

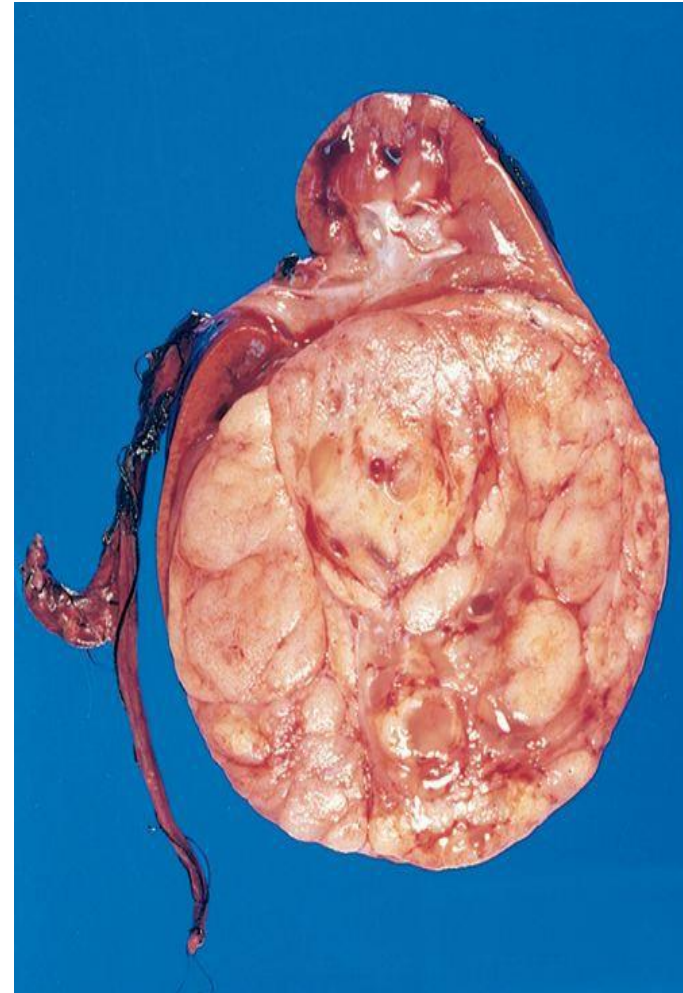
# Malignant renal tumors

## 2. Nephroblastoma (Wilm's tumor)

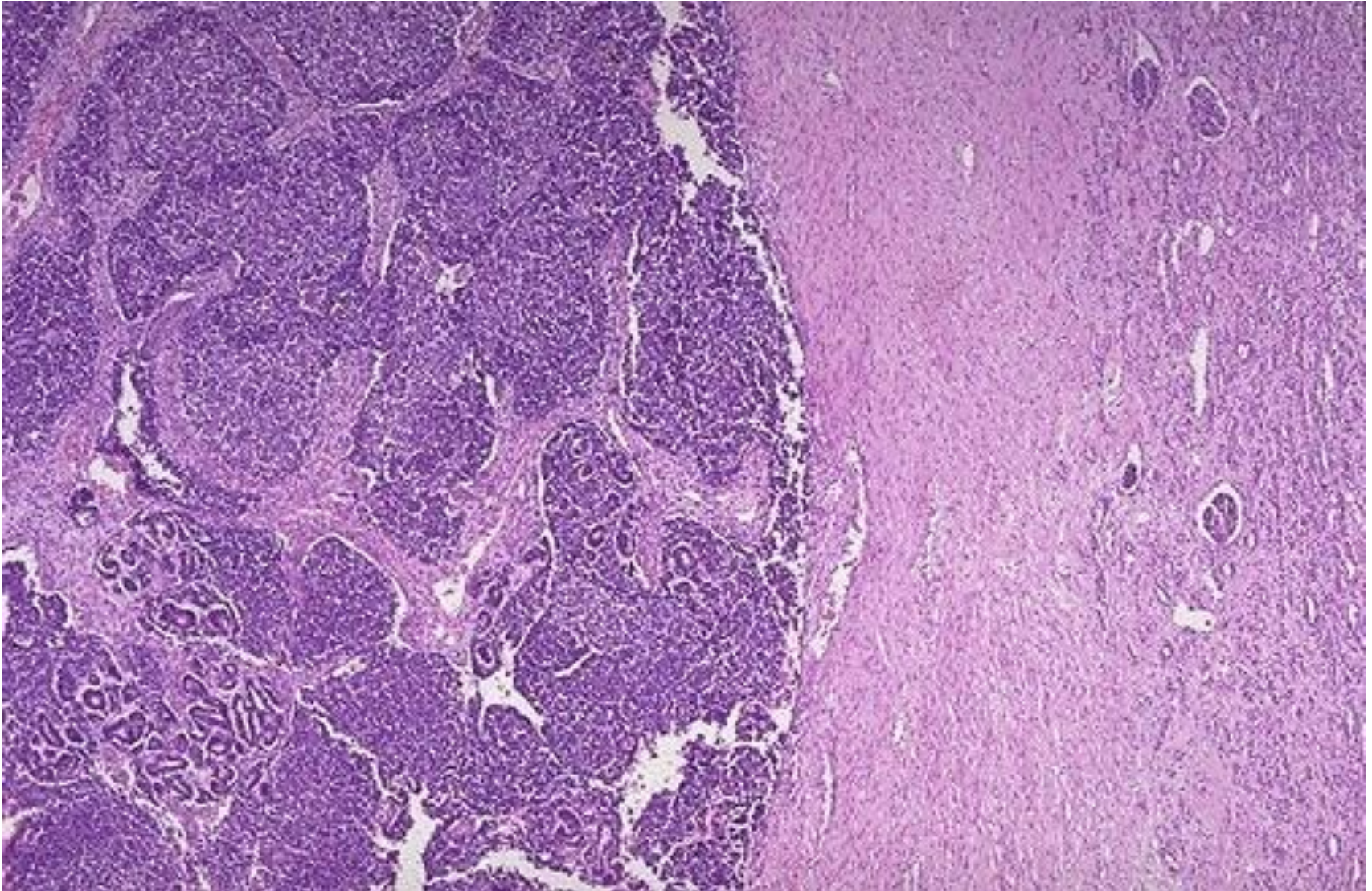
- Uncommon renal tumor but one of the commonest ***childhood*** neoplasms (2-5 yrs).
- Sporadic or familial associated with congenital malformations due to **WT-1 or WT-2** genes mutations on **chr.11**:
  - WAGR syndrome.
  - *Denys-Drash syndrome* (DDS).
  - *Beckwith-Wiedemann syndrome*.

# Morphology

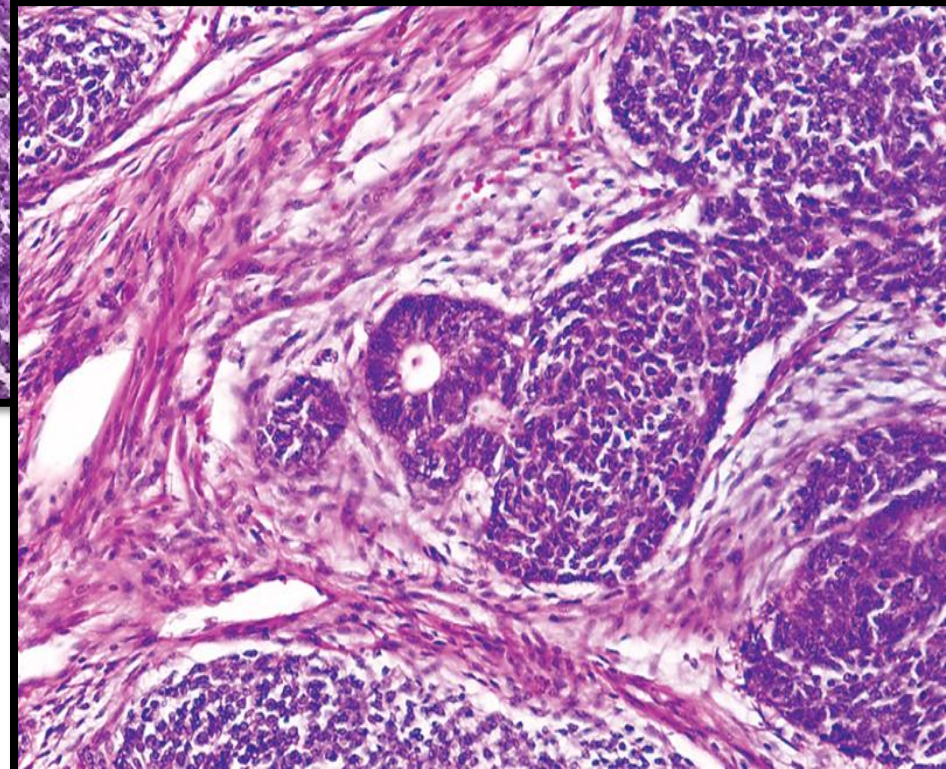
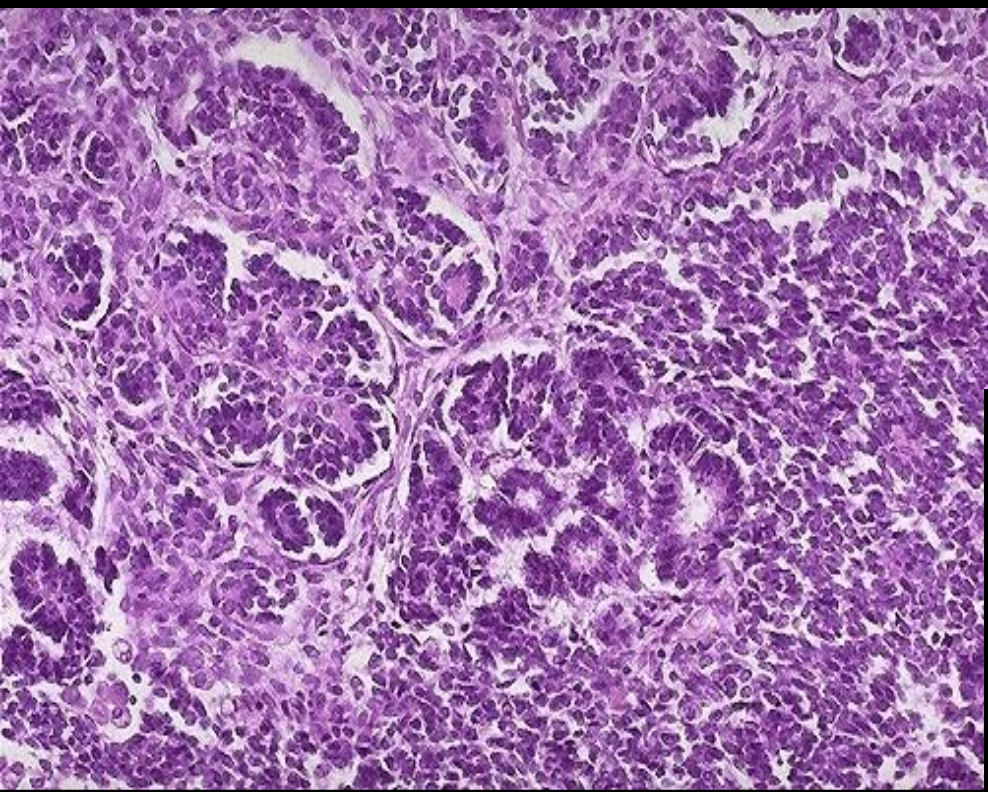
- **Gross:**
  - Large, well-circumscribed soft, tan-gray, homogenous tumor.
- **Microscopic\*:**
  - Classic **TRIPHASIC** components:
    - **Blastemal**: sheets of undismall blue cells
    - **Epithelial\*\***: abortive tubules or glomeruli.
    - **Stromal**.



# Wilm's tumor



# Wilm's tumor



# Clinical features

- Palpable ***abdominal mass***, (may cross the midline) + hematuria, abdominal pain or hypertension
- **Prognosis:**
  - Generally *good* (currently 90% long term survival).
- **Treatment:**
  - Combination of nephrectomy & chemotherapy

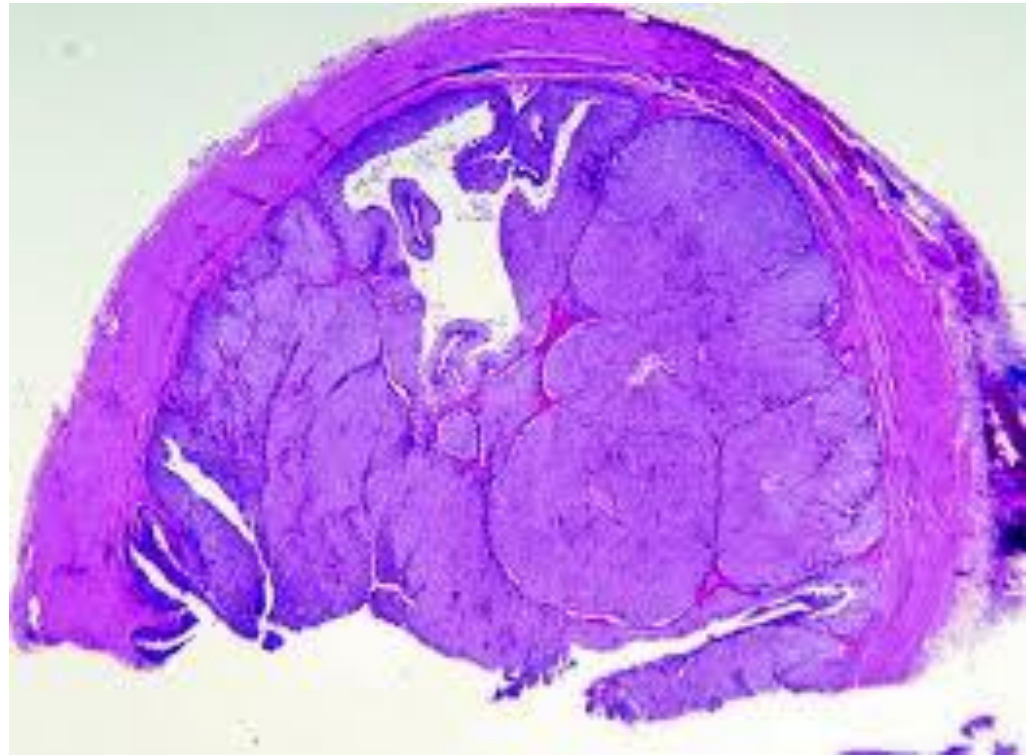
## Malignant renal tumors

### 3. Urothelial Carcinoma of the Renal Pelvis

- **5-10%** of renal neoplasms
- Often *small* and present *early* with, due to:
  - Painless hematuria.
  - Pain or mass due to hydronephrosis.
- Linked to Lynch syndrome & analgesic nephropathy.
- In **50%** of renal pelvic tumors there is a preexisting or concomitant bladder urothelial tumor\* (field effect).
- **Prognosis:** Variable, depend on stage & grade.

Despite removal by nephrectomy → 50% 5 yrs

# Urothelial carcinoma of renal pelvis



# **Diseases of ureters and lower urinary tract**



# Ureters

- Sites of narrowing:
  - Ureteropelvic junction.
  - Ureterovesical junction.
  - Crossing of iliac vessels.
- In female pelvis, they lie close to uterine arteries and the cervix. Operations of the female genital tract and diseases of the cervix and uterus may affect ureters.

# Causes of Ureteral Obstruction

## Intrinsic

- Calculi
- Strictures
- Tumors
- Blood clots
- Neurogenic

## Extrinsic

- Pregnancy
- Retroperitoneal fibrosis\*
- Endometriosis
- Tumors

## Urinary bladder

# 5. Carcinoma of urinary bladder

- **Epidemiology:**
  - 7% of cancers & 3% of cancer deaths.
  - M>F. 50-80 yrs.
- **Types:**
  - ❖ Transitional (urothelial) cell carcinoma (>90% ).
  - ❖ Squamous cell carcinoma (5-7%).
  - ❖ Adenocarcinoma (~2%).
  - ❖ Others.

# Urothelial (transitional cell) neoplasms

- May involve any site of the urinary collecting system from renal pelvis to urethra → Most commonly seen in **the bladder**.
- Many are **multifocal** at presentation

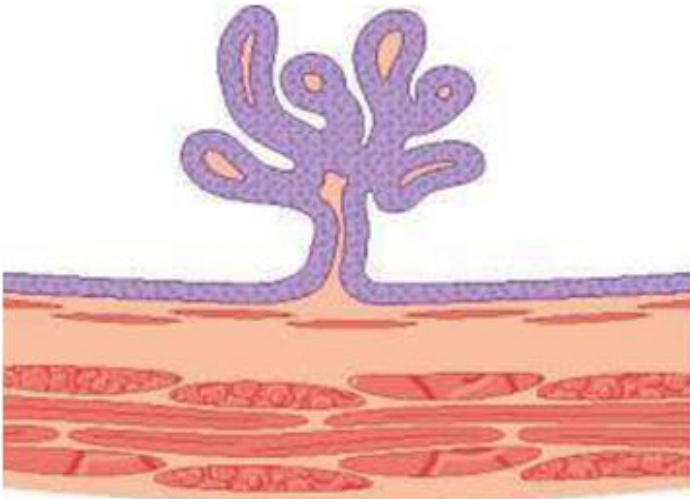
# Urothelial carcinoma - *Etiology*

- Mostly are *sporadic* with **unknown** cause.
- **Possible causes:**
  - Cigarette smoking (*most important*).
  - Dye and rubber industry
    - Aromatic amines 2 - naphthylamine
    - 4-aminobiphenyl
    - Benzidine.
    - Azo dyes.
  - Cyclophosphamide
  - Phenacetin containing analgesics
  - *S. Hematobium* infestation (*SCC+TCC*).
  - Previous radiation.
- Induction time ~22yrs.

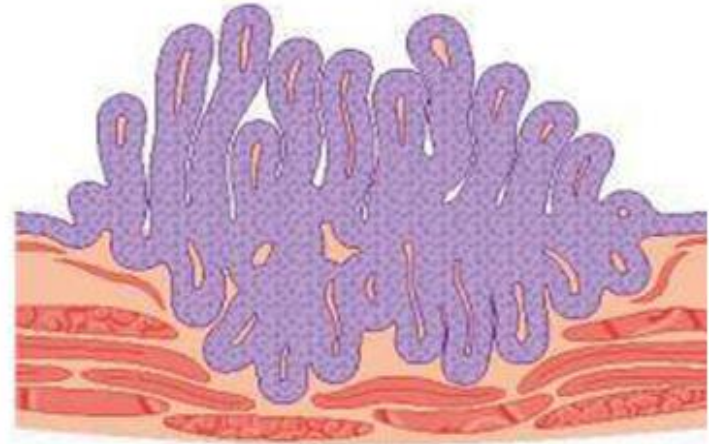
# Classification of urothelial neoplasms

	Papillary (commoner)	Flat
Non-invasive	<b>WHO/ISUP grade:</b> <ul style="list-style-type: none"><li>▪ Urothelial papilloma</li><li>▪ Papillary urothelial neoplasms of low malignant potential (PUNLMP)</li><li>▪ Papillary urothelial carcinoma, low grade</li><li>▪ Papillary urothelial carcinoma, high grade</li></ul>	<b>Carcinoma in-situ</b> By definition <i>high grade</i>
Invasive	Papillary and invasive More in <i>high grade</i>	Flat and invasive

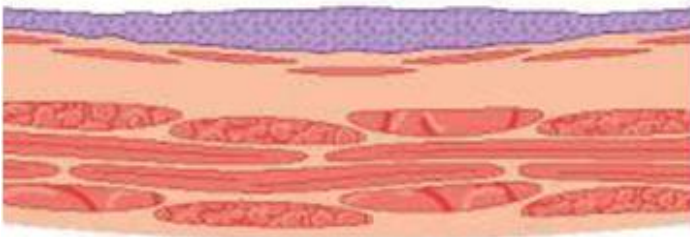
# Morphologic patterns of bladder tumors



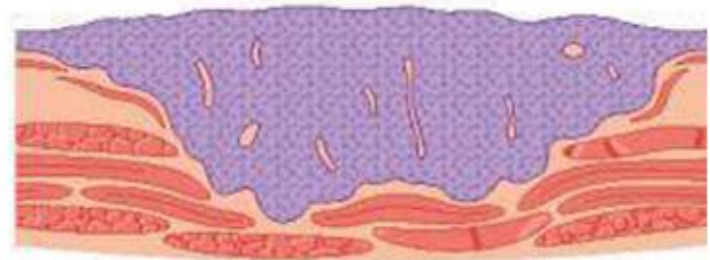
Papilloma—  
papillary carcinoma



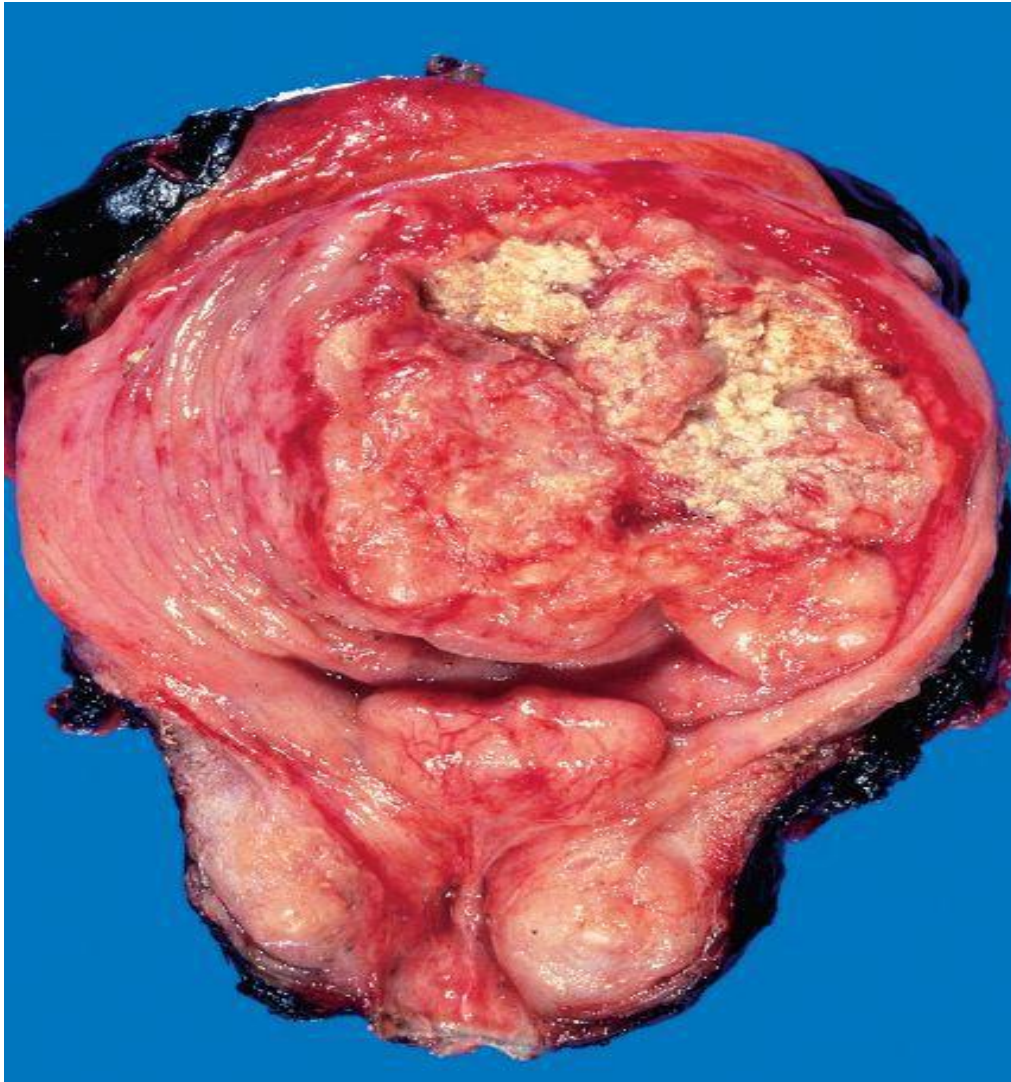
Invasive  
papillary carcinoma



Flat noninvasive  
carcinoma (CIS)



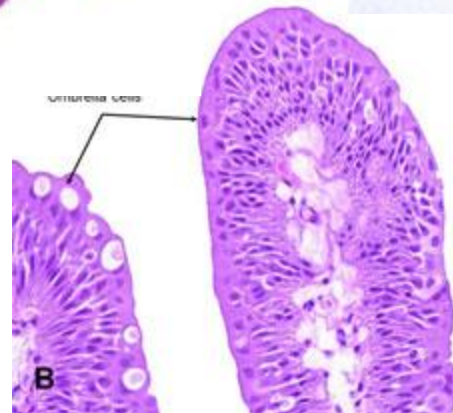
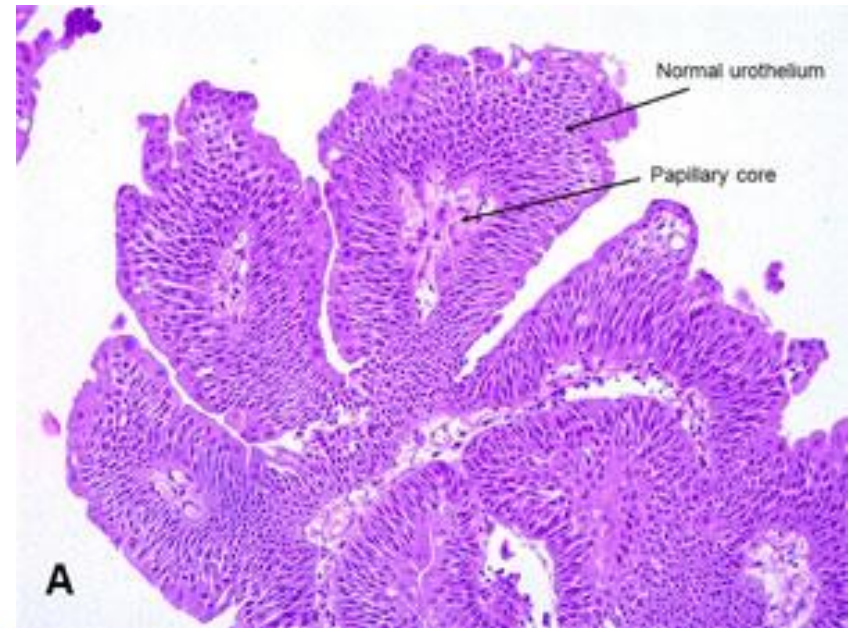
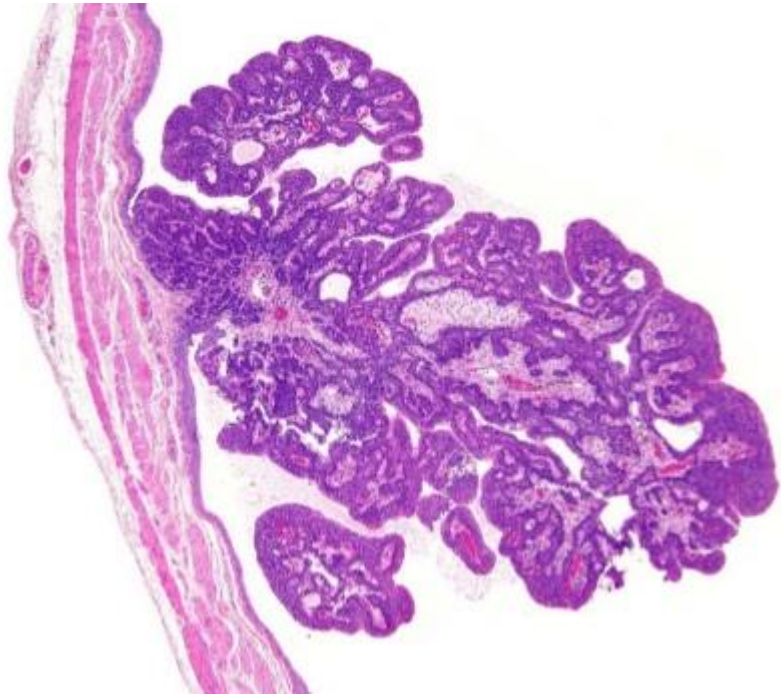
Flat invasive  
carcinoma



Exophytic tumor  
(Most arise from the **lateral** or posterior walls)

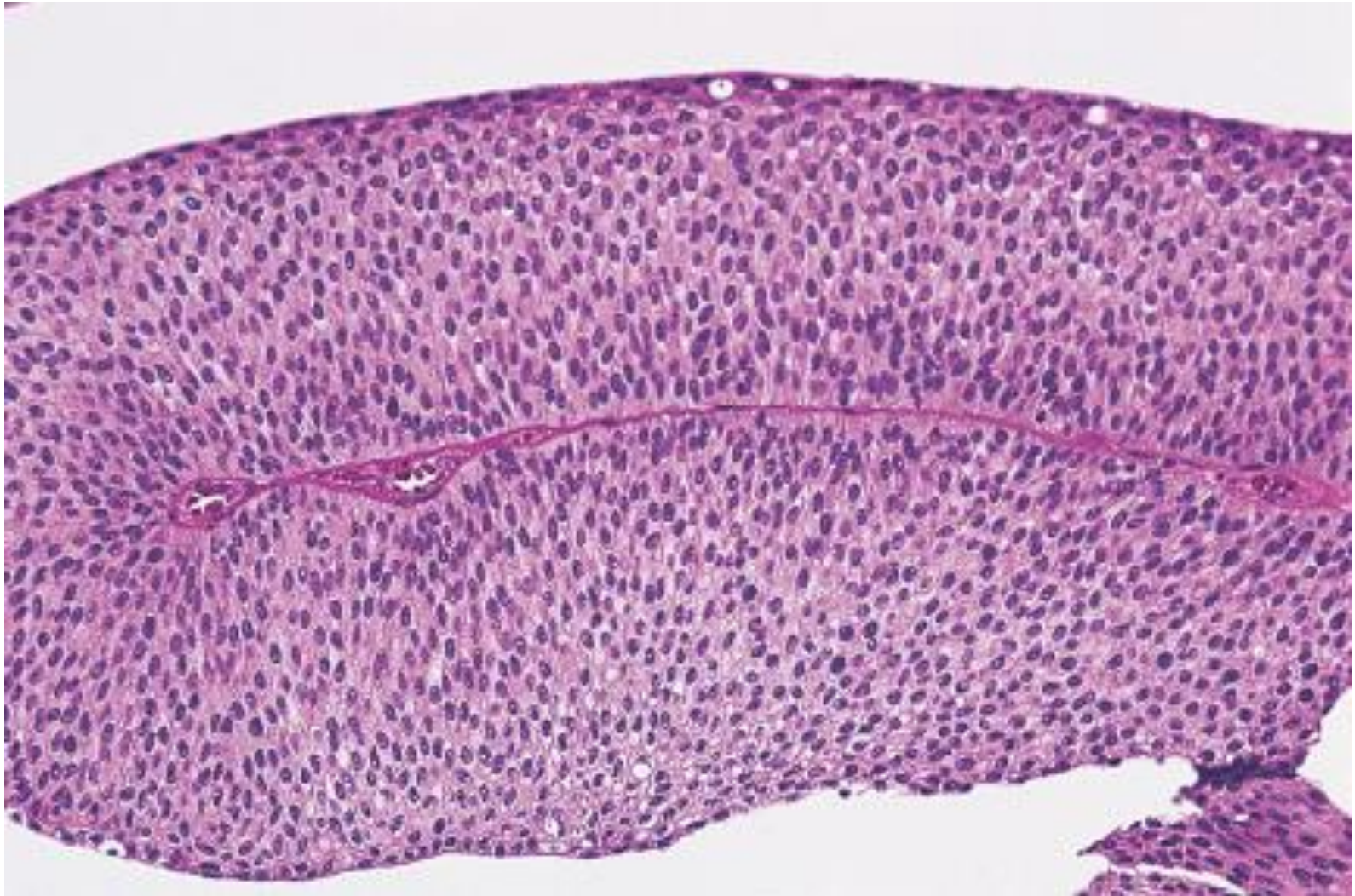


# Papilloma



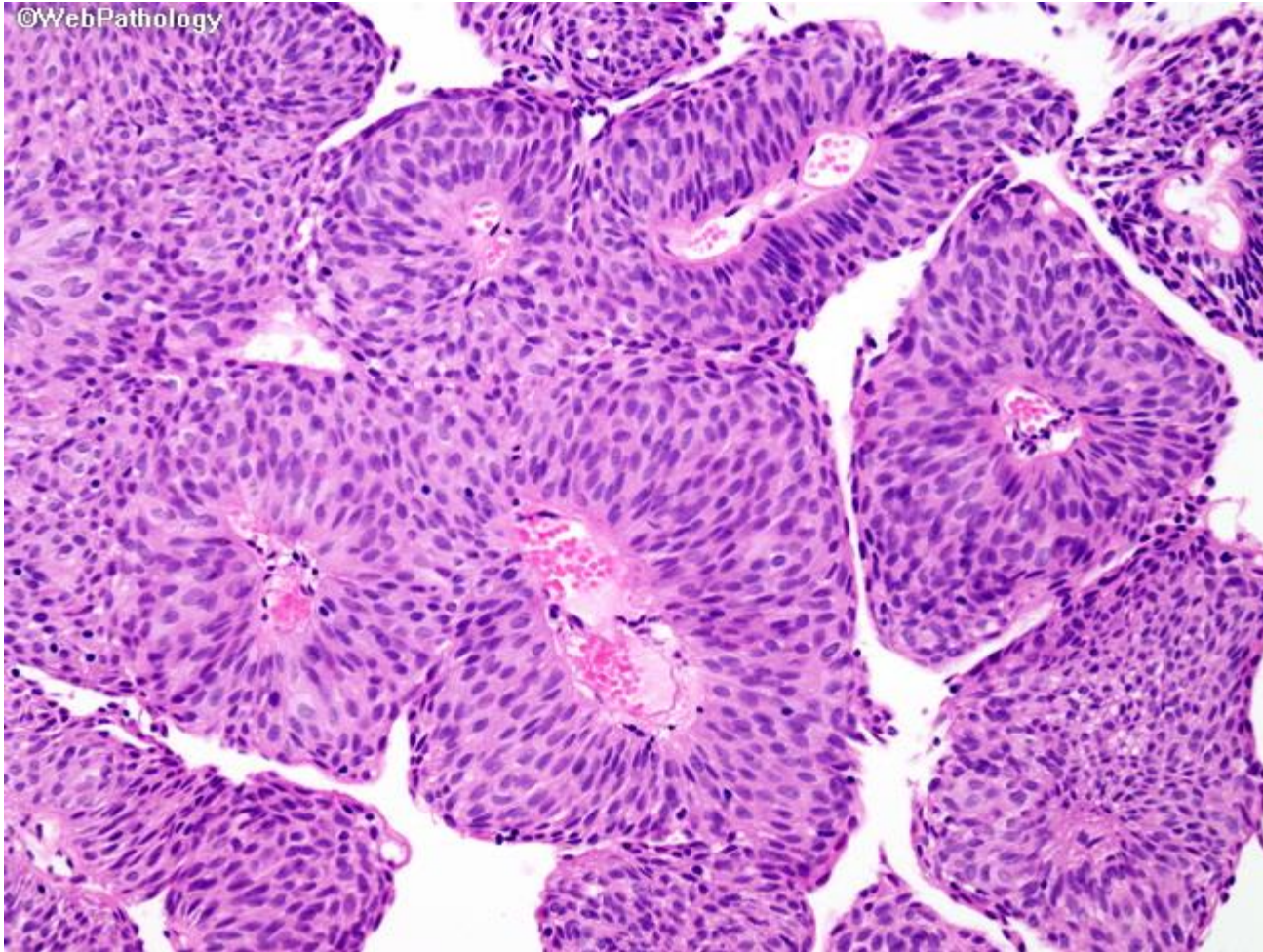
- Small papillary fronds lined by **normal-appearing** urothelium
- Some have endophytic growth (**inverted papilloma**)

# PUNLMP



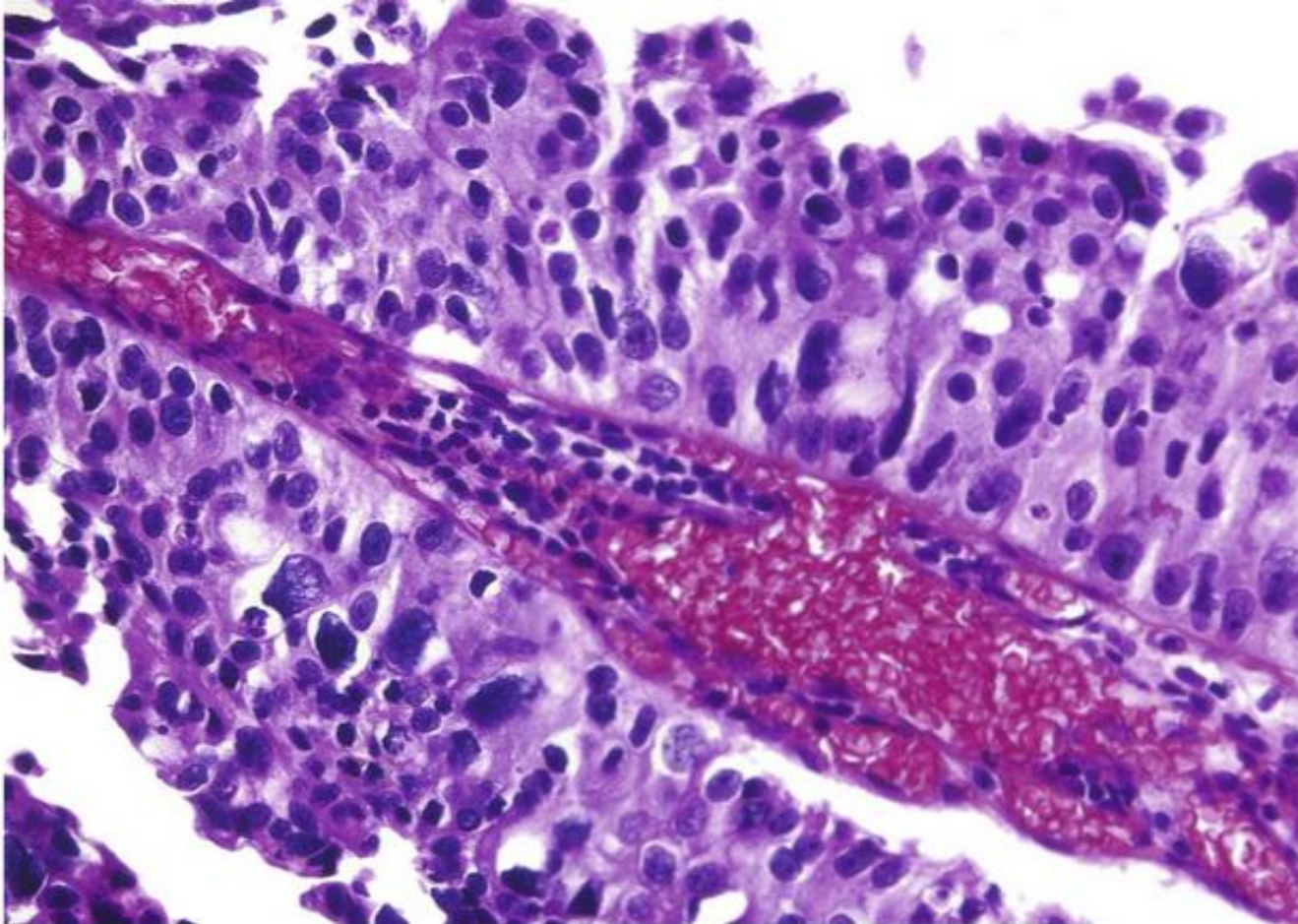
Resembles papilloma but larger & is covered by **thicker urothelium**

# Low-grade papillary urothelial carcinoma

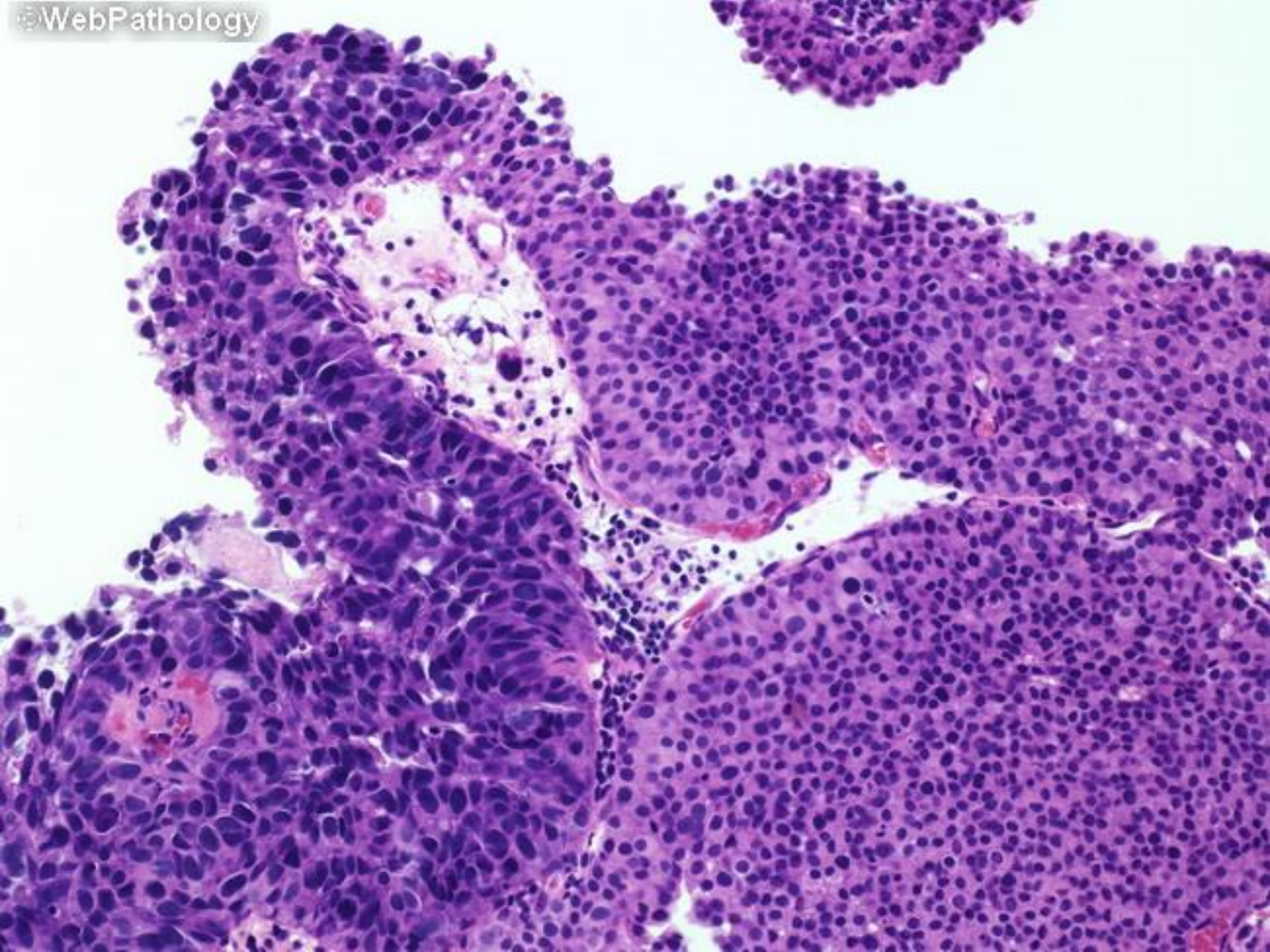


Mild degree of atypia & mitosis with *preserved polarity of cells; the cells are evenly spaced and cohesive*

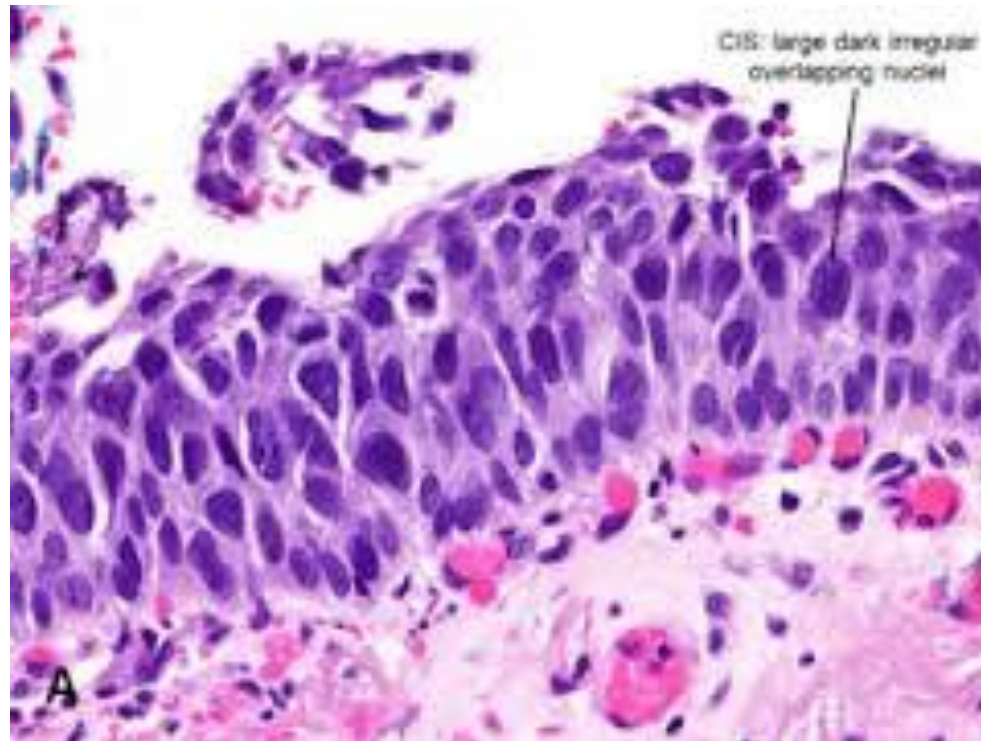
# High-grade papillary urothelial carcinoma



Increased atypica & mitosis with loss of polarity & dyscohesive cells



# Carcinoma in situ (CIS) or flat urothelial carcinoma

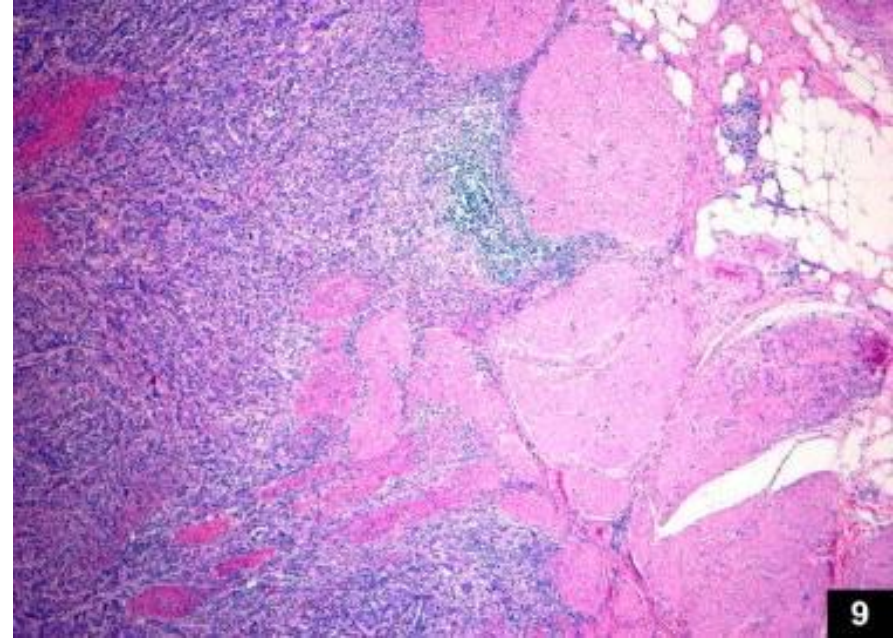
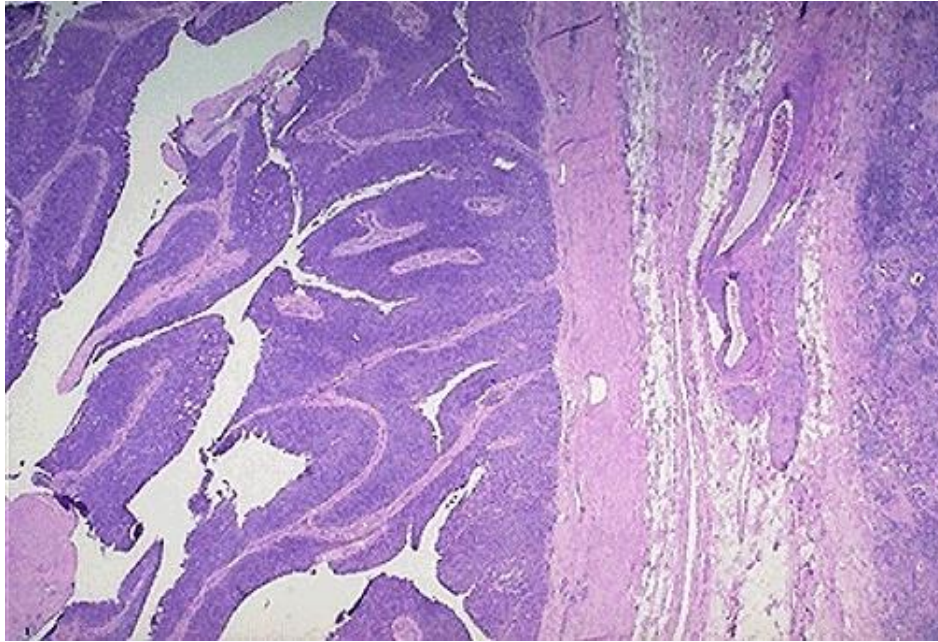


- Defined by the presence of any cytologically malignant cells within a flat urothelium (**high grade** by definition).
- Accounts for less than 1-3% of urothelial neoplasms → seen in association with invasive carcinoma (45-65% )

# Invasive urothelial cancer

- May be flat or papillary, low or high grade:
  - < 10% of low-grade cancers are invasive.
  - 80% of high-grade carcinomas (including CIS) are invasive.
- May be superficial (to lamina propria) or deeper (to muscularis propria).
  - The extent of the invasion is **the most important prognostic factor**

# Non-invasive vs invasive TCC





# Other bladder tumors

- Squamous cell carcinoma (5%), linked to:
  - Schistosomiasis
  - Chronic bladder irritation.
  - Tobacco smoking
- Adenocarcinoma (2%), linked to:
  - Urachal remnants.
  - Bladder exstrophy.
  - Cystitis glandularis.
- Sarcomas.
- Paraganglioma (*micturition syncope*).
- Carcinoid.

# Clinical features & prognosis

- ***Painless hematuria*** is the dominant symptom.
- Lesions that invade the ureteral or urethral orifices cause urinary tract obstruction.
- **Prognosis:**
  - Overall 5-year survival is 57%.
  - Depends on:
    - The depth of invasion of the lesion (stage).
    - Histologic grade.

# Urothelial (Transitional) Cell Carcinoma

	Low grade	High grade
Gross appearance	Papillary	Nodular flat, papillary
Invasion	<10%	80%-90%
Adjacent dysplasia & CIS	none	Frequent
Recurrences	50%	80%-90%
Progression of disease	<10%	65%
10 year survival	>90%	40%