URINARY BLADDER

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1ST YEAR BHMS 2019-20

FEATURES,SIZE,SHAPE AND POSITION

- The urinary bladder is a muscular reservoir of urine, anterior part pelvic cavity
- The bladder varies in size, shape and position, when empty lies pelvis it fills expand and extend upward in abdominal cavity

EXTERNAL FEATURES

- Empty bladder is tetrahedral in shape
- Apex,directed forward, base directed backward, neck lowest and most fixed part of bladder
- Three surface:superior, right and left inferolateral
- Four border:two lateral, one anterior and one posterior
  - Full bladder is ovoid shape
- Apex directed upward toward the umbilical, neck directed downwards
- Two surface anterior and posterior

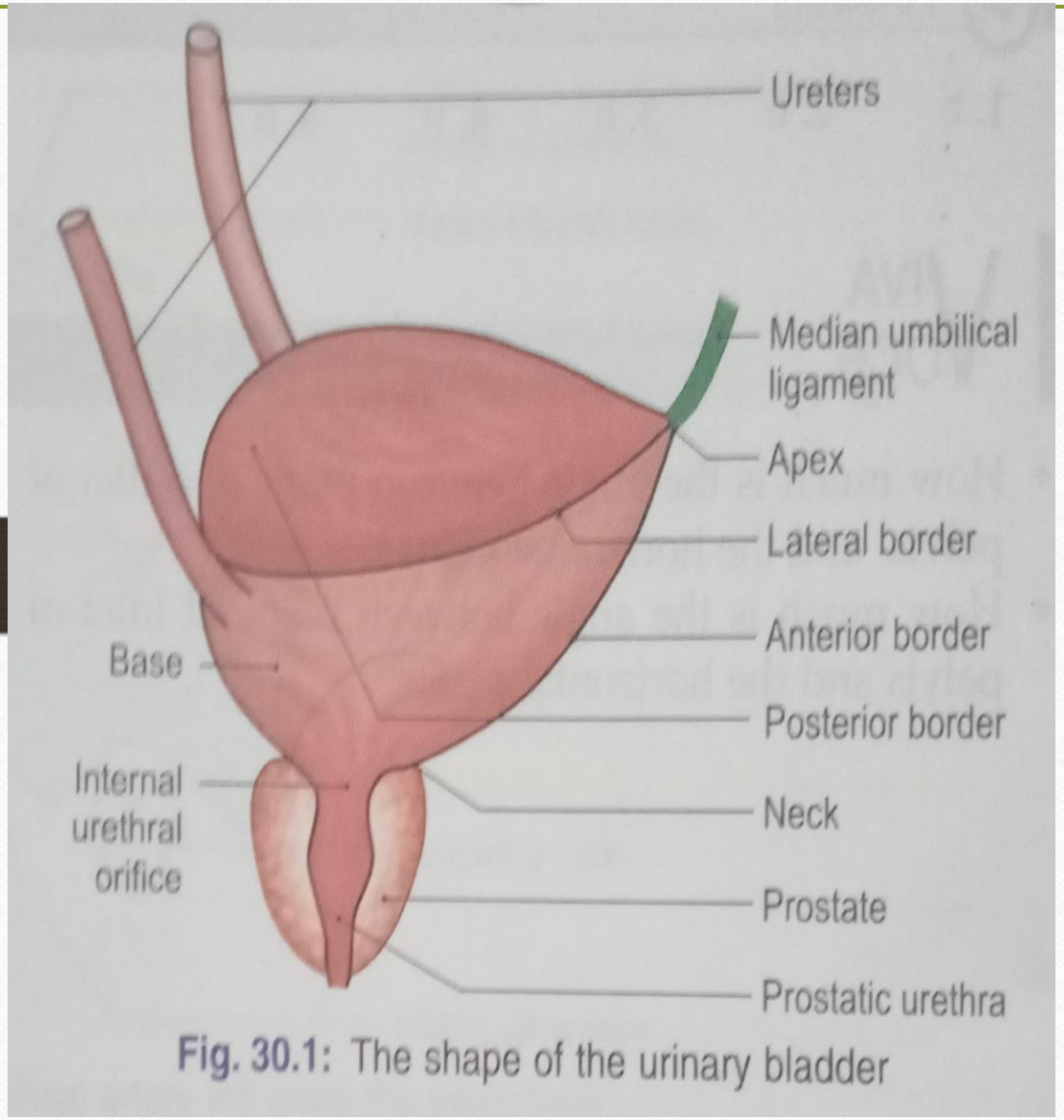

Fig. 30.1: The shape of the urinary bladder

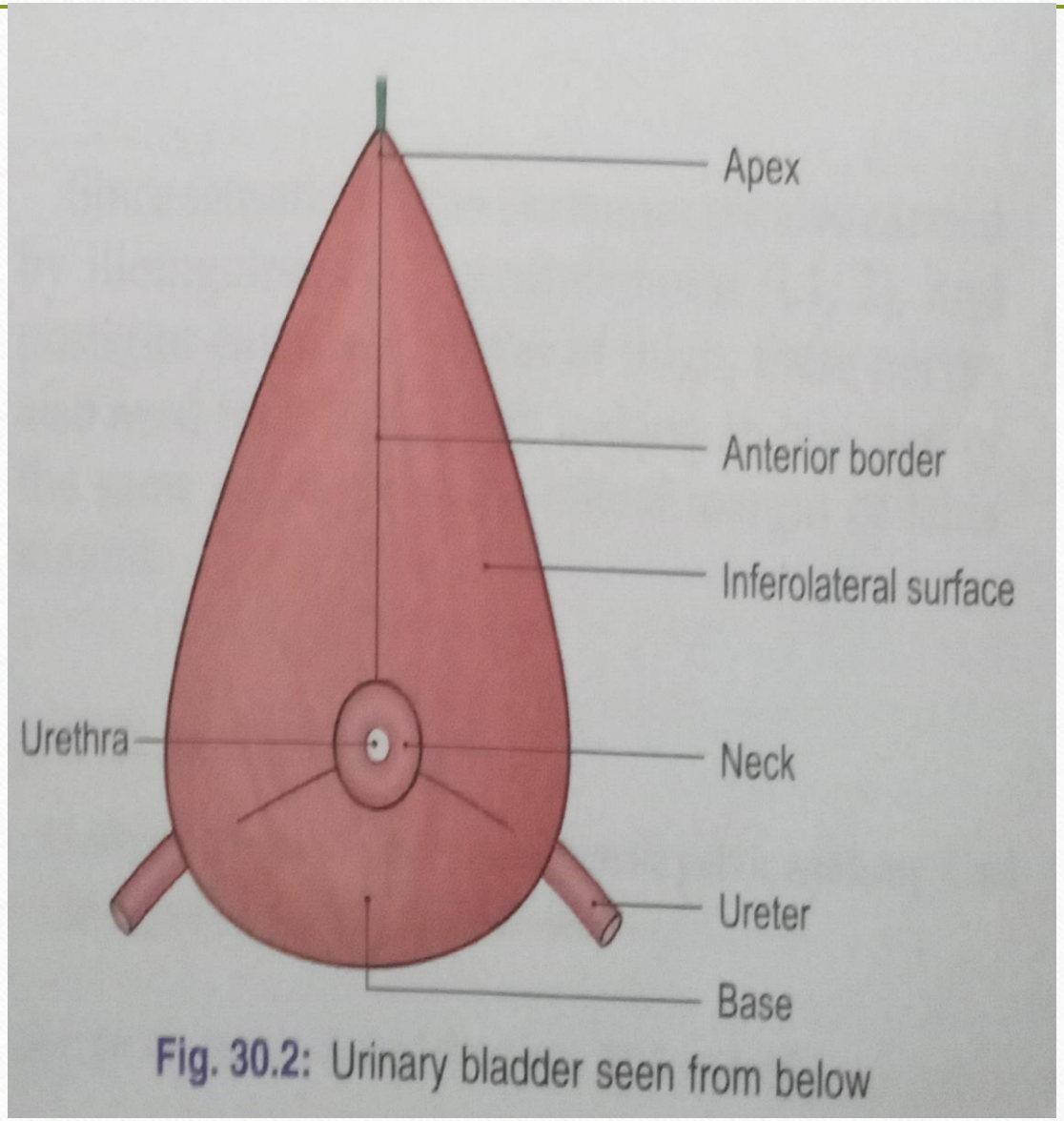

Fig. 30.2: Urinary bladder seen from below

RELATION

Apex **connected to umbilocus by median umbilical ligament**

Base: In female related uterine cervix and vagina

In male Upper part base separated rectum by rectovesical pouch, lower part related seminal vesicles and vas deferens, triangular area between two ducts deferens separated rectum

Neck: lowest and most fixed part of bladder, lies 3 to 4 behind lower part of pubic symphysis

In male,smooth muscle bundle surrounded bladder neck

In female neck related Pelvic facia surround upper part of urethra

In infants Bladder lies higher level ,internal urethral orifice lies superior border of pubic symphysis

- Superior surface: in male completely covered by peritoneum and contact sigmoid colon and coils of terminal ileum
- In female peritoneum cover the greater part of superior surface, related supravaginal part of uterine cervix
- Inferolateral surface: devoid of peritoneum ,separated from Anteriorly by anterior border and superior surface by lateral border
- In male, surface related pubis, puboprostatic ligament, retropubic fat,levator ani, and obturator internus
- In female relation are same puboprostatic ligament are replaced by pubovesical ligament

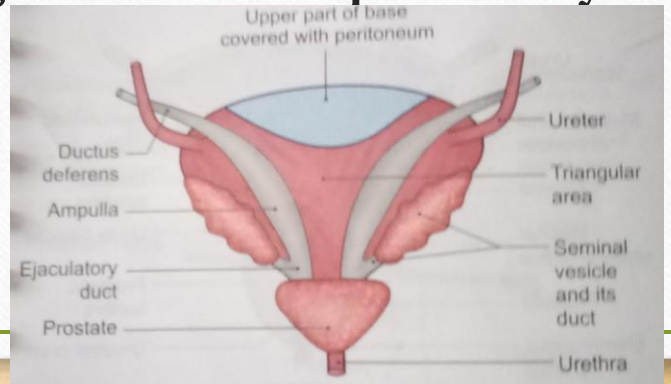

Fig. 30.3: Posterior view of a male urinary bladder and its relations to the genital ducts and glands

LIGAMENT OF THE BLADDER

TRUE LIGAMENT

1.Lateral true ligament bladder extend side of bladder to tendinous arch

2.Lateral puboprostatic ligament directed medially and backward, extend anterior end the tendinous arch of pelvic facia

3. Medial puboprostatic ligament directed downwards and backward, two side the floor of retropubic space

4. Median umbilical ligament is remnants of urachus

5. Posterior ligament directed backward and upwards, extend wall of pelvis

FALSE LIGAMENT

- 1. Median umbilical fold
- 2. Medial umbilical fold
- 3. Lateral false ligament formed by peritoneum of paravesicle fossa
- 4. Posterior false ligament formed by sacrogenital folds

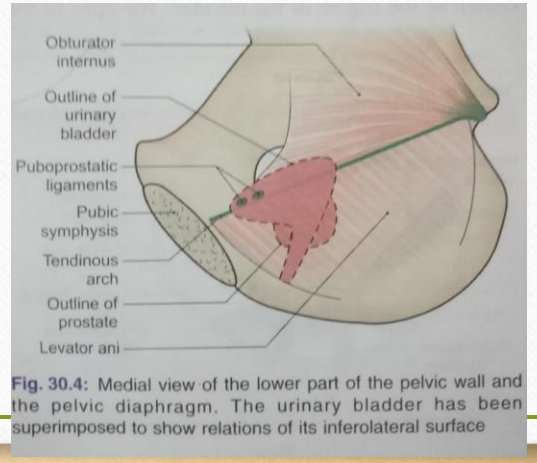

Fig. 30.4: Medial view of the lower part of the pelvic wall and the pelvic diaphragm. The urinary bladder has been superimposed to show relations of its inferolateral surface

INFERIOR OF THE BLADDER

- Examine by cystoscopy, at operation or autopsy
- In empty bladder greater part of mucous irregular fold
- Smooth dye firm attachment muscular coat known as Trigone of bladder, Trigone directed downwards and forward, opening urethra
- Their opening are 2.5cm apart in empty bladder and 5cm apart in distended bladder

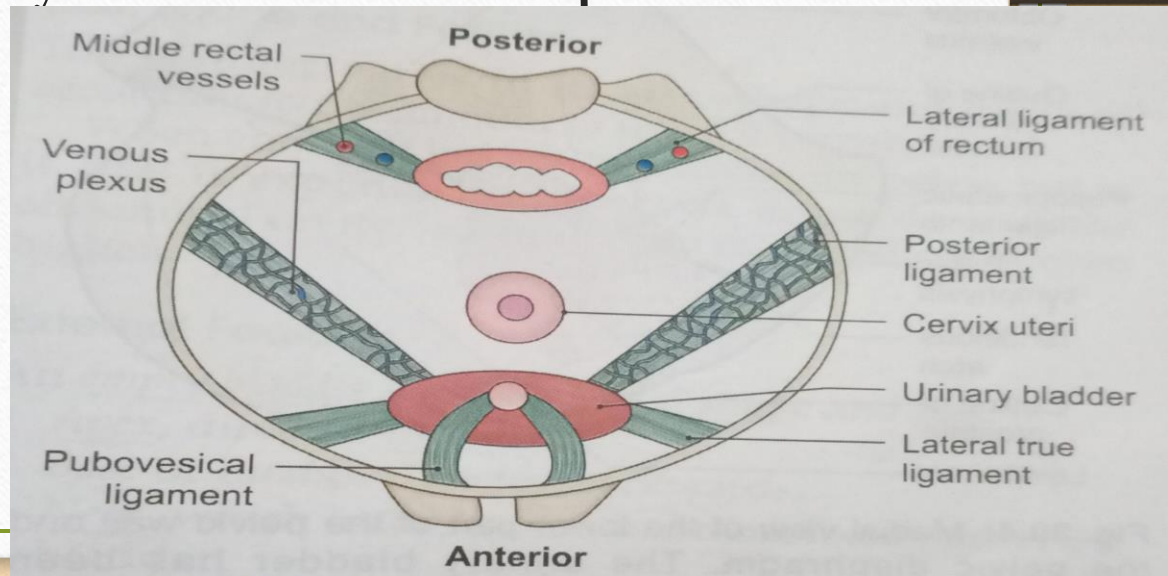

Fig. 30.5: True ligaments of the bladder in female

CAPACITY OF BLADDER AND ARTERIAL SUPPLY

- Adult Male 220ml,varying from 120 to 320ml
- 220ml causes desire micturete the bladder usually emptied when filled 250 to 300ml
- 500ml may be tolerated
- ARTERIAL SUPPLY: main supply comes superior and inferior vesicles arteries, branches of anterior trunk of internal iliac artery
- Additional supply derived obturator and inferior gluteal arteries, in females from uterine and vvaginal arteries instead of inferior vesicles

VENOUS DRAINAGE AND LYMPHATIC DRAINAGE

Inferolateral surface there is a vesicle venous plexus, pass backward in posterior ligament of bladder and drain internal iliac veins

LYMPHATIC DRAINAGE: urinary bladder terminate in external iliac nodes,pass internal iliac nodes or lateral aortic node

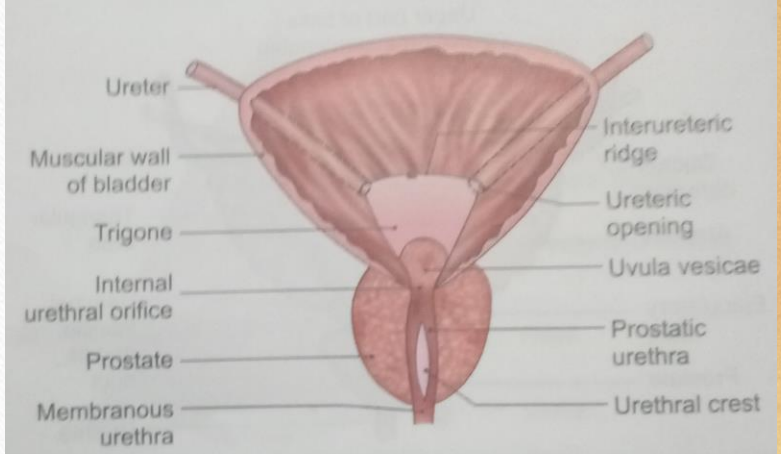

Fig. 30.6: Coronal section through the bladder and prostate to show the interior of the bladder

NERVE SUPPLY

- Parasympathetic efferent fiber, s2,3,4 are detrusor muscle
- Sympathetic efferent fibers, T11 to L2
- Somatic pudendal nerve, S2-4 supplied sphincter urethrae, situated wall of urethra
- Sensory nerve : pain sensations ,carried mainly parasympathetic nerves, pain arises in bladder passes lateral spinothalamic tract

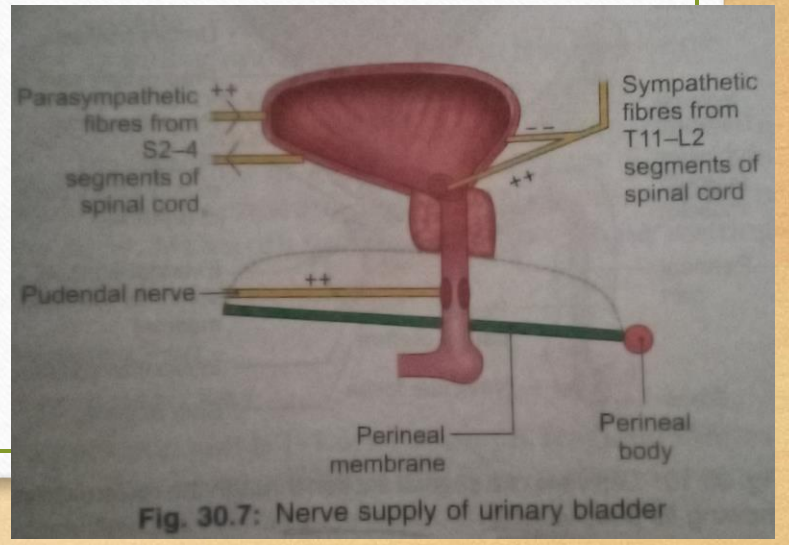

Fig. 30.7: Nerve supply of urinary bladder

HISTOLOGY

- The epithelium of urinary bladder is transitional variety
- Luminal cells are well defined dome shaped
- Middle layer are pear shaped cells and basal layer short columnar cells
- Outer most layers is serous or adventitial coat

CLINICAL ANATOMY

- Cytoscope :inferior of the bladder can be examined
- A distended bladder may be ruptured by injury of lower abdominal wall
- Chronic obstruction to the outflow of urine by an enlarged prostate cause hypertrophy of bladder leading to tabulated bladder
- In the operation of suprapubic cystotomy the bladder is distended with about 300ml of fluid as a result the anterior aspect of bladder came into directed contact with the anterior abdominal wall
- Urinary bladder is one of sites for stone formation as concentrated urine lies here

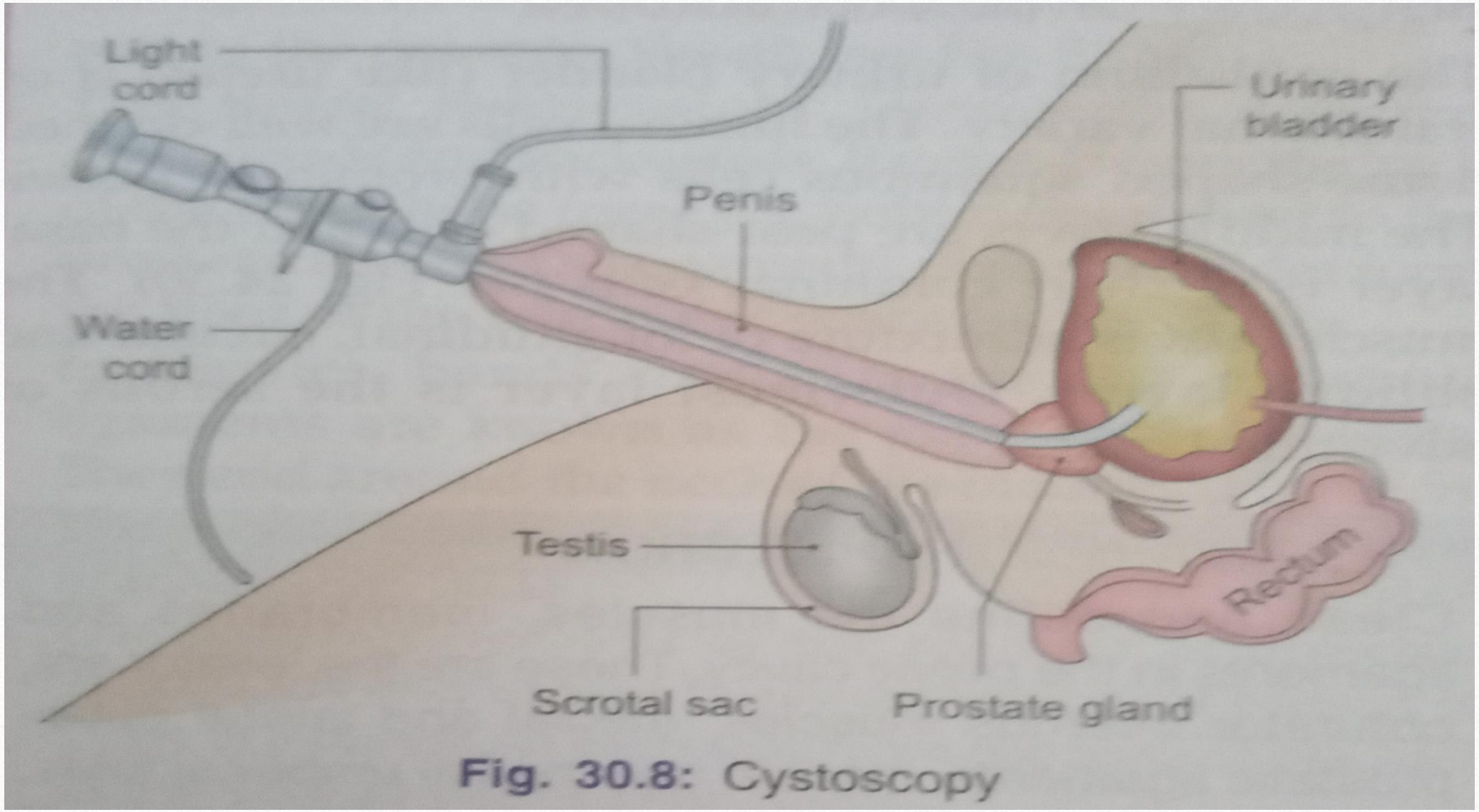

Fig. 30.8: Cystoscopy