

The Urinary Passage

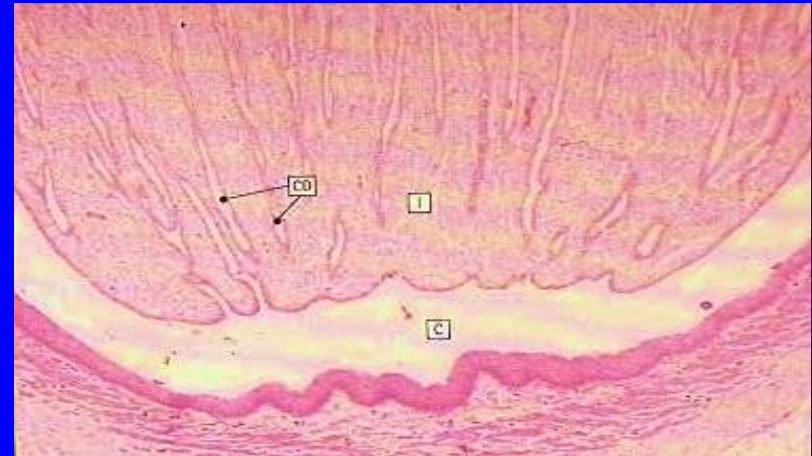
Objectives:

By the end of this lecture, the student should be able to describe

1. The microscopic structure of the renal pelvis and ureter.
2. The microscopic structure of the urinary bladder and male and female urethra.

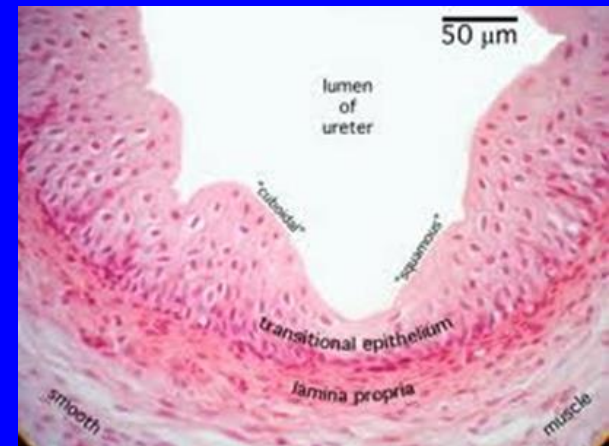
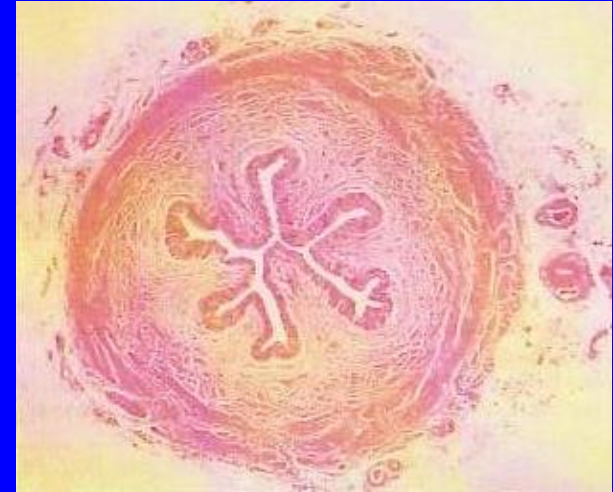
Renal calyces

- Each calyx accepts urine from the renal papilla of a renal pyramid.
- They are lined with transitional epith., lamina propria and smooth muscle.
- Minor calyces merge to form major calyces (with same lining tissue as minor calyces).
- Major calyces open into renal pelvis.



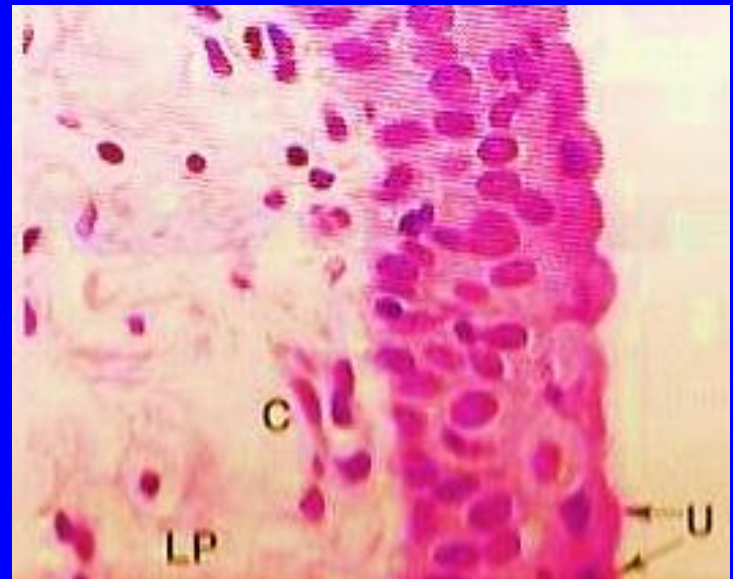
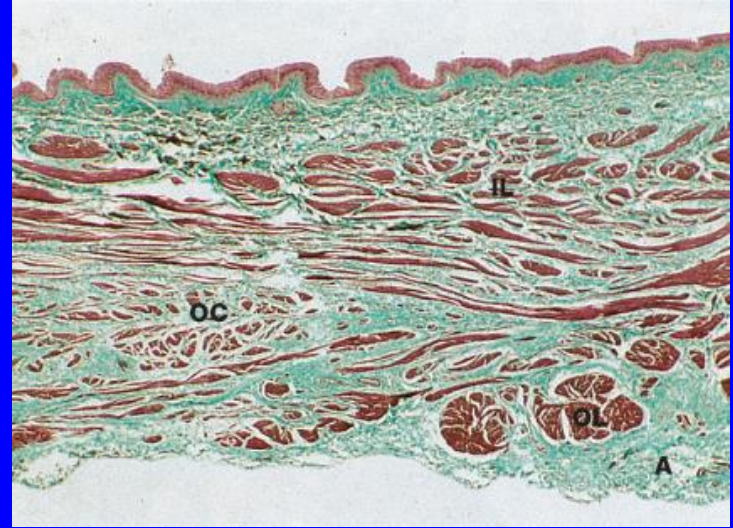
Ureter

1. **Mucosa:** is formed of transitional epith. and lamina propria.
2. **Muscularis** (muscular coat):
 - in the upper 2/3: formed of 2 layers of smooth muscle.
 - a) Inner longitudinal.
 - b) Outer circular.
 - in the lower 1/3: formed of 3 layers of smooth muscle.
 - a) Inner longitudinal.
 - b) Middle circular.
 - c) Outer longitudinal.
3. **Adventitia:** fibrous C.T. covering.
N.B. No serosa.

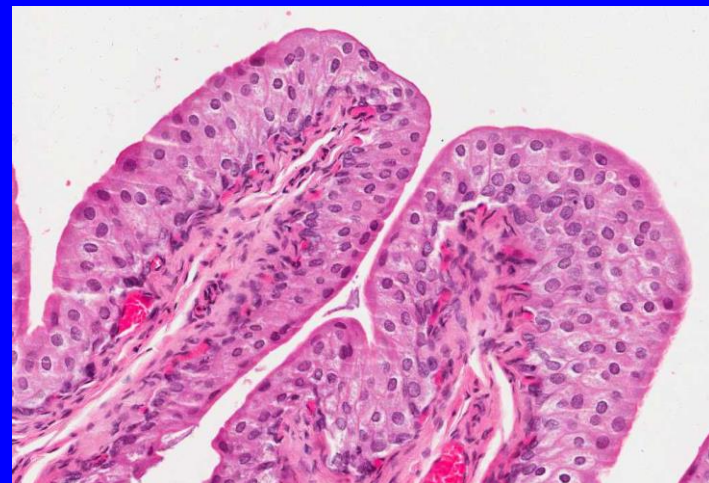
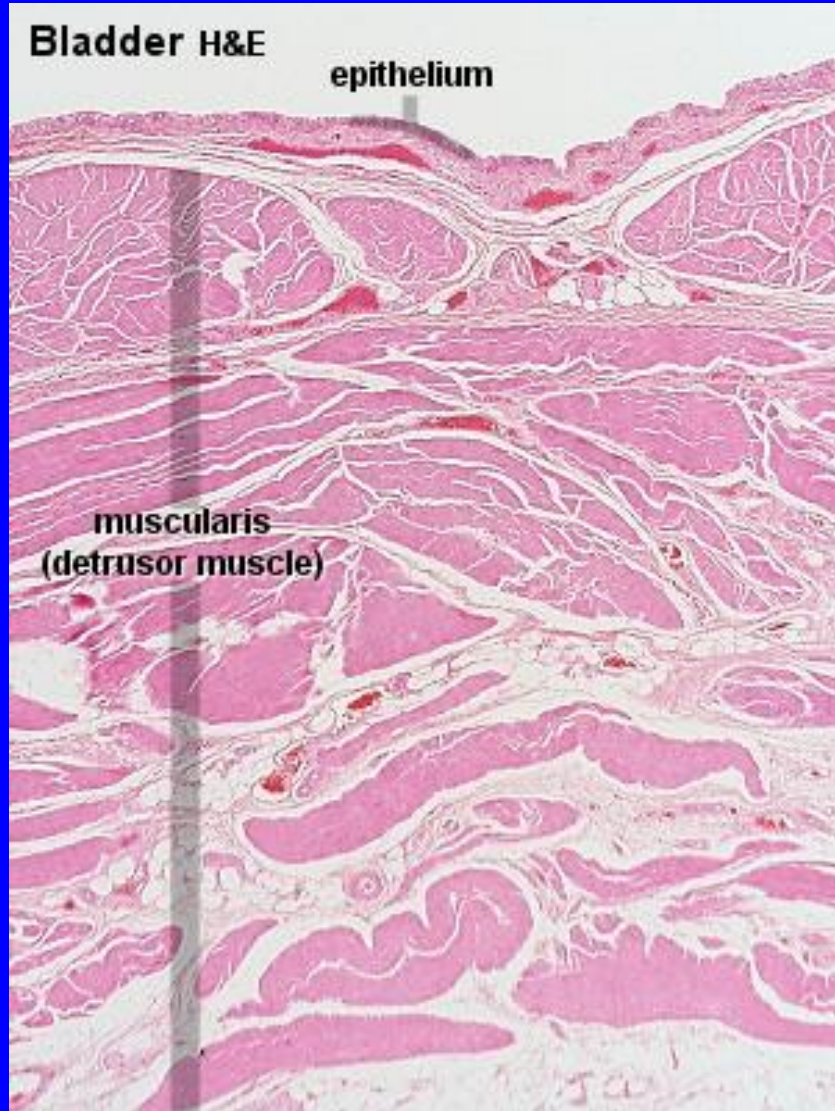


Urinary bladder

- It has the same structure as the lower third of the ureter.
- Superficial layer of transitional epithelium has dome-shaped cells (in empty bladder).
- It has 3 layers of smooth muscle: inner and outer longitudinal (thin) and middle circular (thick) layers.
- Its outer covering is adventitia or serosa.



Urinary bladder



Female urethra

Female urethra is short and lined by:

A. Epithelium:

1. Transitional epith. near the bladder.
2. Pseudostratified columnar epith.
3. Stratified squamous non-keratinized epith.

B. Sub-epithelial fibroelastic CT: contains glands of Littre (mucus-secreting glands).

C. Smooth muscle: inner longitudinal and outer circular layers.

Male urethra

It is long and is divided into 3 regions:

- 1. Prostatic urethra:** is lined with transitional epith.
- 2. Membranous urethra:** is lined with stratified columnar epith. with patches of pseudostratified columnar epithelium.
- 3. Penile (spongy) urethra** is lined with stratified columnar epith. with patches of pseudostratified columnar epithelium.

N.B. In navicular fossa (enlarged terminal portion): stratified squamous non-keratinized epith.

N.B. The lamina propria contains mucus-secreting glands of Littre.

Best Wishes