INGENUITY
FOR
HEALTH

ENODCOPIC UROLOGY

INGENIOUS

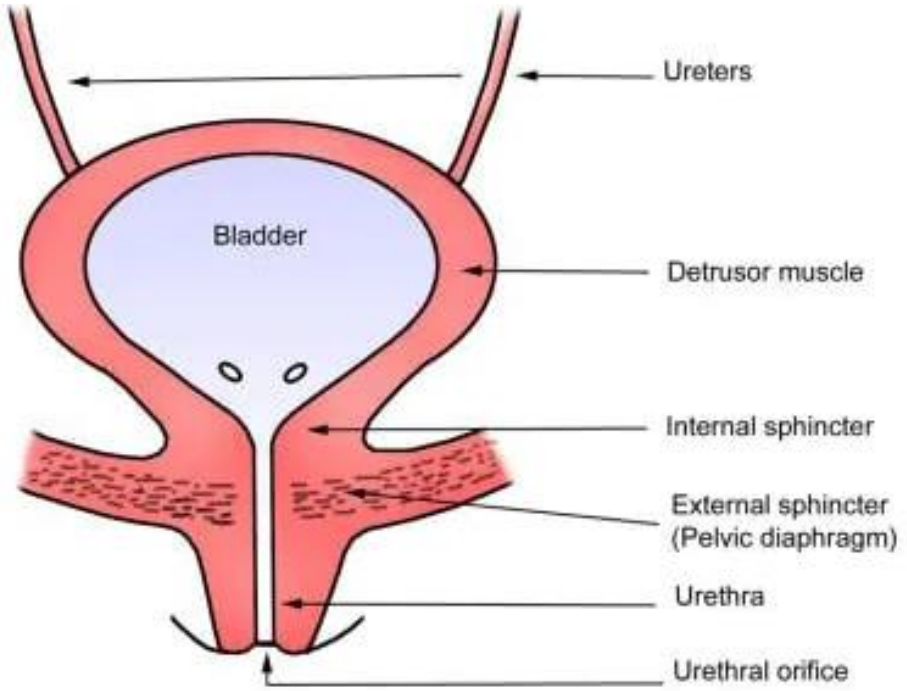
1. CYSTOSCOPY
2. URETHROTOMY
3. TURP
4. TRUB
5. URETERO-RENOSCOPY
6. NEPHROSCOPY

CYSTOSCOPY

1. CYSTOSCOPY - ANATOMICAL REVIEW

INGENIOUS

- The adult bladder is located in the anterior pelvis and is enveloped by extraperitoneal fat and connective tissue.
- It is separated from the pubic symphysis by an anterior prevesical space known as the retropubic space (of Retzius).
- The dome of the bladder is covered by peritoneum, and the bladder neck is fixed to neighboring structures by reflections of the pelvic fascia and by true ligaments of the pelvis.

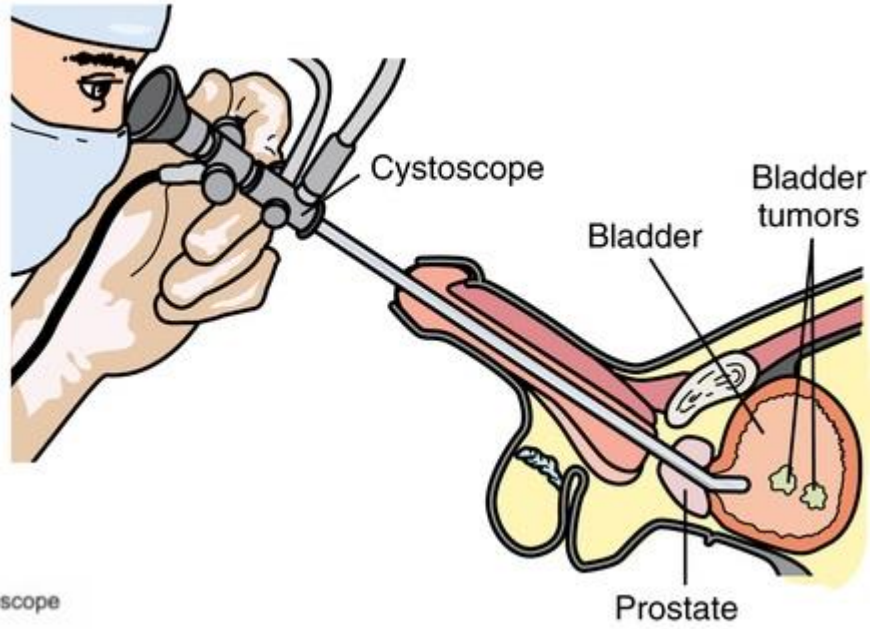


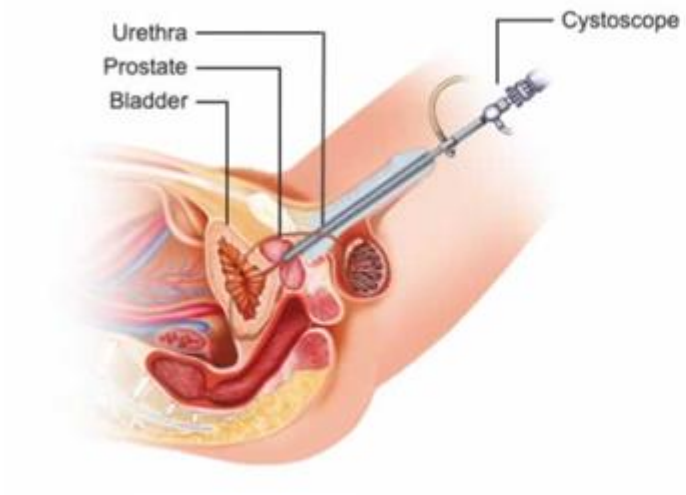
INGENUITY FOR HEALTH

1. CYSTOSCOPY - DEFINITION

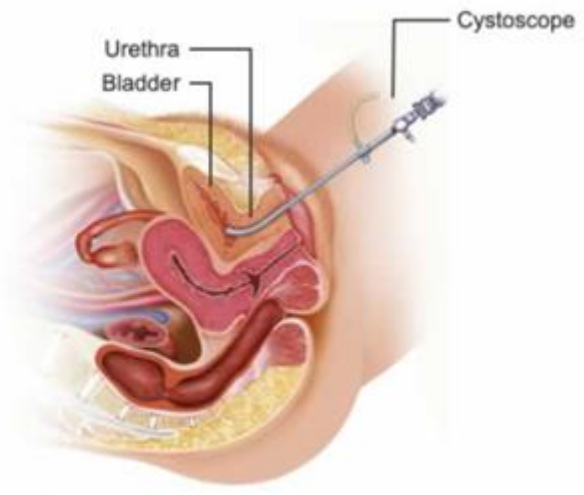
- Cystoscopy is endoscopy of the urinary bladder via the urethra for either **DIAGNOSTIC** or **THERAPEUTIC** purposes.

- Cystoscopy is the use of a scope to examine the Urethra, Ureters, Bladder, and Prostate (for males).





MALE

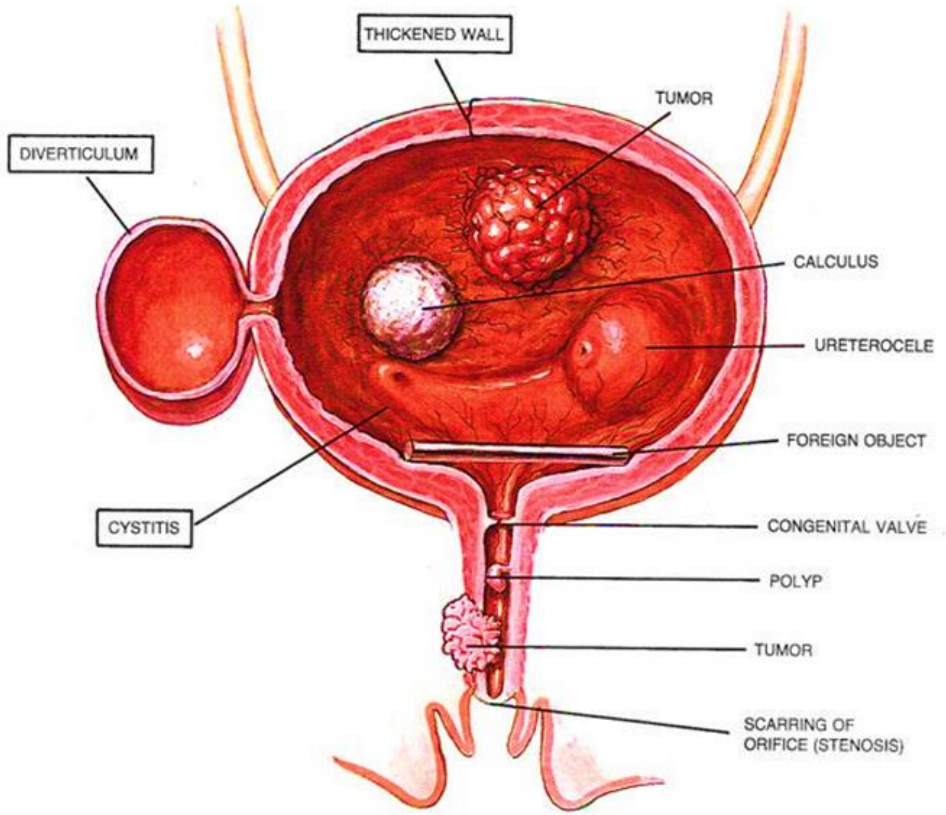


FEMALE

INGENIOUS

DIAGNOSTIC CYSTOSCOPY

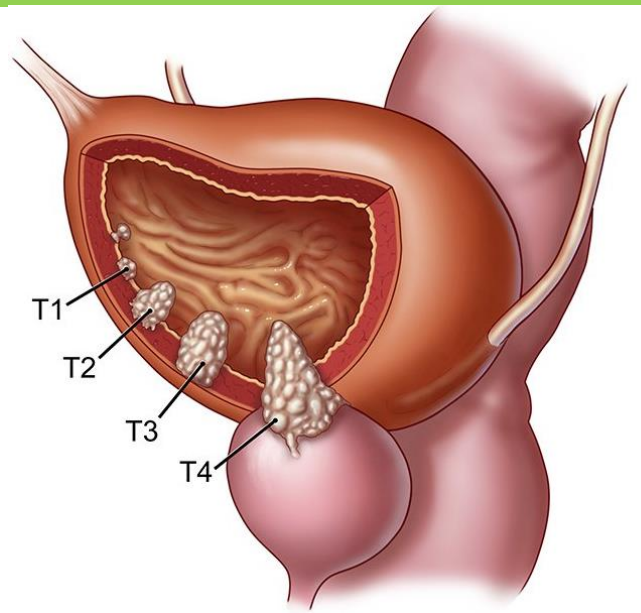
- Evaluation of patients with voiding symptoms (storage or obstructive).
- Gross or microscopic **hematuria**.
- Evaluation of urologic fistulas.
- Evaluation of urethral or bladder diverticula.
- Congenital anomilies in pediatric population.
- Retrieval of samples (for cytologic and histologic studies).
- Intraoperative evaluation of the urethra, bladder, and ureters after some incontinence or prolapse procedures.
- Retrograde pyelography for upper urinary tract evaluation.

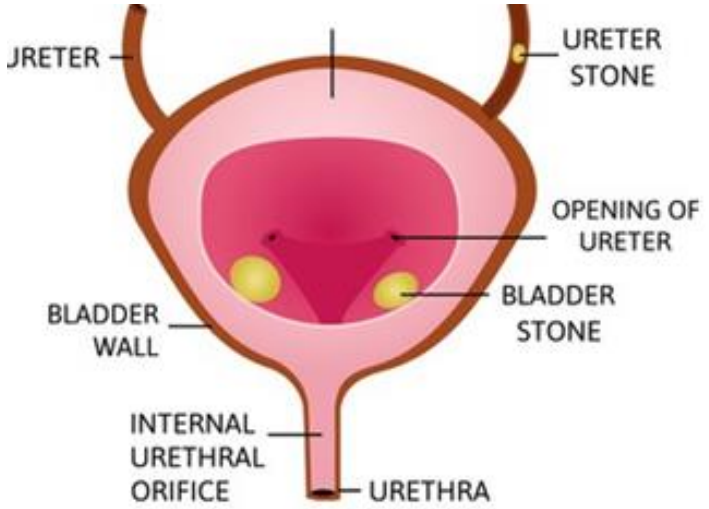


INGENIOUS

THERAPEUTIC CYSTOSCOPY

- Treatment of urethral strictures.
- Bladder neck procedures.
- Intravesical procedures (eg: for treatment of bladder stones, bladder ulcers, or bladder tumors; removal of foreign bodies in the bladder; botulinum toxin injection; and ureteral catheterization in association with some gynecologic problems).
- Reflux treatment in pediatric population.
- Cystourethroscopy is contraindicated in febrile patients with urinary tract infections (UTIs) and those with severe coagulopathy.





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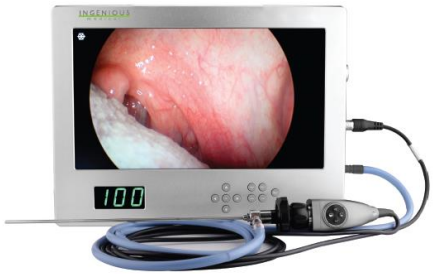
1. CYSTOSCOPY – SURGICAL TOOLS

INGENIOUS



IMAGING SYSTEM

IRRIGATION PUMP

SURGICAL TOOLS

INGENUITY FOR HEALTH

1. CYSTOSCOPY – DEFINITION OF CHARRIERE OR FRENCH

INGENIOUS

Ch. = Charrier Fr. = French

- Ch. = Fr.

- **CH N°/3 = ext. diameter in mm**
  Example: CH6 = 2mm

1. CYSTOSCOPY – SURGICAL INSTRUMENTS

INGENIOUS

CYSTOSCOPY SHEATH

OBTURATOR

SEMI - FLEXIBLE INSTRUMENT

TELESCOPE BRIDGE

Ø4 / Ø2.7 MM
TELESCOPE (0°, 12°, 30°, 70°)

1. CYSTOSCOPY – COMPLETE SET

INGENIOUS

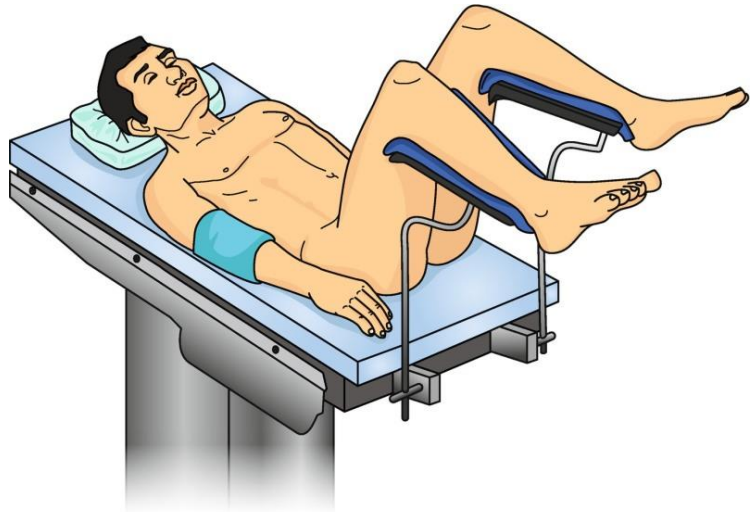
- STANDARD CYSTOSCOPY SET FOR Ø 4 MM TELESCOPES
- PEDIATRIC CYSTOSCOPY SET FOR Ø 2.7 MM TELESCOPES

1. CYSTOSCOPY – PROCEDURE

INGENIOUS

ANESTHESIA

General anesthesia or local lidocaine gel.



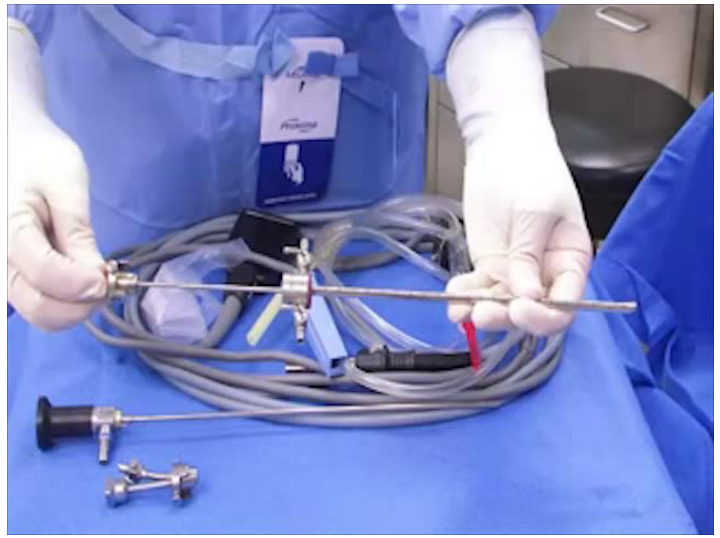
POSITION

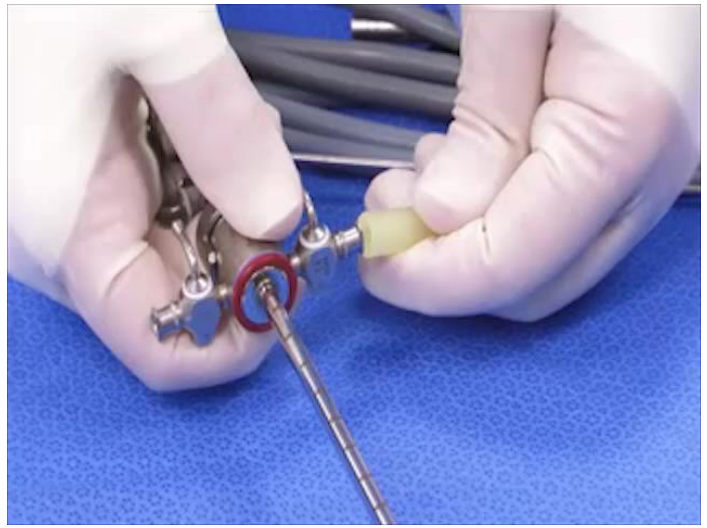
Lithotomy position.

1. CYSTOSCOPY – PROCEDURE

INGENIOUS

1. The light guide cable is screwed into the telescope. (The light guide fibers will transmit the light to the tip of the endoscope).
2. The Bridge is connected to the Sheath.
3. The telescope is introduced in the sheath to complete the system.
4. Using the Stop-Cock the in and out flow can be regulated.





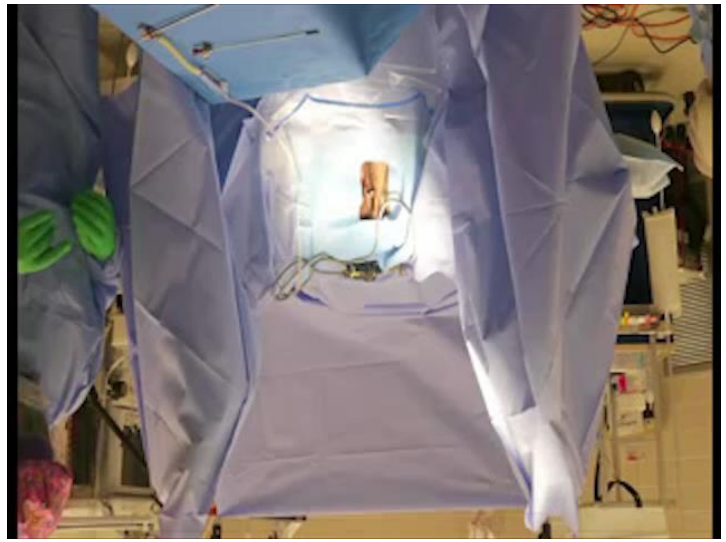
1. CYSTOSCOPY – PROCEDURE

INGENIOUS

5. The working channels can be open for accessories.

6. Before the cystoscope instruments is inserted, 2% lidocaine gel is inserted into the urethra and left for 5 minutes.

7. The patient is positioned on the cystoscopy table, prepared, and draped in the usual sterile manner.



8. The patient is warned about some increased discomfort at the level of the external urethral sphincter.

9. When a rigid cystoscope is used in a female patient, it should be introduced with its obturator to minimize urethral trauma and pain.

INGENIOUS

5 Systematic Inspection of :

- **Meatus** (Opening of the Urethra)

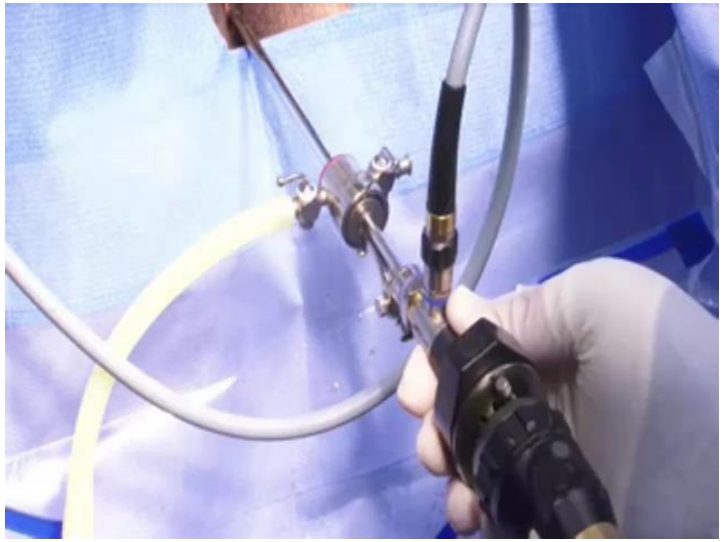
- **Urethra**
  - Mucosal abnormalities
  - Diameter

- **External sphincter**

- **Prostate gland**
  - BPH(Benign Prostatic Hyperplasia)
  - Prior TURP(Trans-urethral Resection of Prostate)

- **Bladder**

Foreign Bodies Lesion/Neoplasama/Stones /Cystitis

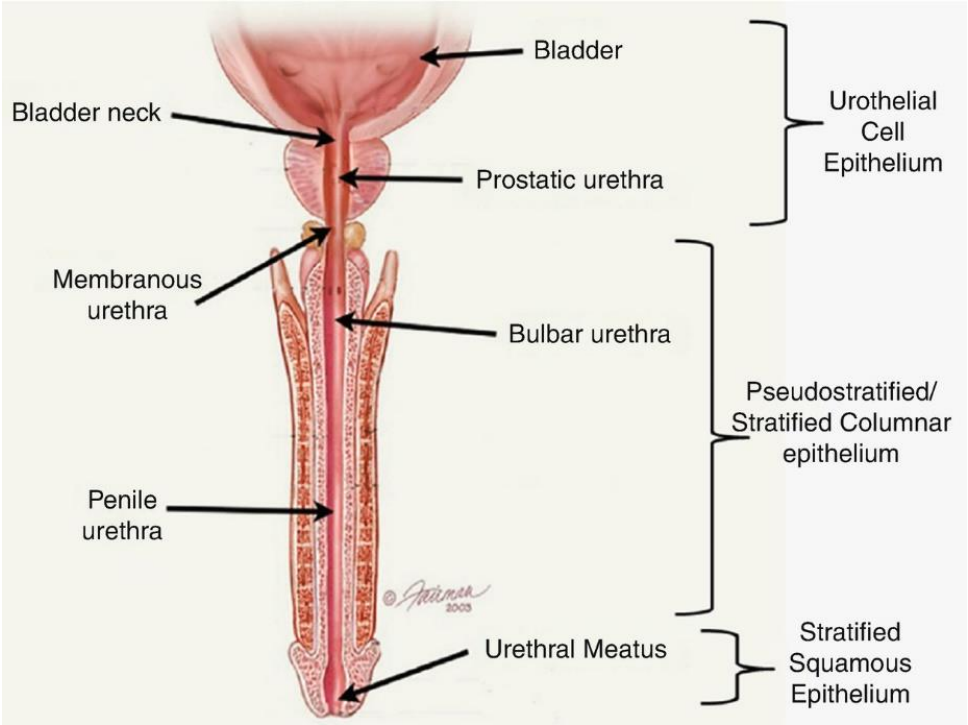


URETHROTOMY

2. URETHROTOMY - DEFINITION

- A urethral stricture is a scar in or around the urethra, which can block the flow or urine, and is a result of inflammation, injury or infection.

- **CAUSES :**
  - Trauma of the urethra
  - Infections (such as sexually transmitted diseases)
  - Direct trauma to the penis and catheterization can result in strictures of the anterior part of the urethra.
  - Instrumentation trauma post prostate surgery and catheterization
  - Congenital abnormalities.



2. URETHROTOMY - PROCEDURE

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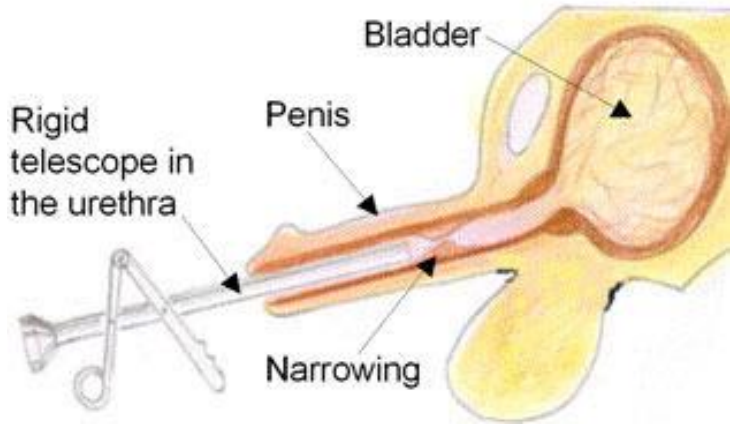
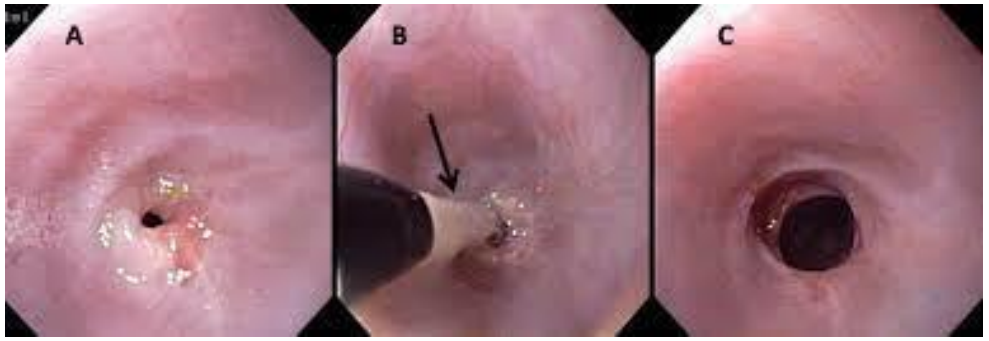
- An operation which involves the incision of the urethra used for the relief of a stricture.



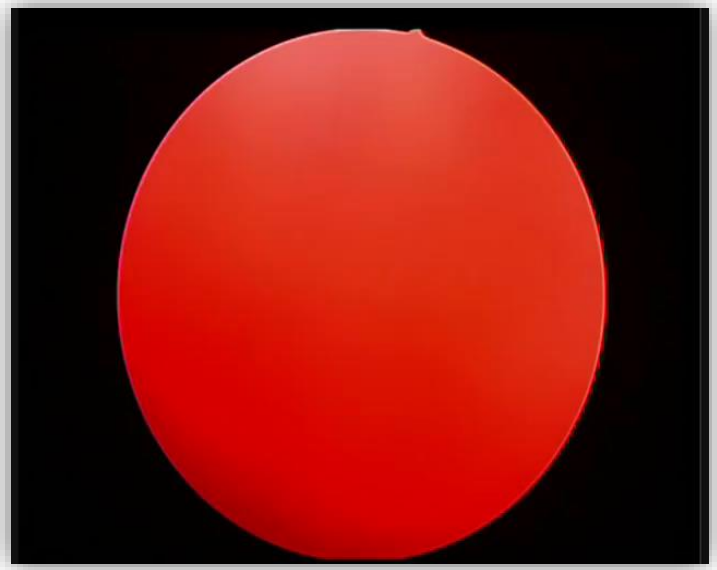
- Types of Optical Urethrotomy:

  A. Holmium Laser Urethrotomy

  B. Internal Urethrotomy by cold knife



BEFORE AFTER



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2. URETHROTOMY – SURGICAL INSTRUMENTS

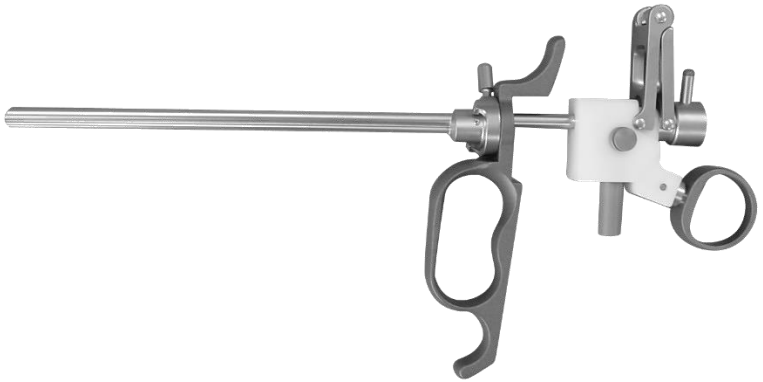
INGENIOUS

SUPPLEMENTARY SHEATH

URETHROTOME SHEATH / 1 INSTRUMENT CHANNEL

STANDARD OBTURATOR

STRICTURE KNIFE

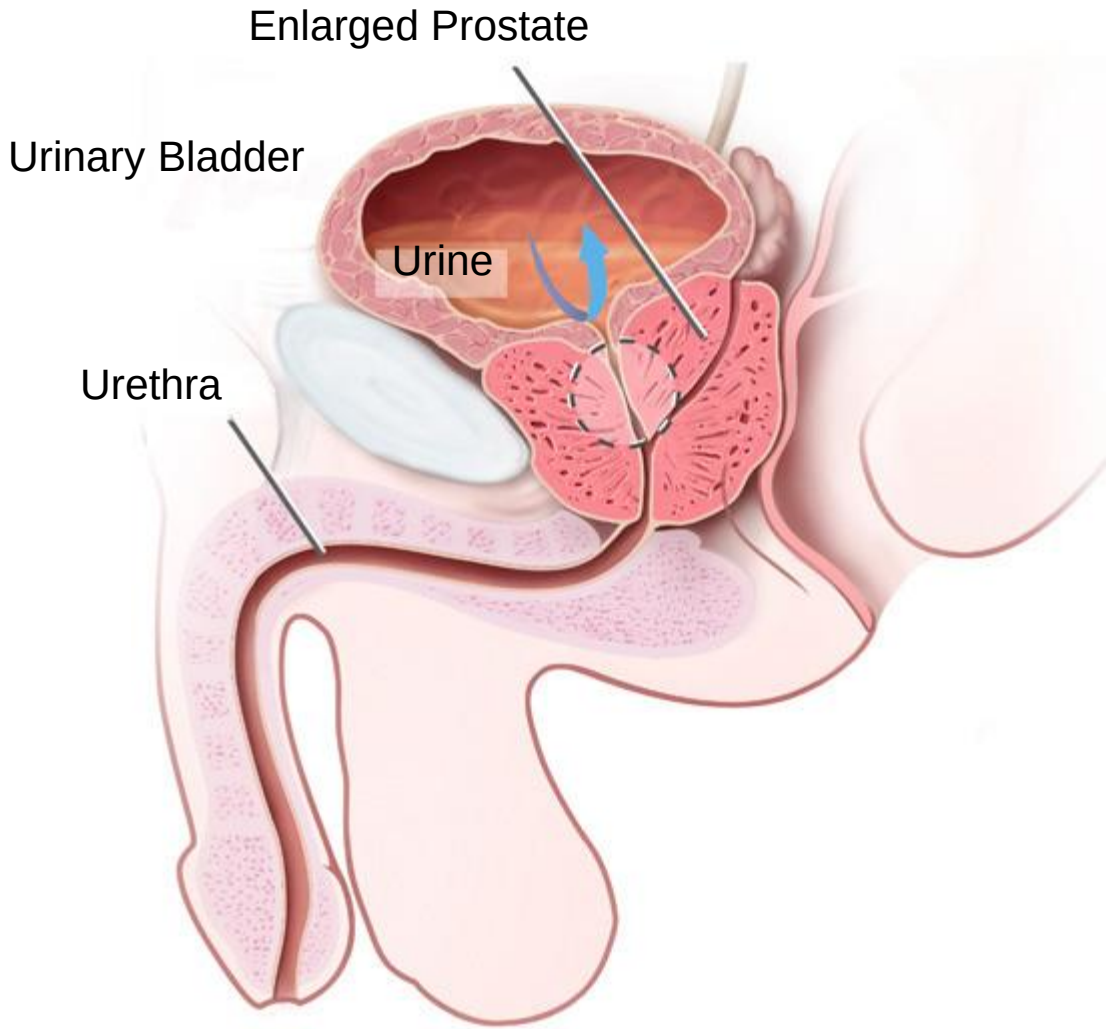


PASSIVE WORKING ELEMENT

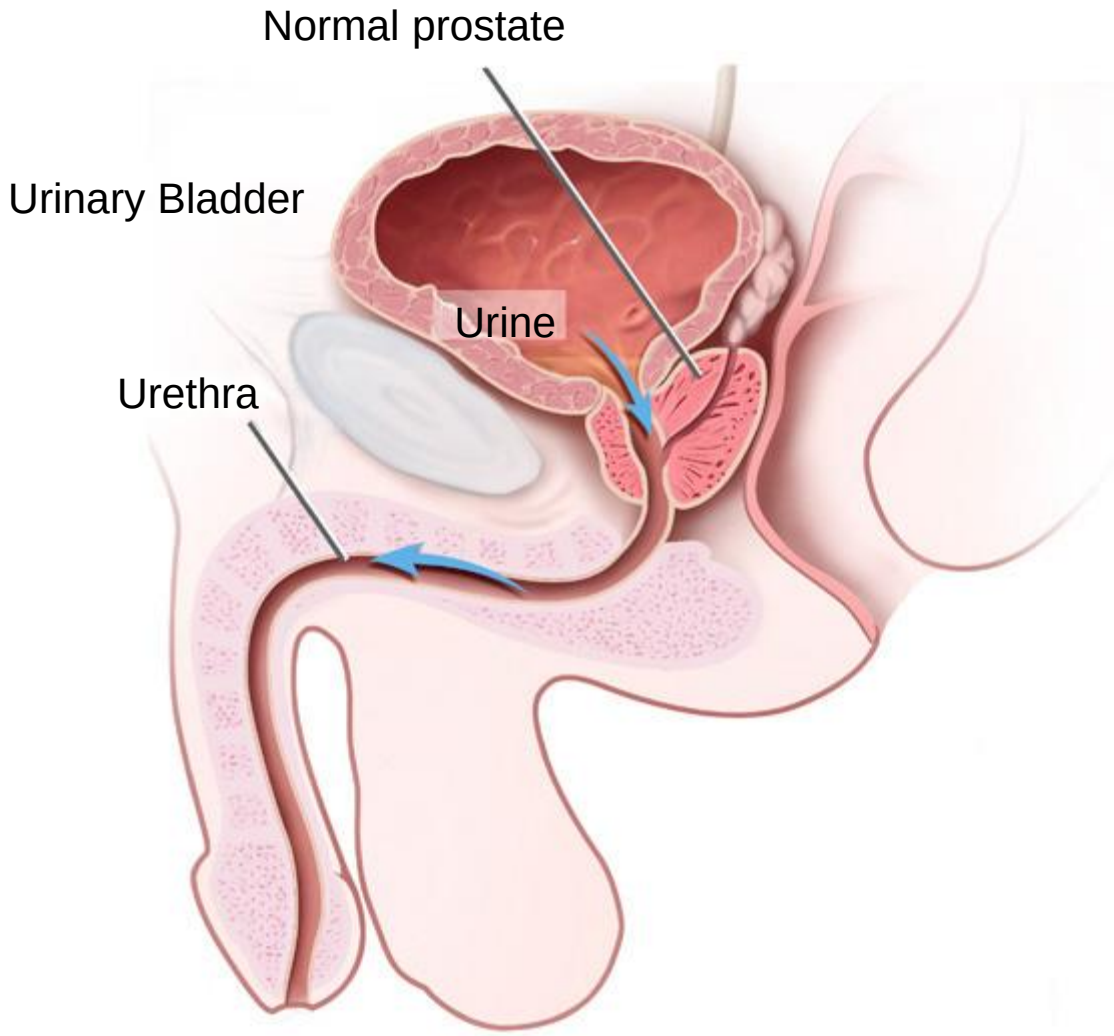
Ø4 MM, TELESCOPE (0°)

TURP

3. TURP – BENIGN PROSTATIC HYPERPLASIA (BPH)



BENIGN PROSTATE



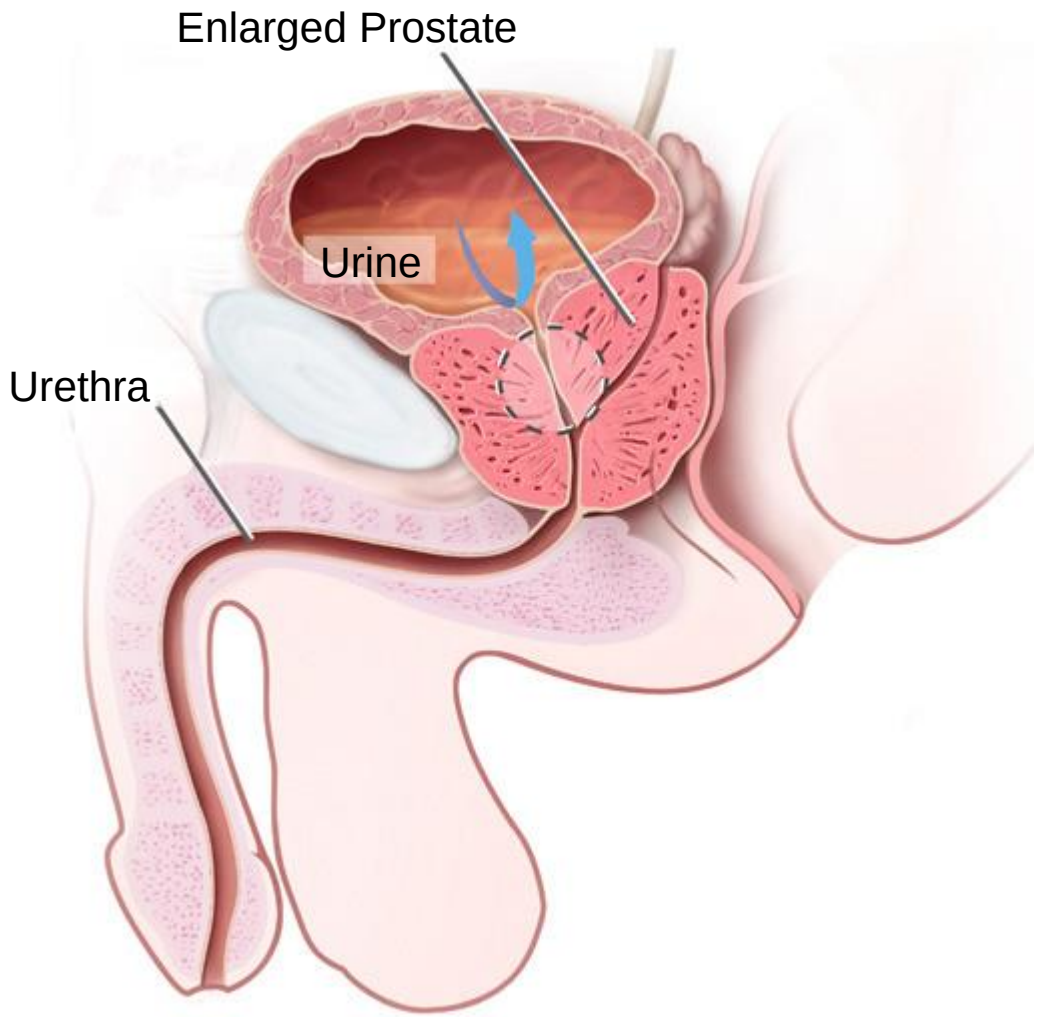
NORMAL PROSTATE

3. TURP – BENIGN PROSTATIC HYPERPLASIA (BPH)

INGENIOUS

SYMPTOMS AND POSSIBLE OUTCOME

- Urination at night
- Week urine stream, urinary retention
- High bladder pressure
- Enlargement of the urinary wall
- Inflammation
- Bladder stones
- Dilatation of the upper urinary system
- Continuous enlargement may lead to uremia



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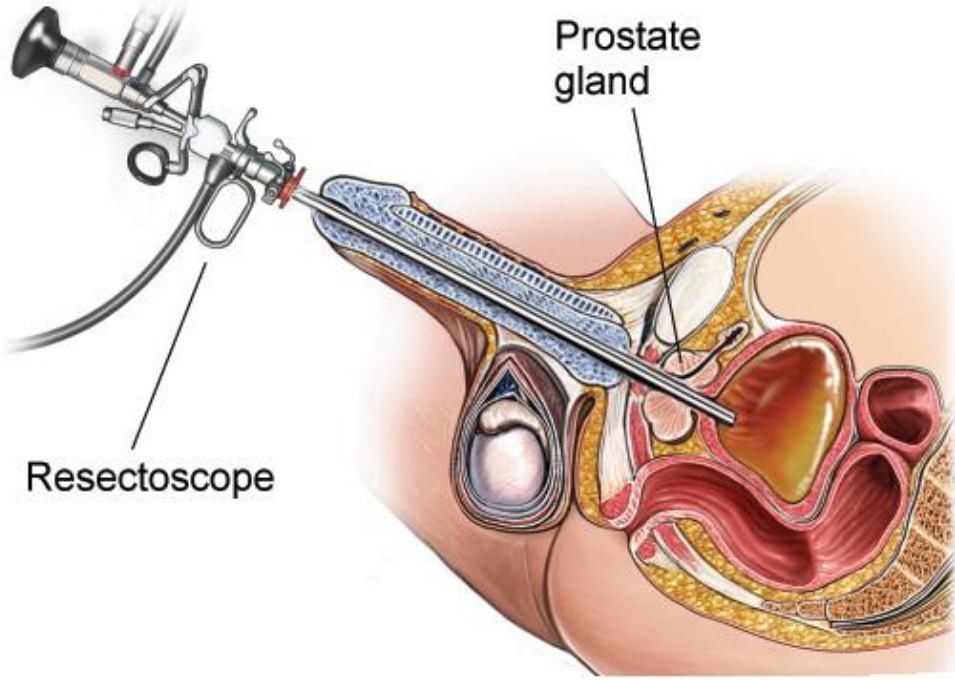
3. TURP – PROCEDURE

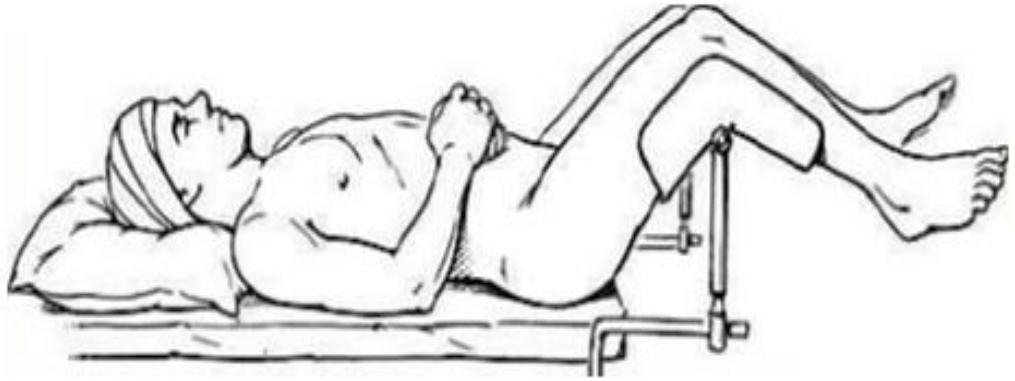
- Transurethral resection of the prostate (TURP) is a commonly performed procedure for treatment of benign prostatic hyperplasia.
- TURP surgically treat moderate to severe cases with prostate size of 30 – 80 mL .



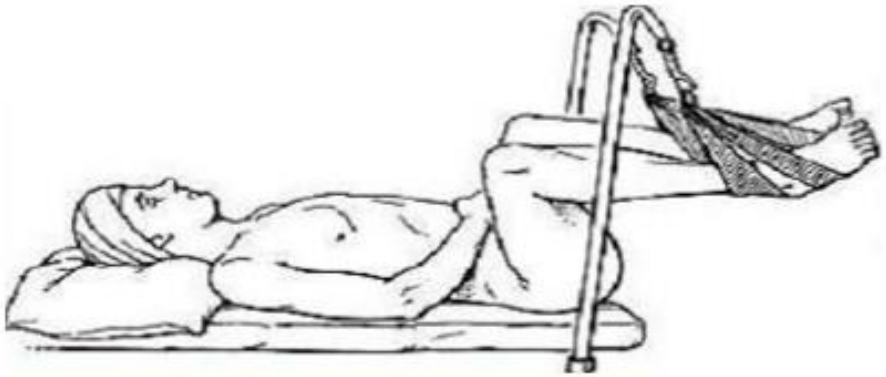
INDICATIONS:

- Recurrent urinary retention
- Acute urinary retention
- Recurrent hematuria refractory to medical treatment
- Bladder stones
- Renal insufficiency

3. TURP – PROCEDURE



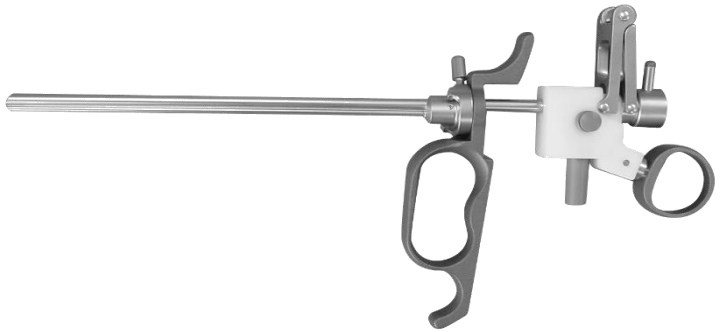
RIGHT POSITION
(Lithotomy position 45 degrees)

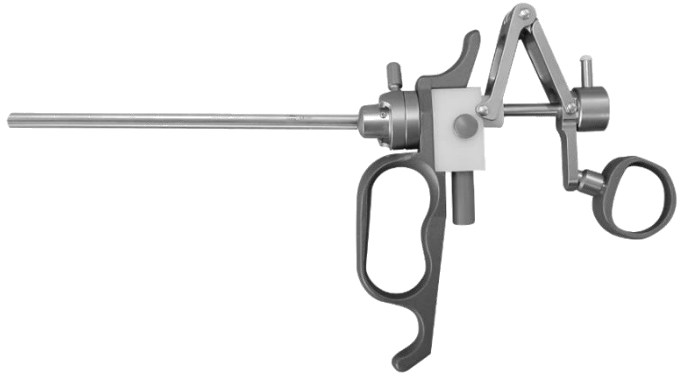


WRONG POSITION
(Lithotomy position 90 degrees)

3. TURP – SURGICAL TOOLS

24/26 FR. SHAFT, CONTINUOUS FLOW, WITH ROTATING INNER TUBE





ACTIVE / PASSIVE WORKING ELEMENT

ELECTRODES

Ø4 mm TELESCOPE (30°)

3. TURP – PROCEDURE

INGENIOUS

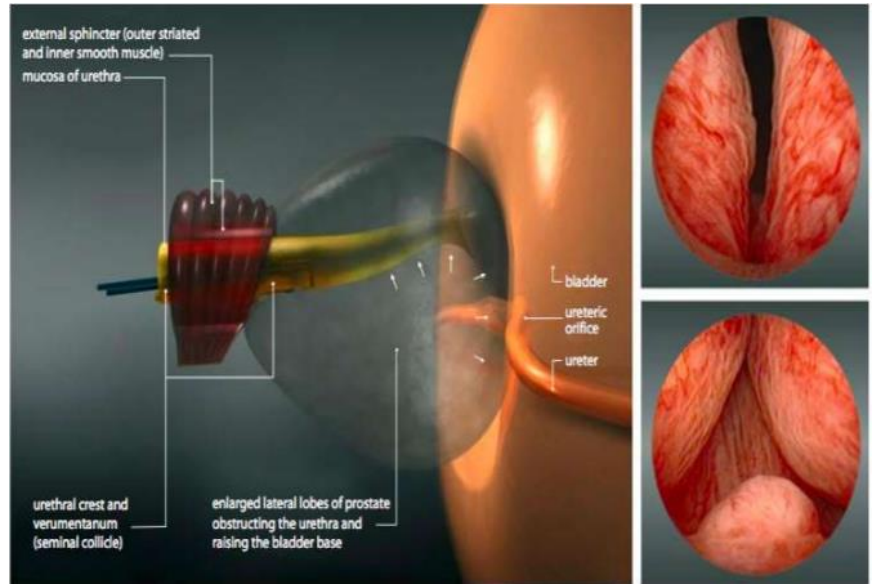
1. IDENTIFICATION OF LANDMARKS
2. REMOVAL OF MOST OF ADENOMA
   (Mauermayer technique or Nebsit technique)
3. BLEEDING CONTROL
4. TIDYING UP & REMOVAL OF APICAL TISSUE
5. CATHETER APPLICATION

INGENIOUS

1 URETHROCYSTOSCOPY

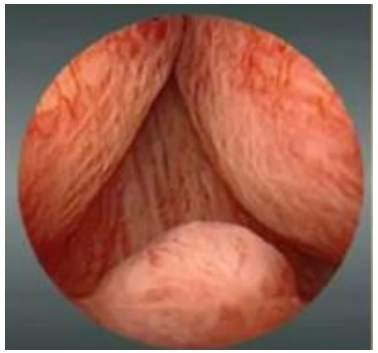
For identification of:

- Verumontanum
- Kissing lobes
- Bladder neck
- Ureteral orifices
- Bladder capacity



2 ORIENTATION

- The external sphincter is easily identifiable at the level of membranous urethra

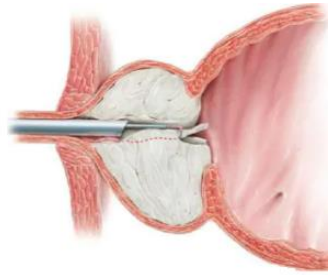
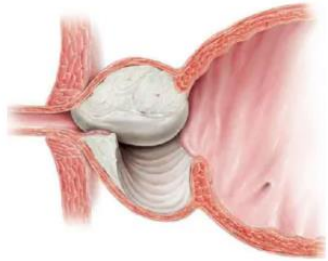
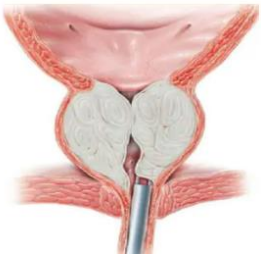


- It is necessary to be aware of the Verumontanum to see that the lower part of the cut is not extending below this level, otherwise damage to the sphincter mechanism may occur.

INGENIOUS

3 RESECTION

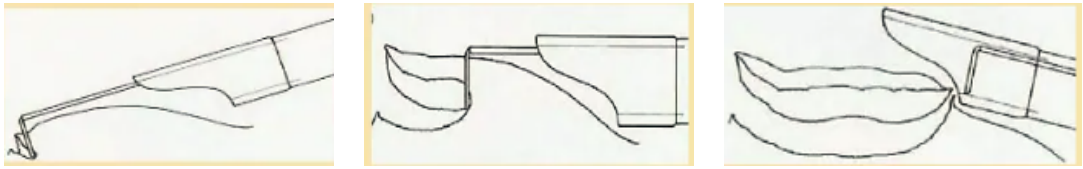
- Resection of right and left lobes
- The resectoscope is placed just proximal to the verumontanum and the resection carried out always controlling the endpoint of each cut.
- Resection at both sides of the verumontanum with particular care of the position of the external





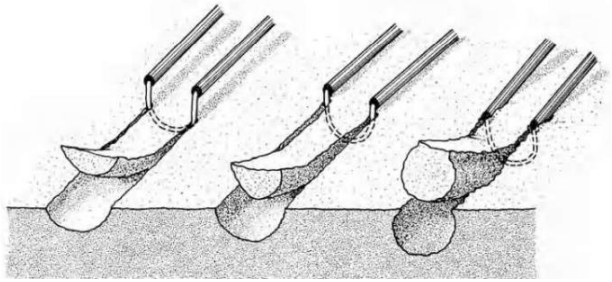
4 CUTTING SHIP



- Lift the resectoscope to allow the loop to sink in
- Keep it level as you cut the ship
- Depress the sheath to cut off the ship

- This shape of the chip is like a canoe. It is a wide and deep as the loop, and its length is determined by the travel of the loop.

- Cutting the ship off before the loop enters the sheath prevents any possible damage to the telescope.



Variation of depth of cut
(Shallow, normal and deep cuts)

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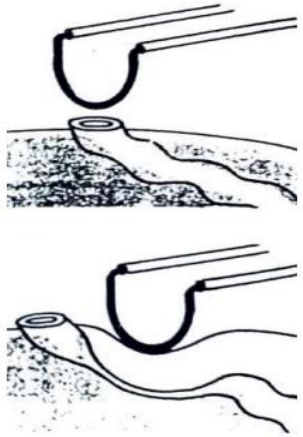
5 BLEEDING CONTROL

- Smaller vessel may be controlled by coagulating its mouth.
- Larger vessel is controlled by applying the loop just to one side of wall to seal the walls together.



6 CHIPS EVACUATION

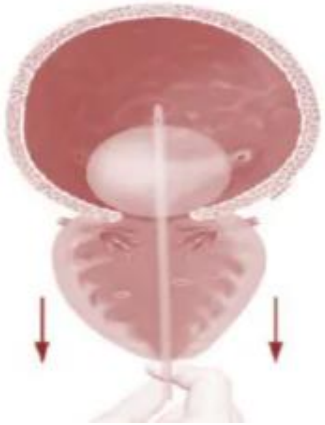
Ellik Evacuator / Syringe Bladder

- Get rid all the air
- Gently
- Inflow valve left open (safety valve)

7 CATHETER PLACEMENT

- Placement of 3 way catheter for drainage
- The balloon is inflated
- The catheter can be left at the bladder (Preferred method by surgeons, because of less trauma on the urethra)

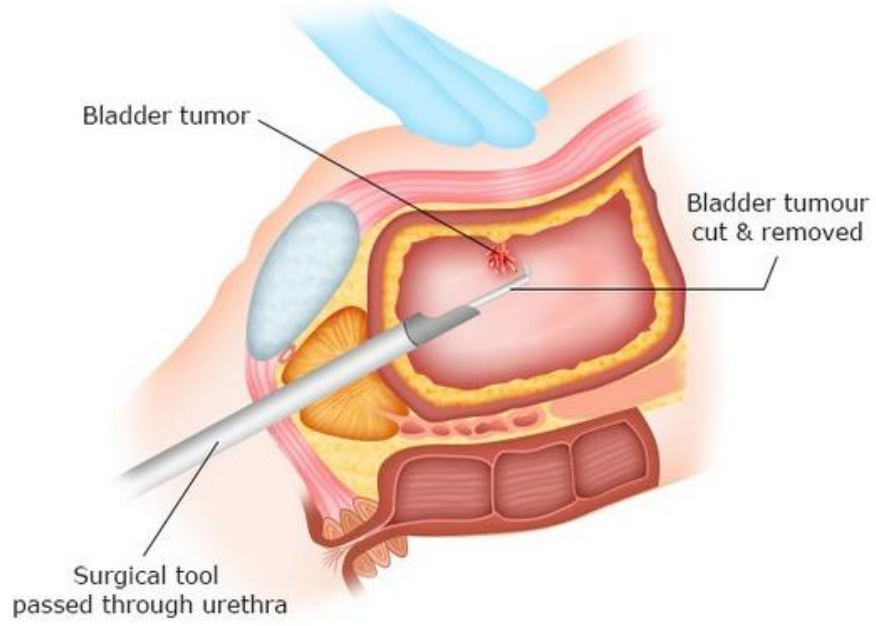
- The catheter can be placed in the prostatic fossa (method for short time only) it allows the control of bleeding



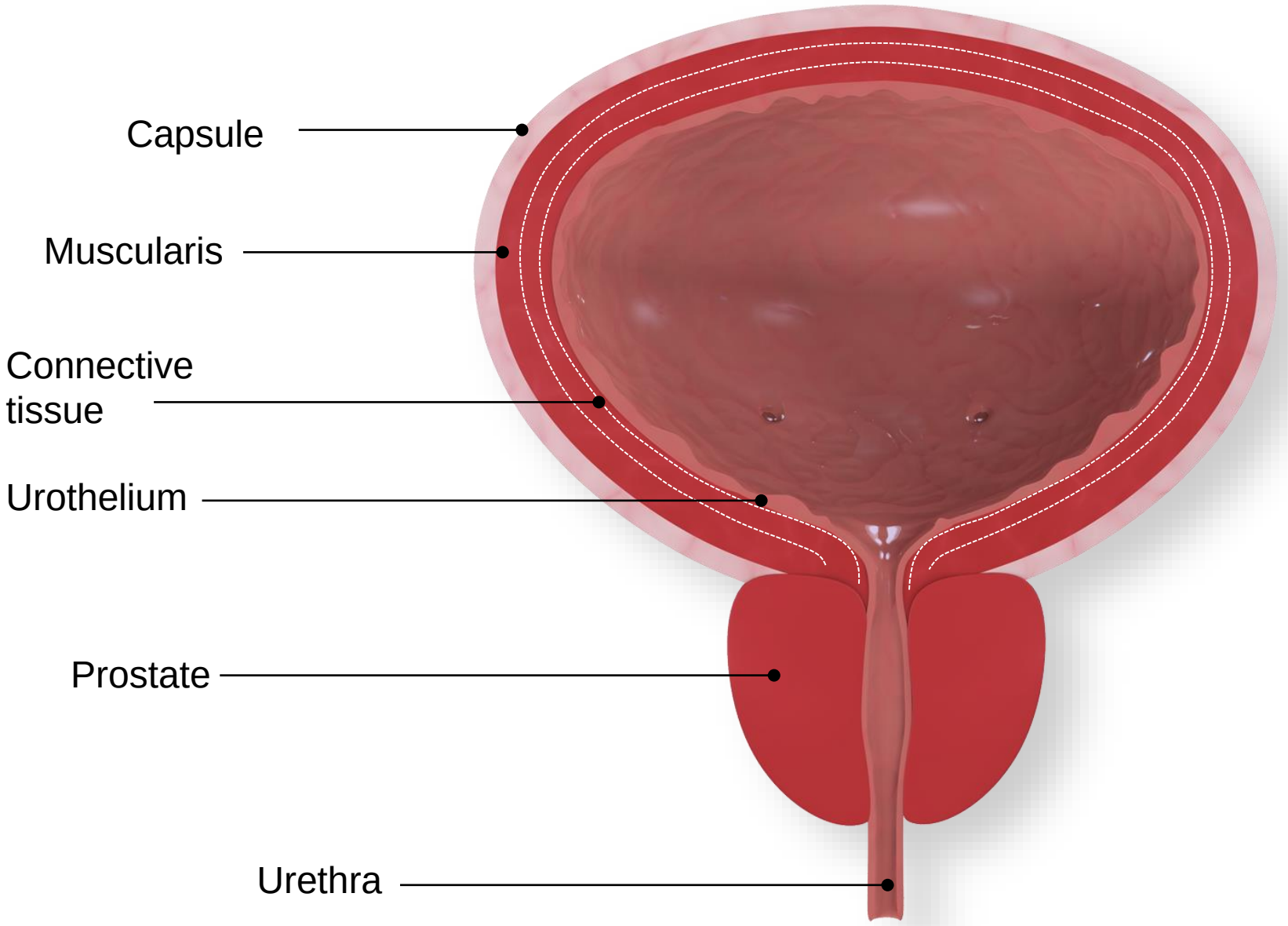
TURB

4. TURB – DEFINITION

- Transurethral resection of bladder tumor (TURBT) is the surgical removal (resection) of bladder tumors.
- This procedure is both diagnostic and therapeutic.
- Diagnostic because the surgeon removes the tumor and all additional tissue necessary for examination under a microscope (histological assessment).
- TURBT is also therapeutic because complete removal of all visible tumors is the treatment for this cancer.
- A **CYSTOSCOPY** is often used to detect the presence of bladder cancer. If there is cancer, a TURBT is performed to remove the tumor and to determine whether it has spread to the muscle layer of the bladder wall.



4. TURB – ANATOMICAL REVIEW



4. TURB – CANCER OF THE BLADDER

INGENIOUS

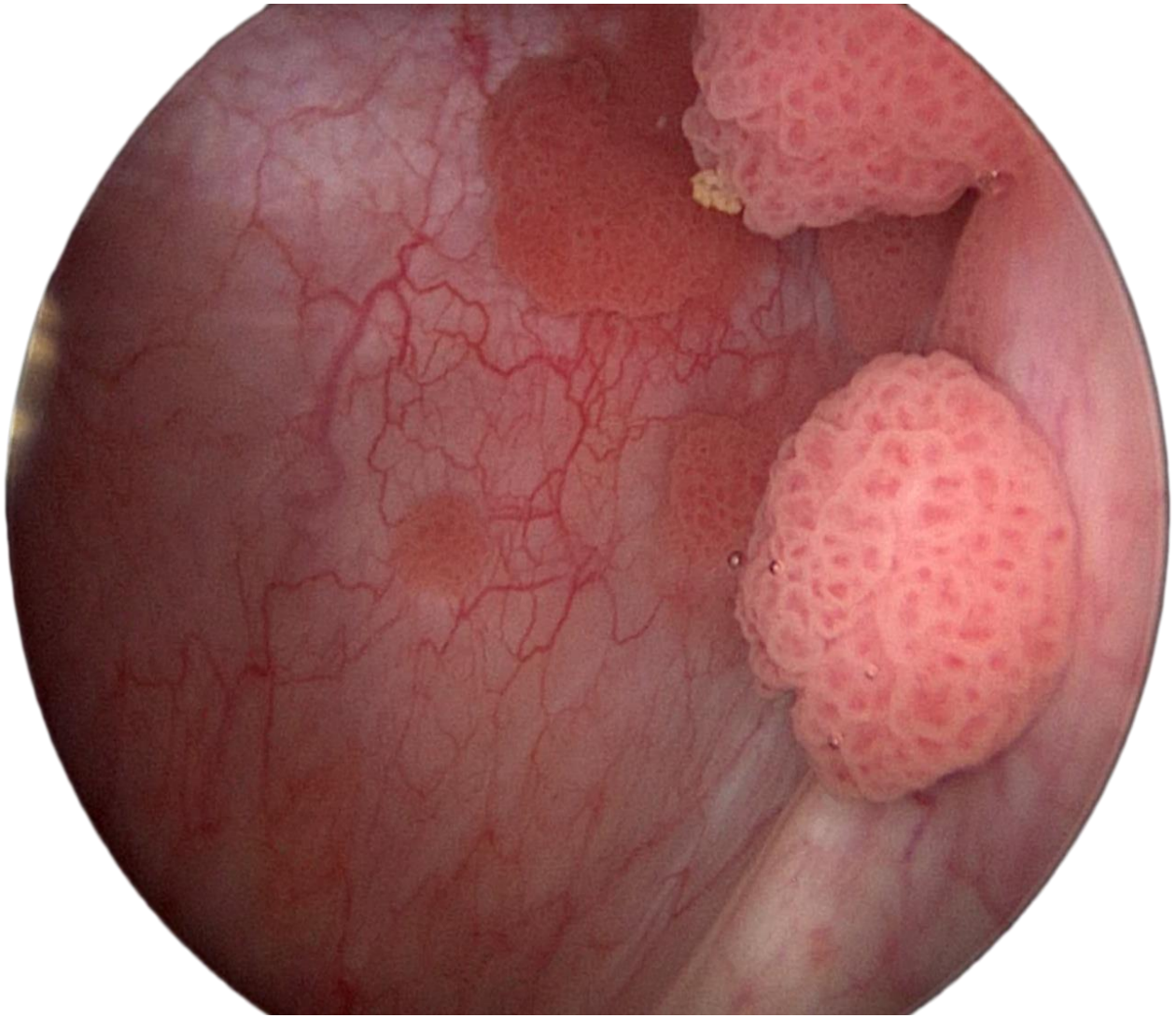
CANCER OF THE BLADDER

POSSIBLE CAUSE

- Chronic inflammations
- Tobacco consumption

SURGICAL THERAPIES

- Transurethral resection in the urinary bladder, TUR-B
- Cystectomy – removal of the urinary bladder

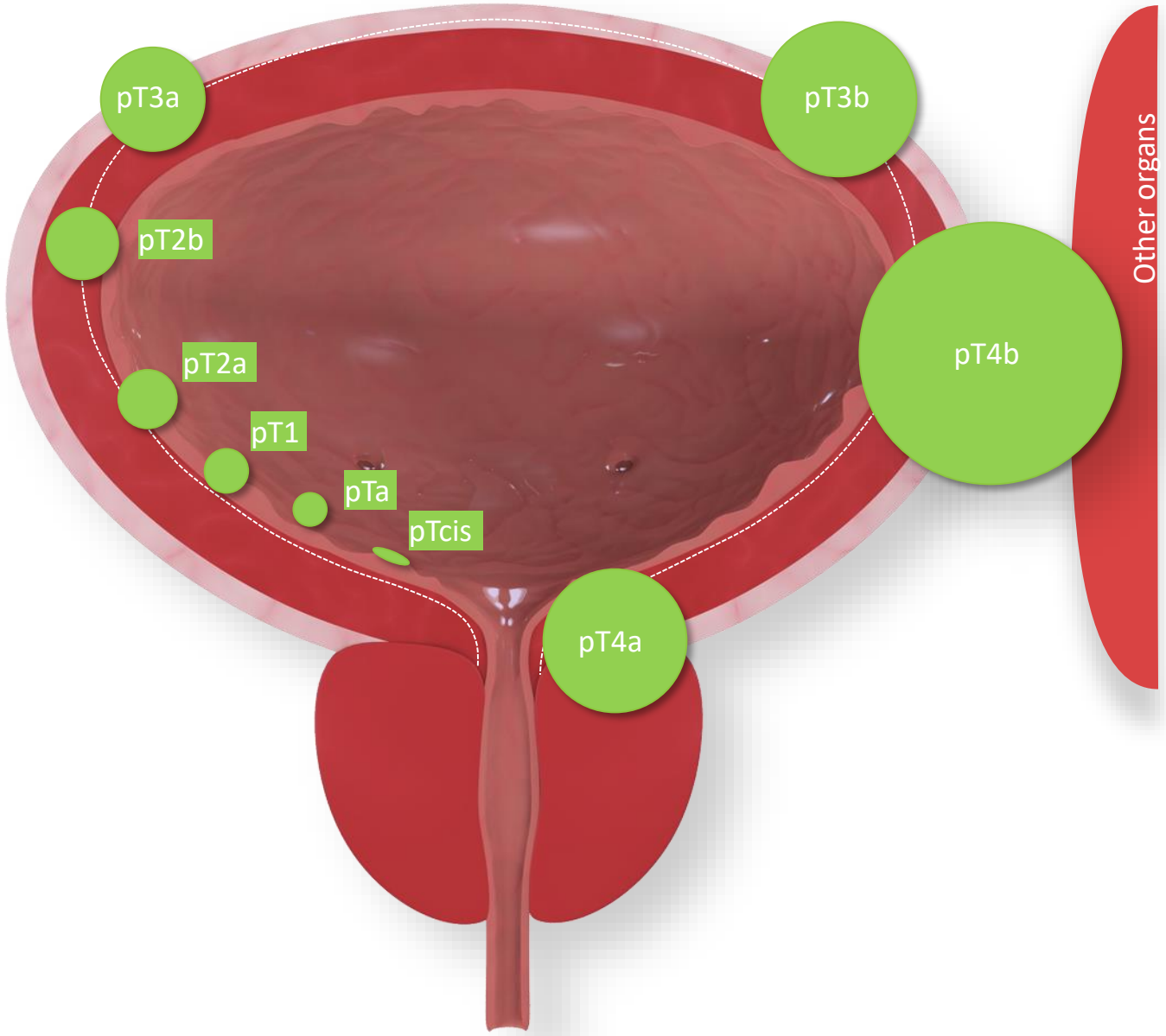


4. TURB – CANCER OF THE BLADDER

INGENIOUS

CARCINOMA OF THE URINARY BLADDER

- Forth most frequent carcinoma
- Classification according to the size and penetration of the tumor



THERAPY

- TUR-B in case of stage T2 and less
- Cystectomy in case of stage T2 and above

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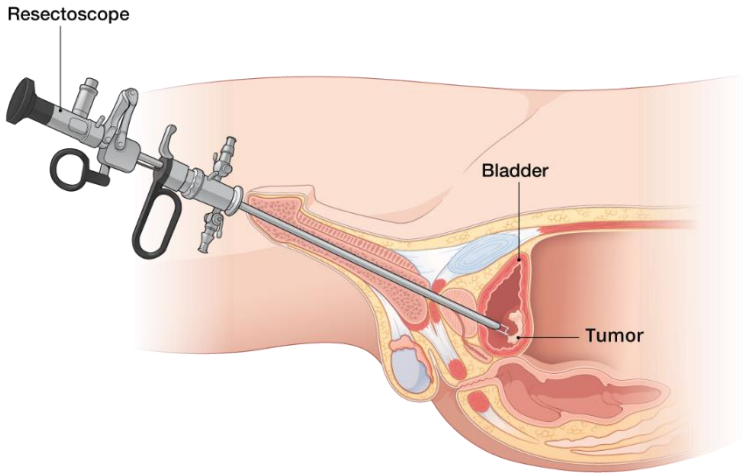
4. TURB – PROCEDURE

INGENIOUS

1

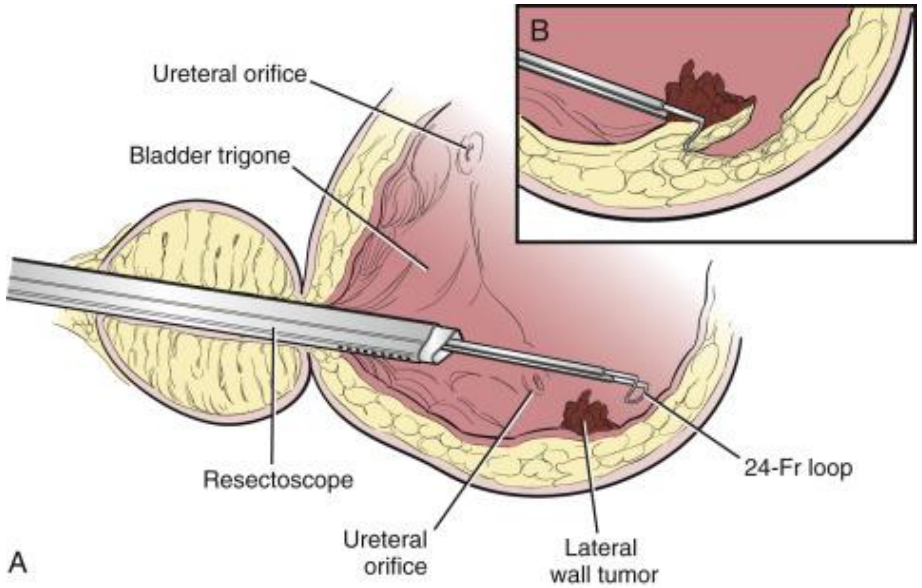
- A resectoscope is passed through your urethra to see the tumor.

- In some cases; a dye may be used to enhance tumor detection, a procedure also known as Photodynamic Diagnosis (PDD) Cystoscopy. It enables the surgeon to see tumors that might not be detected otherwise



2

- Resection or “shaving” of the tumor off the bladder wall piece by piece using electric current.
- Most tumors are papillary and are easily removed by endoscopically transecting (bipolar or monopolar electrocautery) their narrow stalk or base.



INGENUITY FOR HEALTH

4. TURB – PROCEDURE

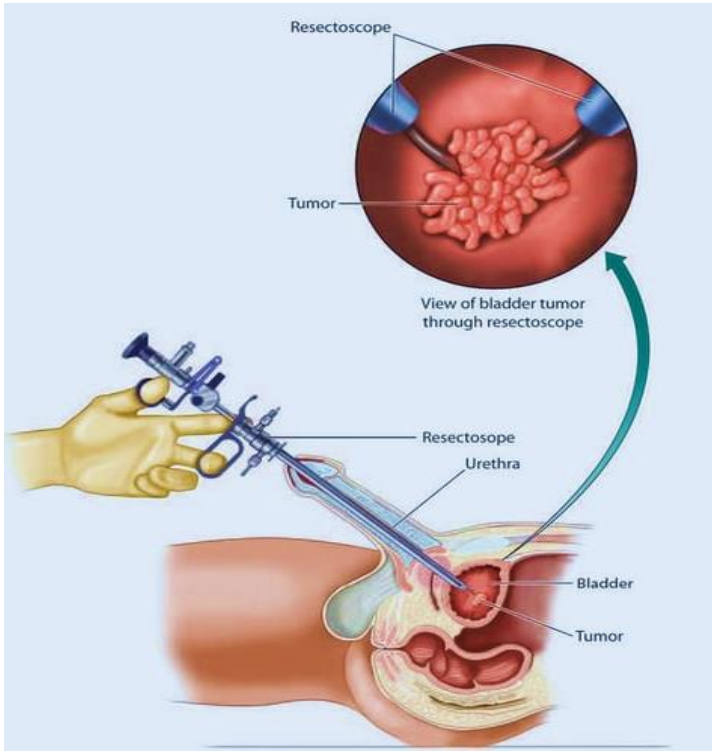
INGENIOUS

3

- Biopsy of the base or deeper resection is performed to ensure complete removal and the absence of invasion.
- The goal is that muscle tissue (or fat) must is present in the base biopsy specimen to ensure accurate staging.

4

- Continuous-irrigation during resection is a popular modality as it not only assists in visualization but also lessens the bladder wall movement that occurs during filling and emptying, and thereby may decrease the risk of bladder perforation.



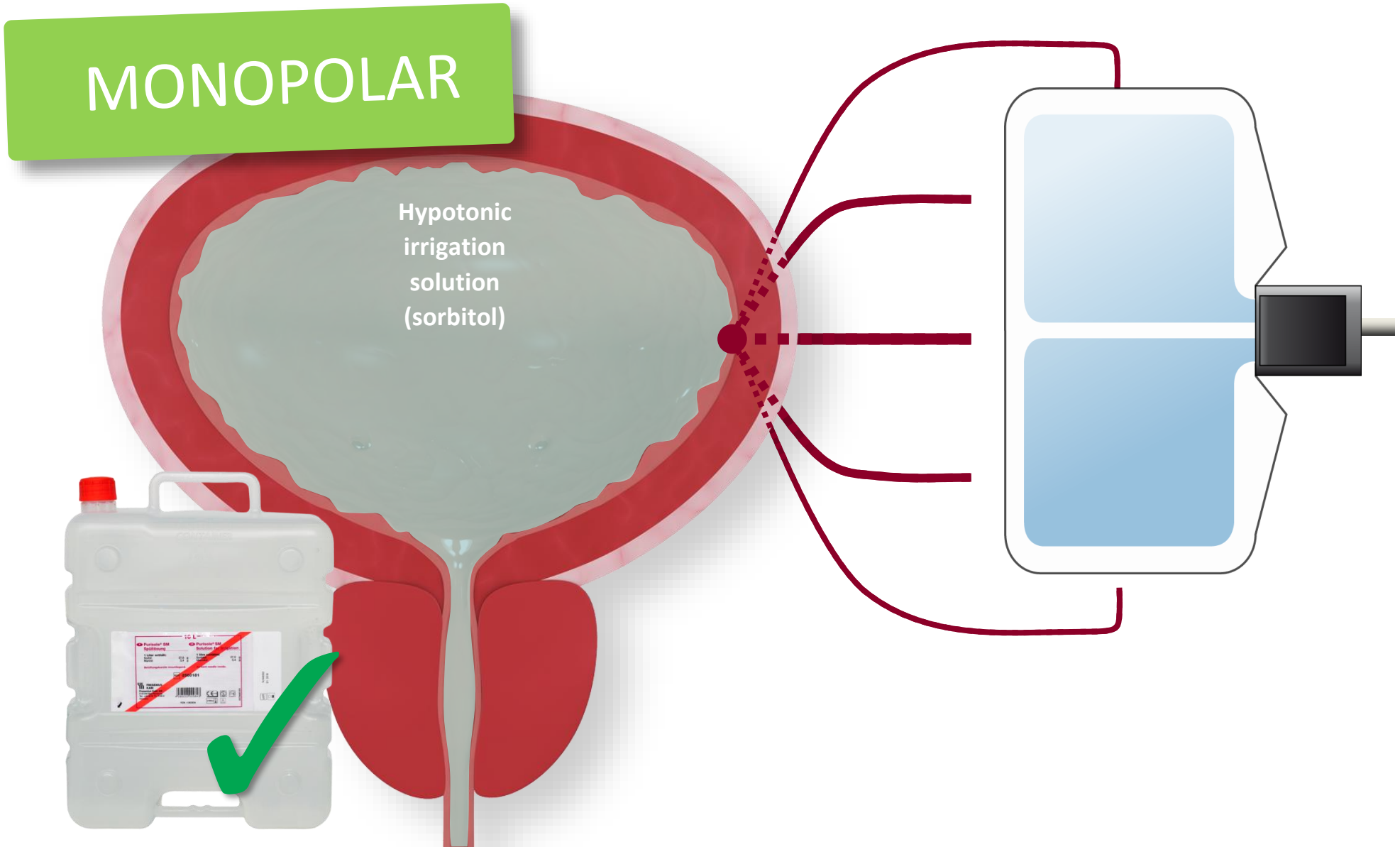
INGENUITY FOR HEALTH

CONTINUOUS IRRIGATION

- Filling of the urinary bladder
- Flushing-out of the resected tissue and the blood

INGENIOUS

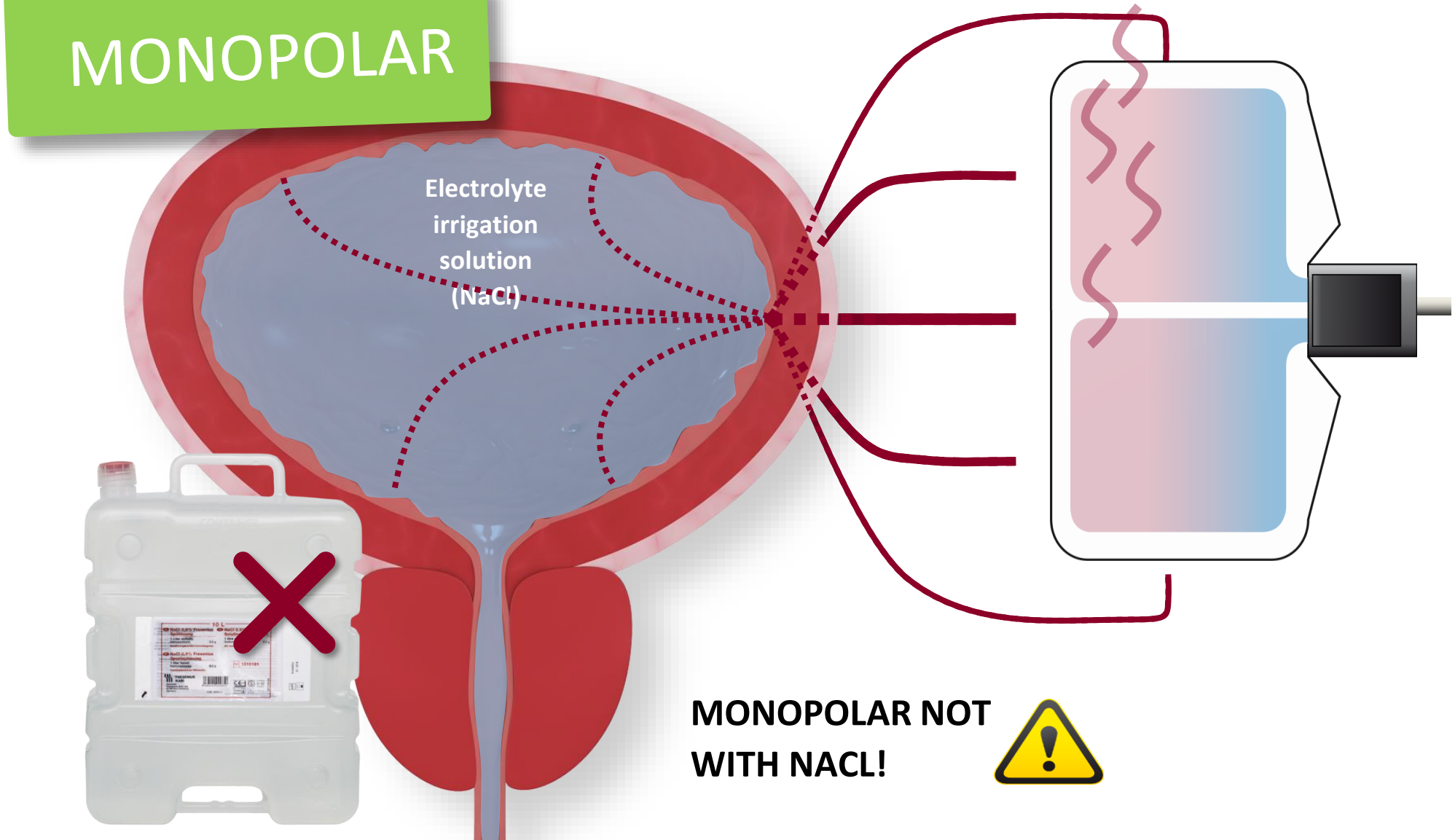
MONOPOLAR



INGENUITY
FOR
HEALTH

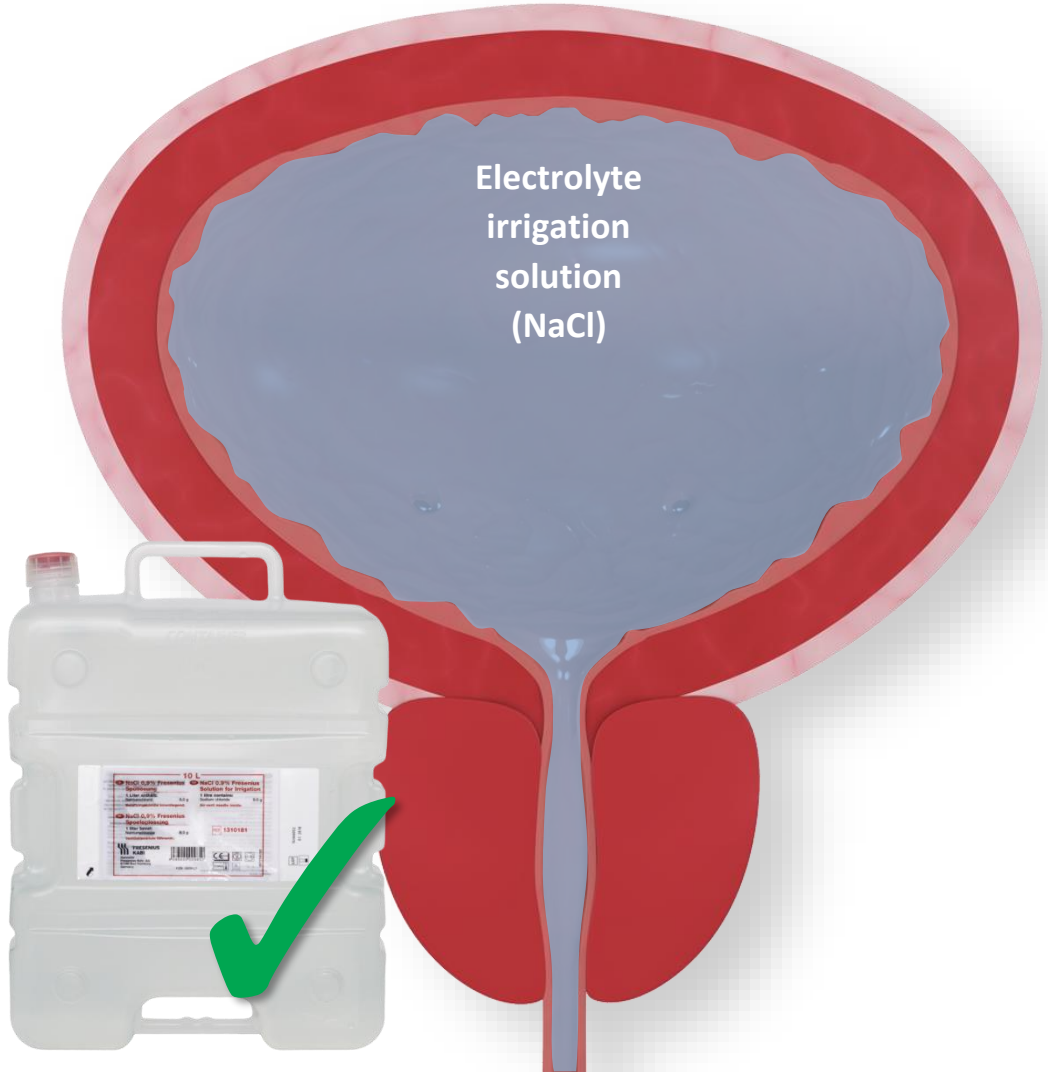
INGENIOUS

MONOPOLAR



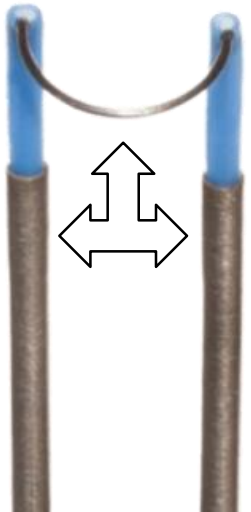
MONOPOLAR NOT WITH NACL!

INGENUITY
FOR
HEALTH



BIPOLAR

BIPOLAR ONLY WORKS WITH NACL!



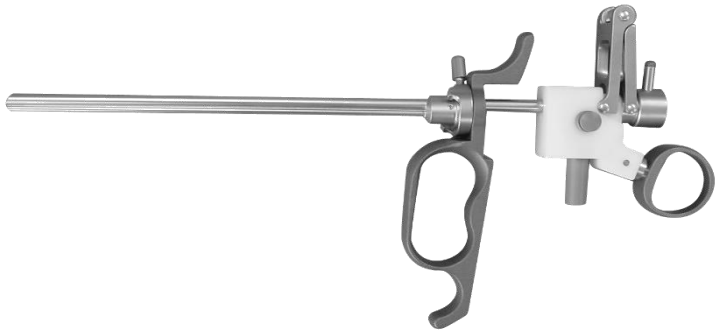
BIPOLAR

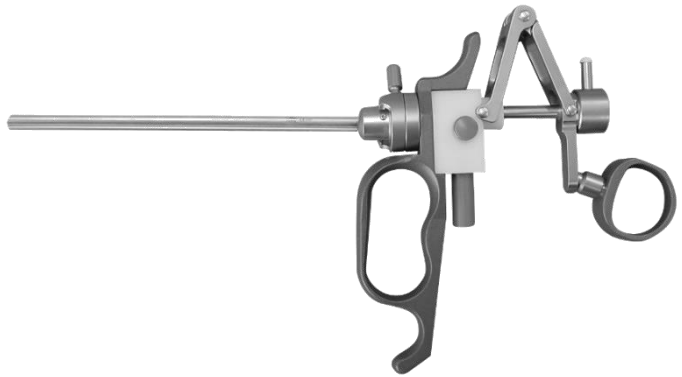
Sugar-alcohol solutions are non-conducting!

INGENIOUS

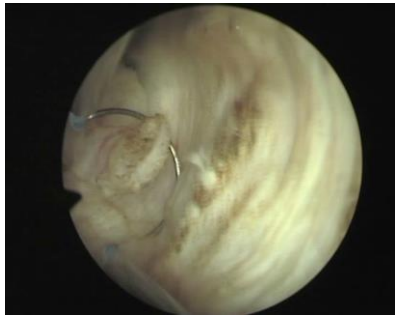
HYBRID SOLUTION!!

24/26 FR. SHAFT, CONTINUOUS FLOW, WITH ROTATING INNER TUBE





ACTIVE / PASSIVE WORKING ELEMENT



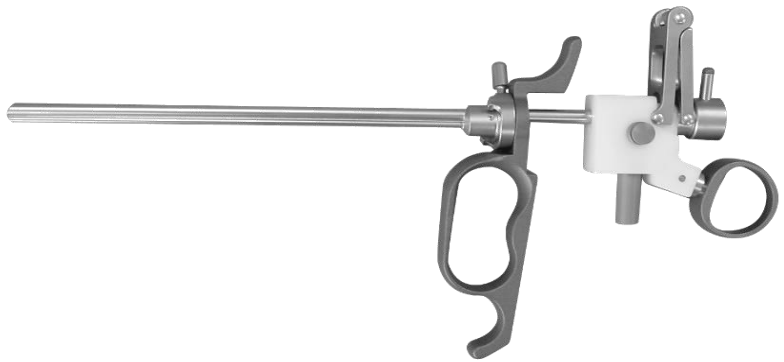
ELECTRODES

Ø4 mm TELESCOPE (30°)

INGENUITY FOR HEALTH

ACTIVE Working Element
Out - In

PASSIVE Working Element
In - Out



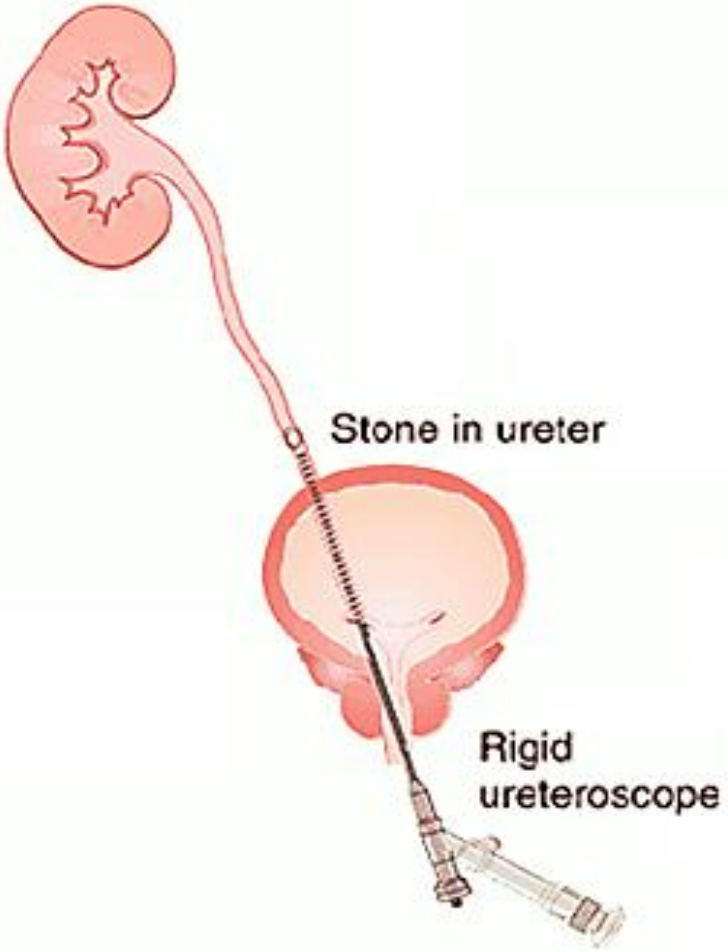
URETERO-RENOSCOPY

(URS)

5. URS – DEFINITION & INDICATIONS

INGENIOUS

- Procedure in which a scope is inserted into the bladder and ureter and it is used to **DIAGNOSE** or **TREAT** a variety of problems in the urinary tract.

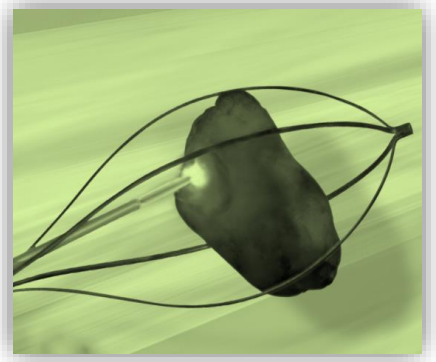


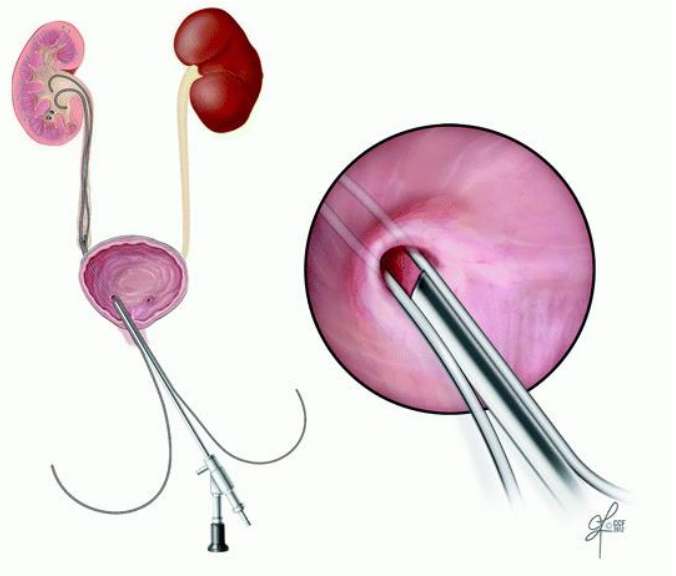
INDICATIONS

- Ureteral stones
- Polyps
- Tumors
- Abnormal tissues.
- Recommended also when SWL is contra-indicated (Pregnancy, obesity, blood clotting disorders).

5. URS – PROCEDURE

- Endoscope with small caliber is inserted through the urethra to the bladder to reach the ureters.
- Depending on where the stone is, a rigid or a flexible ureteroscope is used.
- Once the stone is identified, it is pulled out with the help of a special basket. If the stone is too big to be removed completely, it will be broken down with a laser, ultrasound or pneumatic lithotripter.
- Placement of stent (A tube that is placed in the ureter to hold it open, to let the pieces of stones go out)

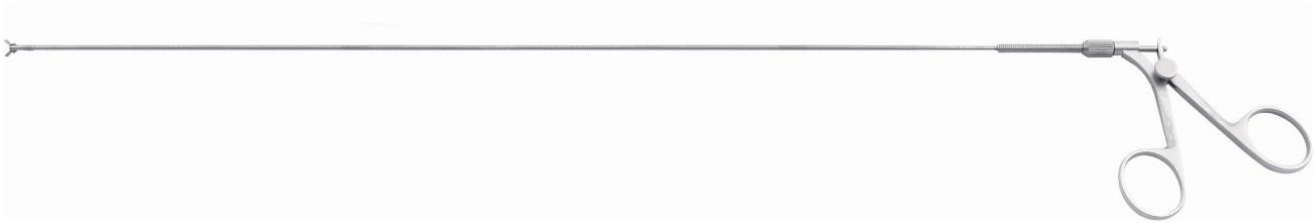




5.URS – SURGICAL INSTRUMENTS

STANDARD / MINI URETHRO-RENOSCOPE

INSTRUMENT BRIDGE



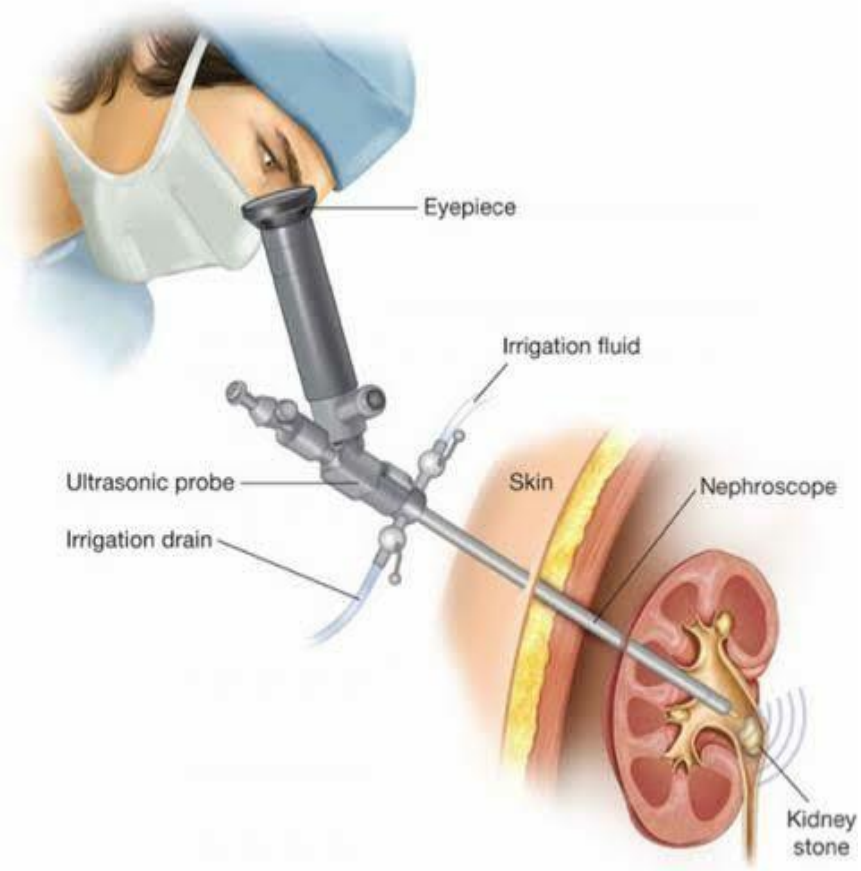
SEMI - FLEXIBLE INSTRUMENT

STONE BASKET WITH SPIRAL TIP

NEPHROSCOPY

6. NEPHROSCOPY – DEFINITION & APPLICATION

A procedure to examine inside of the kidney and to treat certain condition (Stones, Tumors…) in upper urinary tract by an instrument called **Nephroscope**.



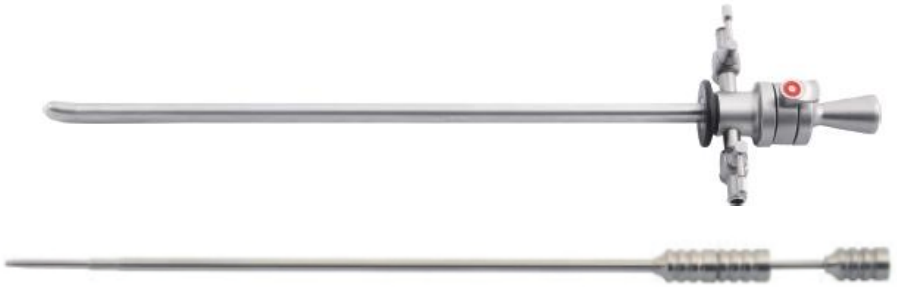
APPLICATION:

- Percutaneously a thin small tube of the nephroscope is inserted into the skin through a very small incision.
- The nephroscope has channels within for : light source, telescope and irrigation system. A laser probe or ultrasound may be used to destroy the stone.
- Pieces of the stone are removed by : Suction Or Graspers.

Procedure : PCNL Or Percutaneous nephrolithotomy.

6. NEPHROSCOPY – SURGICAL INSTRUMENTS

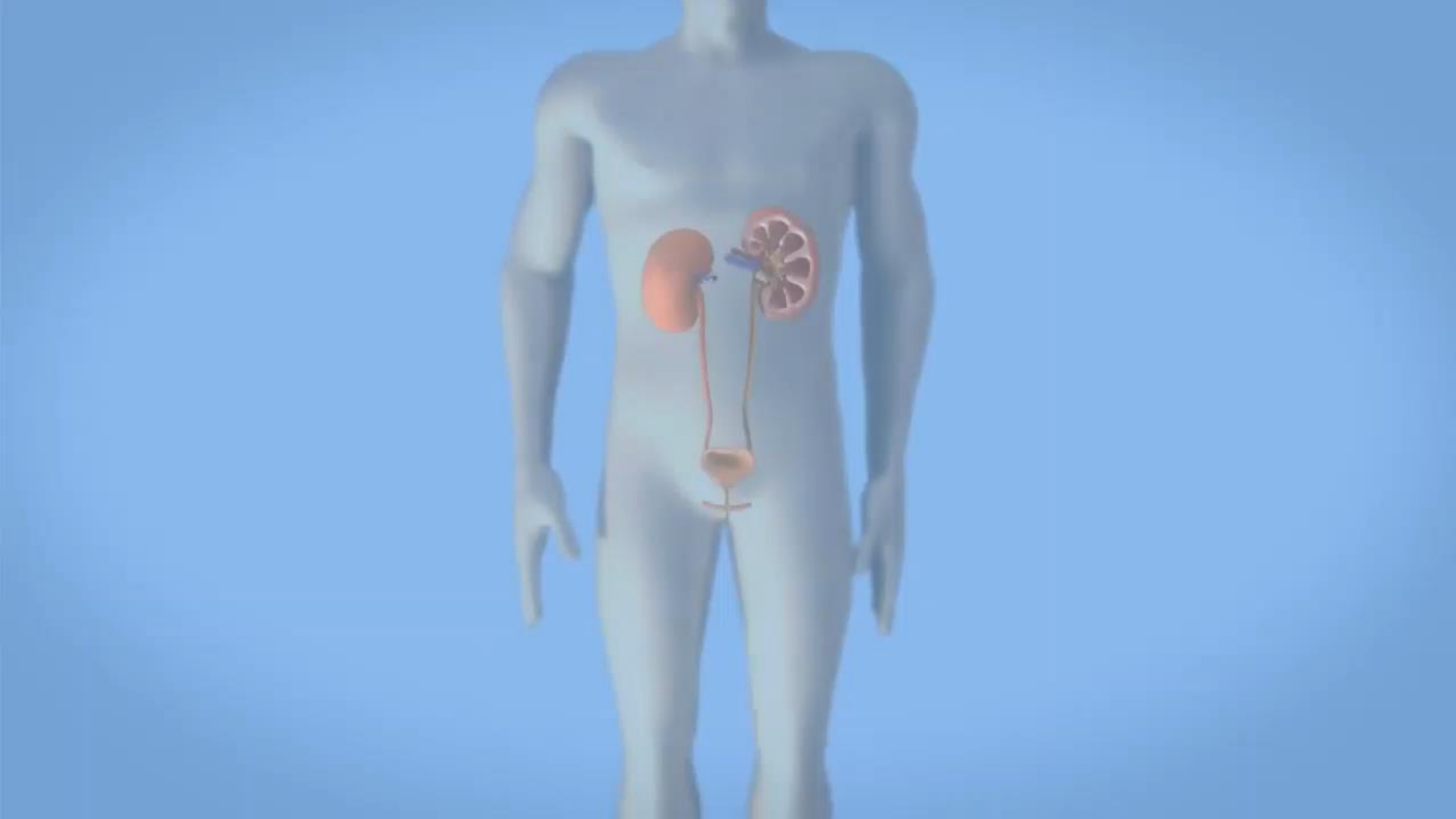
15.5 Fr Nephroscope



NEPHROSCOPE SHEATH & DILATATOR

OPEN CONDUCTOR

GUIDE WIRE



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Videos Citied from European Association of Urology