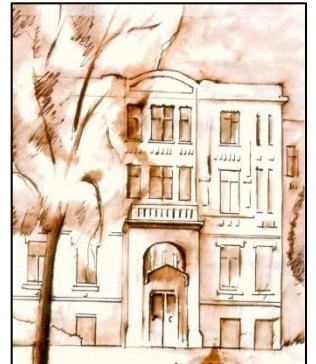


# Endourology

**Péter Nyirády**



**EBU Certified Clinic**



# Cystoscopy

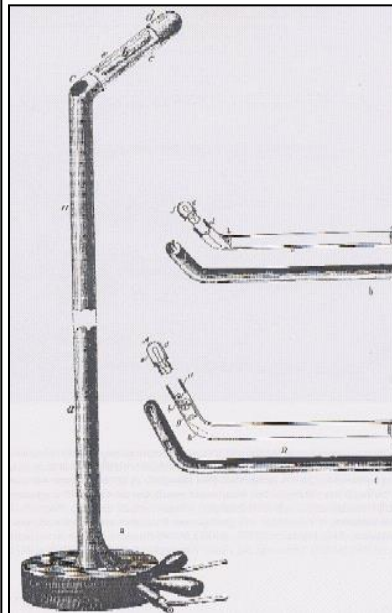
Bozzini 1805 – light leader

Desormeaux 1853 –

candle light → mirror system



Max Nitze 1848 – 1906

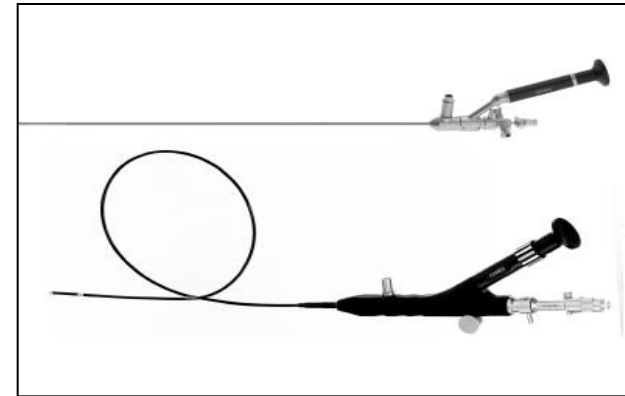


Nitze 1879 – cystoscope, source of light:  
platinum wire heated by electric power

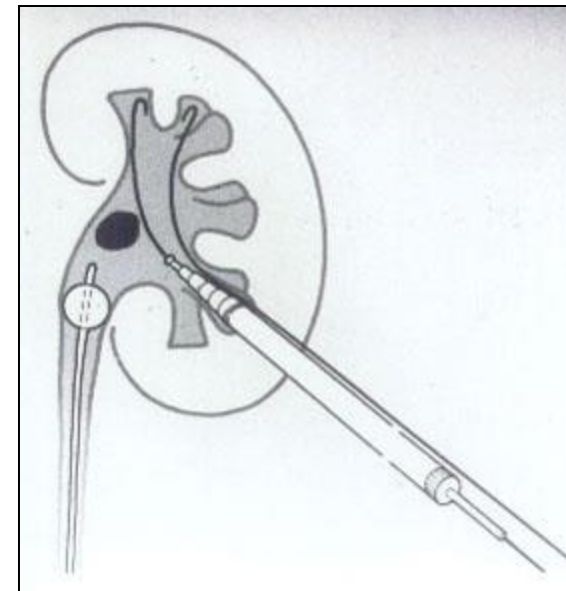
Newman 1883 – source of light:  
electric bulb

# Ureteroscopy

1912 - Hugh Hampton  
Used cystoscope in the dilatated ureter of a  
2 months infant



1964 - Flexible ureteroscopy



## Percutaneous nephrostomy

1869 - Gustav Simon, Heidelberg – hydronephrosis

1976 - Percutan stone removal



# Types

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- Urethroscopy
- Cystoscopy
- (Retrograde filling)
- Ureterorenoscopy
- Nephroscopy
- (Laparoscopy)
- (Pouchoscopy)

# Avoid iatrogen infections

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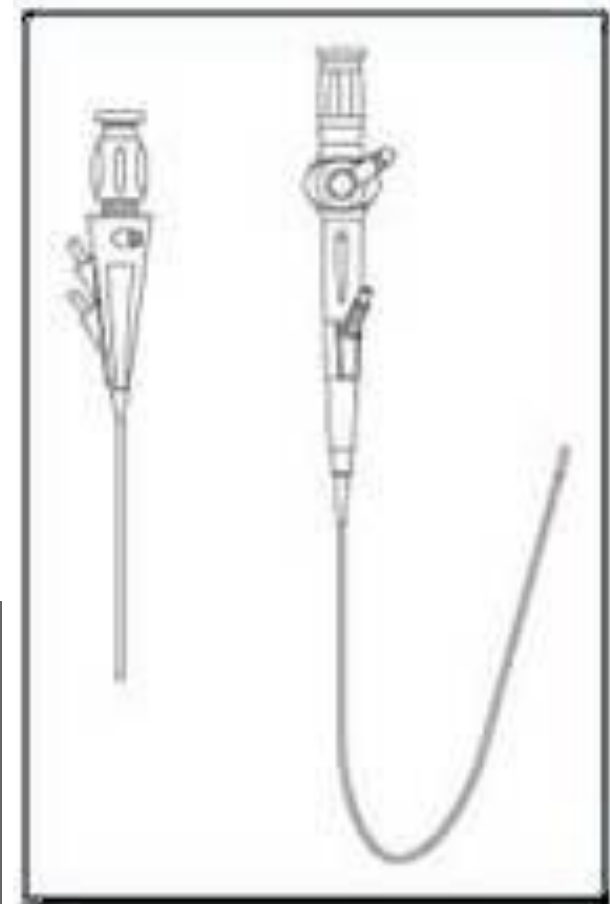
- Applying steril devices
- Steril rinse liquid
- Desinfection of urethral meatus
- Applying endoscopic gel (chlorhexidin)
- In case of pyuria antibiotics  
(targeted or wide-spectrum, high dose)
- Antibiotics following examination  
(compulsory in case of pyuria)
- Decrease local number of bacteria – rinse  
with betadine

# Avoid iatrogen injuries

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- Devices should be perfect! (Albarran)
- Device must not be forced!
- In case of stricture:
  - urethrotomy !
  - dilatation by ballon Ø
  - dilatation by catheter Ø
- Always optical device entry
- Usage of endoscopic gel instead of water
- Flexible devices

# Flexibile cystoscopy

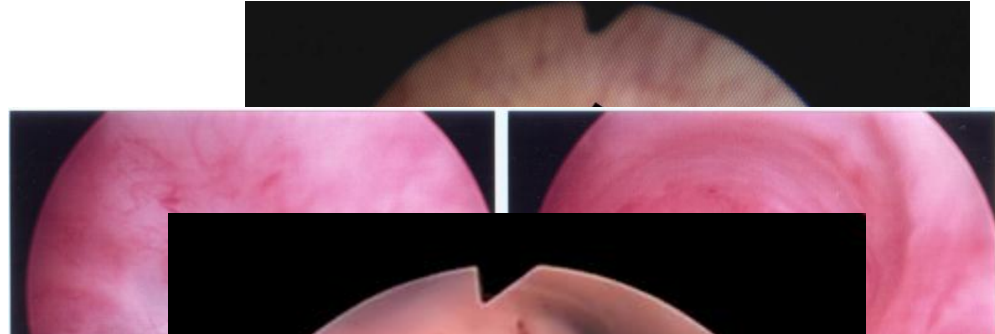




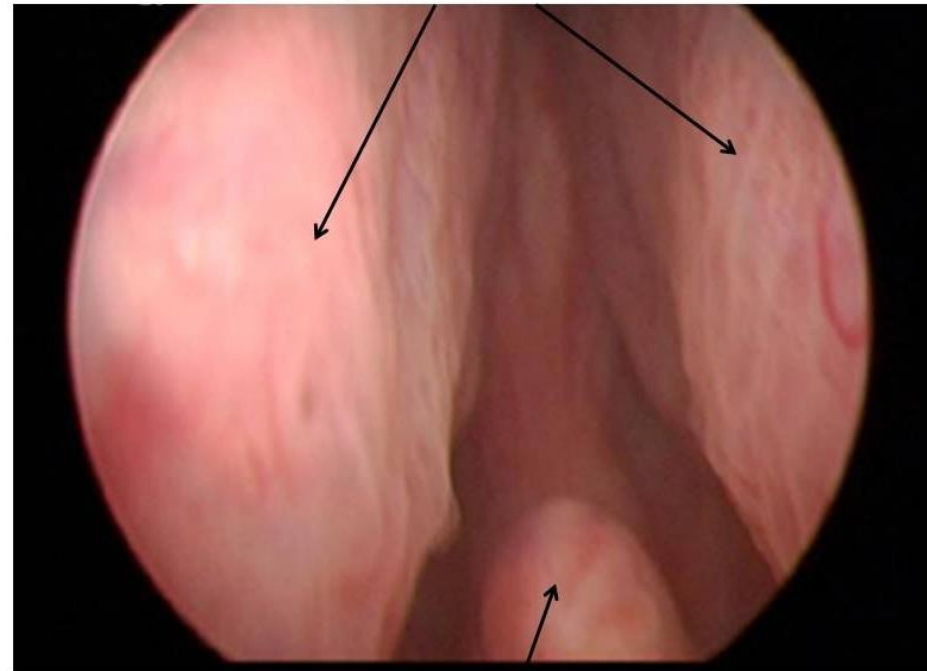
# Urethroscopy

## Diagnostics:

- Urethral stricture
- Urethral tumor
- Urethral stone
- Urethral diverticulum
- Prostatic urethra assessme



Lateral prostatic lobes

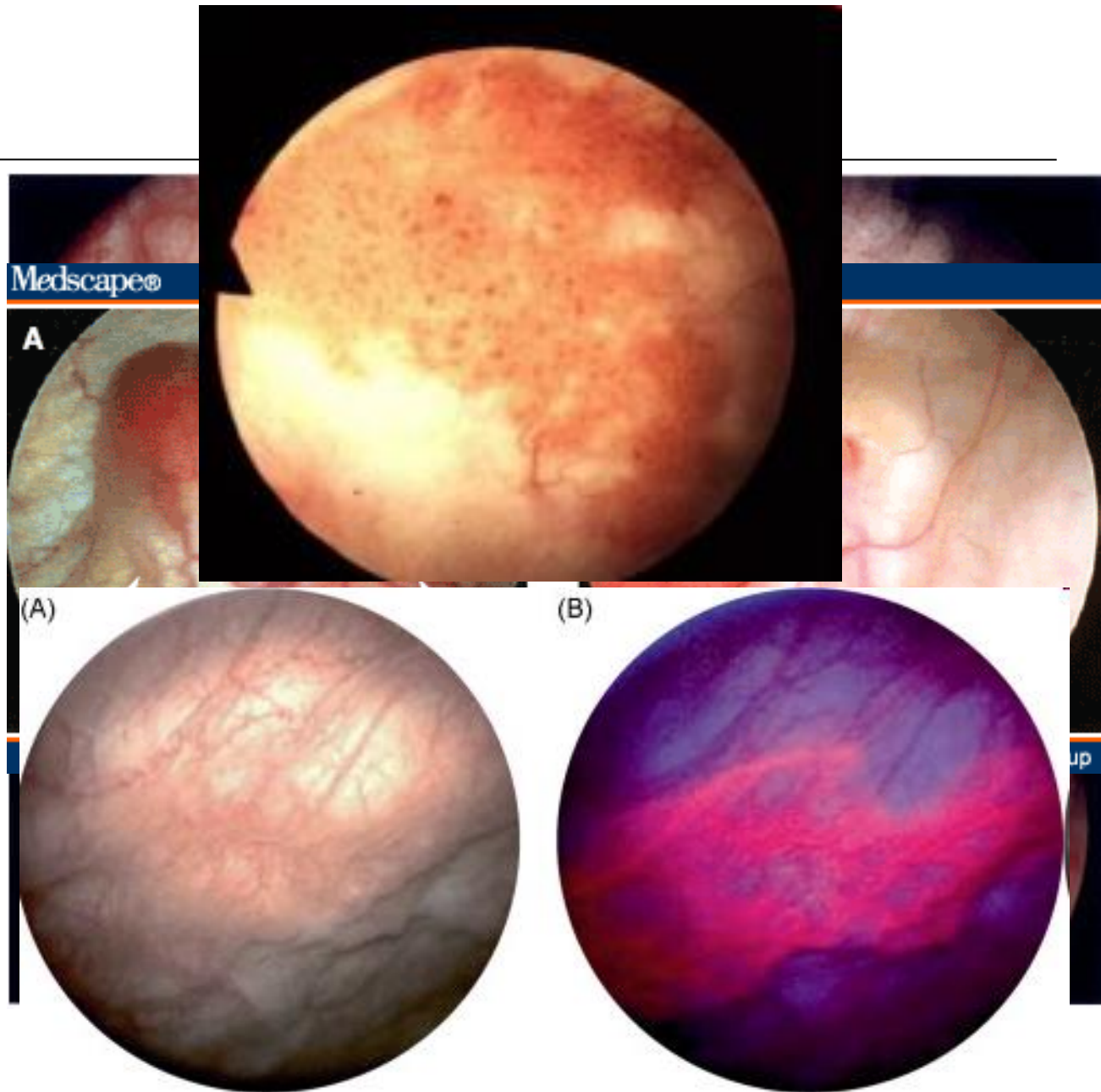


Verumontanum



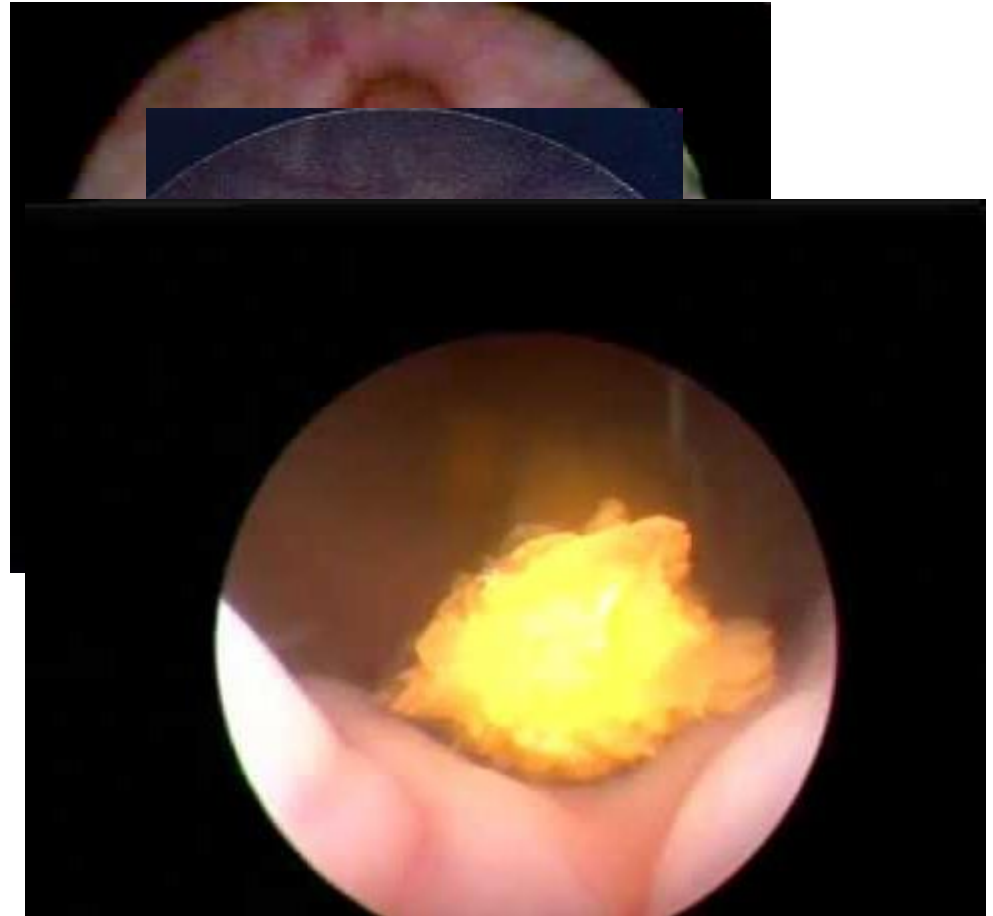
## Diagnostics:

- Bladder tumor
  - Papillare
  - Solid
  - CIS

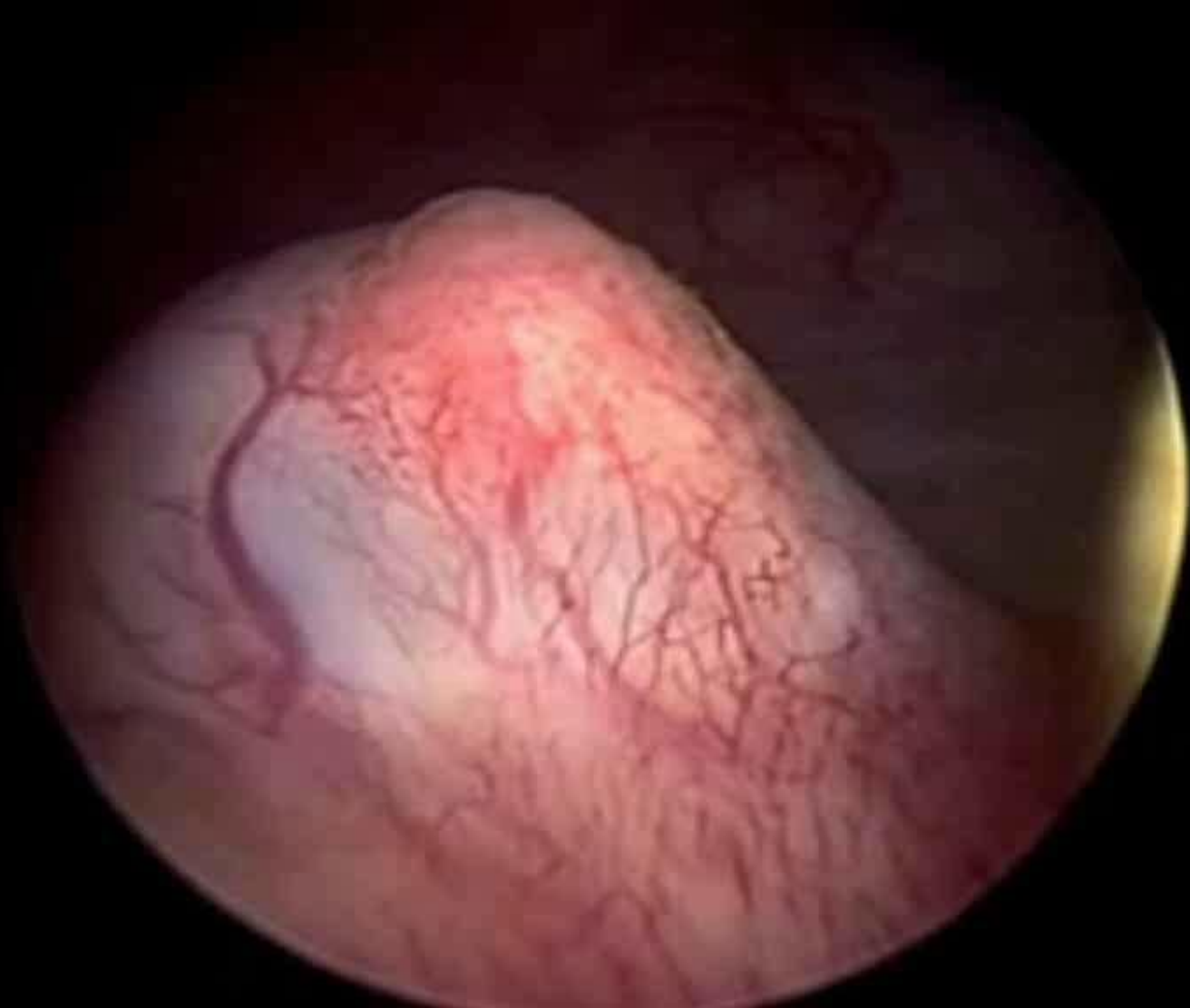


Diagnostics:

- Bladder diverticulum
- Trabeculated bladder wall
- Bladder stone




Diagnostics: → Ureterocele



Diagnostics: → VUR



Diagnostics: → Interstitial cystitis



bladder filling

A cystoscopic view of the bladder during a filling procedure. The bladder is partially filled with a fluid, and the text "bladder filling" is overlaid on the image.

# Fluorescens cystoscopy (Photodynamic examination)

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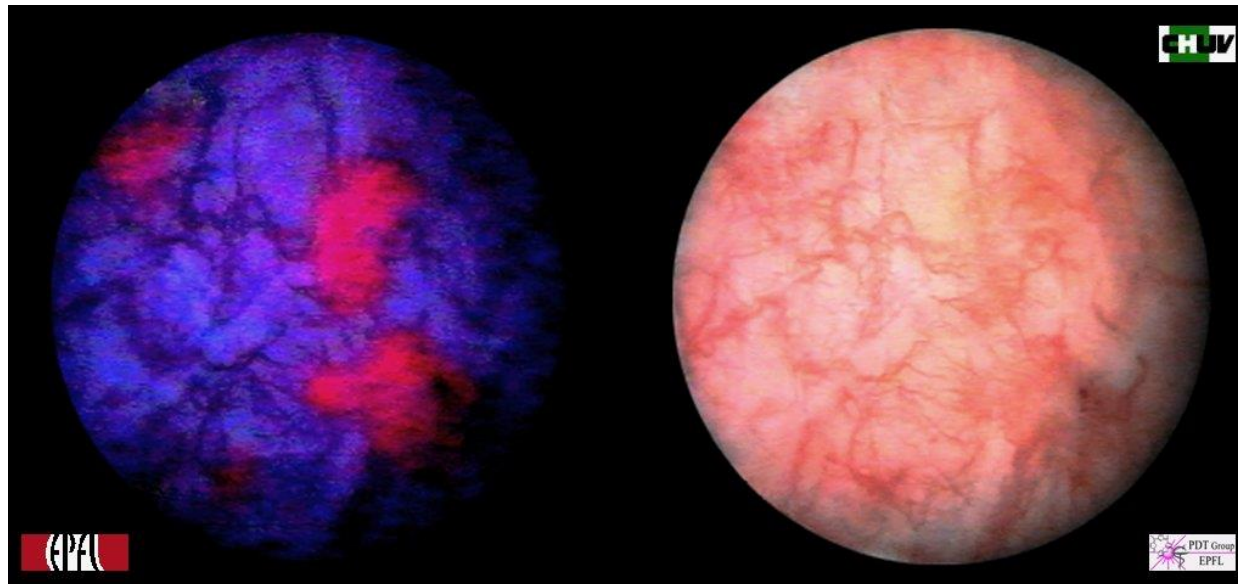
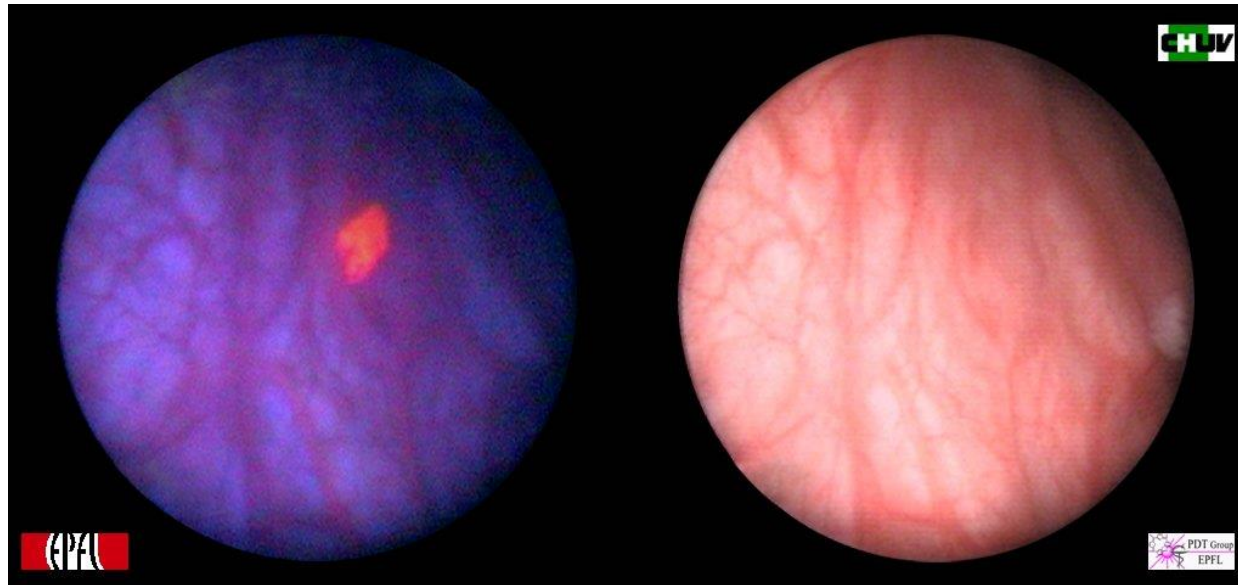
- Increase **sensitivity** (hexaminolevulinic acid - HAL)
- Tumors that not recognizable using white light cystoscopy can be diagnosed and resected by fluorescens cystoscopy
- **Expensive method**
  - HAL = 600\$, Cystoscopy = 601\$, TURBT= 1984\$

Burger M, Zaak D, Stief CG, Filbeck T, Wieland WF, Roessler W, Denzinger S. Photodynamic diagnostics and noninvasive bladder cancer: is it cost-effective in long-term application? A Germany-based cost analysis. *Eur Urol.* 2007 Jul;52(1):142-7.

Schmidbauer J, Witjes F, Schmeller N, Donat R, Susani M, Marberger M; Hexvix PCB301/01 Study Group. Improved detection of urothelial carcinoma in situ with hexaminolevulinic acid fluorescence cystoscopy. *J Urol.* 2004 Jan;171(1):135-8.

Pytel A, Schmeller N. New aspect of photodynamic diagnosis of bladder tumors: fluorescence cytology. *Urology.* 2002 Feb;59(2):216-9.

# Fluorescens cystoscopy





# Fluorescens cystoscopy

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## Recommended:

- In the USA → approved to use 1x
- EAU: suspicious case of high grade NMIBC

## Contraindication

- BCG treatment within 90 days
- Significant haematuria
- 5 aminolevulinic acid allergy
- Porphyria

## Method:

- Up to 1-3 hours before cystoscopy HAL is administered via catheter

## Difficulties:

- Inflammation → false positive view

# Fluorescens cystoscopy

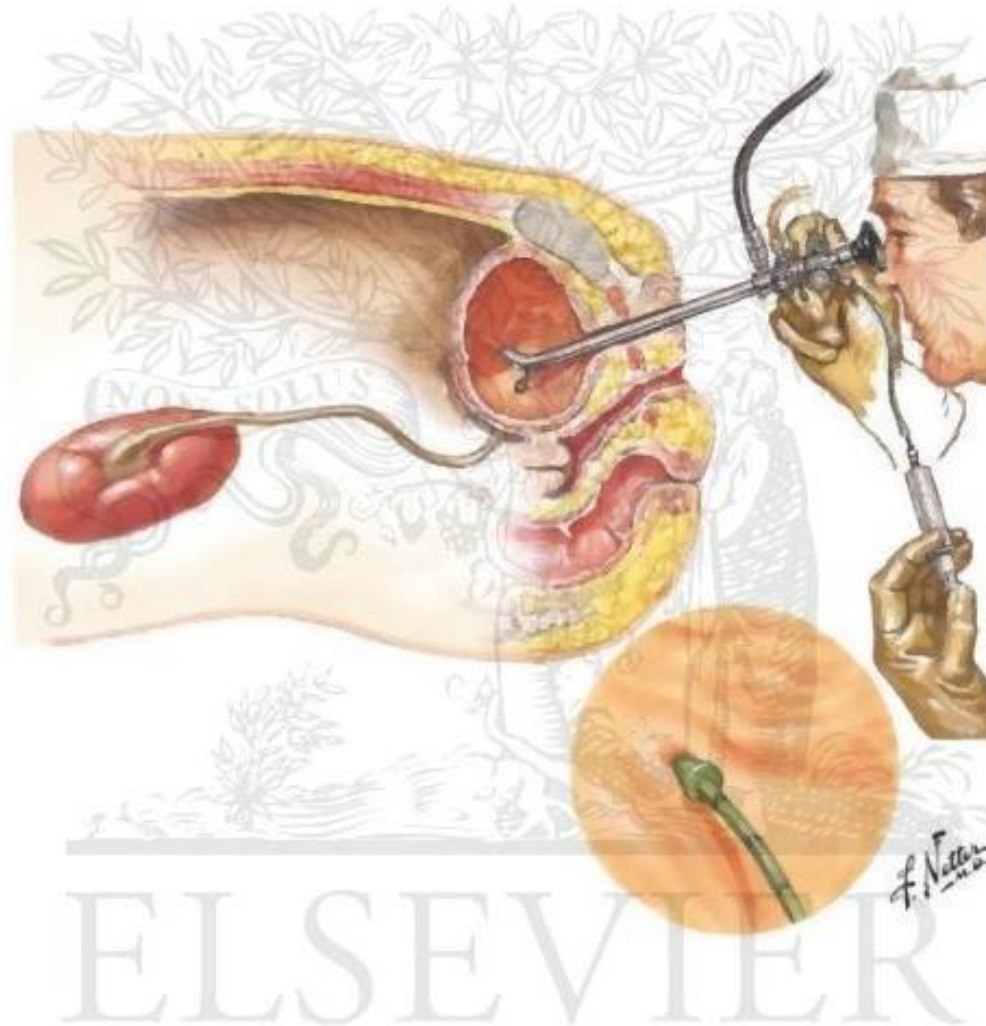


# False positive – Inflammation!!

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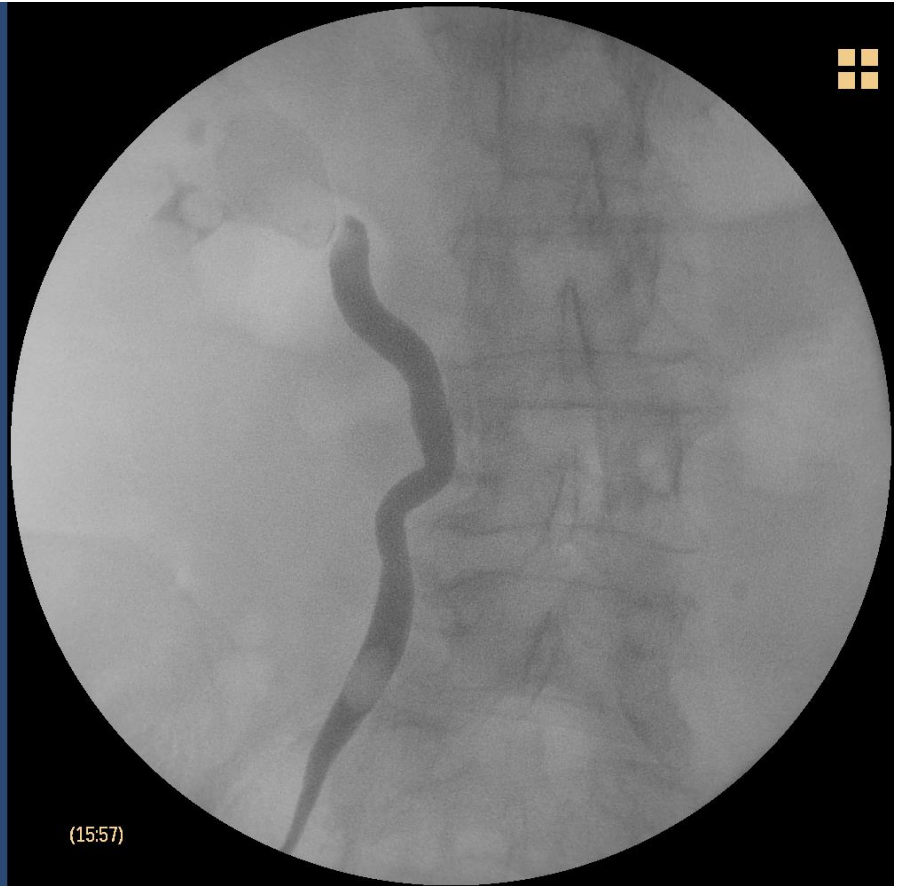
# Retrograde filling



# Retrograde filling

PHILIP	PHILIPS	PHILIPS	PHILIPS	PHILIPS	PHILIPS BV Endura
SE Urológiai Patient No name	SE Urológiai K Patient No name	SE Urológiai K Patient No name	SE Urológiai K Patient No name	SE Urológiai K Patient No name	SE Urológiai Klinika Patient No name
Examinatió	Examination	Examination	Examination	Examination	Examination
Abdomin 2012-05-	Abdominal 2011-12-06	Abdominal 2013-06-26	Abdominal 2012-05-05	Abdominal 2012-12-17	Abdominal 2012-12-06

U



(15:57)

# Retrograde filling

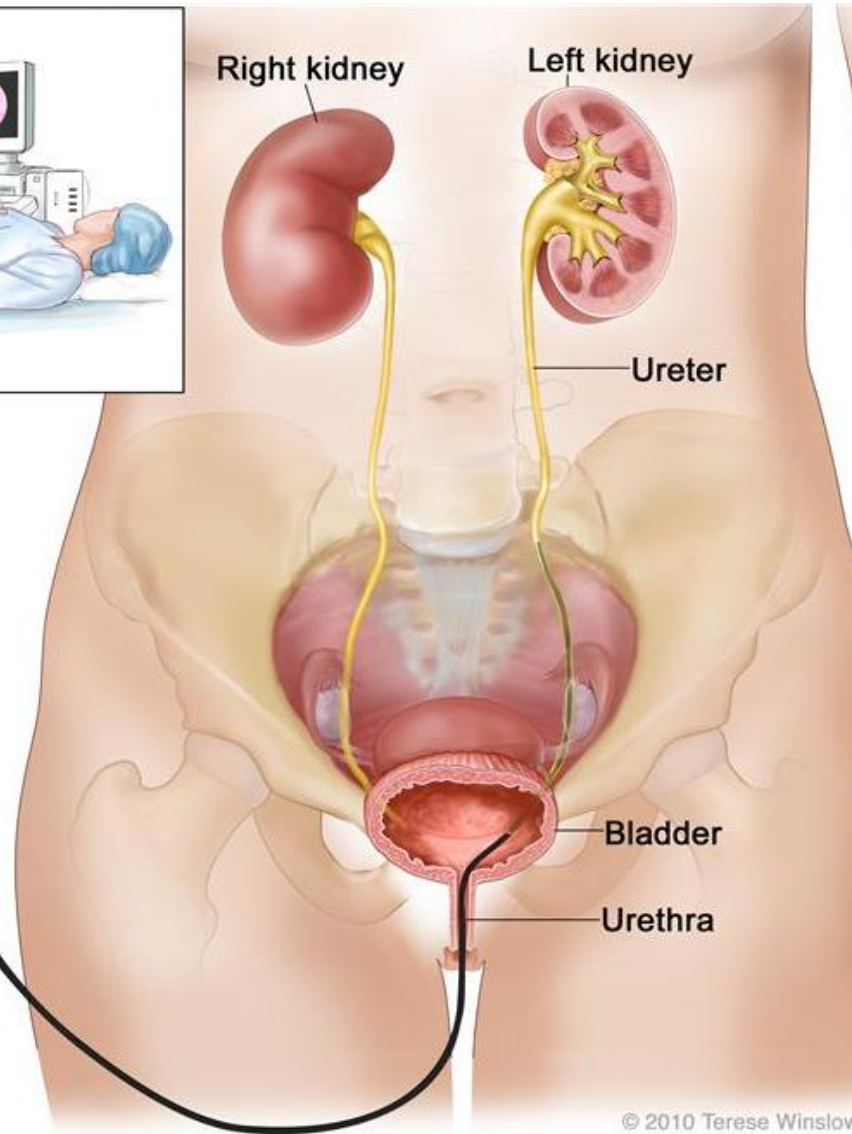




# Ureterorenoscopy



Ureteroscope





# Diagnostic ureterorenoscopy

- Flexible device is favourable
- Applying video is useful - documentation
- Guide-wire should be pushed forward for a few cm!  
(„railway” technic)
- Check rinsing liquide pressure
- Possibility of biopsy
- Hydraulic dilatation of ureteral orifice
- Using instillagel might be advantageous



# Diagnostic ureterorenoscopy

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## Indication:

- Haematuria
- Tumor suspicion
- Biopsy
- Part of other therapies (stone removal)
- Follow up of pyelon or ureter tumor after endoscopic resection

# Diagnostic ureterorenoscopy

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# Diagnostic ureterorenoscopy

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# Nephroscopy

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## Indication:

- ??????????
- Invasive
- Flexible ← rigid
- Miniscopes
- As part of therapy (stone removal, tumor resection)



**THANK YOU FOR THE ATTENTION!**

