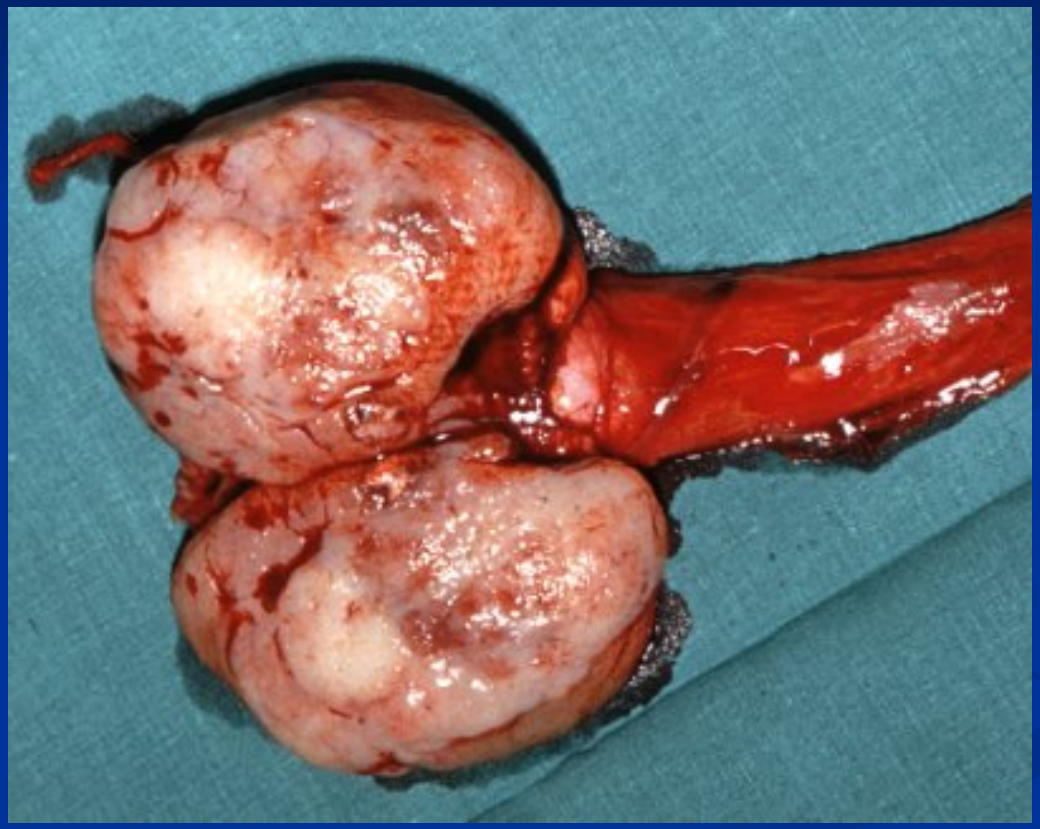
Investigation

- Diagnosis can often be confirmed by testicular ultrasound
- Pathological diagnosis made by performing an inguinal orchidectomy
- Disease can be staged by thoraco -abdominal CT scanning
- Tumor markers are useful in staging and assessing response to treatment
  - Alpha-fetoprotein (alpha FP)
    - Produced by yolk sac elements
    - Not produced by seminomas
  - Beta-human chorionic gonadotrophin (beta HCG)
    - Produced by trophoblastic elements
    - Elevated levels seen in both teratomas and seminoma
  - LDH

Stage Definition

- I Disease confined to testis
- IM Rising post-orchidectomy tumour marker
- II Abdominal lymphadenopathy
  - A < 2 cm B 2-5 cm C > 5 cm
- III Supra-diaphragmatic disease

Seminomas

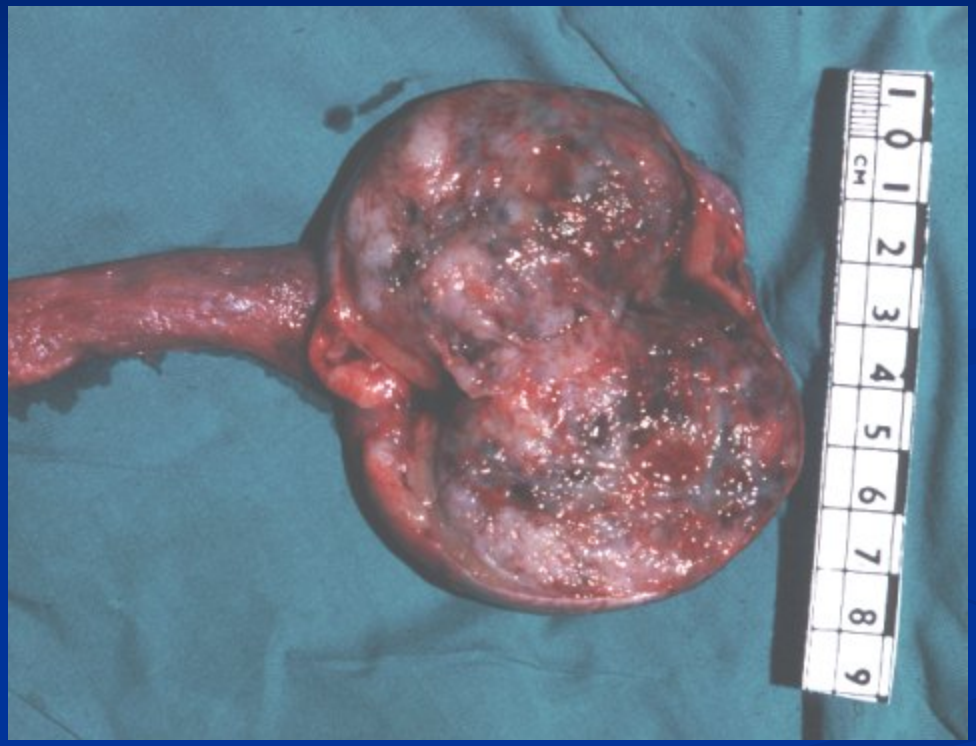


Seminomas

- Seminomas are radiosensitive
- The overall cure rate for all stages of seminoma is approximately 90%.
- Stage I and II disease treated by inguinal orchidectomy plus
  - Radiotherapy to ipsilateral abdominal and pelvic nodes ('Dog leg') or
  - Surveillance
- Stage IIC and above treated with chemotherapy

Radical Orchiectomy

None-Seminoma



None-Seminoma

- None-Seminoma are not radiosensitive
- Stage I disease treated by orchidectomy and surveillance Vs RPLVD Vs Chemo
- Chemotherapy (BEP = Bleomycin, Etopiside, Cisplatin) given to:
- Stage I patients who relapse
- Metastatic disease at presentation

Questions