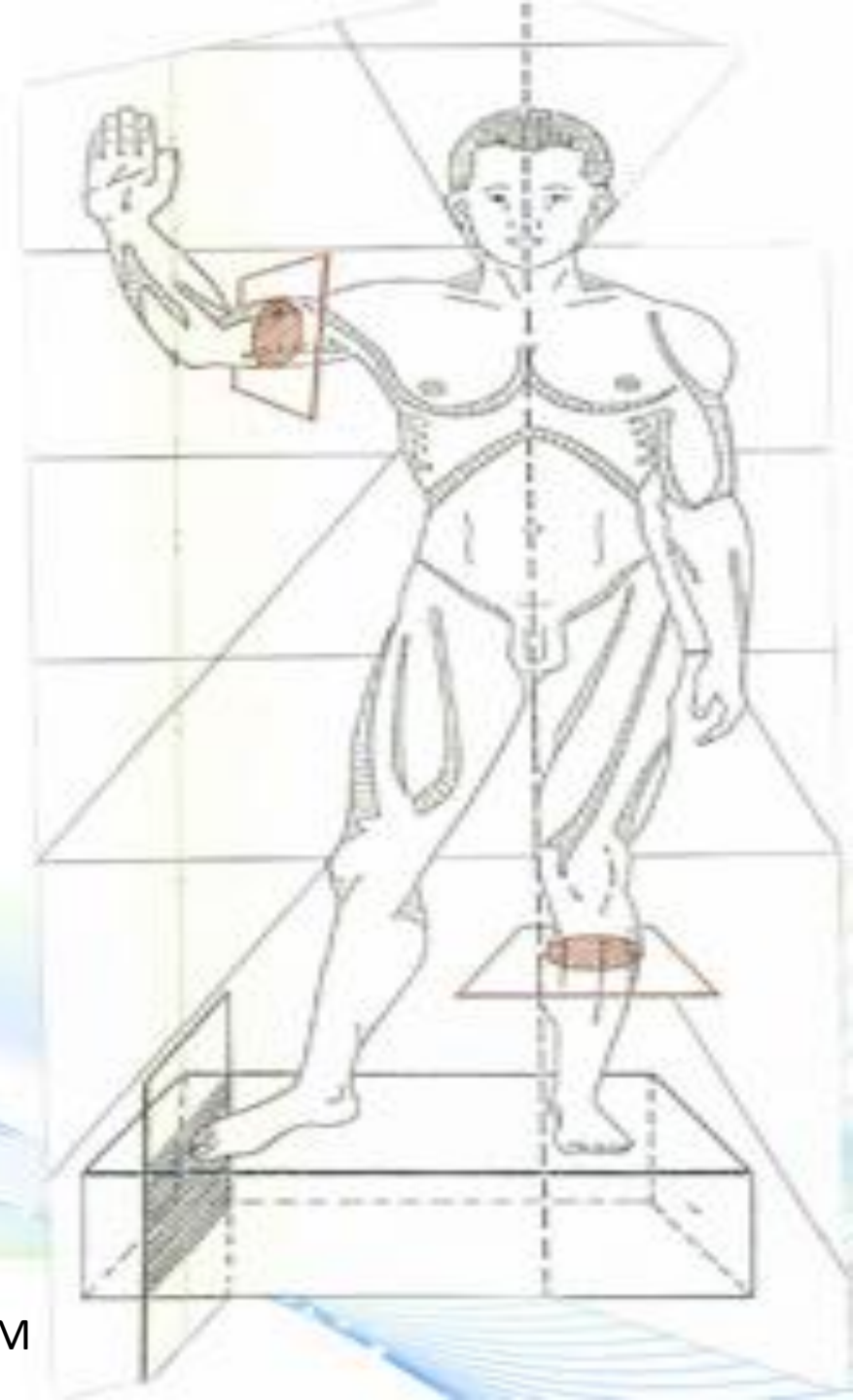


URINARY BLADDER



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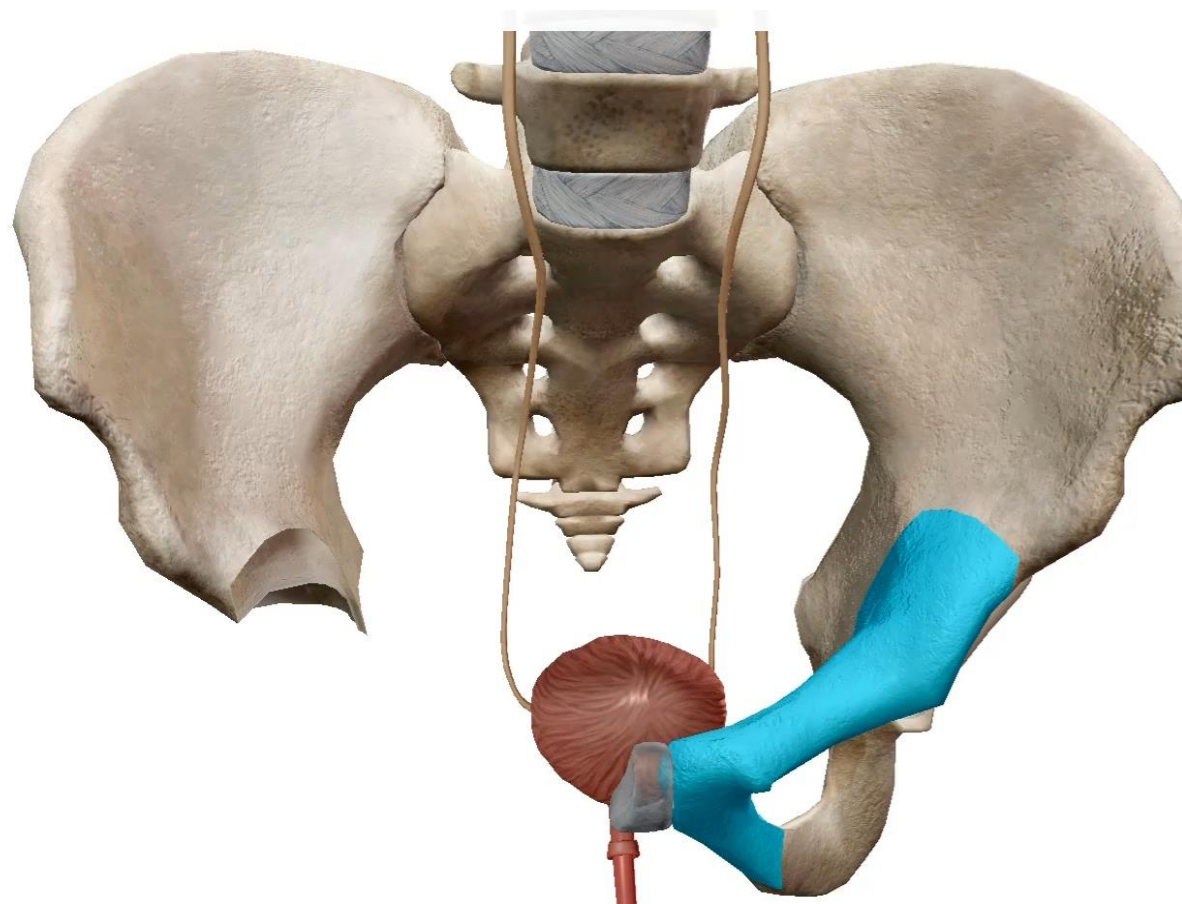
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I. INTRODUCTION

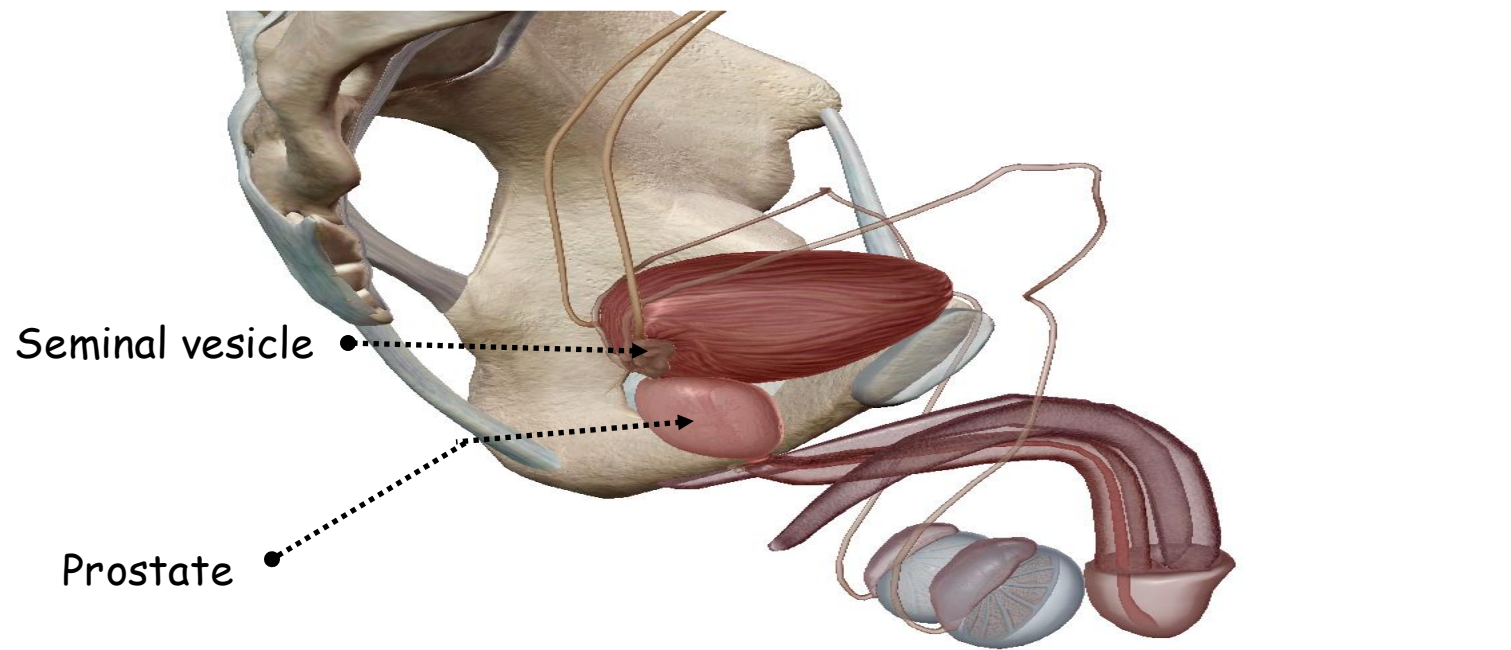
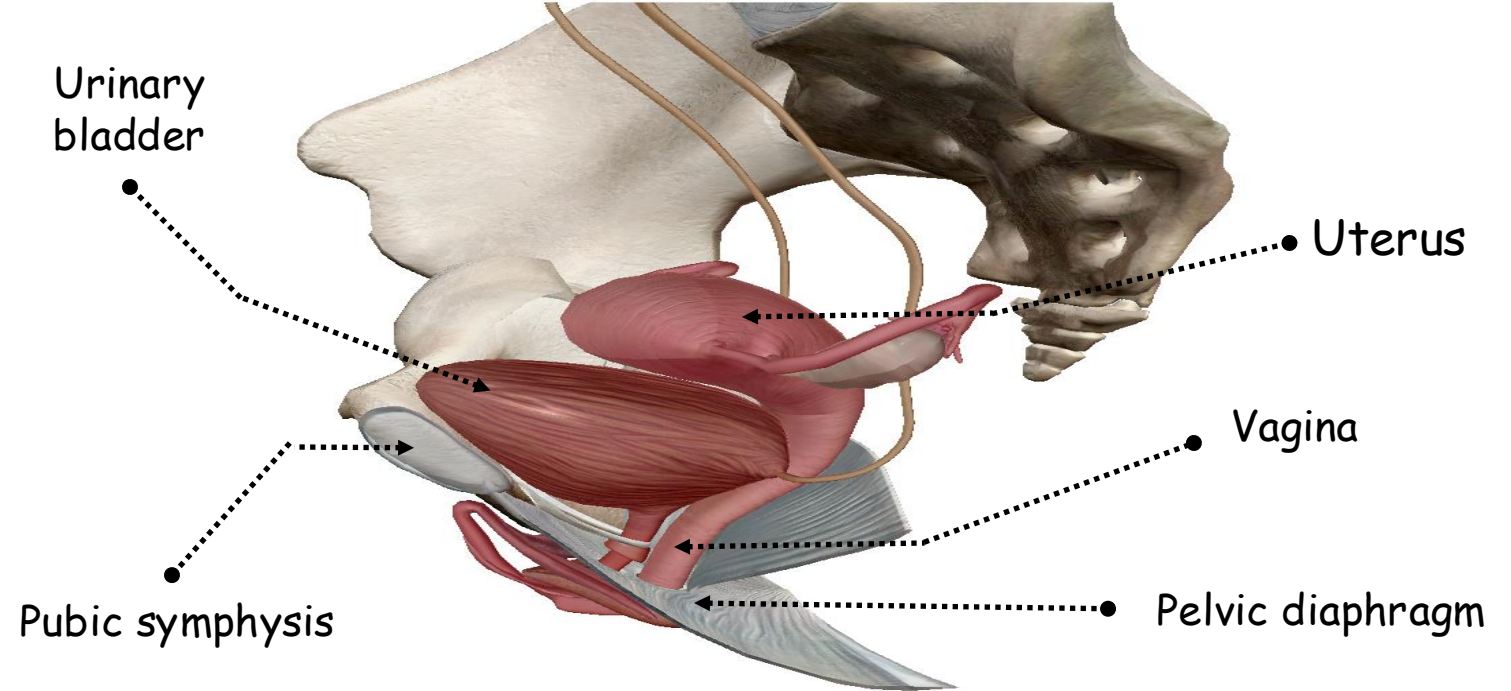
- Hollow musculomembranous organ
- Constitutes with the terminal part of the ureters and the proximal part of the urethra the pelvic parts of the urinary system
- Adapted for mass contraction not peristalsis
- Urine container with major role in micturition
- Although it is entirely situated in the pelvic cavity when empty, it expands superiorly into the abdominal cavity when full



II. DESCRIPTIVE ANATOMY

A. SITUATION

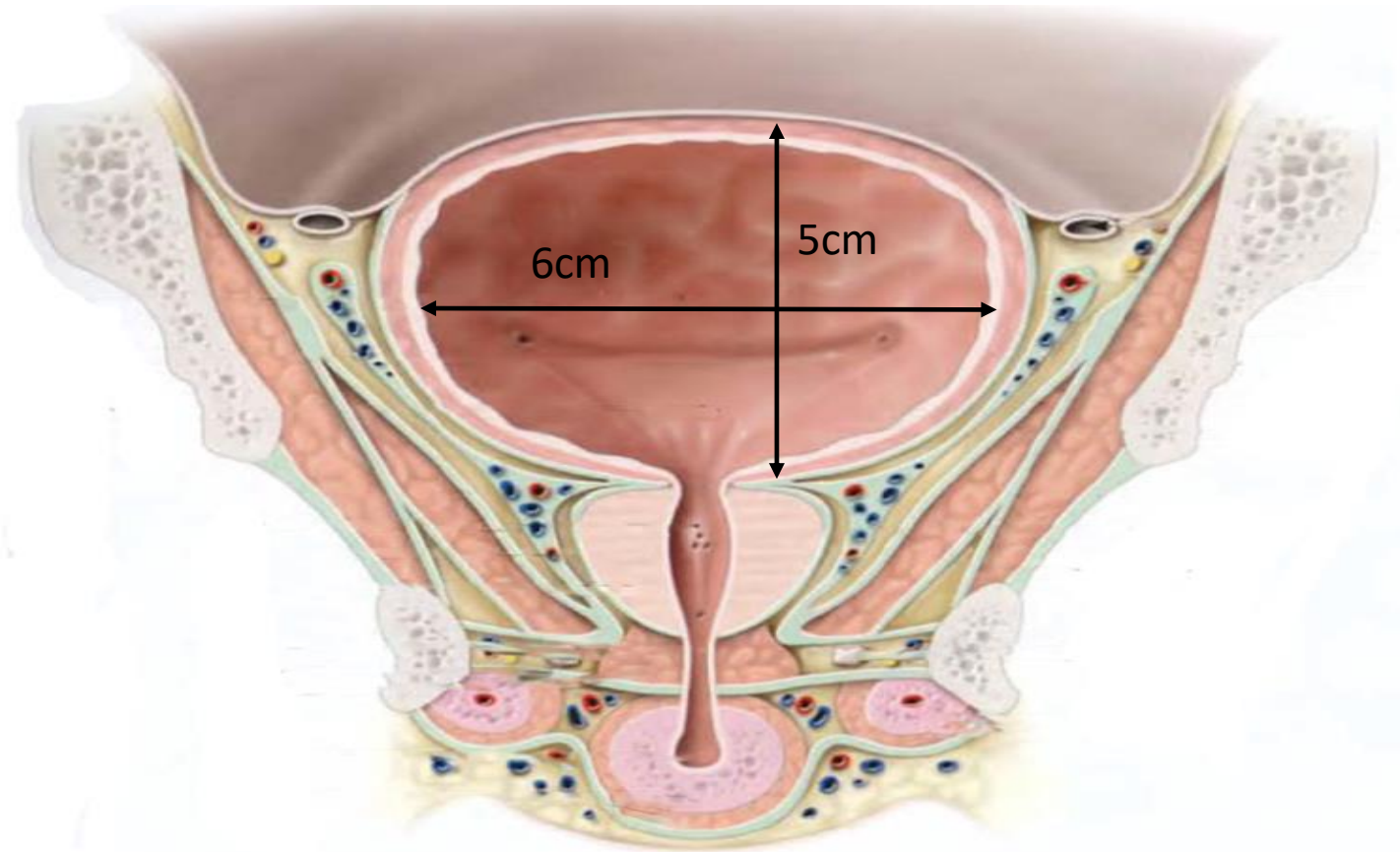
- Most anterior element of the pelvic viscera
- Entirely situated in the pelvic cavity when empty
- Expands superiorly into the abdominal cavity when full
- In men, it is situated in front of the seminal vesicles and the rectum and above the prostate and the top of the pubic symphysis
- In women, it is situated in front of the uterus and the vagina and above the pelvic diaphragm



LATERAL VIEW OF THE BLADDER IN WOMEN AND MEN

B. DIMENSIONS

- In a *coronal section* when *empty*:
 - Length: 6 cm
 - Width: 5 cm
- *Double* when full
- *Anatomic capacity* : 2 l
- *Functional capacity* : 150-300 ml
- *More important in women*
- *Increases with age*



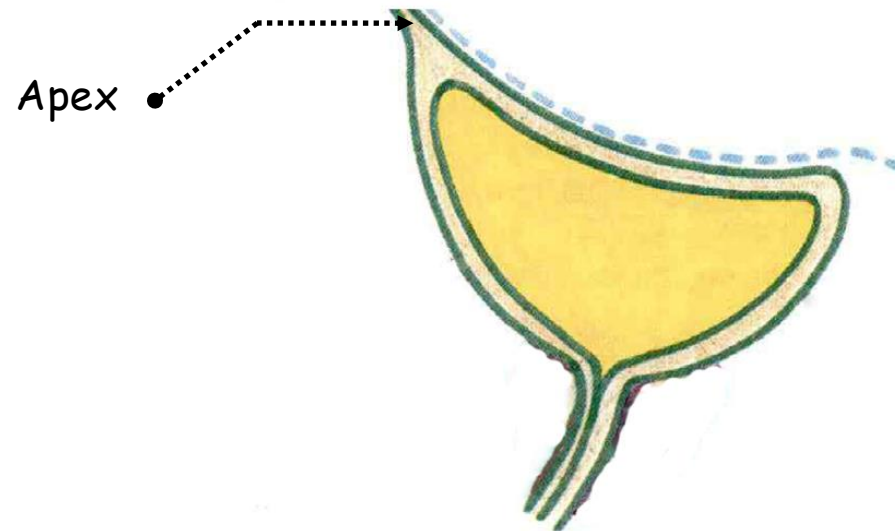
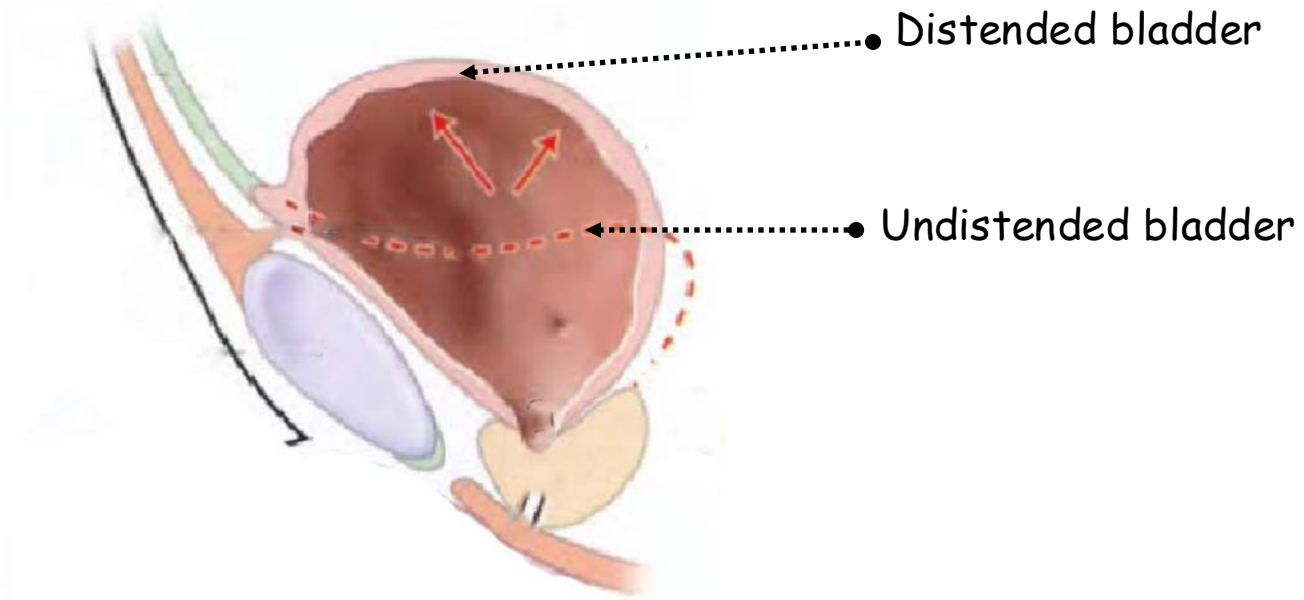
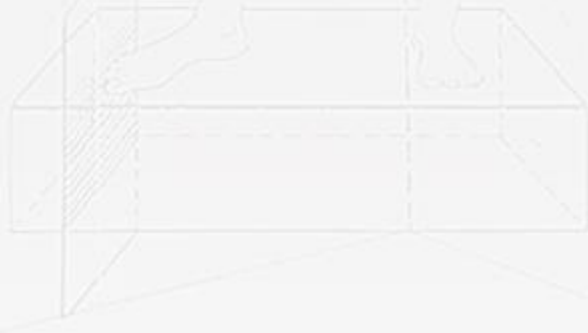
CORONAL SECTION SHOWING THE DIMENSIONS OF BLADDER

C. SHAPE AND SUPPORTS

- Same form and size in both sexes
- Globular and ovoid when distended
- Flattened from above downwards when empty
- Standard description applies to undistended state
- Approximate shape of three-sided pyramid without hard and fast dividing lines between the various surfaces:

1. Apex:

- Sharp apex pointing to the top of the pubic symphysis

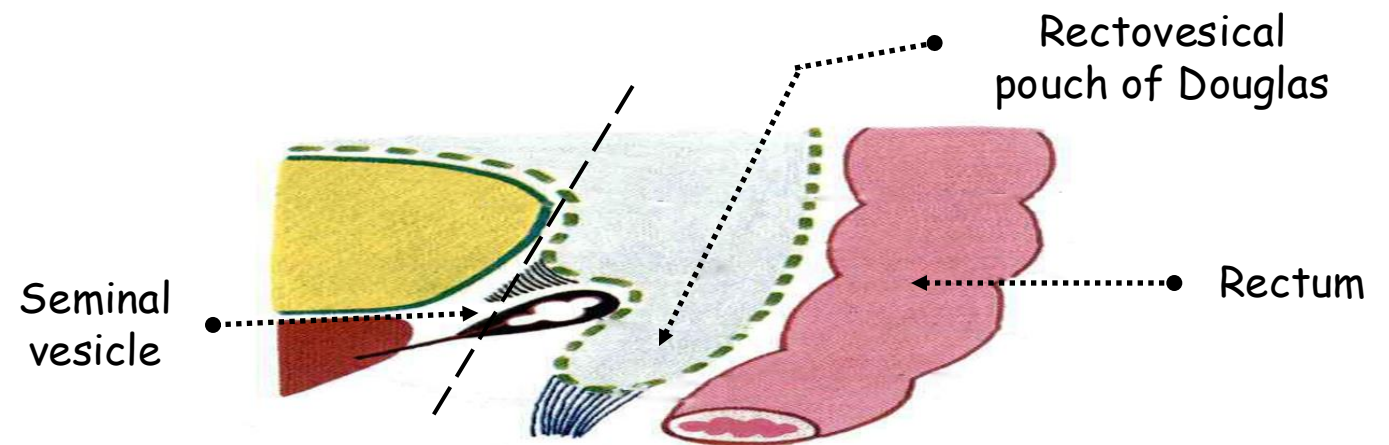
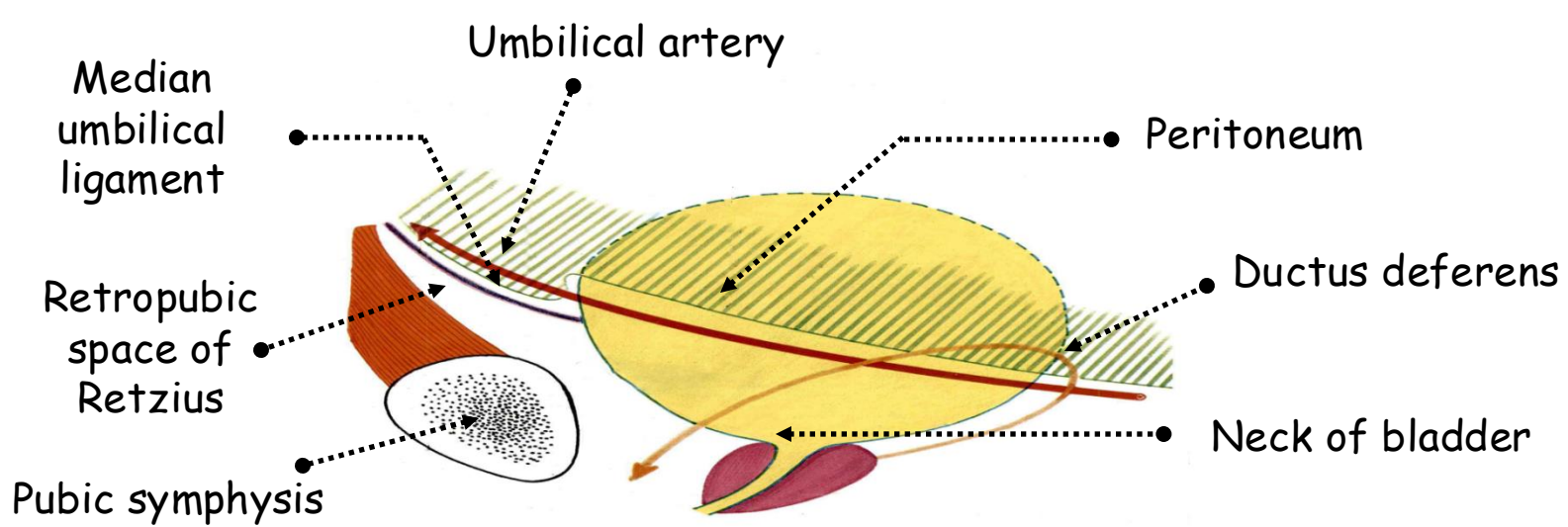


SAGITTAL VIEW SHOWING THE SHAPE OF BLADDER

- Seminal vesicle and ductus deferens are applied backwards on each side of the midline
- Ureters enter the external surface of the base at the upper outer corner
- Lowest part is the trigone
- Highest part is the retrotrigonal part
- Firm connective tissue union with the anterior vaginal wall and upper part of the uterine cervix with no peritoneum in women

3. Inferolateral surface:

- Two inferolateral surfaces cradled by the anterior parts of levator ani and obturator internus
- Each surface slopes downwards and medially to meet its fellow below the apex
- Retroperitoneal retropubic space of Retzius



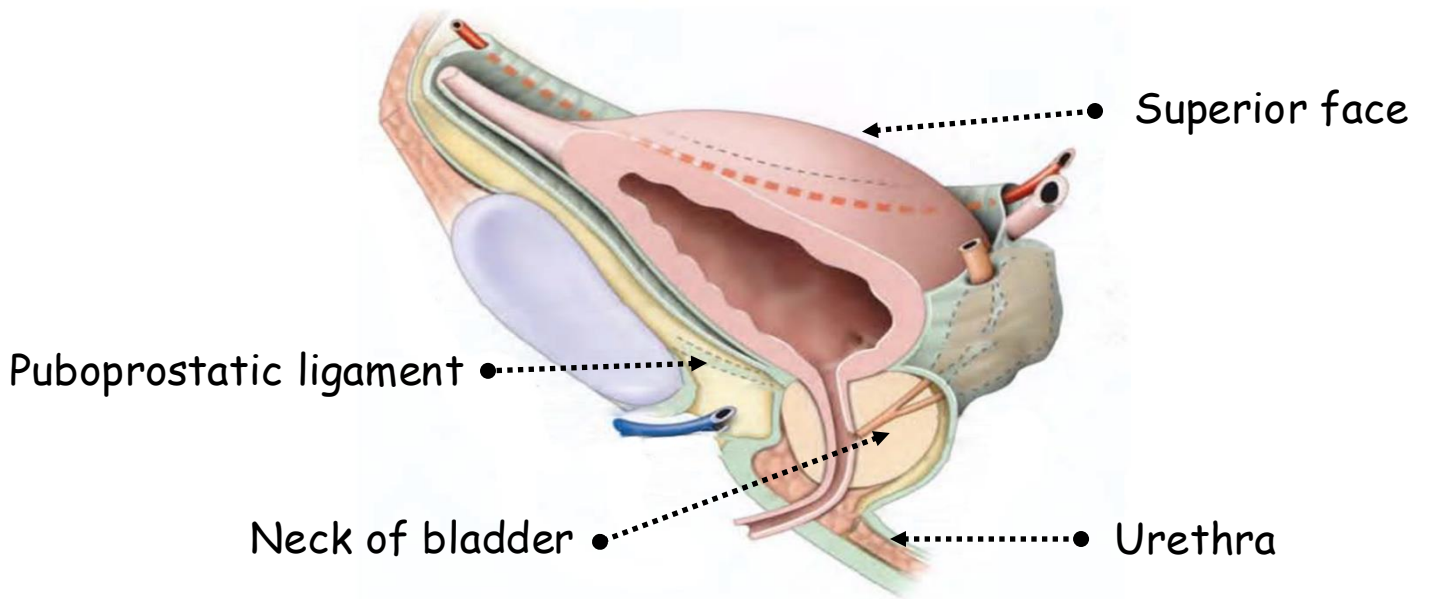
SAGITTAL VIEW SHOWING THE SHAPE OF BLADDER

4. Neck:

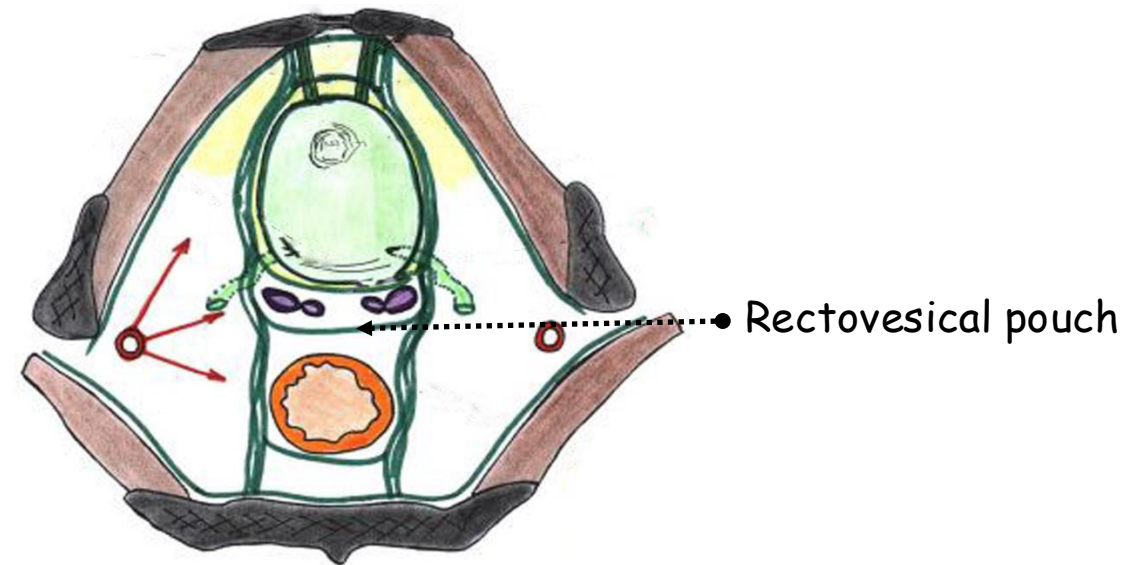
- Lowest part of the bladder
- Where the base and inferolateral surfaces meet
- Pierced by the urethra at the internal urethral orifice
- Lies against the upper surface or base of the prostate in men
- Related to pelvic fascia surrounding the upper urethra in women
- Pubovesical and puboprostatic ligaments

5. Superior surface:

- Moves when the bladder fills
- Covered by peritoneum
- Rising bladder strips peritoneum from behind rectus abdominis, for the fascia transversalis is here loose and tenuous
- Rectovesical pouch in men
vesicouterine in women



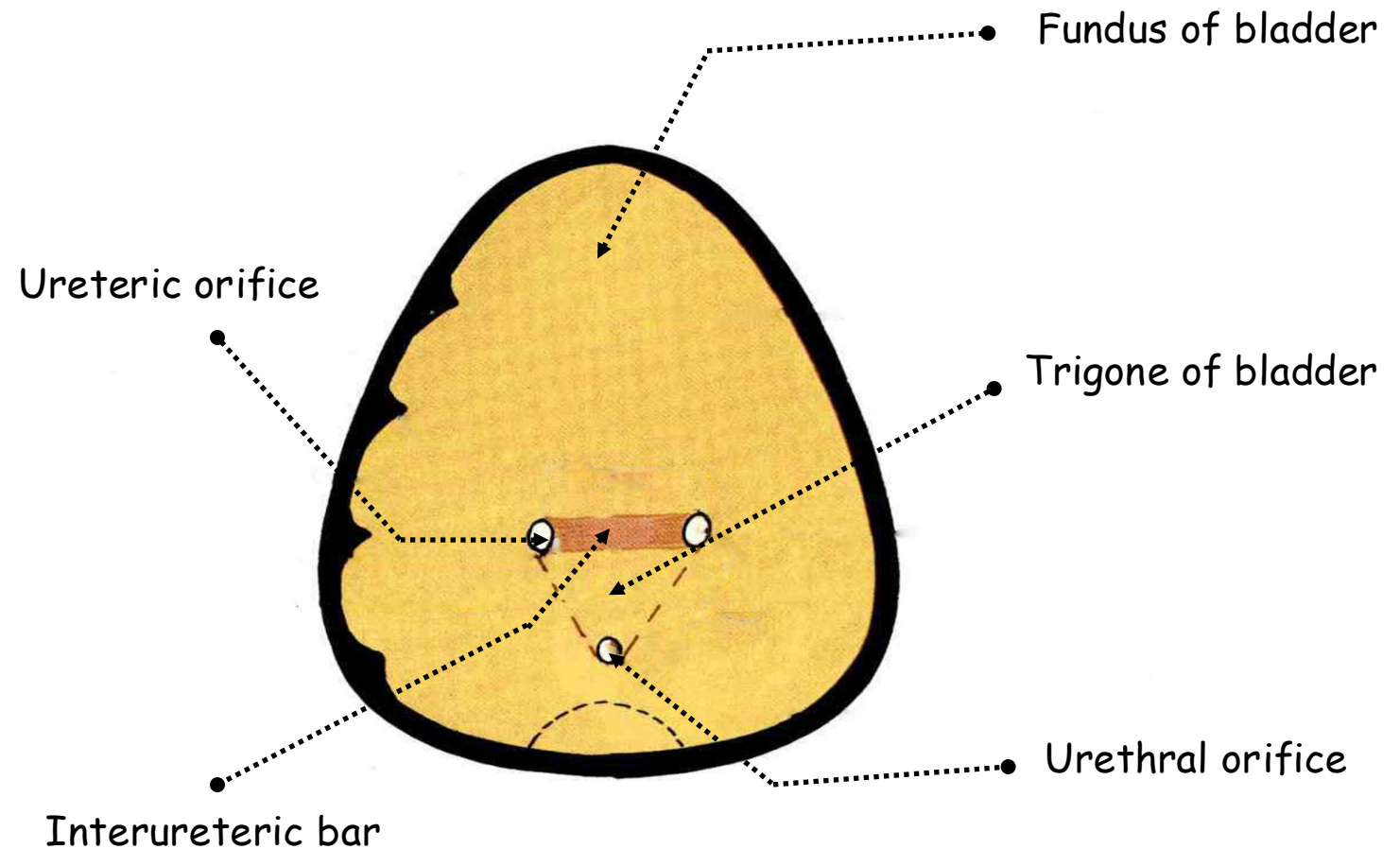
SAGITTAL SECTION OF THE BLADDER AND PROSTATE



HORIZONTAL SECTION SHOWING THE RECTOVESICAL POUCH

6. Trigone:

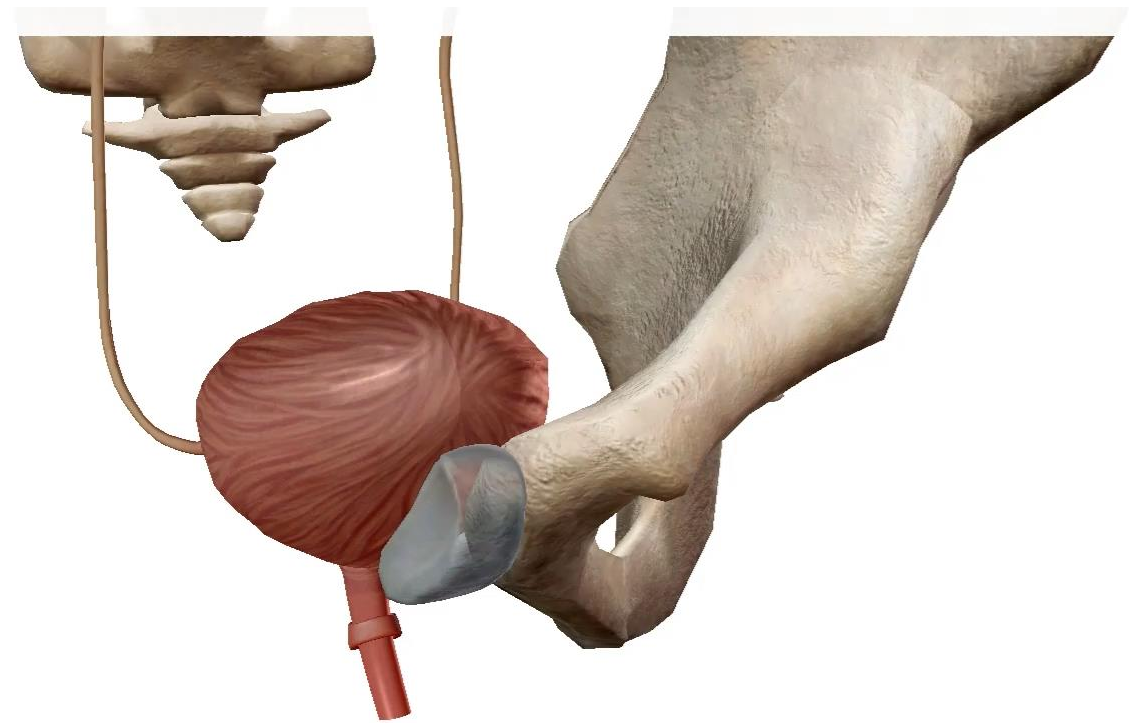
- Triangular area
- Between the internal urethral orifice centrally and below and the two ureteral orifices above and laterally
- Three openings two centimetres and half apart in the empty bladder
- Least mobile part of the bladder
- Fixed on top of the prostate by the urethra and the pelvic fascia surrounding the upper urethra at the front of the vagina
- Overlies the median lobe of the prostate which, after the first flush of youth, may project above the internal urethral orifice as a rounded elevation, the uvula vesicae
- Ureteric orifices are usually in the shape of an oblique slit and are connected by a transverse ridge, the interureteric bar



HORIZONTAL SECTION SWOWING THE SHAPE OF BLADDER

III. STRUCTURE

- The wall of bladder is a **three layers wall**
- **Serous coat:** covers the superior face and is more adherent near the apex
- **Adventitia:** or the vesical fascia, a connective tissue that covers the bladder **except the superior face**
- **Muscle of bladder:** the detrusor, smooth muscle composed of an **interlacing network of fibres** running in various directions that produce a **trabeculated appearance**
- **Superficial trigonal muscle:** distinctive patch of muscle that extends into the proximal urethra in both sexes
- **Internal urethral sphincter:** circular smooth muscle fibres continuous with the smooth muscle of the prostate and seminal vesicle, **absent in women**
- **Mucous membrane:** thick and lax and lined by transitional epithelium **without glands nor muscularis mucosae**, mucus in shed urine has come from urethral glands



IV. ANATOMICAL RELATIONS

A. SUPERIOR SURFACE

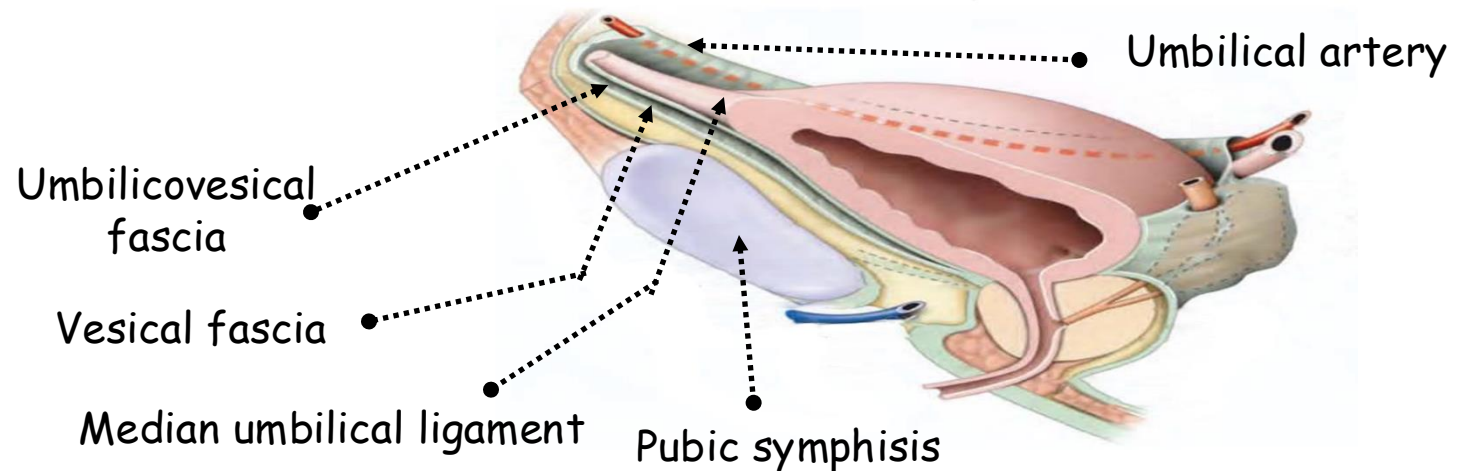
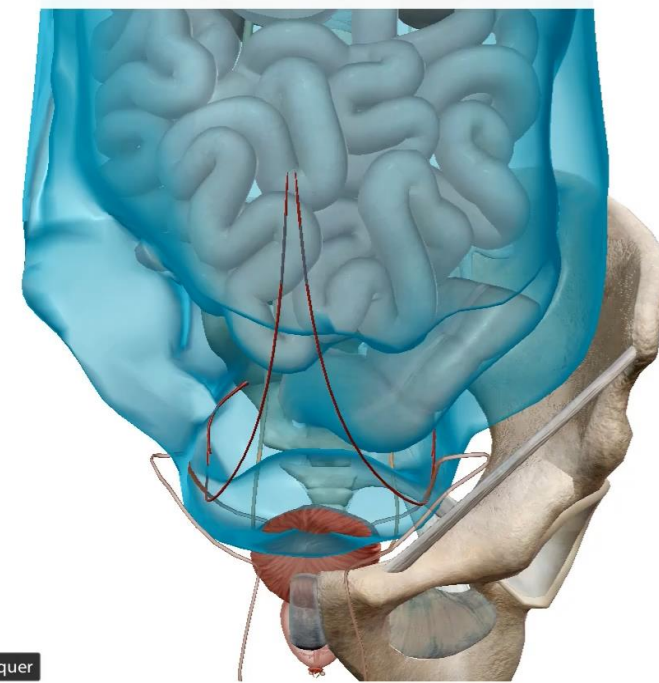
- Covered by peritoneum
- Fascia transversalis and rectus abdominis
- Rectovesical pouch in men
- Vesicouterine pouch and anterior face of the body of uterus in women
- Free mobile part

B. INFEROLATERAL SURFACES

- Pelvic diaphragm and obturator internus
- Pubic symphysis and retropubic space of Retzius

C. APEX

- Median umbilical ligament

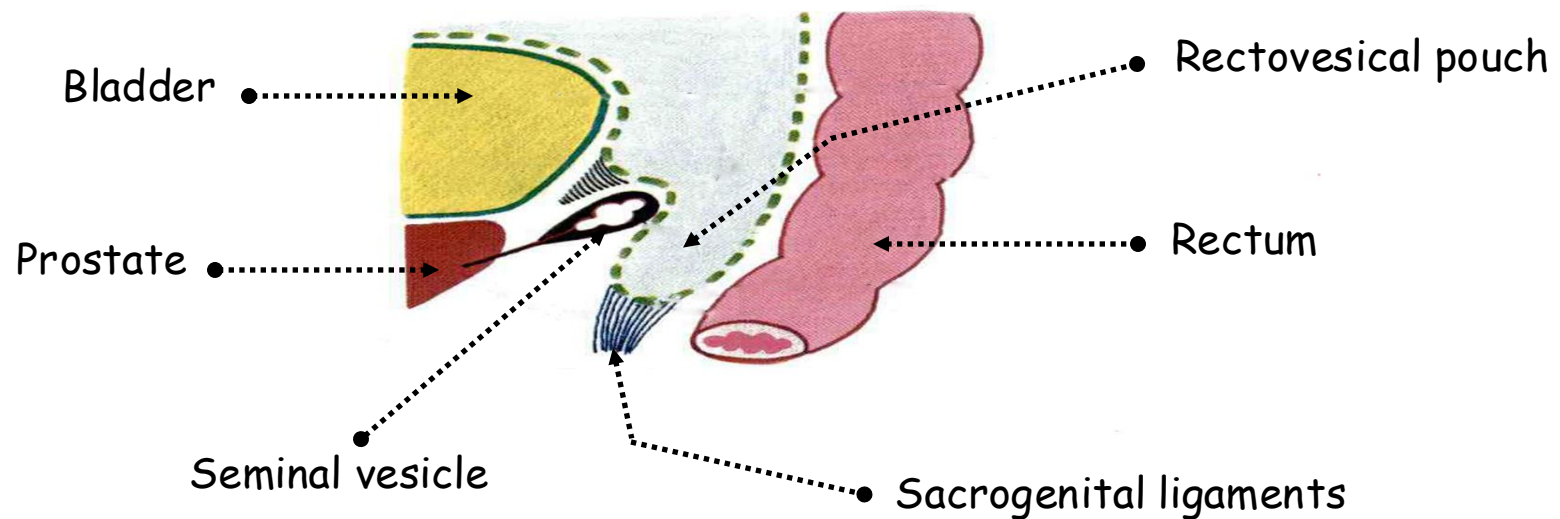
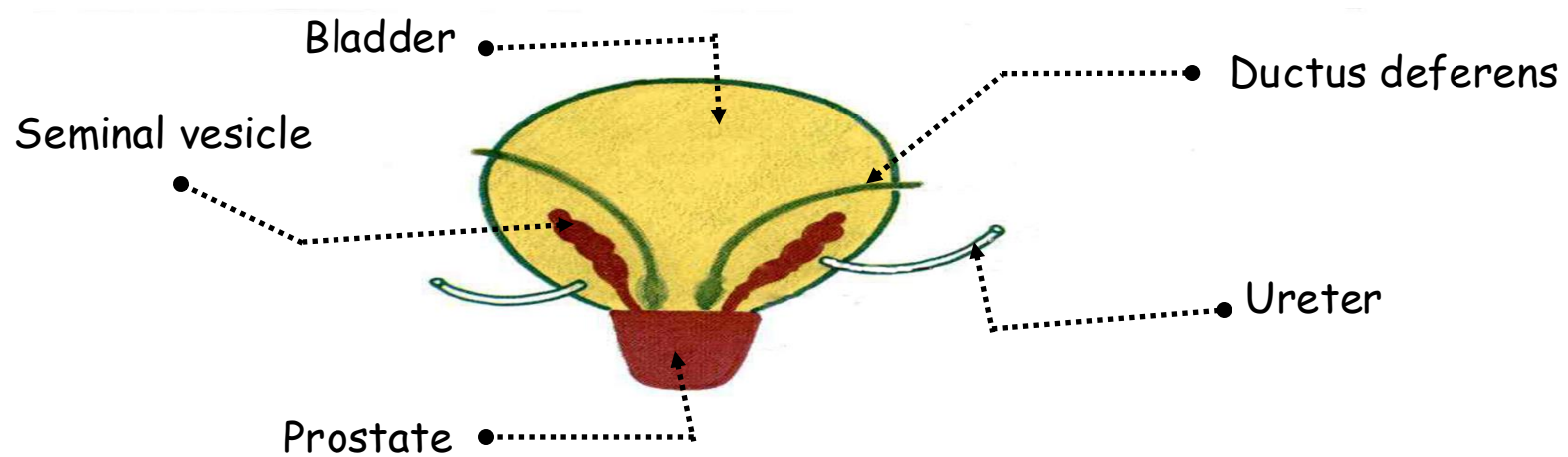


LATERAL VIEW SHOWING THE ANATOMICAL RELATIONS OF SUPERIOR AND INFEROLATERAL SURFACES OF URINARY BLADDER

D. BASE

1. In men:

- No peritoneal covering
- Retrovesical portion of pelvic ureter
- Ductus deferens and seminal vesicle
- Rectovesical septum



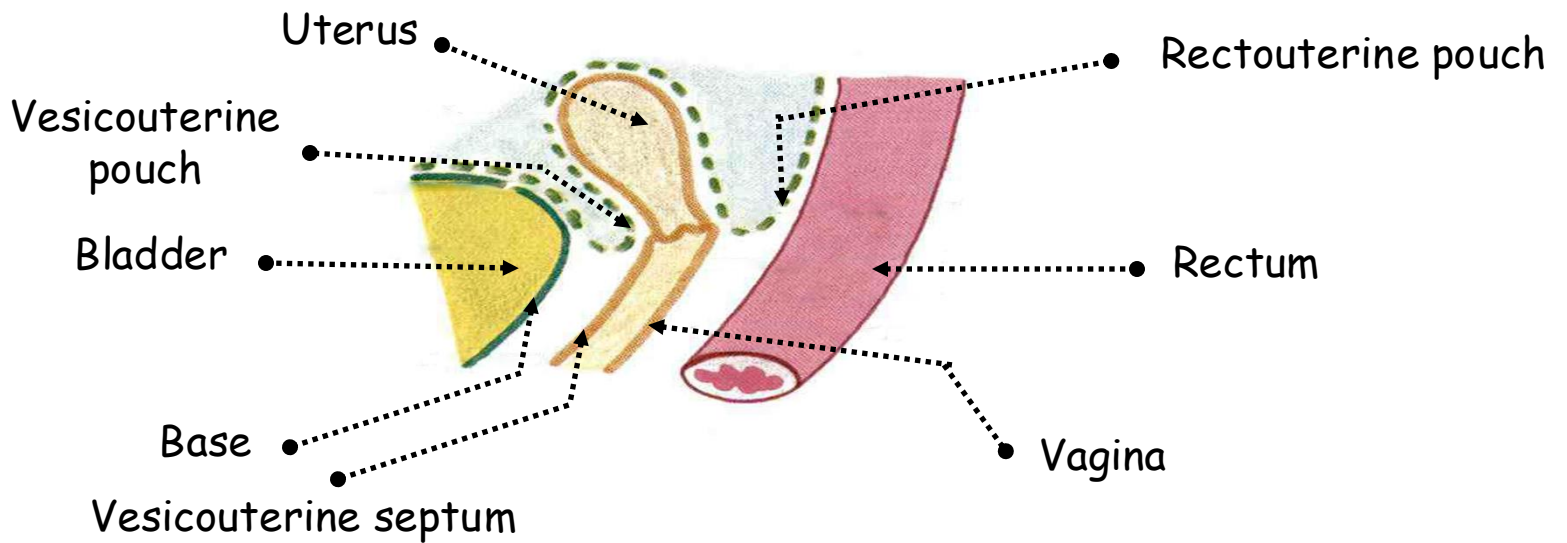
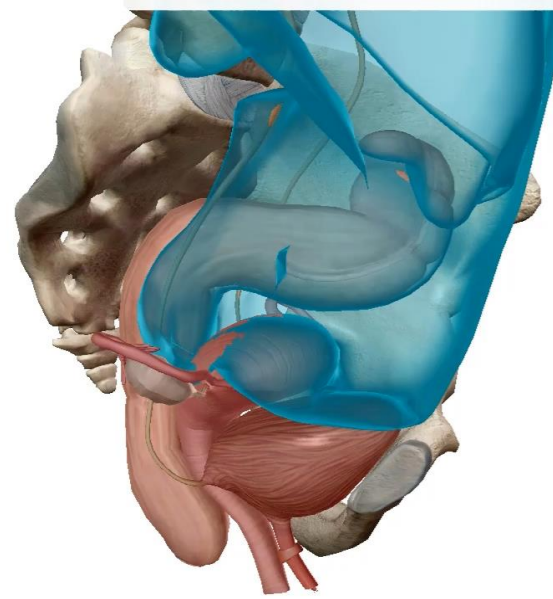
POSTERIOR VIEW SHOWING THE ANATOMICAL RELATIONS OF THE BASE OF BLADDER

2. In women:

- No peritoneal covering
- Cervix and vagina
- Vesicouterine septum
- Ureters

E. NECK

- Base of the prostate in men
- Pubovaginal muscle in women

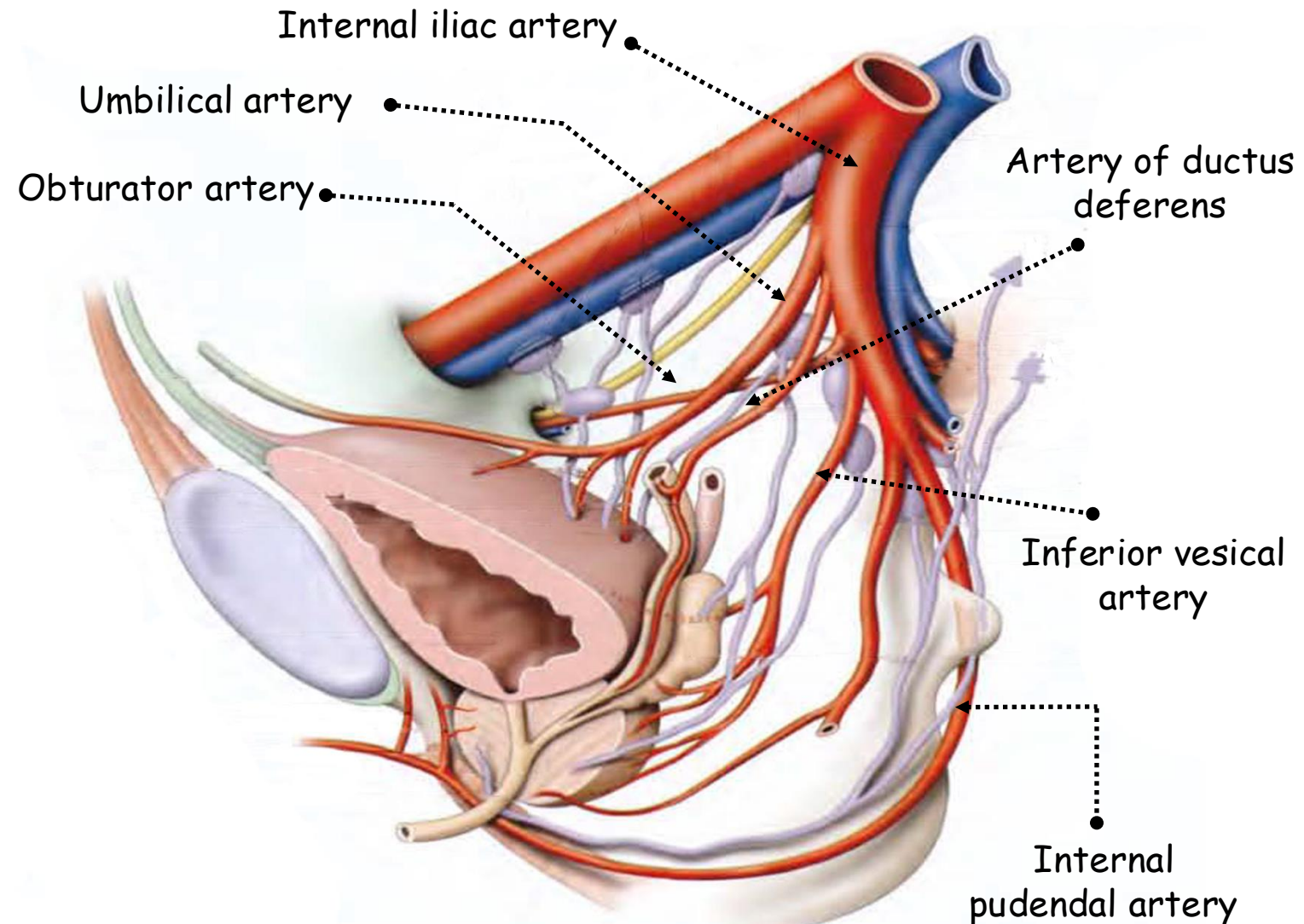


LATERAL VIEW SHOWING THE ANATOMICAL RELATIONS OF THE BASE AND NECK OF BLADDER IN WOMEN

V. BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

A. ARTERIES

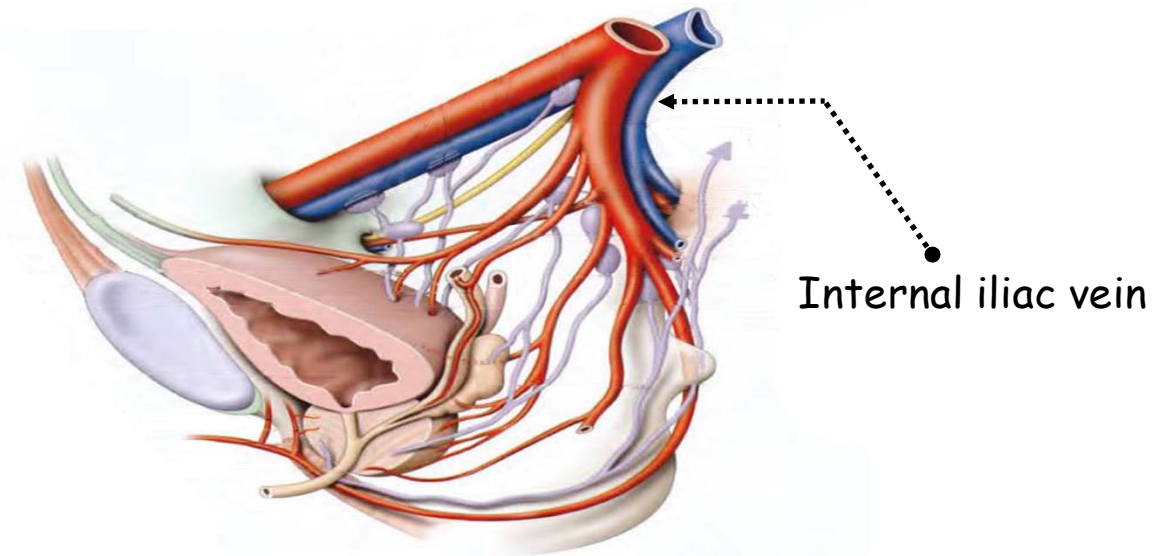
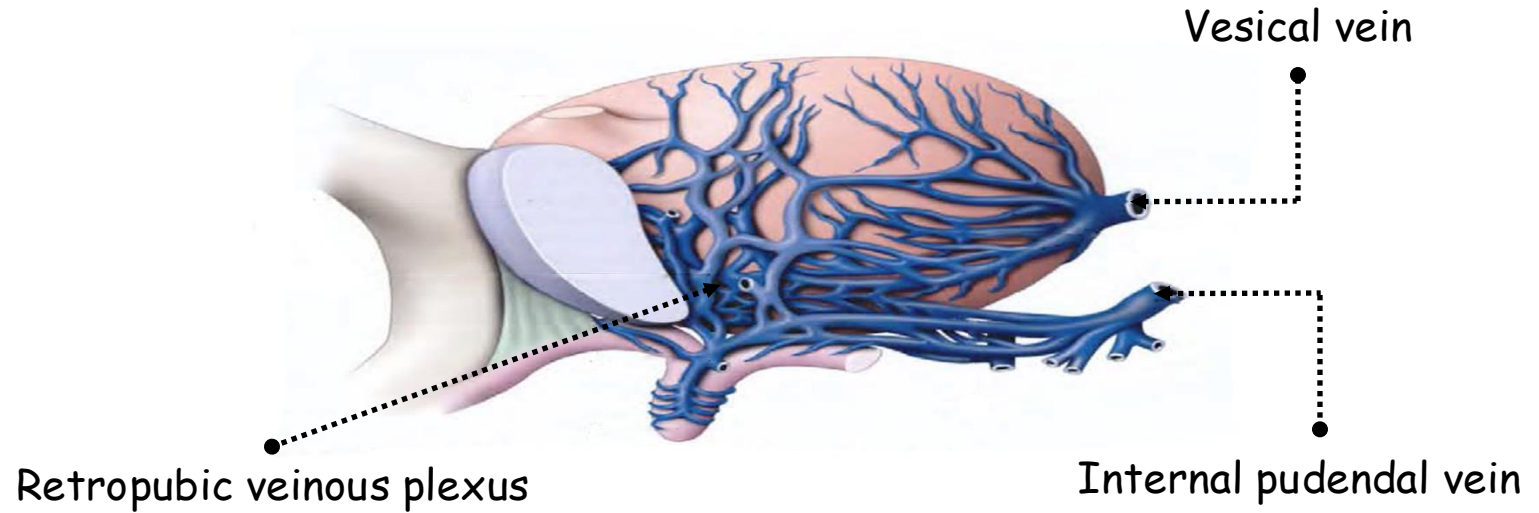
- All arteries of the bladder are provided from the internal iliac artery
- Superior and inferior vesical arteries provide most of the arterial blood
- Small contributions to the lower part of the bladder from the obturator, inferior gluteal, uterine and vaginal arteries
- The superior vesical arteries rise from the umbilical artery
- Raise a small mesentery of peritoneum running from the side wall of the pelvis to the upper part of the bladder
- The inferior vesical artery rises from the internal iliac artery or the inferior gluteal



LATERAL VIEW SHOWING THE ARTERIES OF BLADDER

B. VEINS

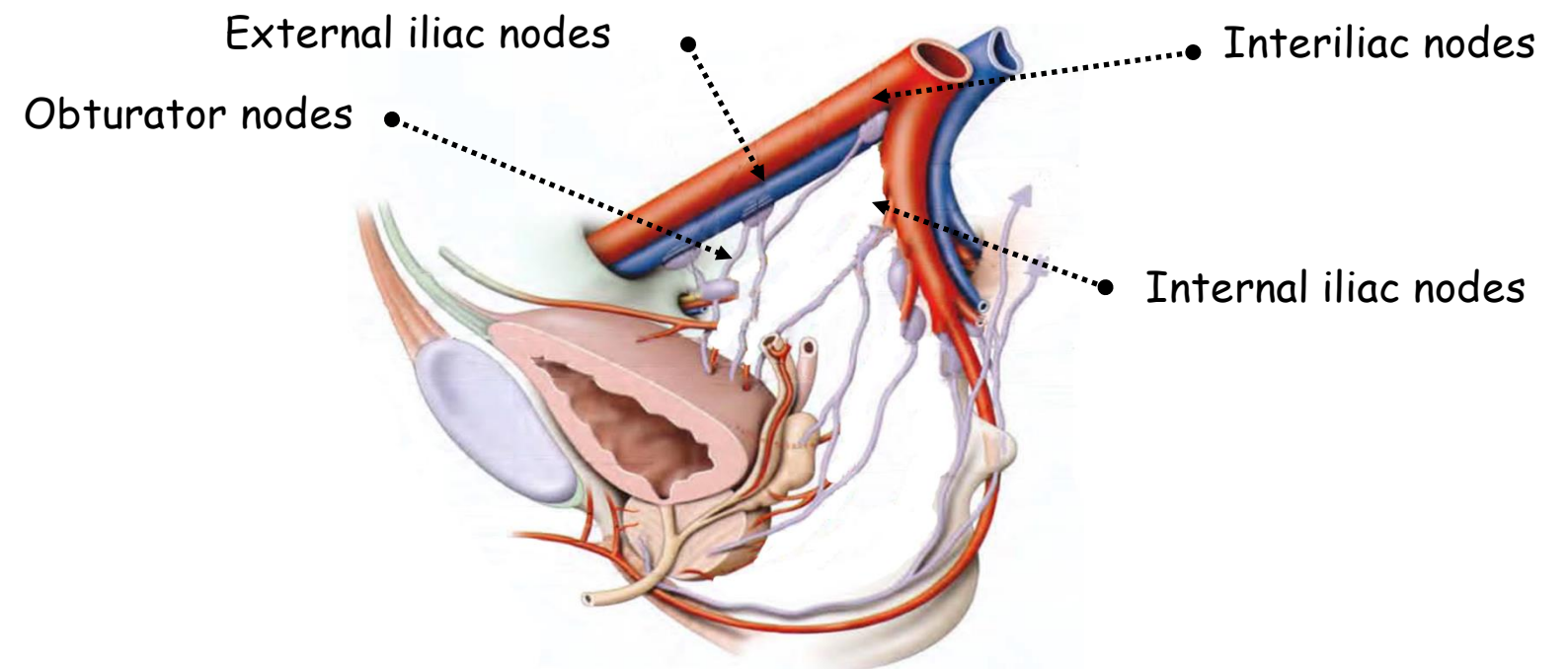
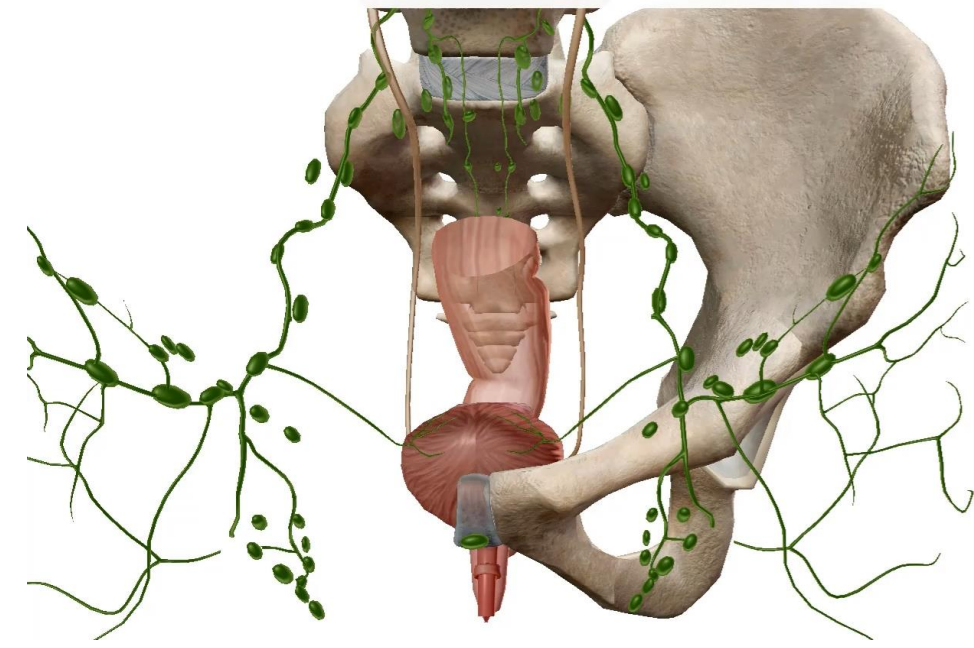
- Do not follow the arteries
- Plexus that converges on the vesicoprostatic plexus in the groove between bladder and prostate in men
- Similar plexus in women communicating with veins in the base of the broad ligament
- Drains backwards across the pelvic floor to the internal iliac veins



LATERAL VIEW SHOWING THE VEINS OF BLADDER

C. LYMPH DRAINAGE

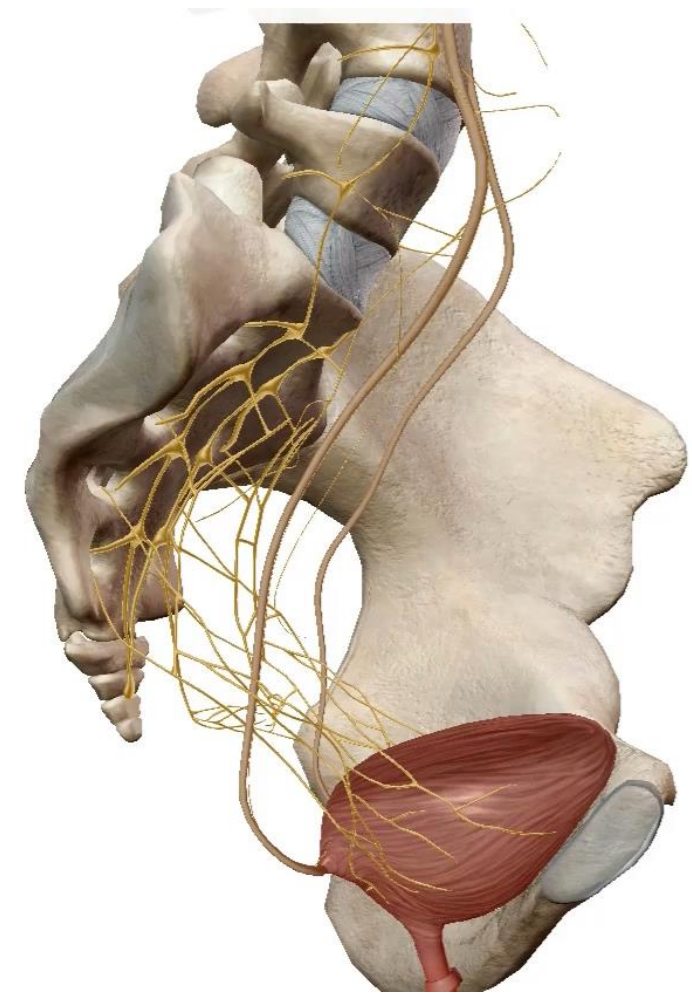
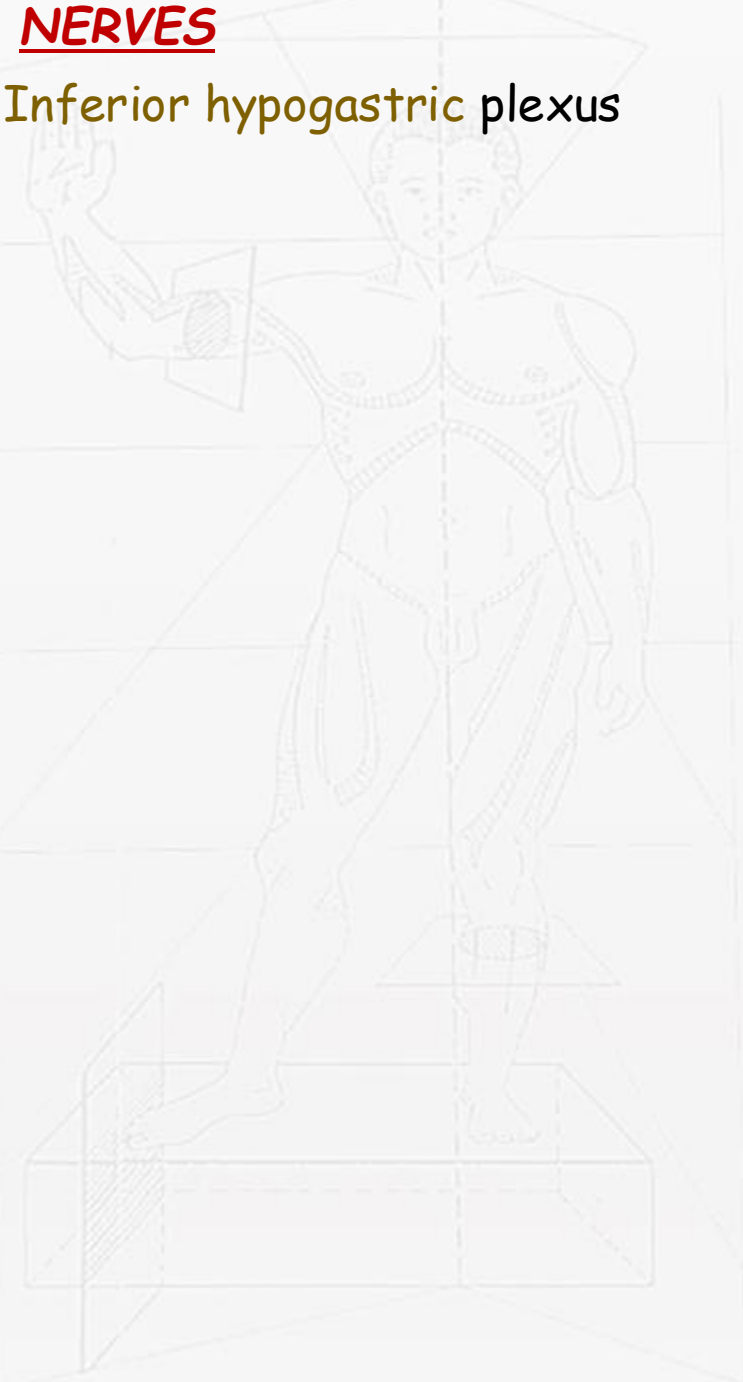
- Internal iliac nodes
- External iliac nodes
- Sacral nodes



LATERAL VIEW SHOWING THE LYMPH DRAINAGE OF BLADDER

D. NERVES

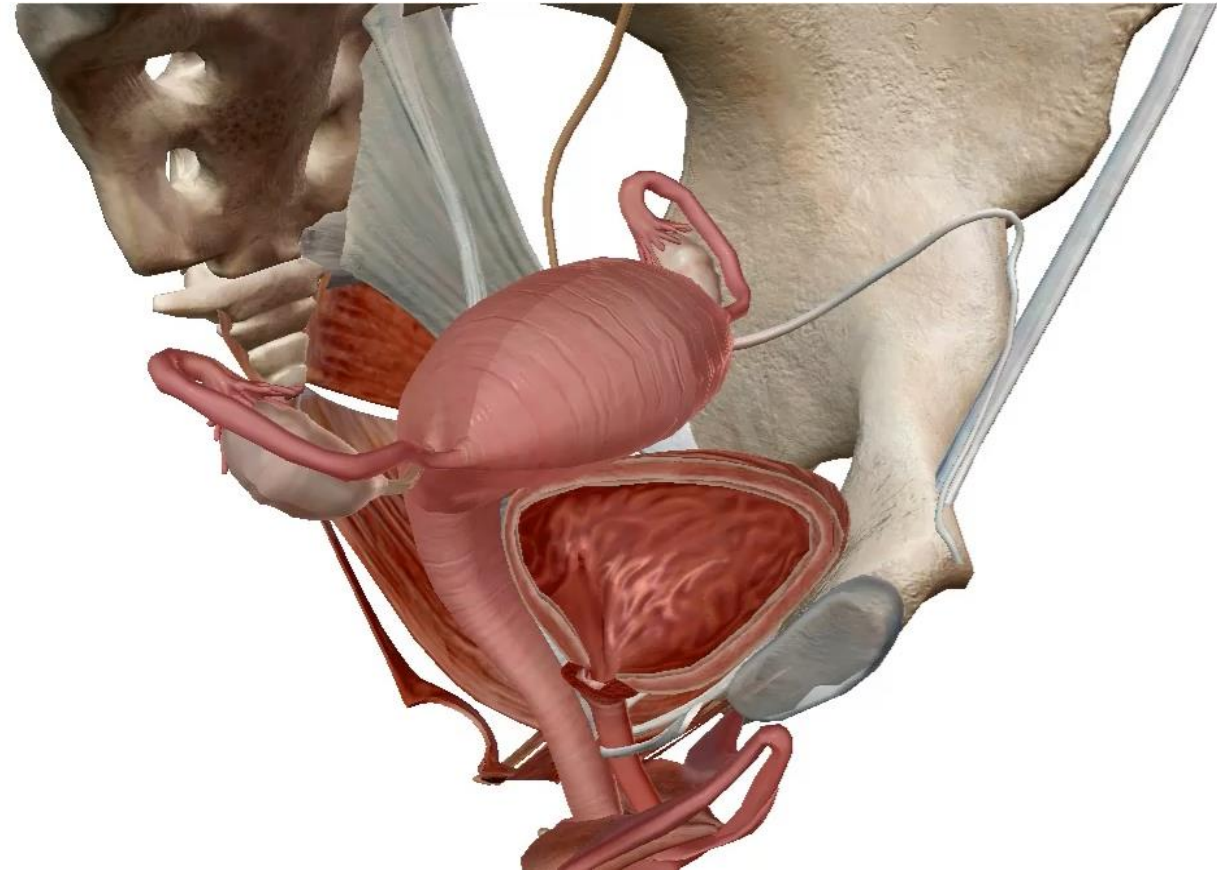
- Inferior hypogastric plexus



LATERAL VIEW SHOWING THE NERVES OF BLADDER

VI. CONCLUSION

- Continuous muscular system with the ureters and the urethra
- Urine container
- Pelvic fixed organ
- Variable dimensions and relations
- Three layers' wall
- Exclusive supply by the internal iliac artery





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