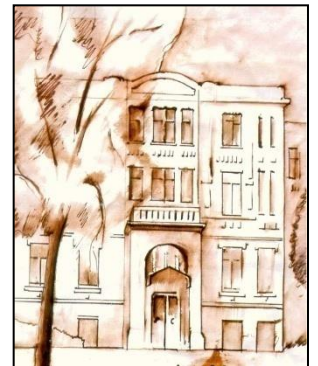


Bladder cancer

Péter Riesz

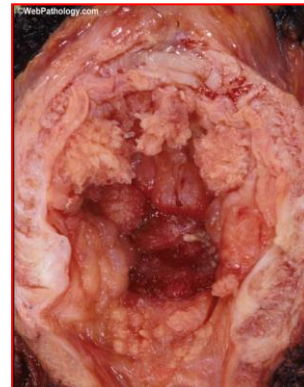
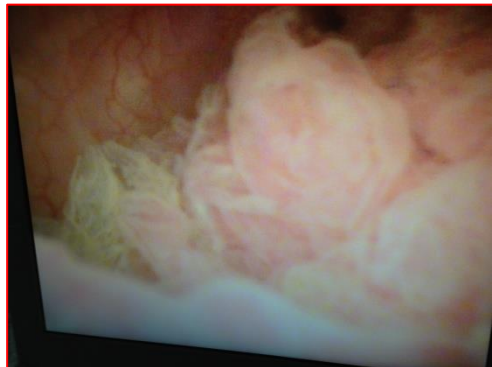


**European Board of Urology
Certified Department**



Epidemiology

- the second most common urological malignancy
- bladder cancer is more than 2.5 times more common in men than in women
- incidence increases with age in both sexes

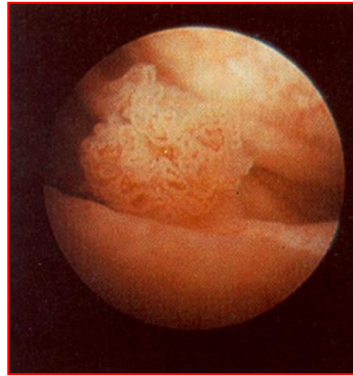


Risk factors



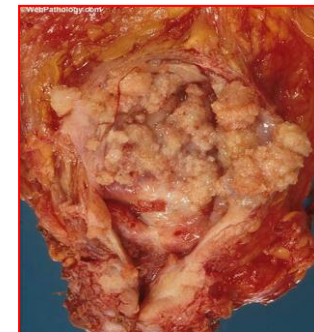
- **cigarette smoking** → triples the risk of developing bladder cancer
- aromatic amines
- industries
- printing
- iron and aluminium processing
- industrial painting
- gas and tar manufacturing

Symptoms



- **Haematuria**

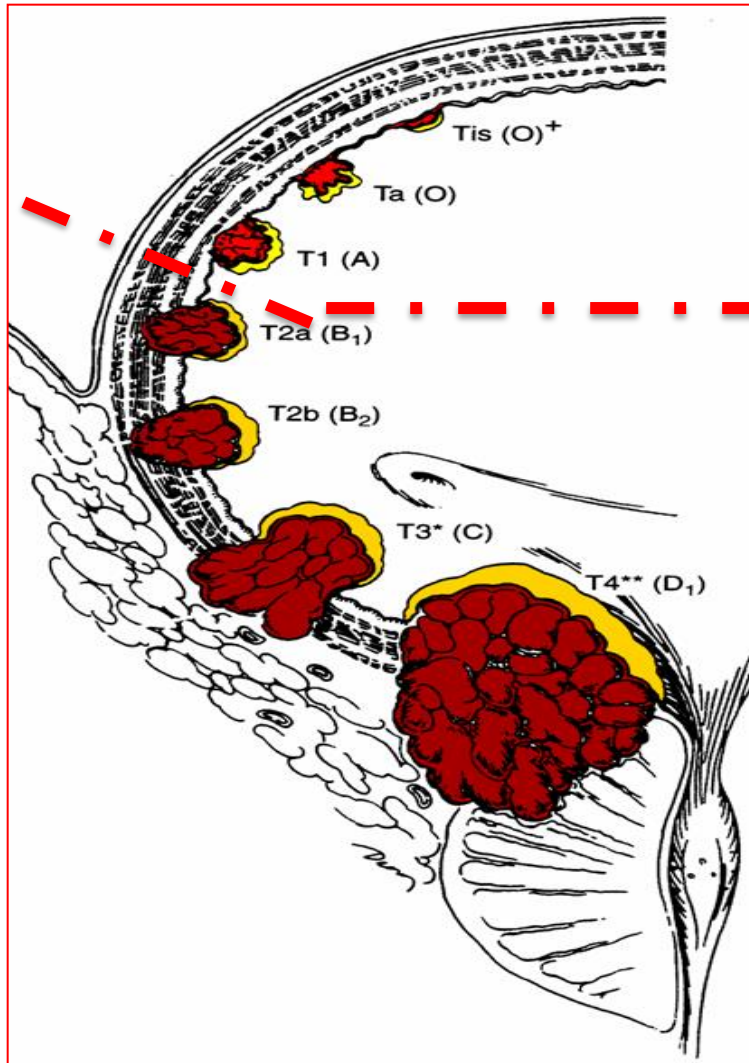
- painless and urine containing blood clots = silent hematuria (4/5 of the cases)
- urgency
- dysuria
- increased frequency, alguria
- pelvic pain, anuria



TNM classification

- T → Tumor
- N → Node
- M → Metastases

TNM staging (primary tumour)



- non-muscle invasive bladder cancer (superficial)

pTa, pT1, CIS

- invasive and metastatic bladder cancer

pT2-4

TNM staging (lymph nodes)

- NX regional lymph nodes cannot be assessed
- N0 no regional lymph node metastasis
- N1 metastasis in a single lymph node 2 cm or less in greatest dimension
- N2 metastasis in a single lymph node > 2 cm but ≤ 5 cm in greatest dimension, or multiple lymph nodes, none more than 5 cm in greatest dimension
- N3 metastasis in a lymph node > 5 cm in greatest dimension

TNM staging (distant metastases)

- MX distant metastasis can not be assessed
- M0 no distant metastasis
- M1 distant metastasis

Histopathological grading

Grade 1

well differentiated

Grade 2

moderately differentiated

Grade 3

poorly differentiated

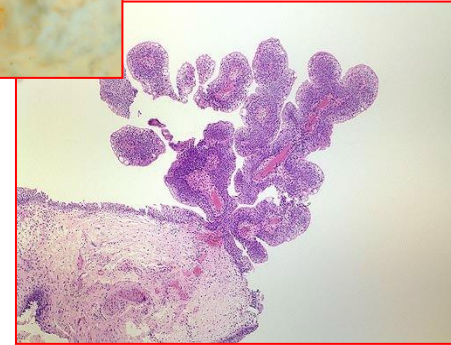


Histological classification (WHO 2004.)

- papillary urinary neoplasms of low malignant potential (**PUNLMP**)
- low grade (**LG**) / high grade (**HG**)
- previous Grade 1 → LG; Grade 3 → HG;
Grade 2 → HG or LG ??? !!!

Histology

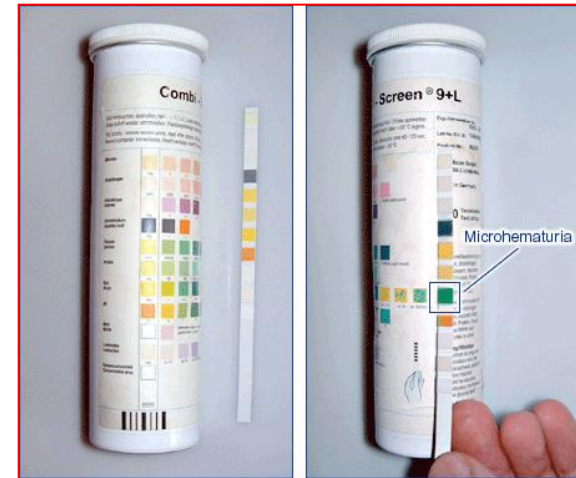
- **Transitional cell carcinoma (urothelial)**
 - ☞ more than **90%**
- Adenocarcinoma ☞ 3-4%
- Squamous cell carcinoma ☞ 2-3%
- Rhabdomyosarcoma, leiomyosarcoma, lymphoma, sigillocellularis carcinoma, melanoma malign. ☞ < 1%
- Papilloma – rare, benign, less than 7 layer of cell (urothelium)



Diagnosis I. (laboratory)



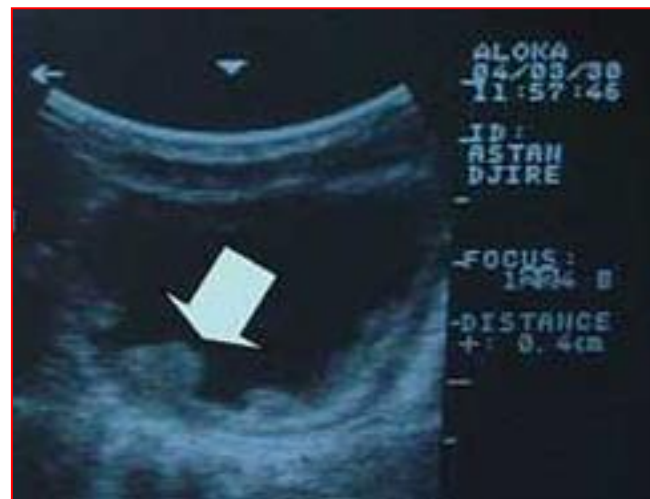
- Macrohematuria
- Laboratory test
Microhematuria!



- Blood test, anemia ☞ continuous hematuria
- Renal function ☞ se creatinine, se urea ↑ ☞
bilateral ureter occlusion

Ultrasonography

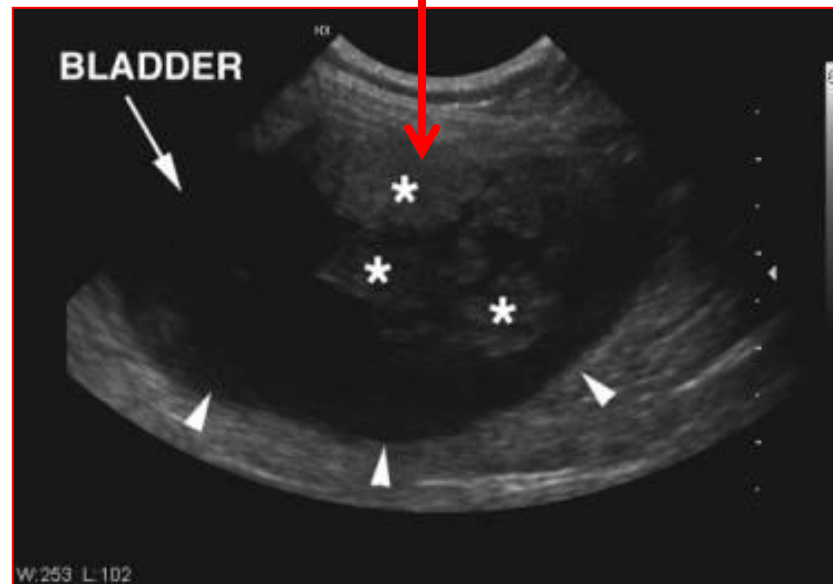
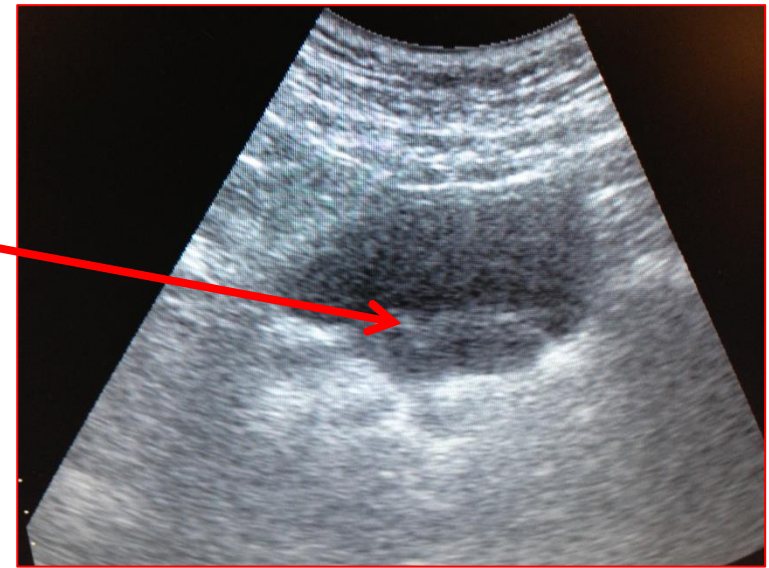
- need full bladder
- difficult to see the rear wall and small tumor (<1 cm)
- is suitable for examination of the upper urinary tract



Bladder cancer (ultrasonography)



Tumor



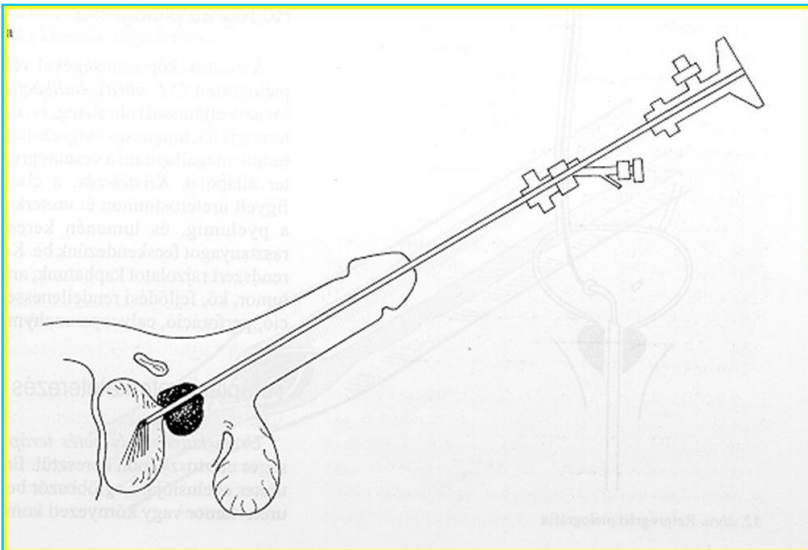
Bladder cancer (ultrasonography) - video



Diagnosis III.

Cystoscopy

- Invasive endoscopic procedure, usually under local anesthesia (rigid or flexible cystoscope)



Cystoscope



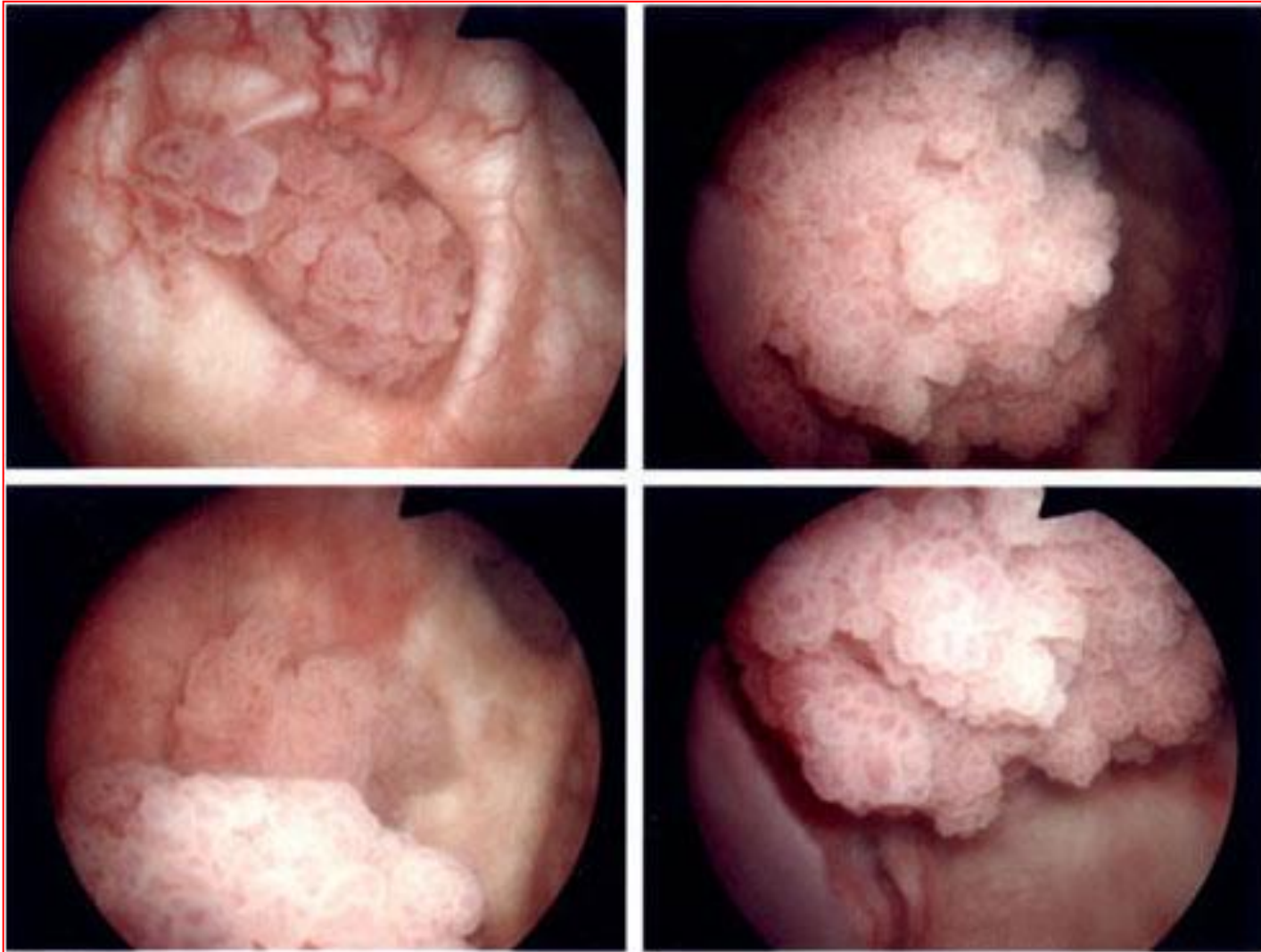
Cystoscopy (tumor size: 25 mm)



Cystoscopy (tumor size: 3 mm)



Cystoscopy (images)



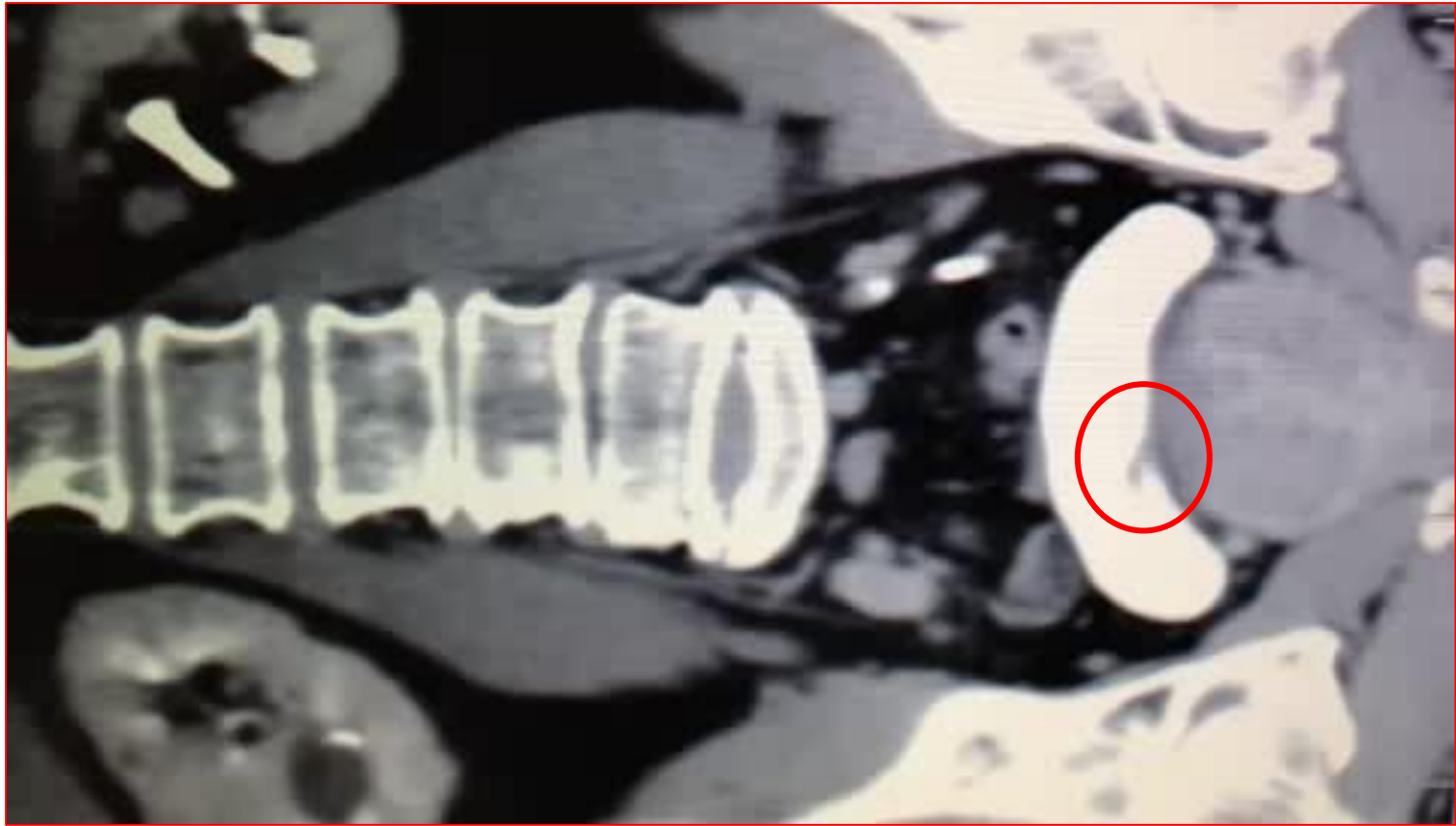
Diagnosis IV.

Computer Tomography

- the pelvic and abdominal lymph node
- involvement of surrounding organs (prostate, uterus, rectum)

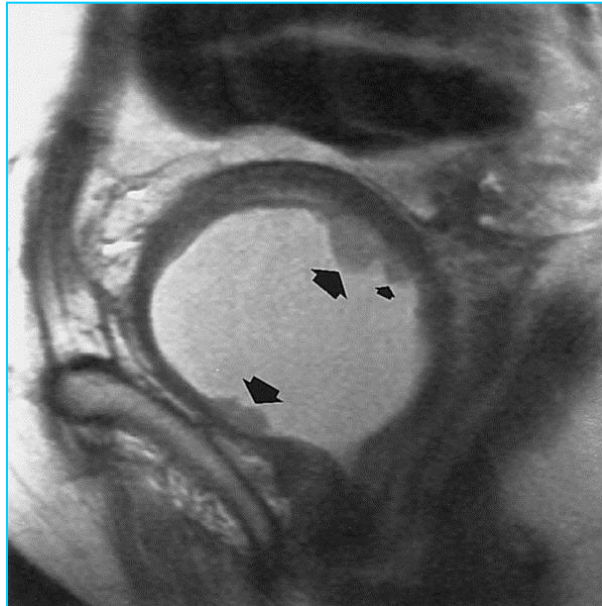


Computer Tomography (video)



MRI (Magnetic Resonance Imaging)

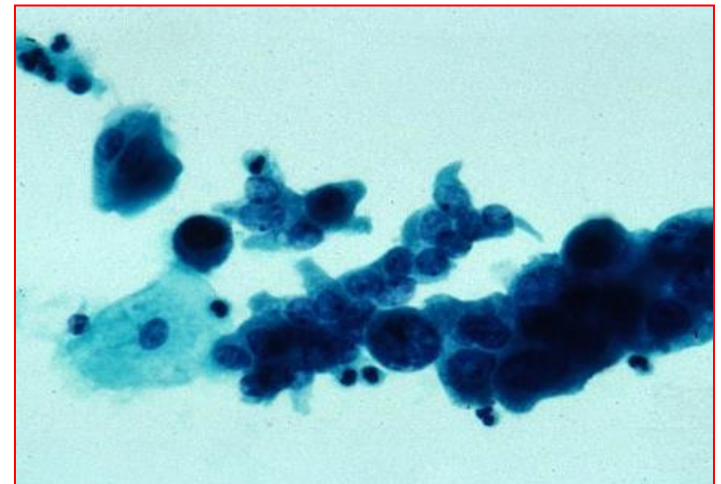
- high-resolution imaging
- advantage over CT that there is no radiation exposure



Diagnosis VI.

Urine cytology

- cytopathology is positive in T1, G3 and/or in situ carcinoma
- requires great practice
- patients with carcinoma in situ is a major benefit

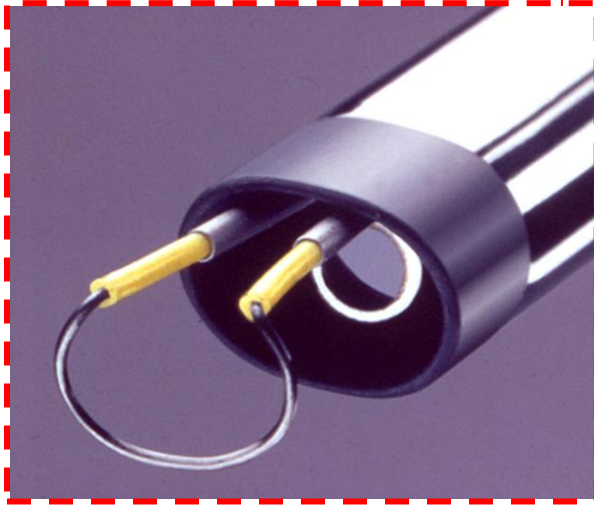
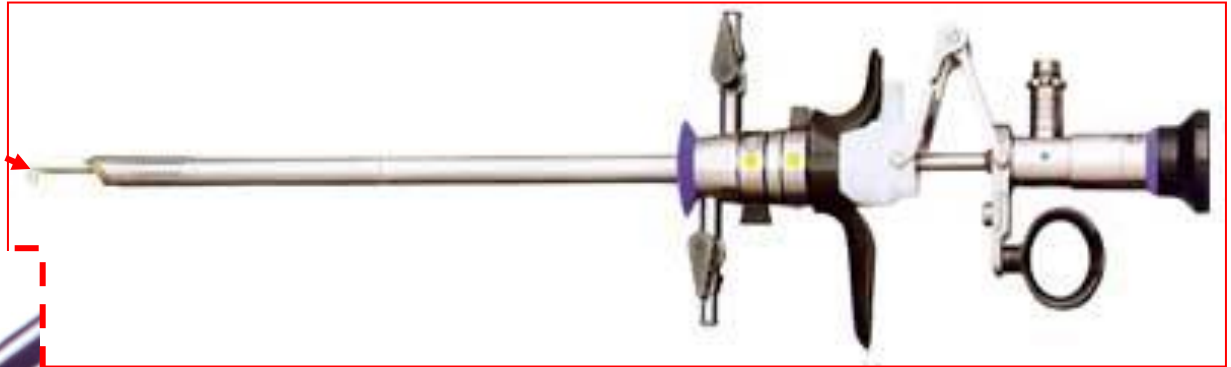


Non-muscle invasive bladder cancer (pTa, T1, CIS) therapy

- **Transurethral resection (TURB):**
- Accurate histological diagnosis only after surgery
- The goal of the TURB in Ta, T1 bladder cancer is to make the correct diagnosis and remove all visible lesions. It is a crucial procedure in the diagnosis and treatment of BC.
- Second resection if necessary: incomplete TURB or no muscle tissue
- It has very high tendency to **recurrence!**
In the first year: 45-65% (without local treatment)
- Progression, invasion susceptibility, relatively low 10-12%

Transurethral resection (TURB)

U-shaped loop



Transurethral resection (TURB)



Transurethral resection (TURB)



Transurethral resection (TURB)



Transurethral resection (TURB)



Transurethral resection (invasive tumor)



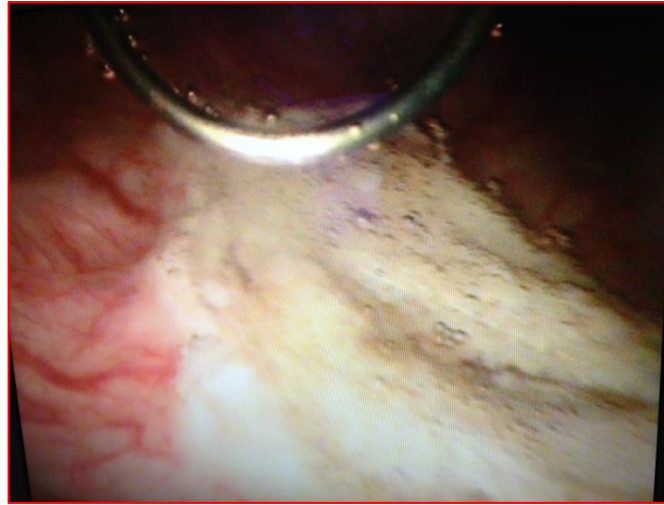
Transurethral electrofulguration (pTa)



Transurethral resection (TURB)



before resection



after resection

**resected
tissue**



Non-muscle invasive bladder cancer (pTa, T1, CIS) therapy

To reduce the recurrence

- intravesical chemotherapy (mitomycin-C, epirubicin)
- immediately after surgery within 6 hours early 1 instillation

This alone will reduce by 39% the recurrence.

- or over 6 weeks, once a week for one catheter



Carcinoma in situ

(non-muscle invasive bladder cancer)

- Flat, velvety, red areas on the bladder
- Always G3!
- After TURB: BCG-therapy (immunotherapy)
(6 x, weekly 1 x)





Non-muscle invasive bladder cancer (pTa, T1, CIS) follow up

- Every 3 months for 2 years, then every 6 months
 - Cystoscopy
 - Ultrasonography

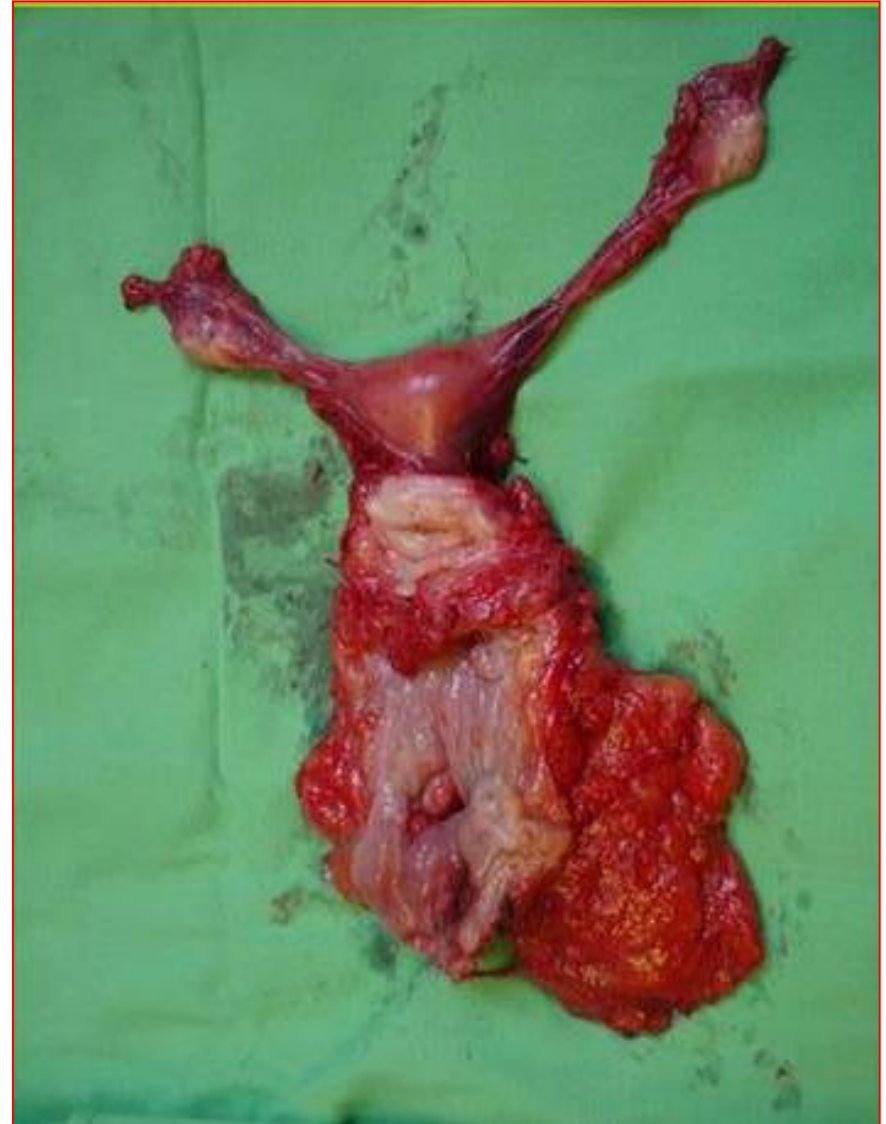


Treatment invasive bladder cancer I.

Radical cystectomy

- Curative treatment of muscle-invasive pT2-T3aN0 BC
- Long intervention with high-risk and high load
- Indication:
 - T1, G3 (recurrent) (individual decision)
 - T2, any G, any N
 - T3, any G, any N
- Male:  Cysto-prostato-vesiculectomy + parailiacal LA is indicated
- Female:  Bladder + uterus + the upper third of vagina removed

Surgical preparation

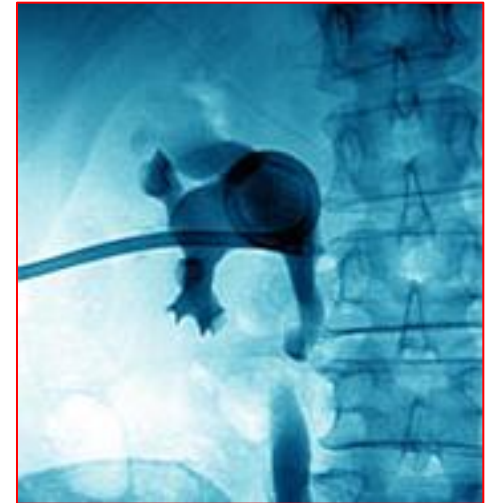


Treatment invasive bladder cancer II.

Urinary diversion → must be provided!


• Urine deviation

- percutan nephrostomy
- ureterocutaneostomy

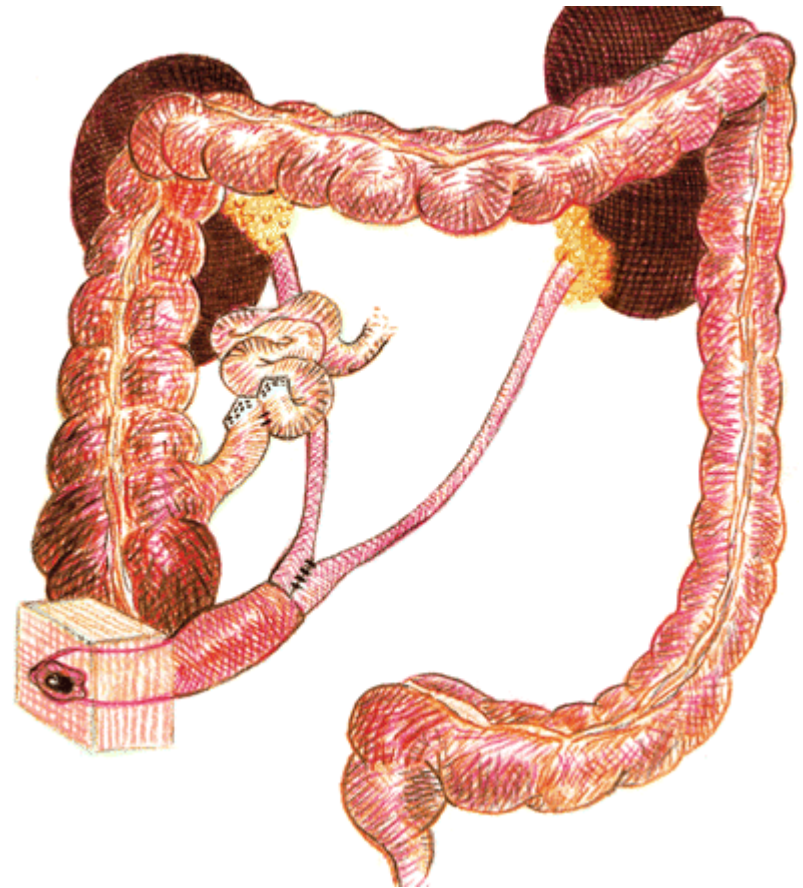
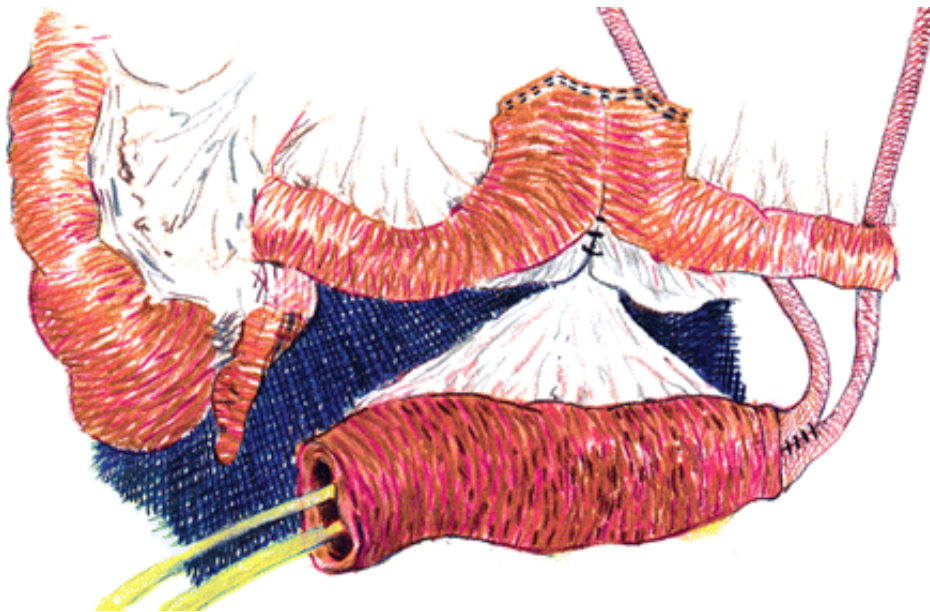
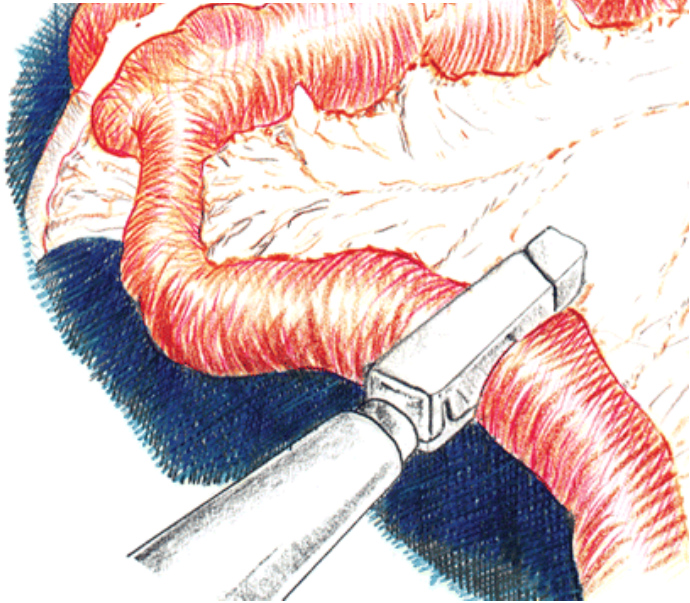


Treatment invasive bladder cancer (pT2-4) III.

Bladder replacement

- Interstitial using intestinal
 - ileal conduit (op. sec. Bricker)  urine container, but no continent

Ileum conduit op. sec. Bricker



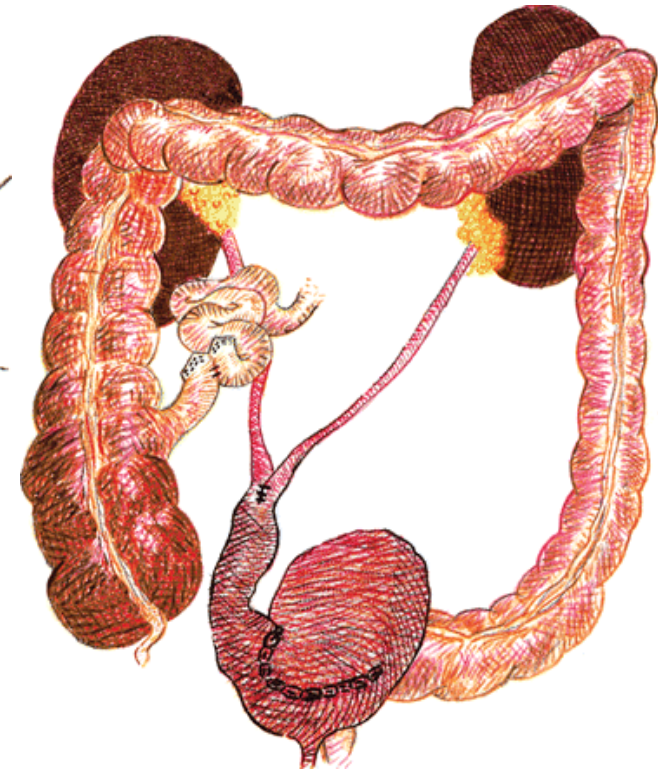
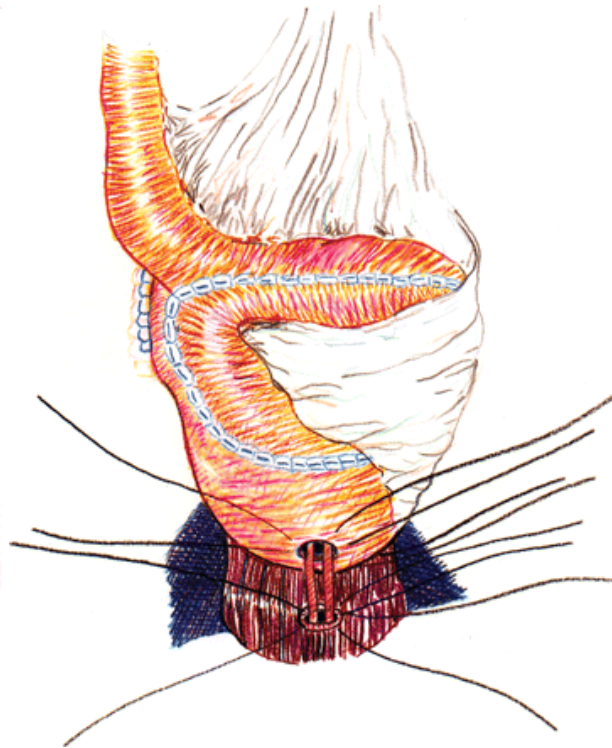
Treatment invasive bladder cancer (pT2-4) III.

Bladder replacement

- Orthotopic bladder  excreted in urine and feces is the natural place

Orthotopic bladder

Op. sec. Studer (ileum-bladder)



Bladder replacement complications, consequences

- Urinary reflux, ascendens pyelonephritis, chronic pyelonephritis
- Urine incontinency (nocturnal)
- Hyperchloremic acidosis - absorption of the urine components (ammonia, chlorine ions), control (blood gas analysis, ions) and compensation with bicarbonate
- Some drugs may be absorbed

Follow-up

- Patients who have undergone cystectomy should have examination every 3 months for at least 2 years
- Laboratory (Astrup), chest X-ray, ultrasonography
- Regular CT scans of the pelvis and abdomen are recommended

Invasive bladder cancer (pT2-4) chemotherapy

- Neoadjuvant chemotherapy (before operation)
- Adjuvant chemotherapy, after radical cystectomy (in stage pT3-4 and/or N+)
- If radical surgery is not suitable

i.v. M-VAC (methotrexat-vinblastin-adriamycin-cisplatin)

i.v. Gemzar-cisplatin

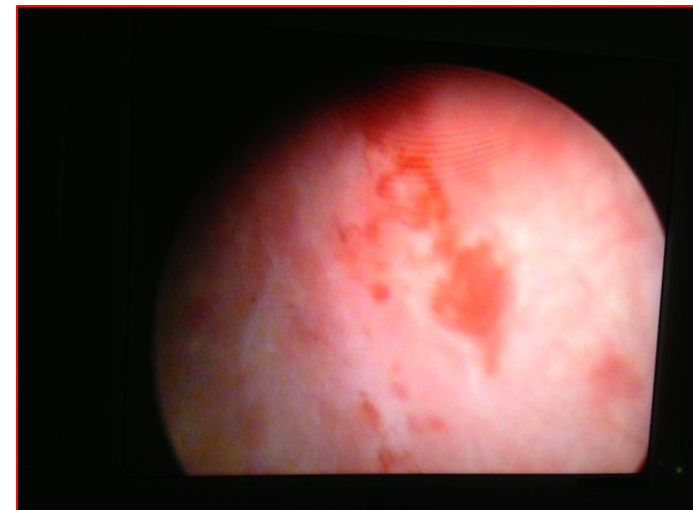
Invasive bladder cancer (pT2-4) radiotherapy

- Radiotherapy combined with chemotherapy (radio-chemotherapy)
- If radical surgery is not suitable **→** palliative radiation



Take home message

- In the case of **hematuria** urinary tract tumor has to be the first idea of the disease
- **Bladder cancer** is the most common cause of the silent and non painful haematuria



Thank you the attention!

