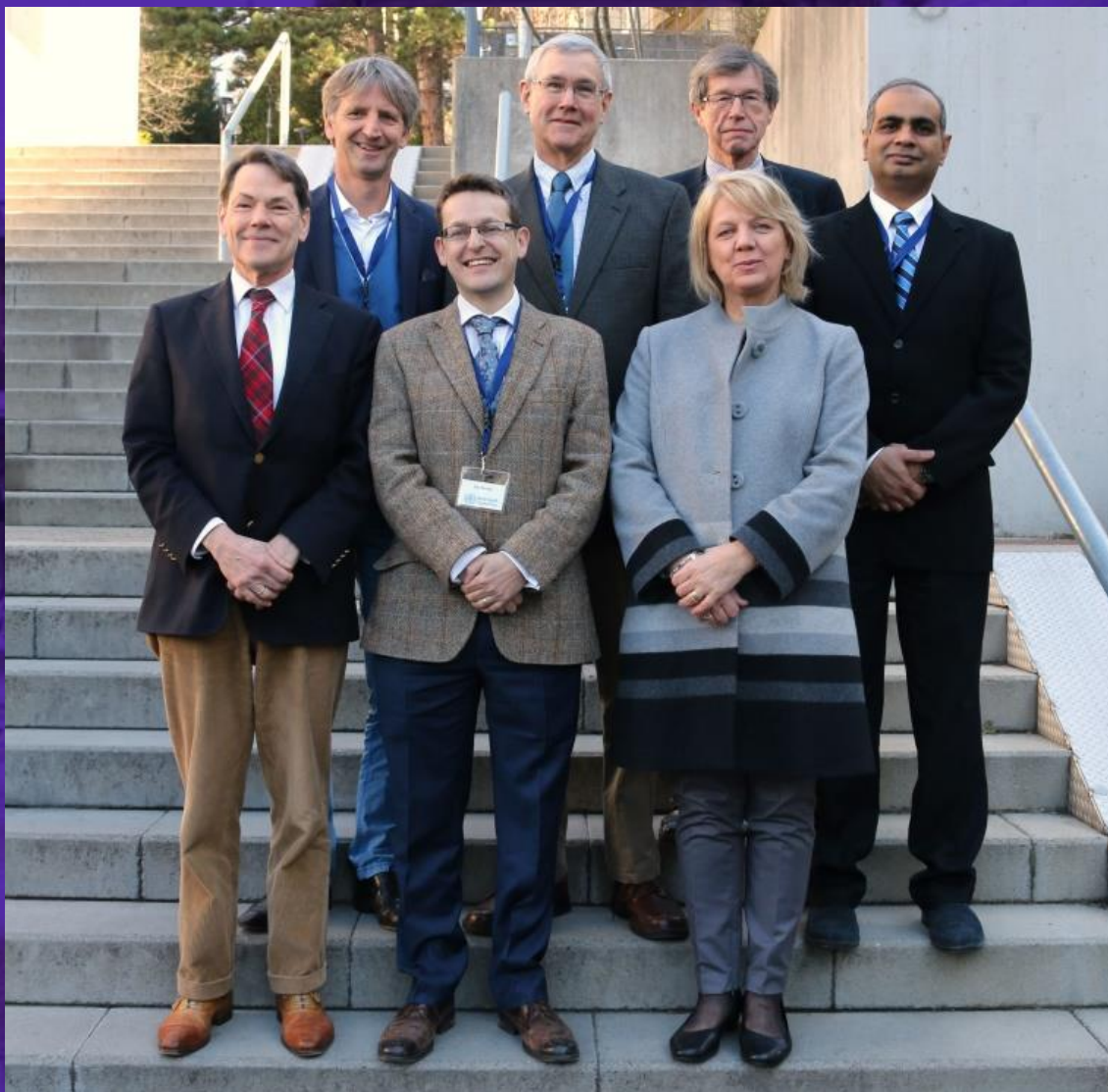


# WHO 2016 classification of tumours of the testis

Dan Berney

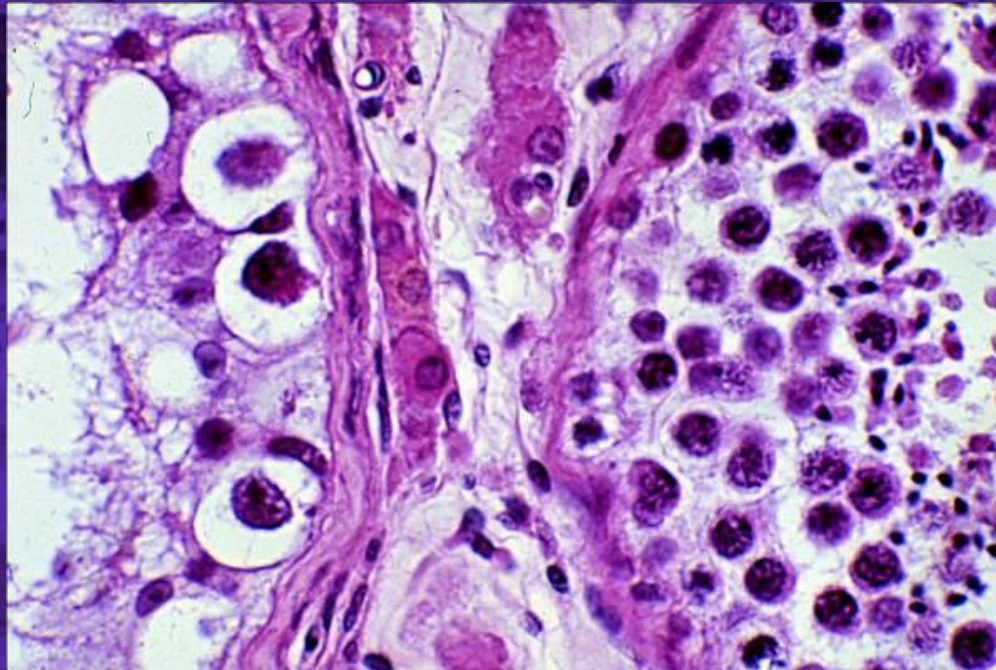
**BAUP/BDIAP 2015**


# WHO Zurich March 2015



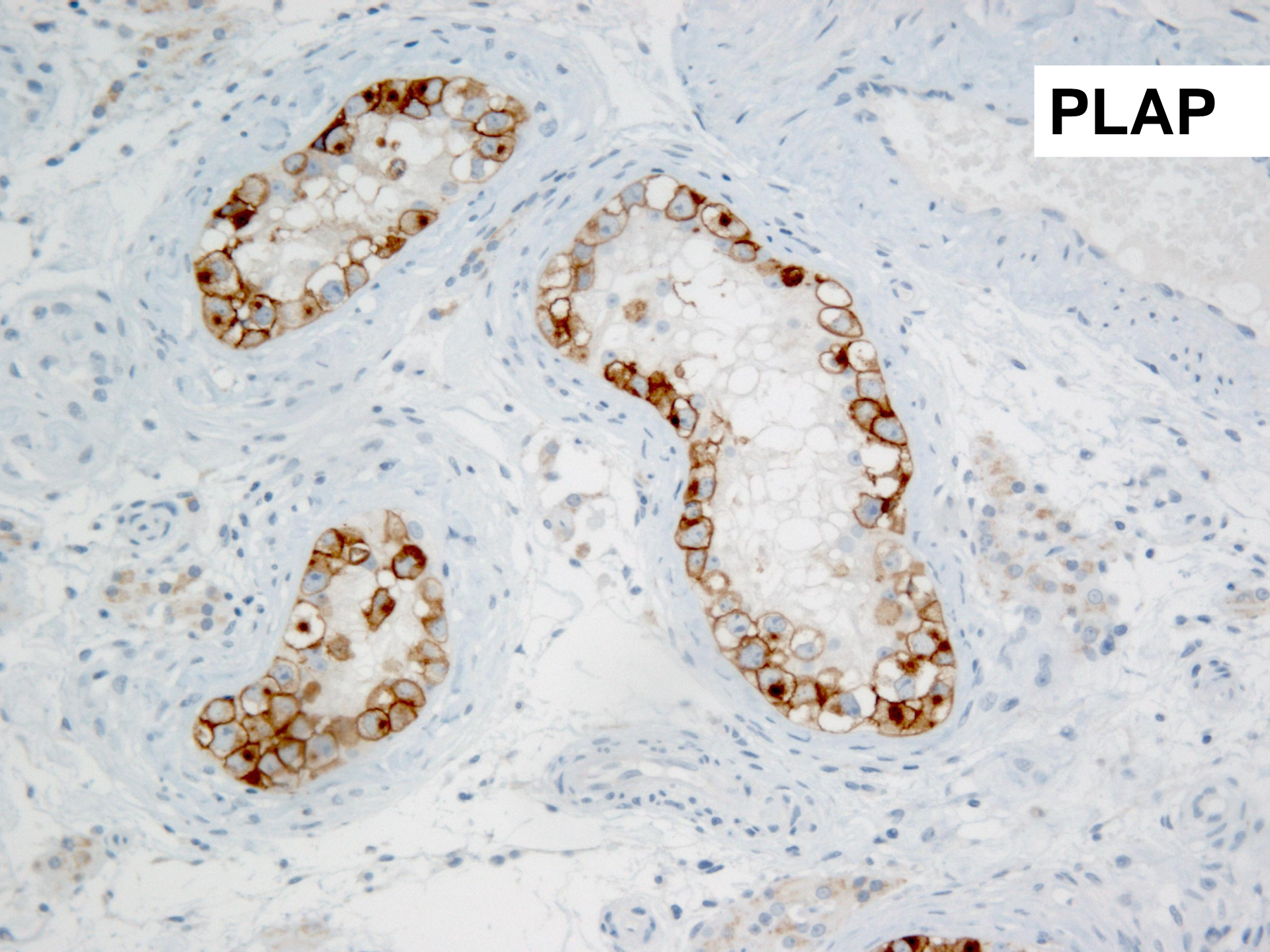
# Nomenclature precursor Germ Cell Tumour (GCT) testis

**CIS IGCNU TIN**



- 
- CIS
    - Not a carcinoma
  - TIN
    - Not intraepithelial
  - IGCNU
    - Unclassified/Undifferentiated...
    - The spermatogonial niche

**PLAP**



CIS

IGCNU

IGCNU

IGCN

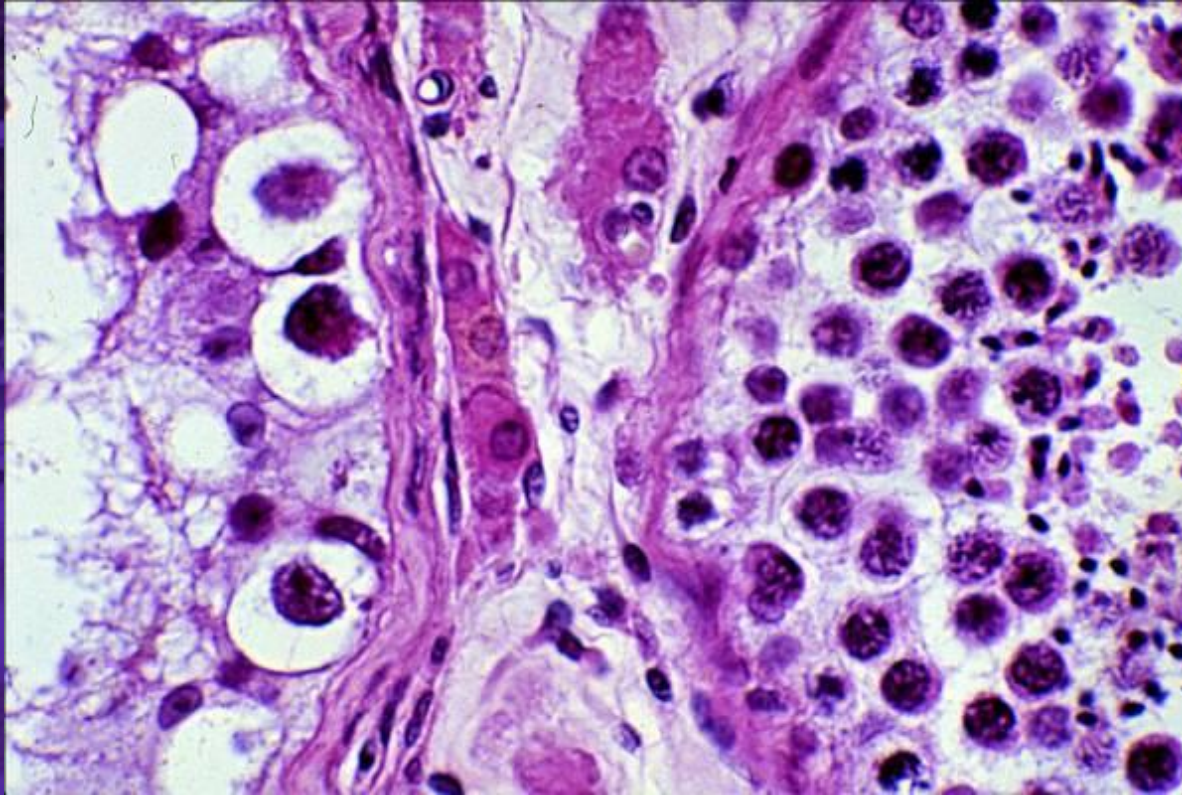
GCNI

GCNIS



# GCNIS

## GERM CELL NEOPLASIA IN SITU

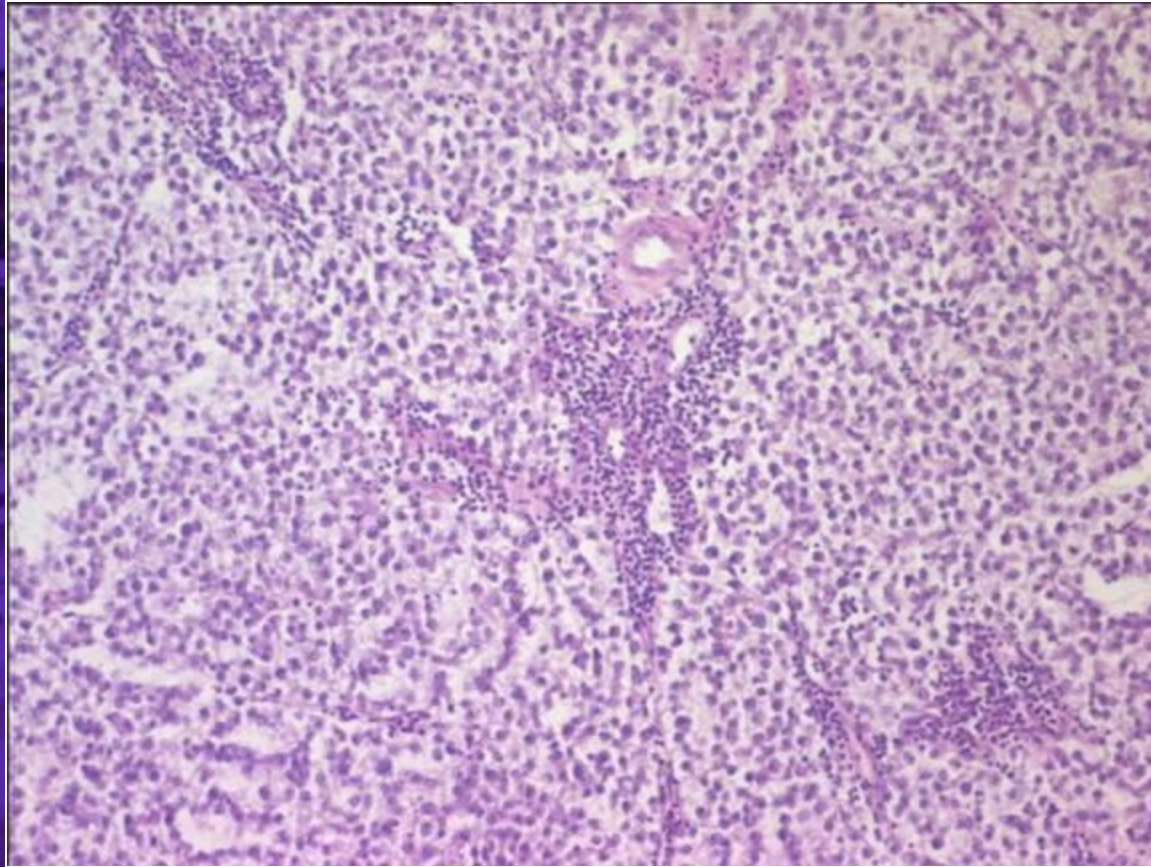


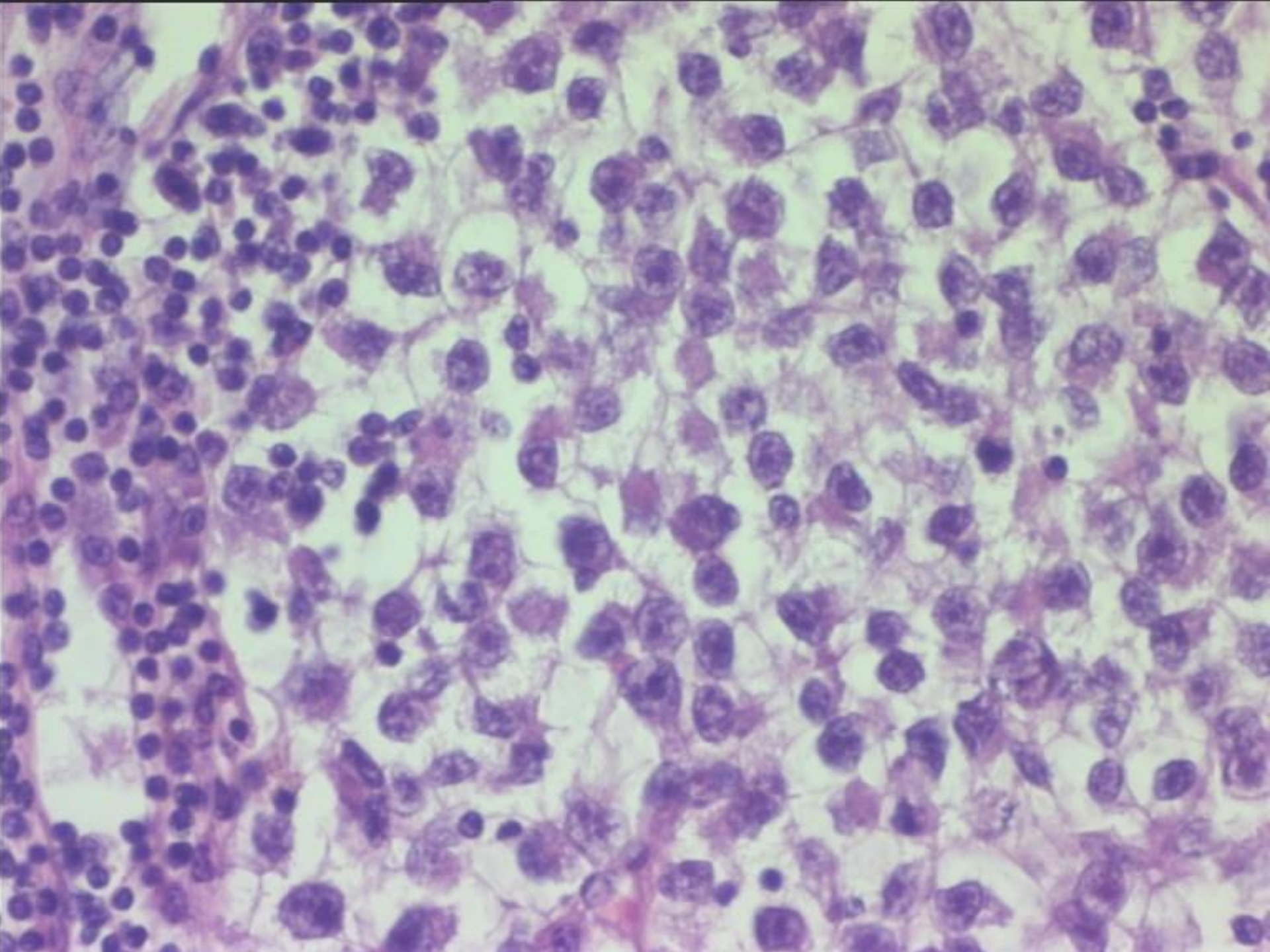
# WHO 2016 Germ cell tumours

- Tumours derived from GCNIS of one type
  - Seminoma
  - Embryonal carcinoma
  - Yolk Sac Tumour, post pubertal type
  - Trophoblastic tumours
  - Teratoma, post pubertal type
  - Teratoma with somatic type malignancy



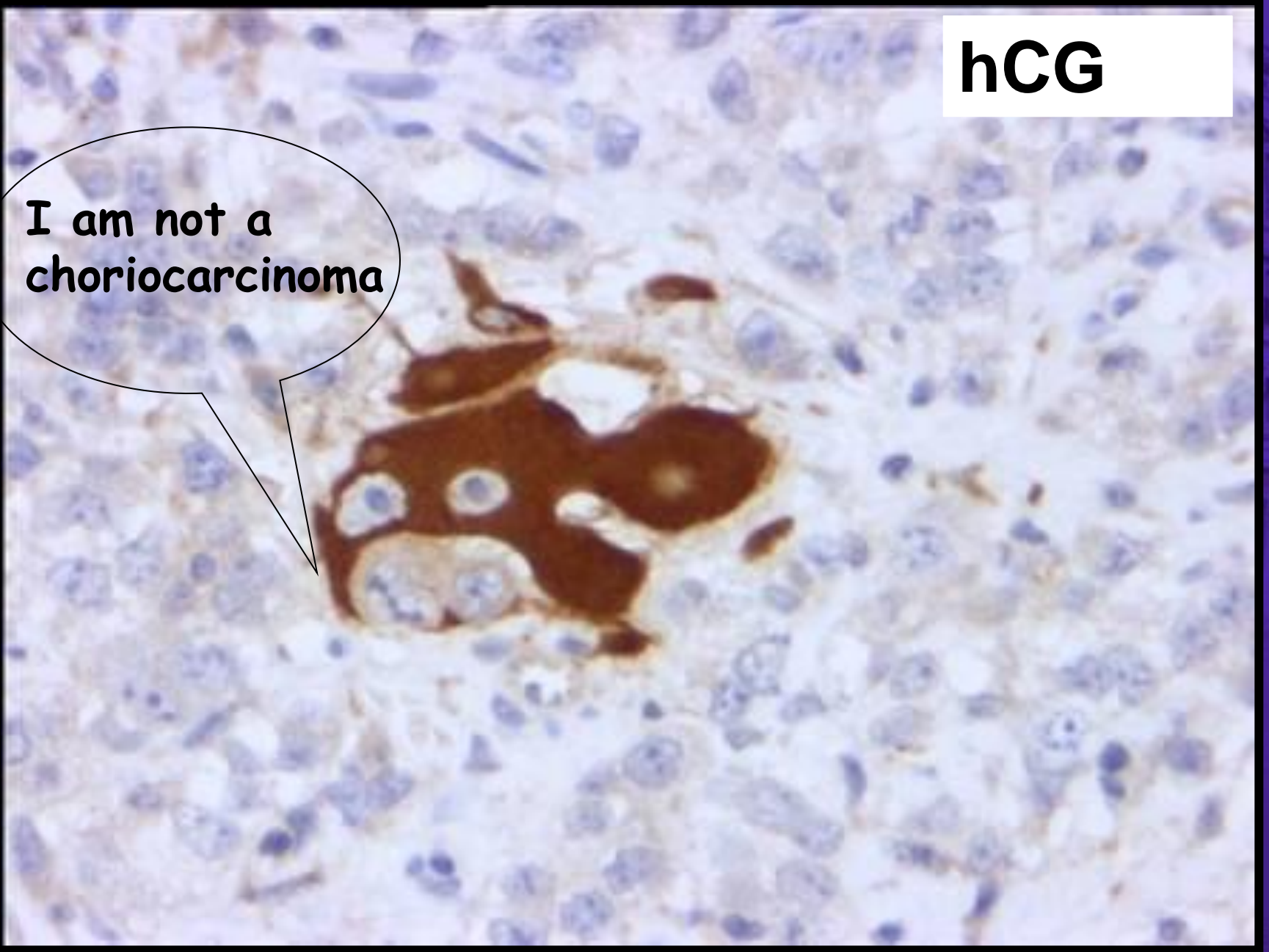
# Seminoma



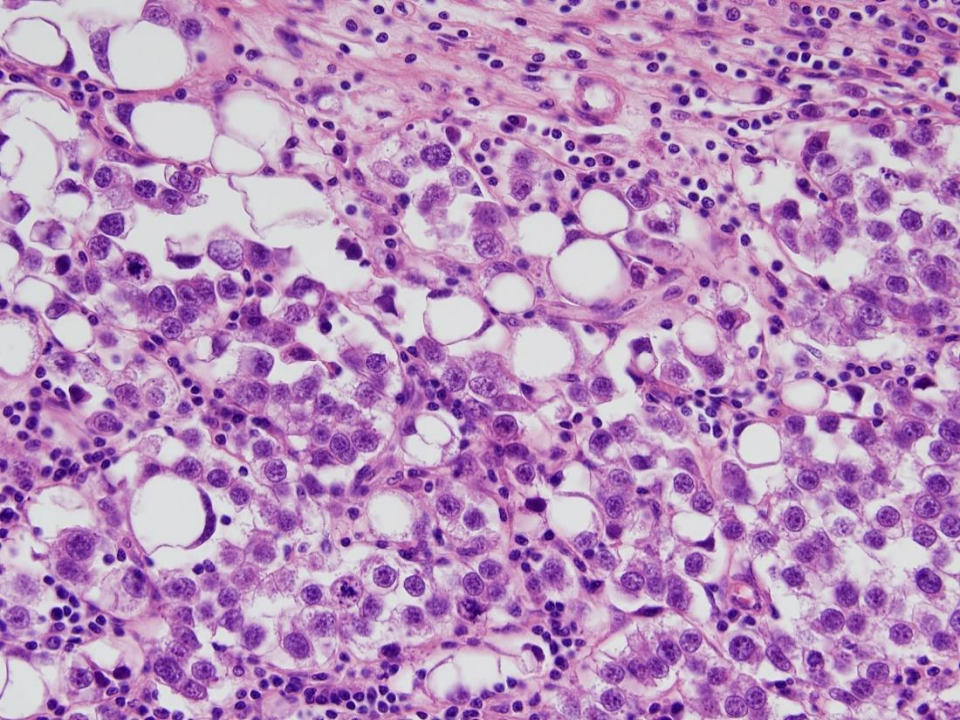
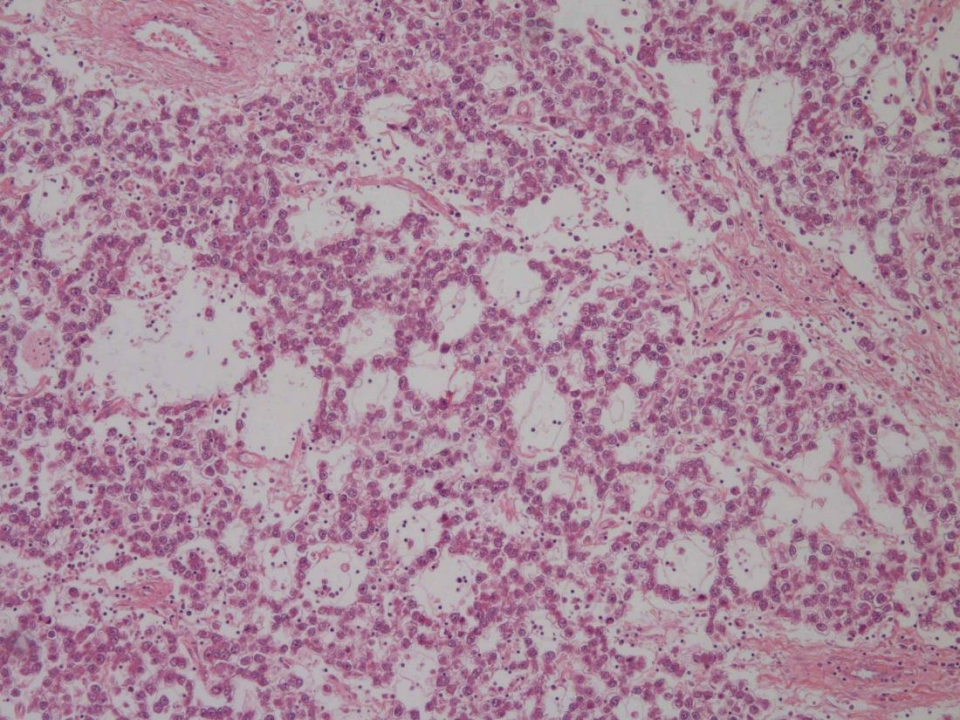
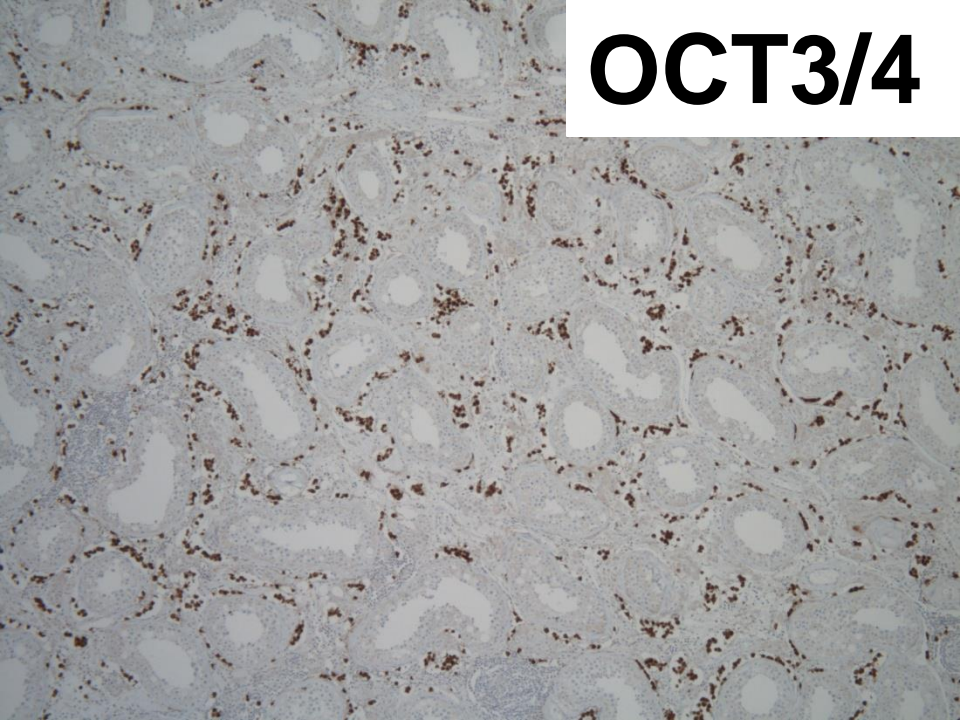
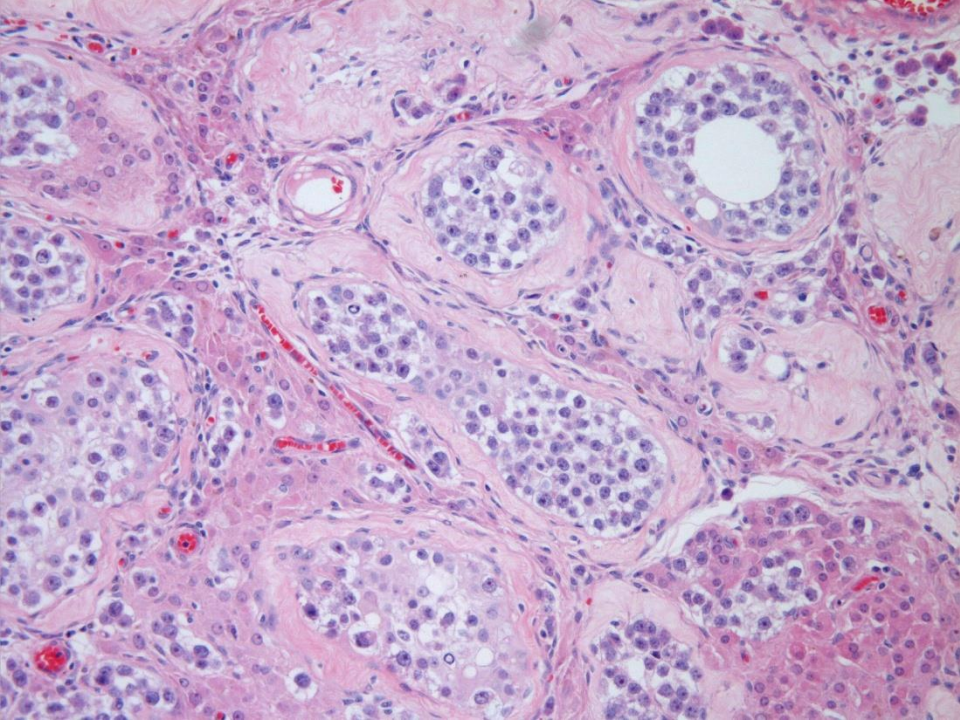


**hCG**

**I am not a  
choriocarcinoma**



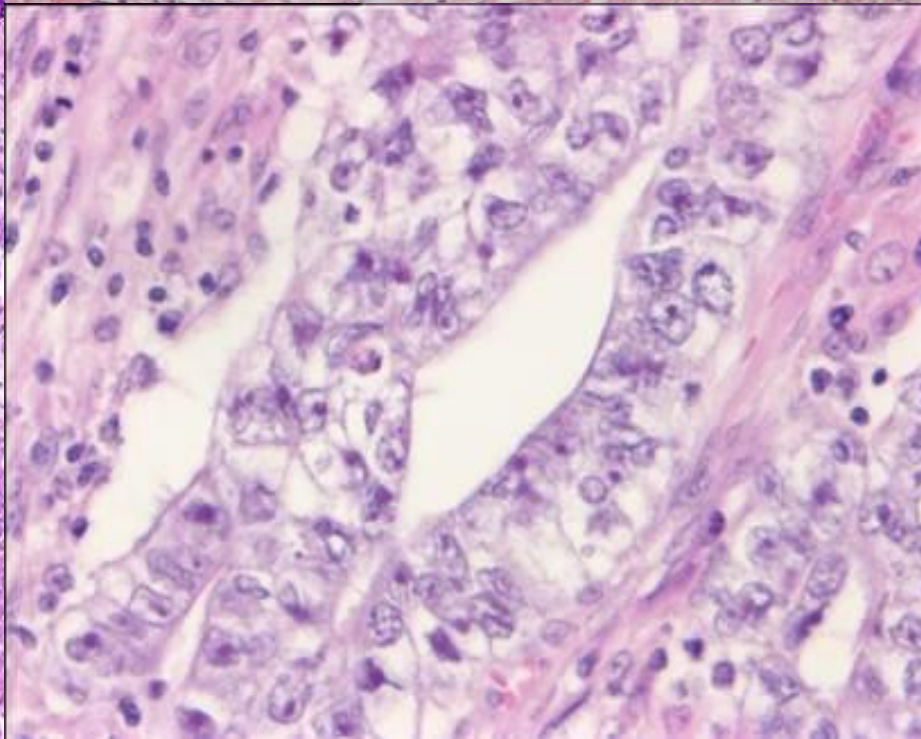
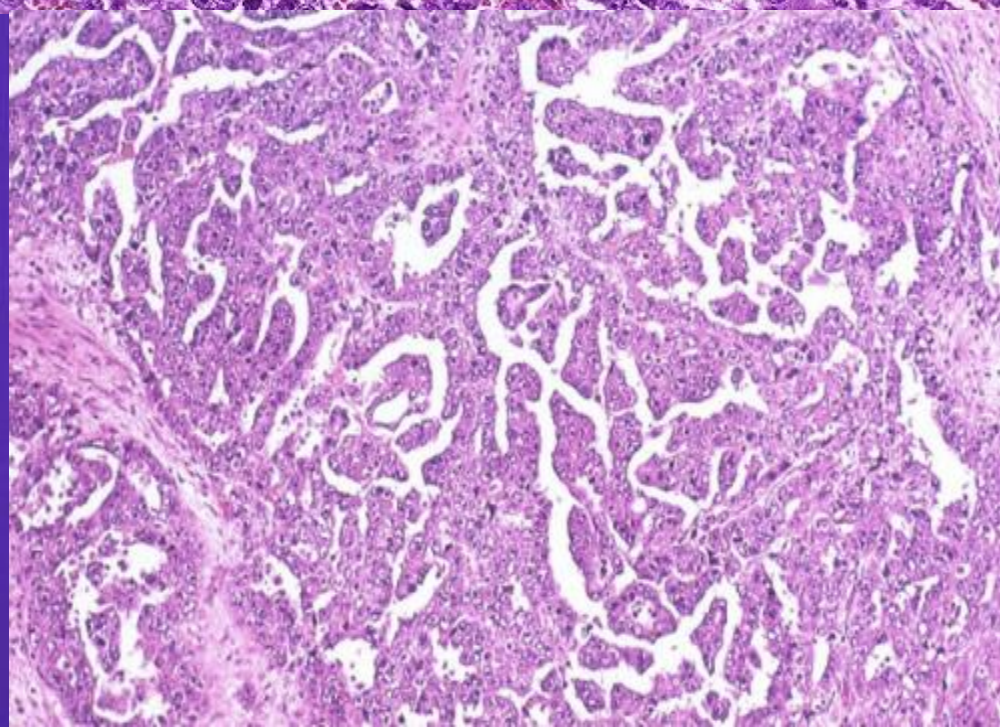
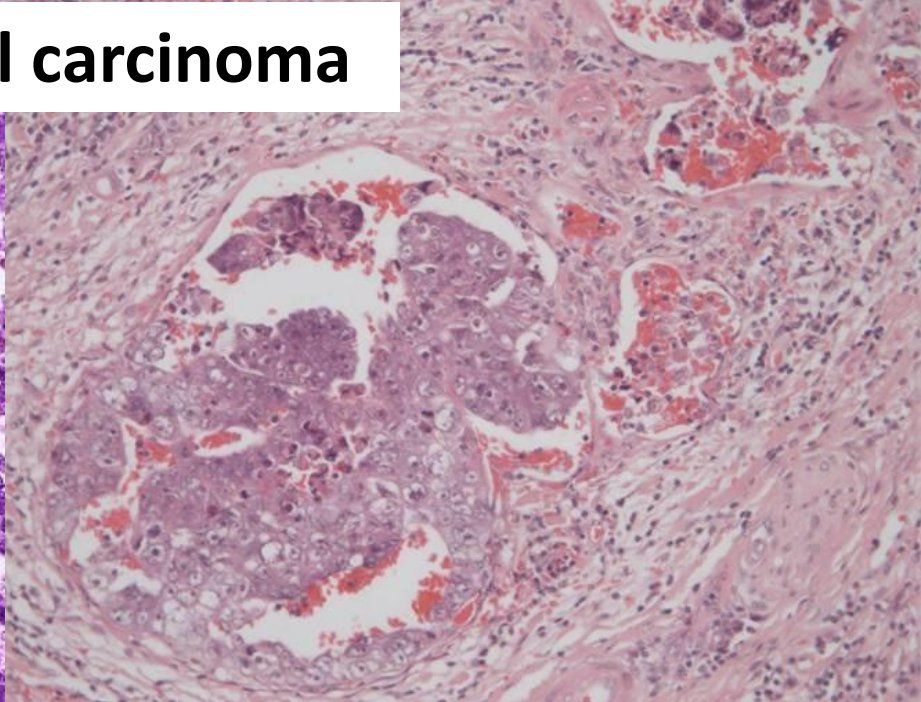
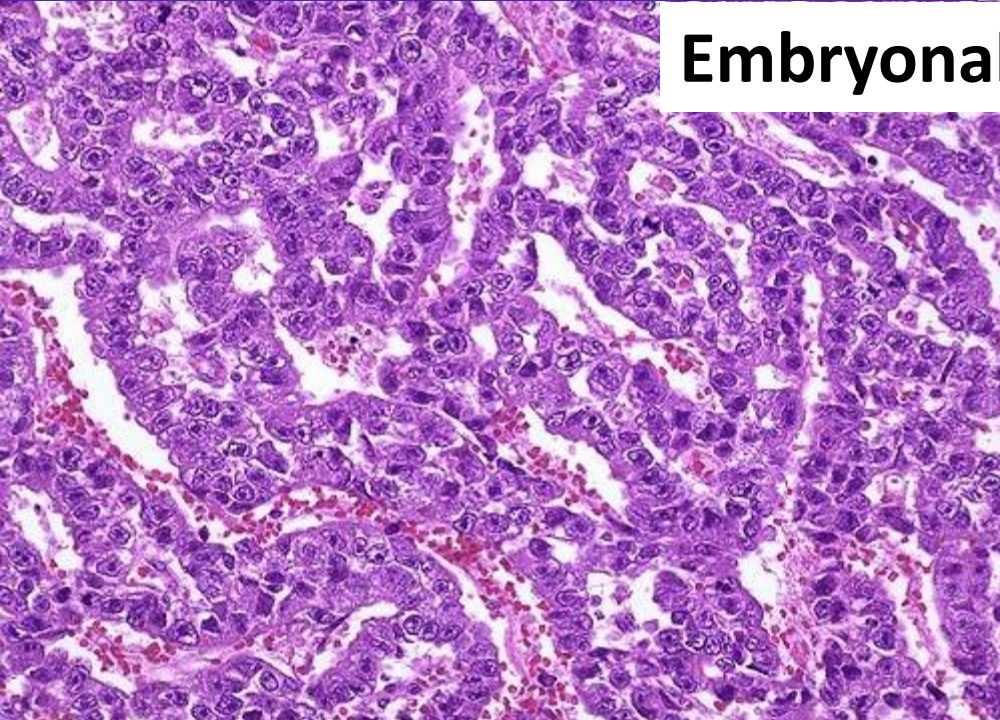
**OCT3/4**



# Anaplastic seminoma?

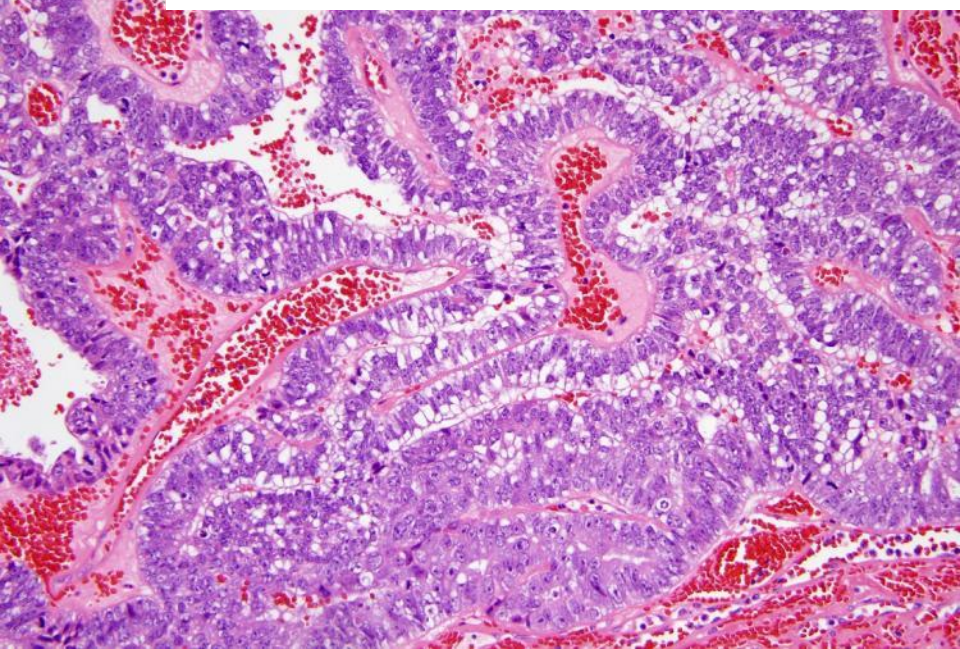
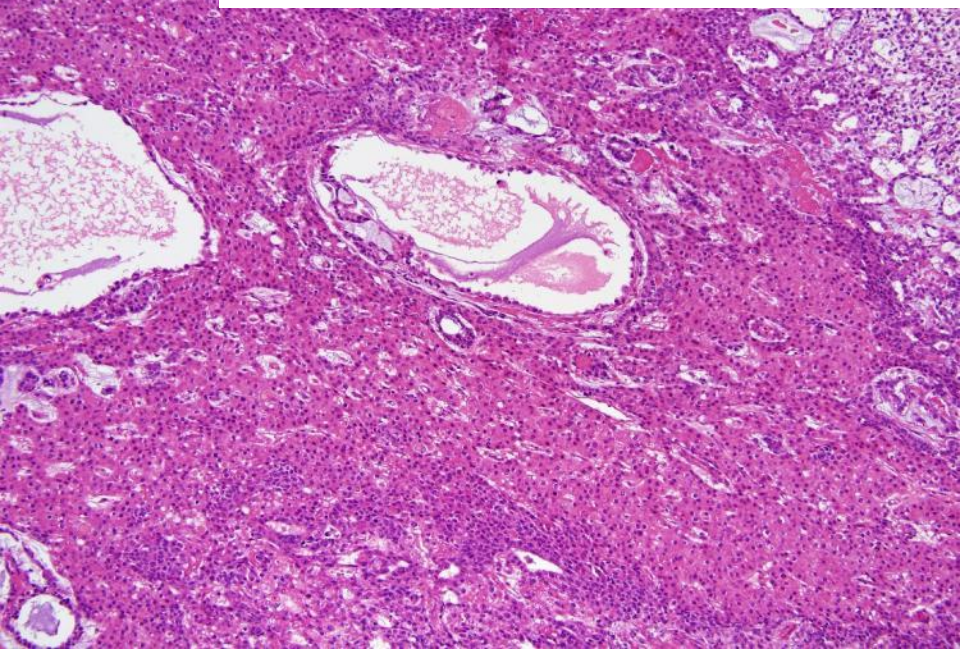
- 'Differentiation' of seminomas
- Mitotic rate
- Lymphocytic infiltrate
- Cell morphology

# Embryonal carcinoma



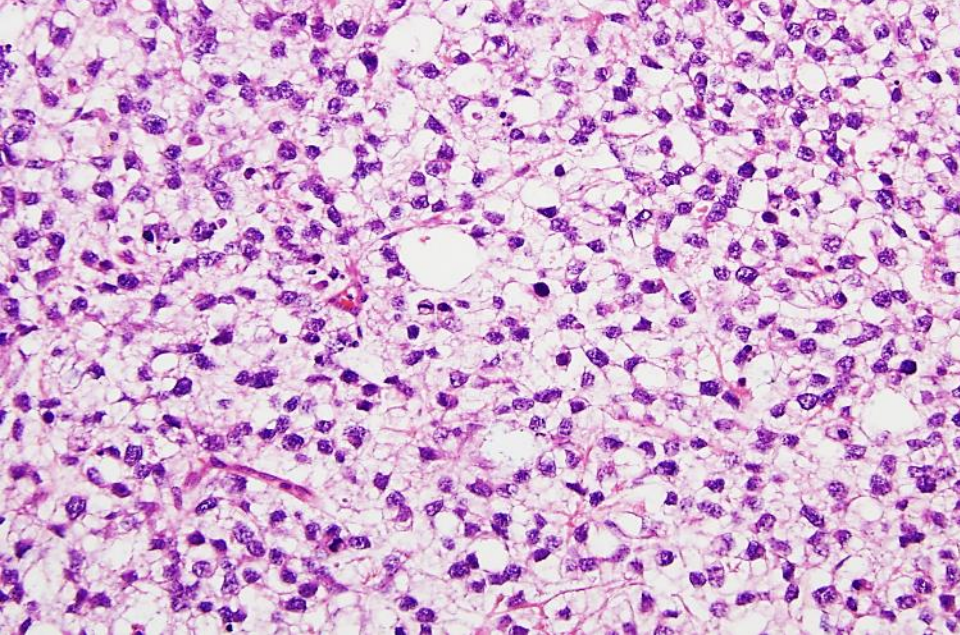
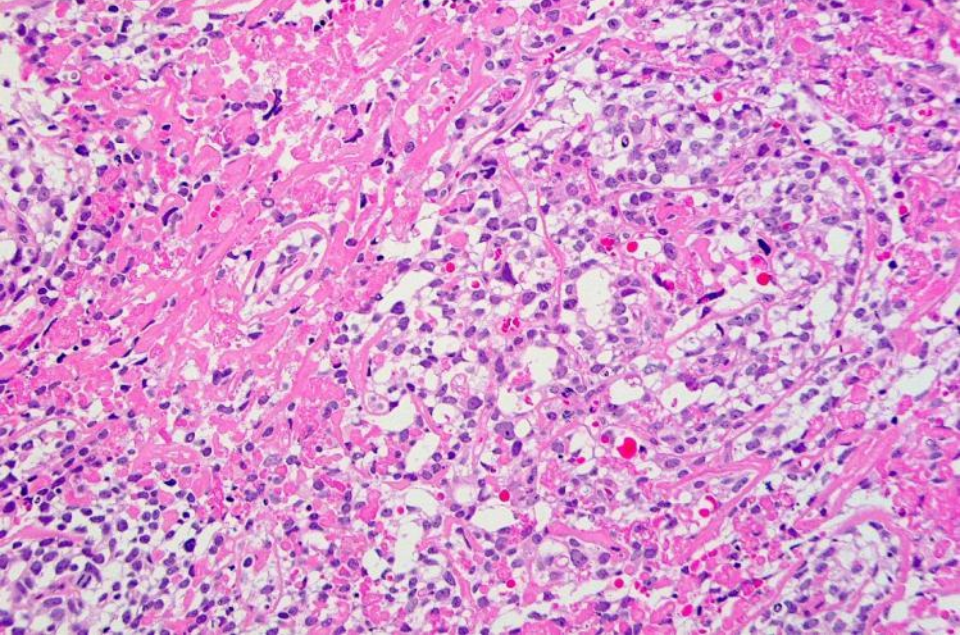
**Hepatoid YST**

**Glandular YST**



**Parietal**

**Solid YST**

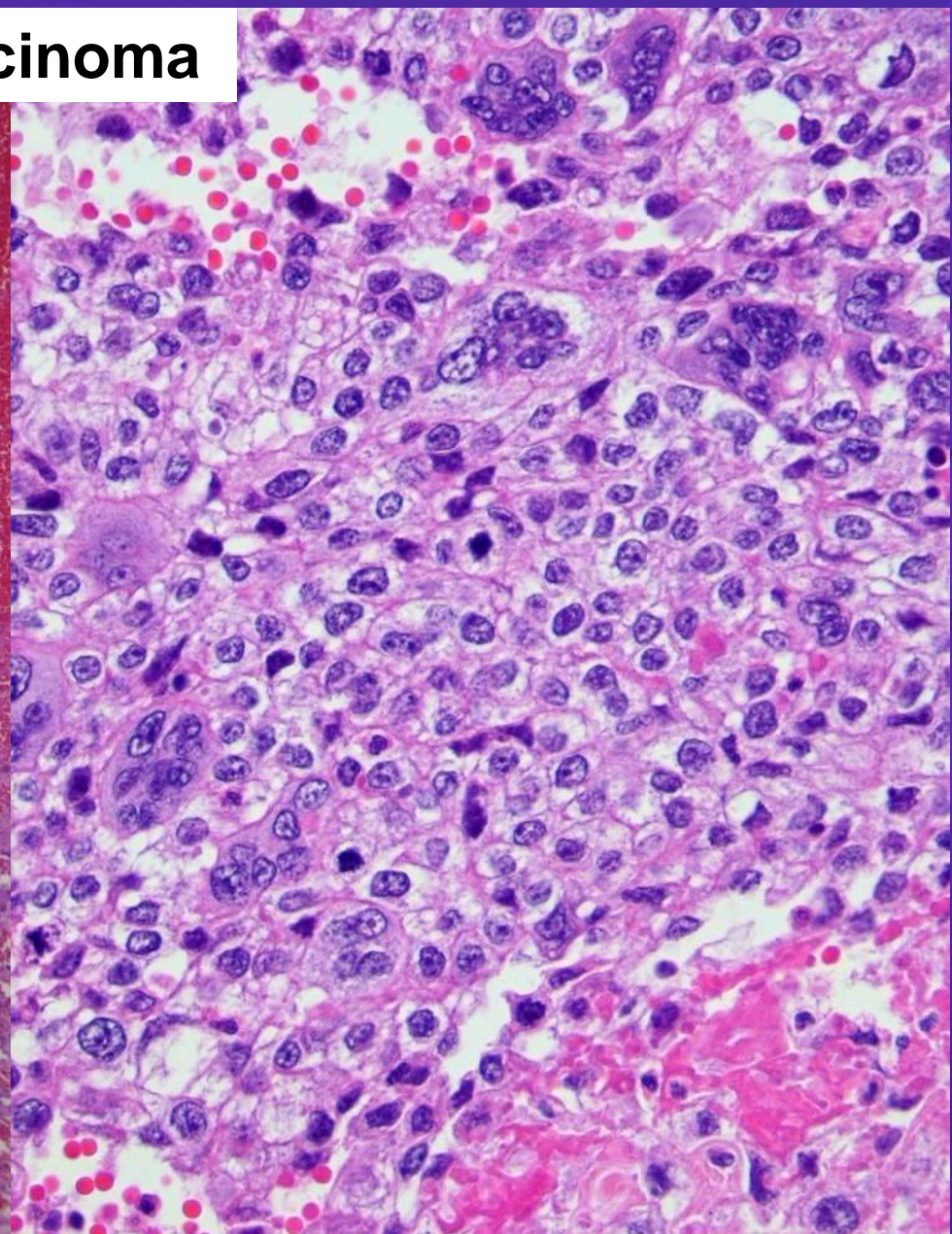
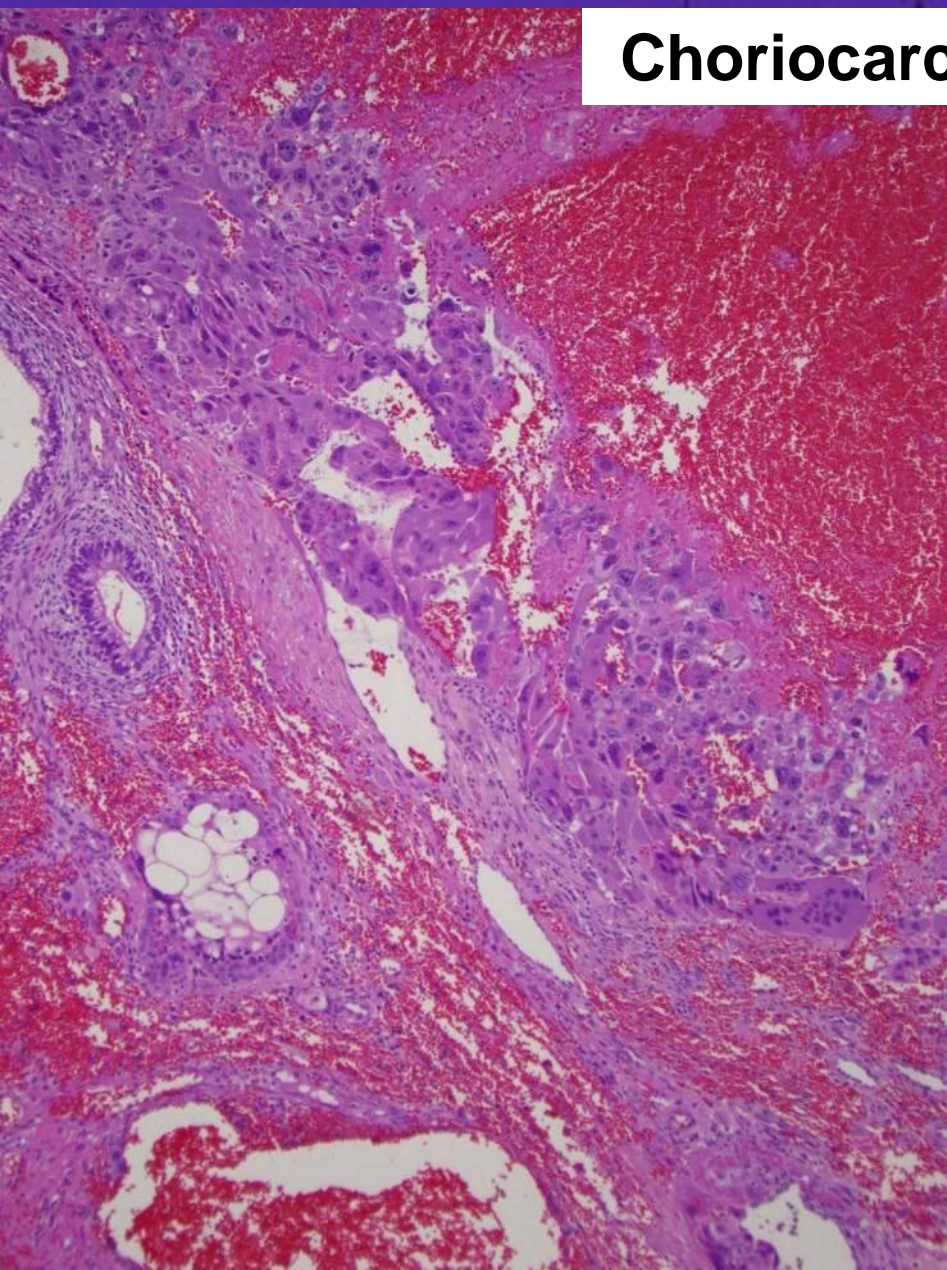


# Trophoblastic tumours

- Choriocarcinoma
- Non-choriocarcinomatous trophoblastic tumours
  - Placental site trophoblastic tumour
  - Epithelioid trophoblastic tumour
  - Cystic trophoblastic tumour

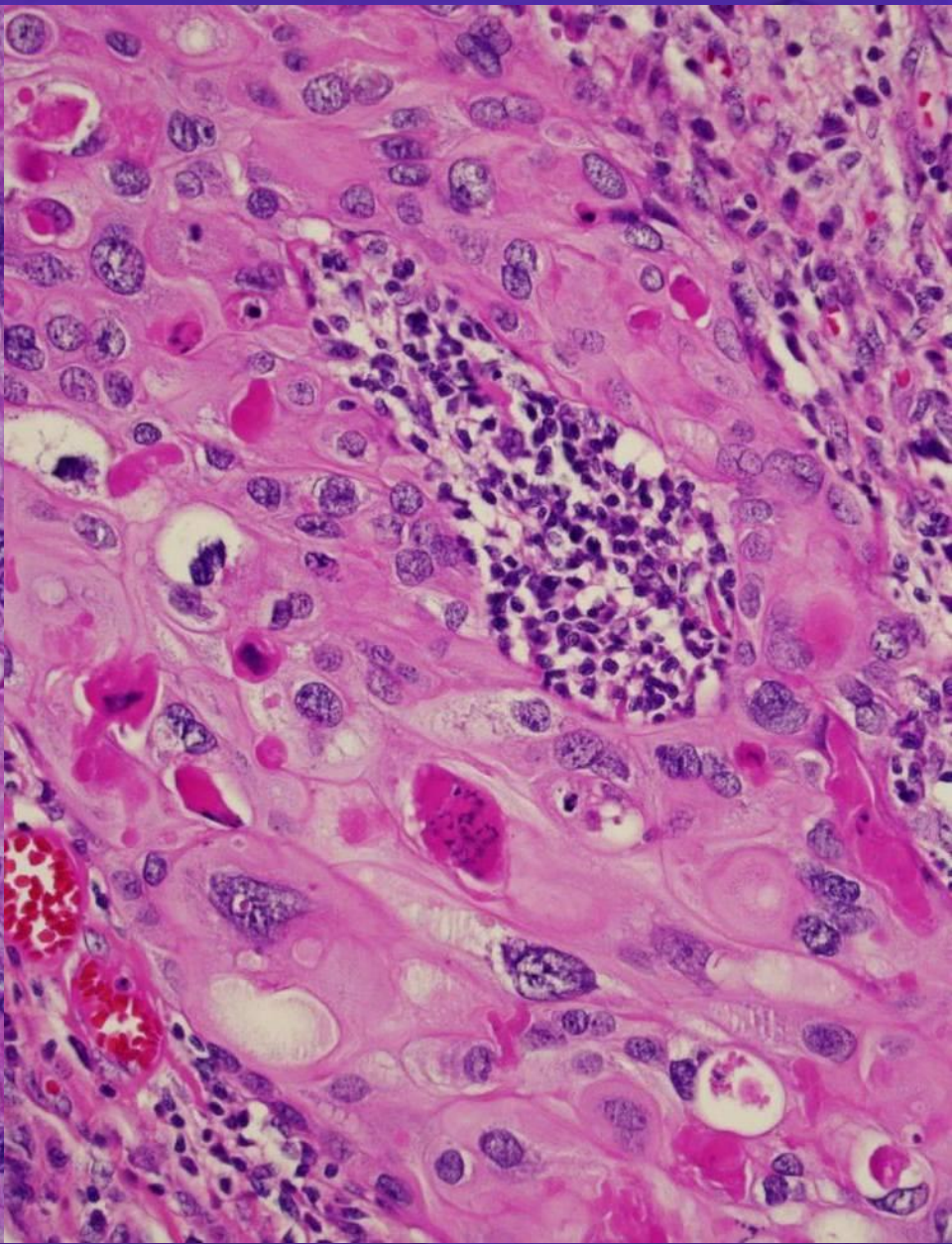
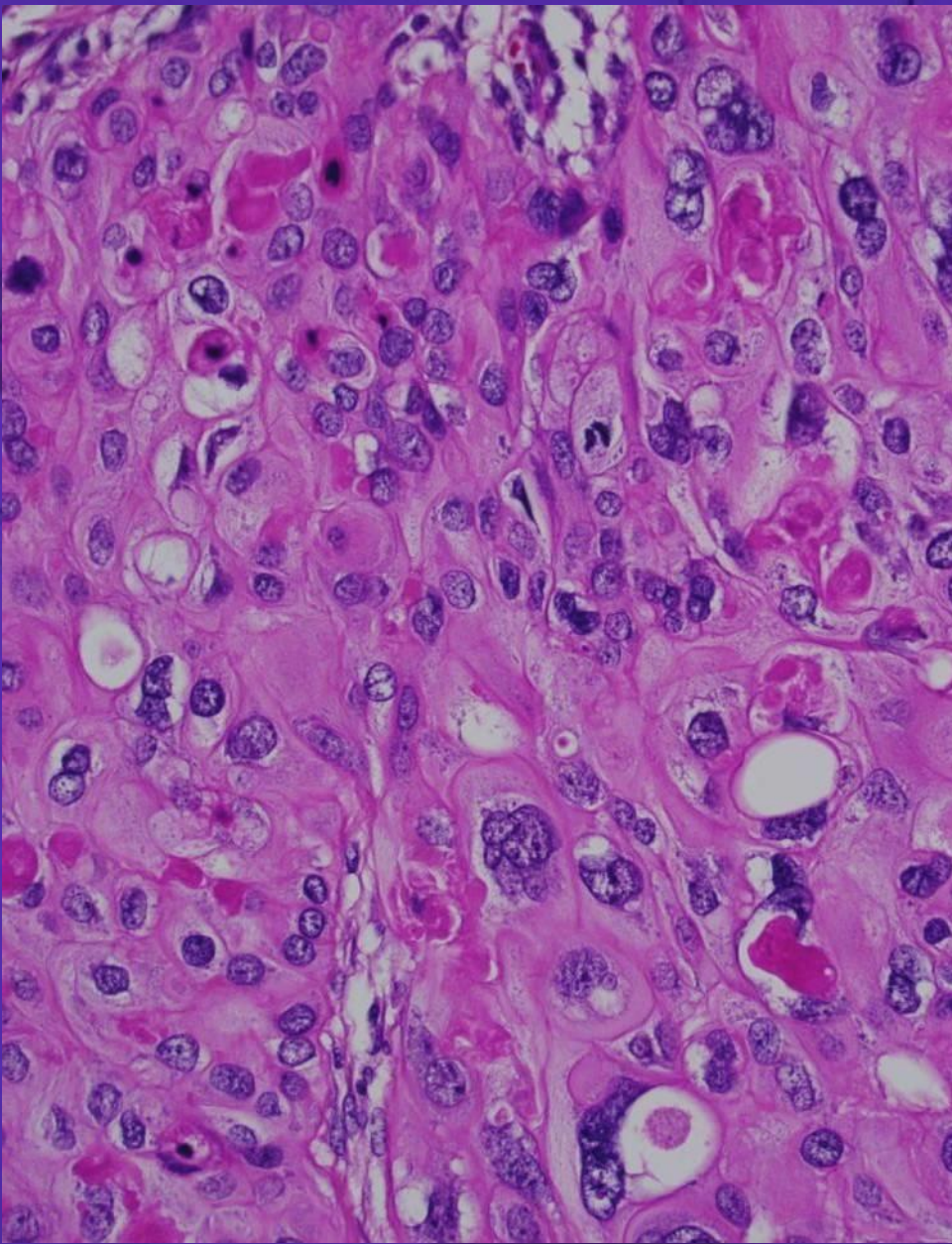


# Choriocarcinoma



# ETT

- Gestational trophoblastic tumor with proposed origin from intermediate trophoblastic cells of the chorionic laeve
- Squamoid monophasic trophoblast cells in cohesive epithelioid nests with abundant eosinophilic cytoplasm
- Lacking the biphasic pattern characteristic of choriocarcinoma
- Prominent cell boundaries, intracytoplasmic, and extracytoplasmic eosinophilic fibrinoid and globular material

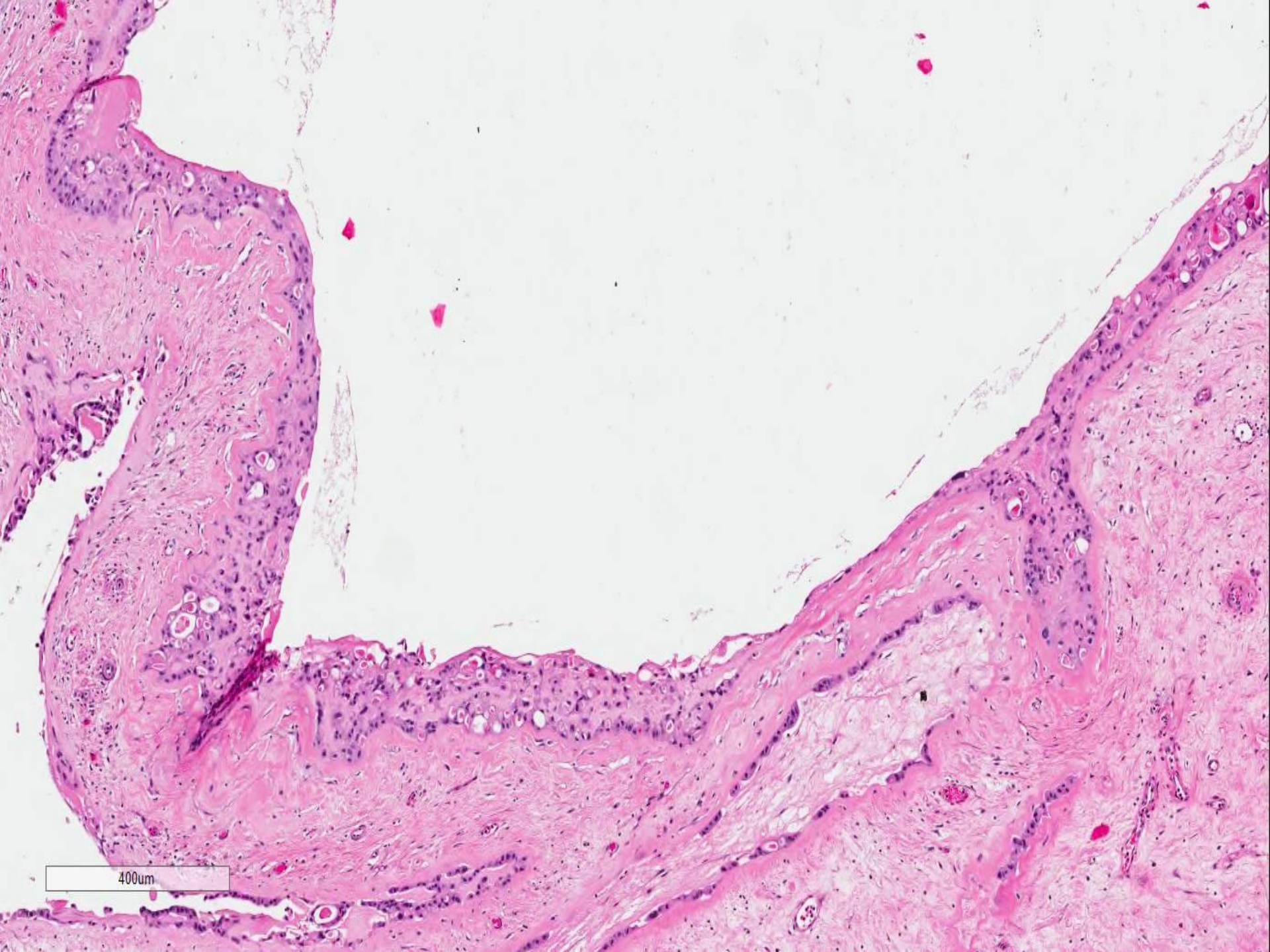


# Cystic Trophoblastic Tumor

*A Nonaggressive Lesion in Postchemotherapy Resections of Patients With Testicular Germ Cell Tumors*

*Thomas M. Ulbright, MD,\* John D. Henley, MD,\* Oscar W. Cummings, MD,\* Richard S. Foster, MD, † and Liang Cheng, MD\**





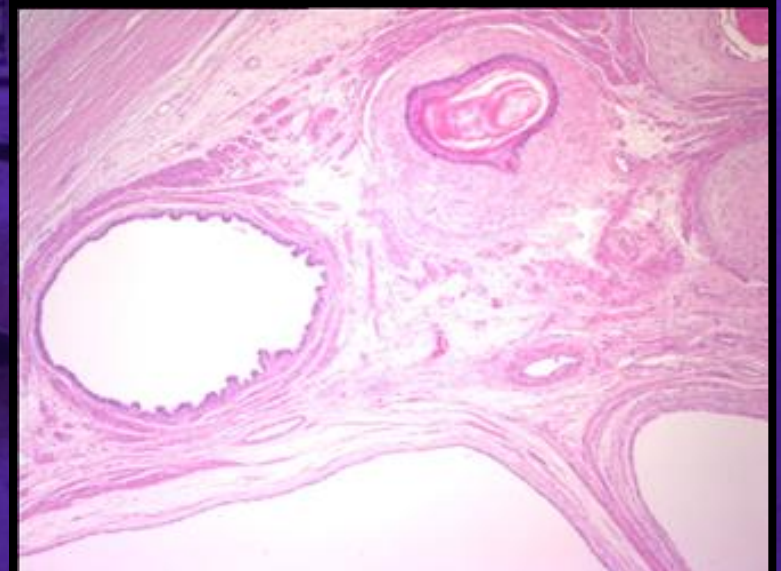
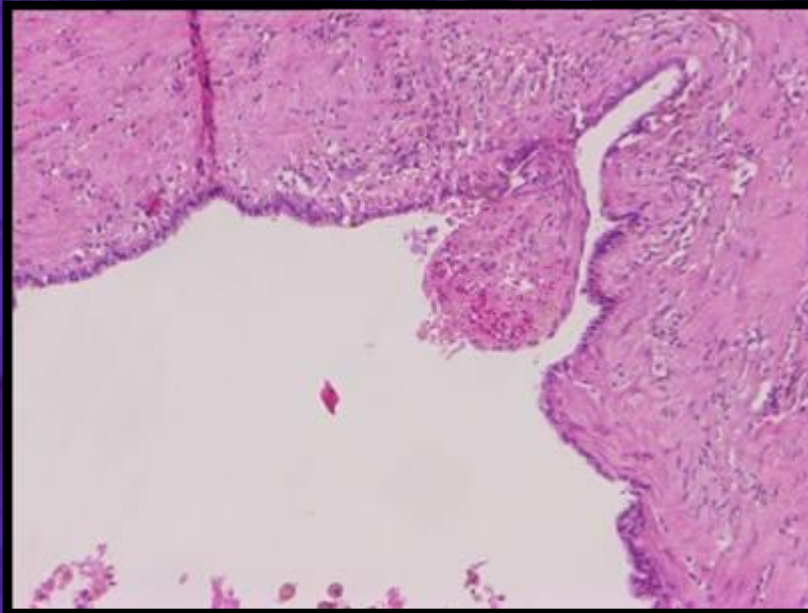
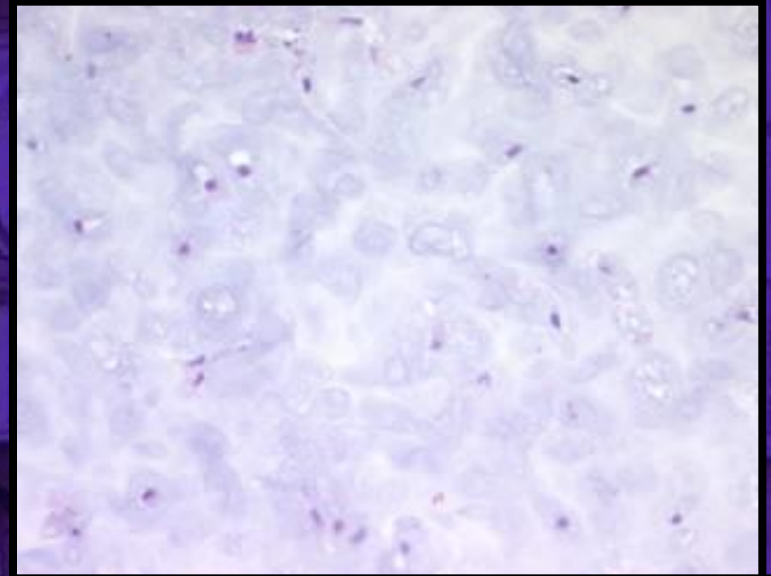
400um

# Immunoprofile

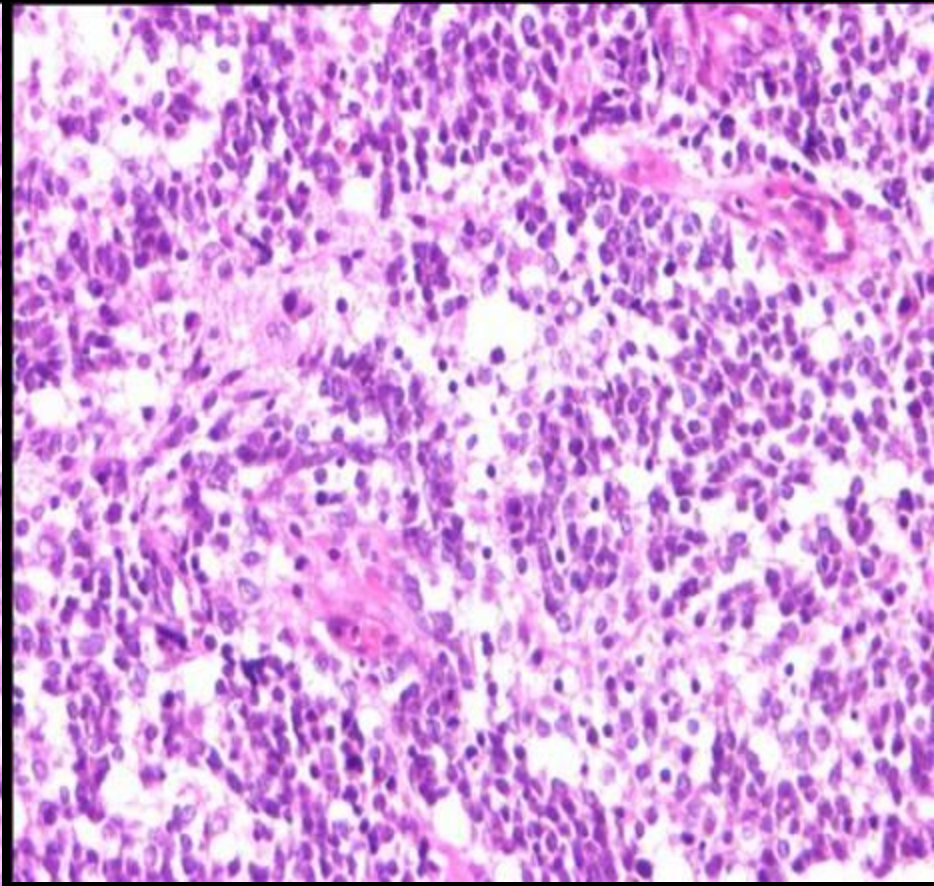
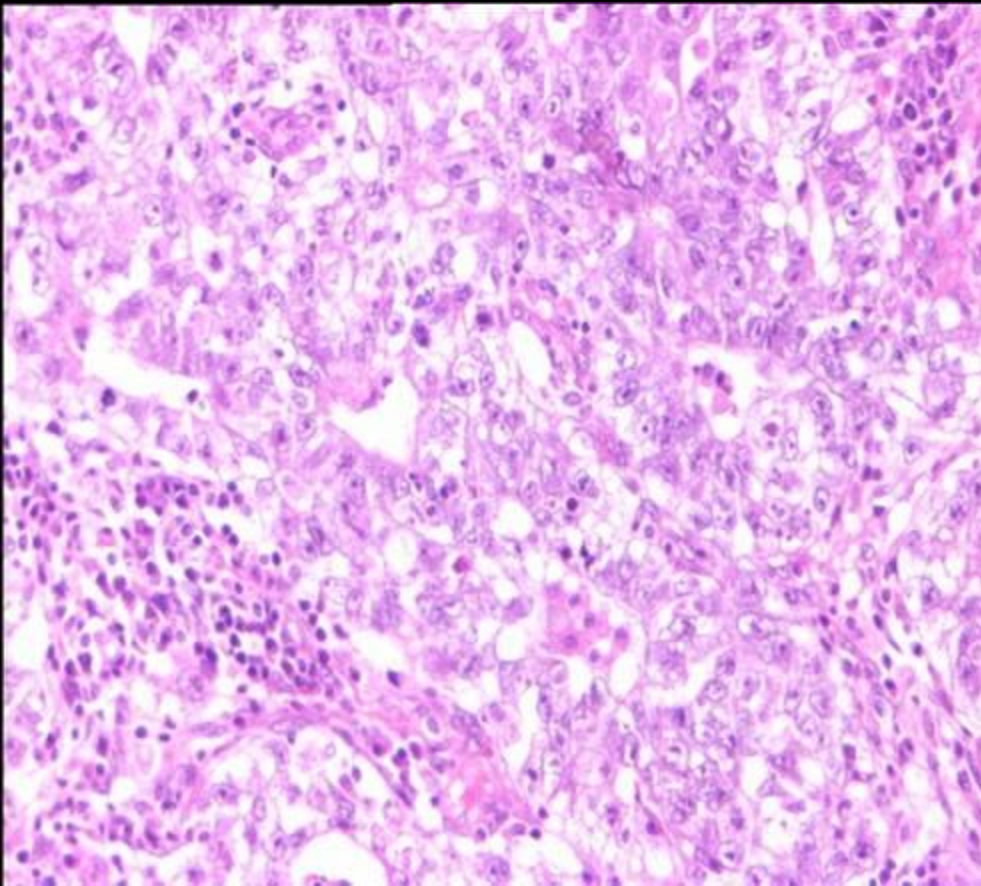
	<b>CTT</b>	<b>ETT</b>	<b>Chorioca.</b>
Inhibin	++	++	+/-
p63	--	++	-
hCG	++	++	+++
HPLC	+/-	++	+++
Ki-67	<5%	>10%	>10%

# Teratoma, post pubertal type

- Immaturity
- Atrophy
- GCNIS



# Teratoma with somatic type malignancy



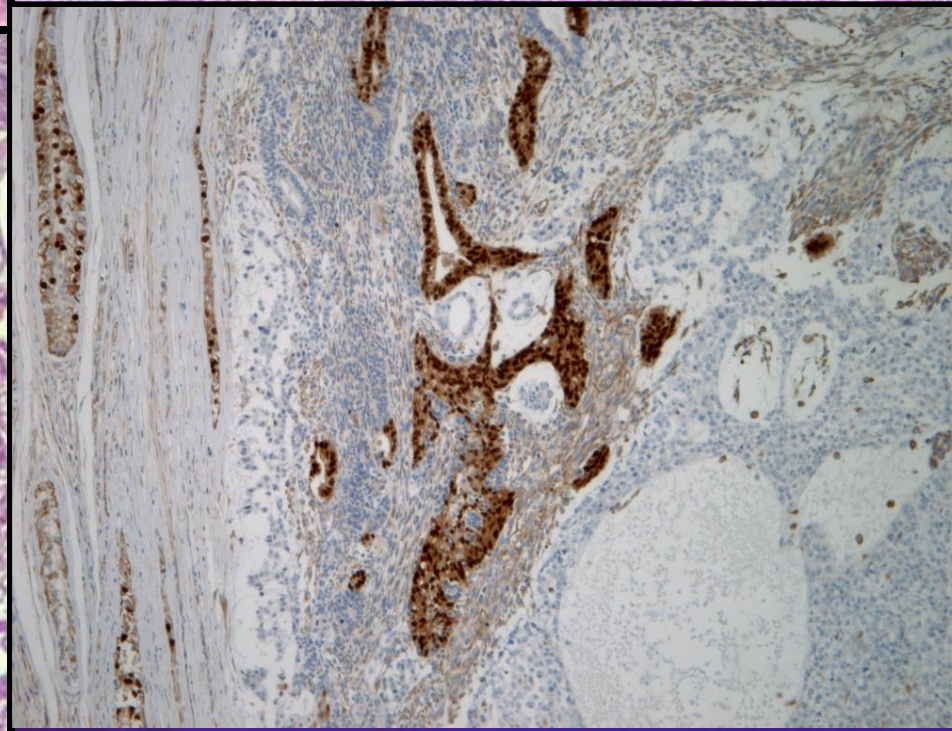
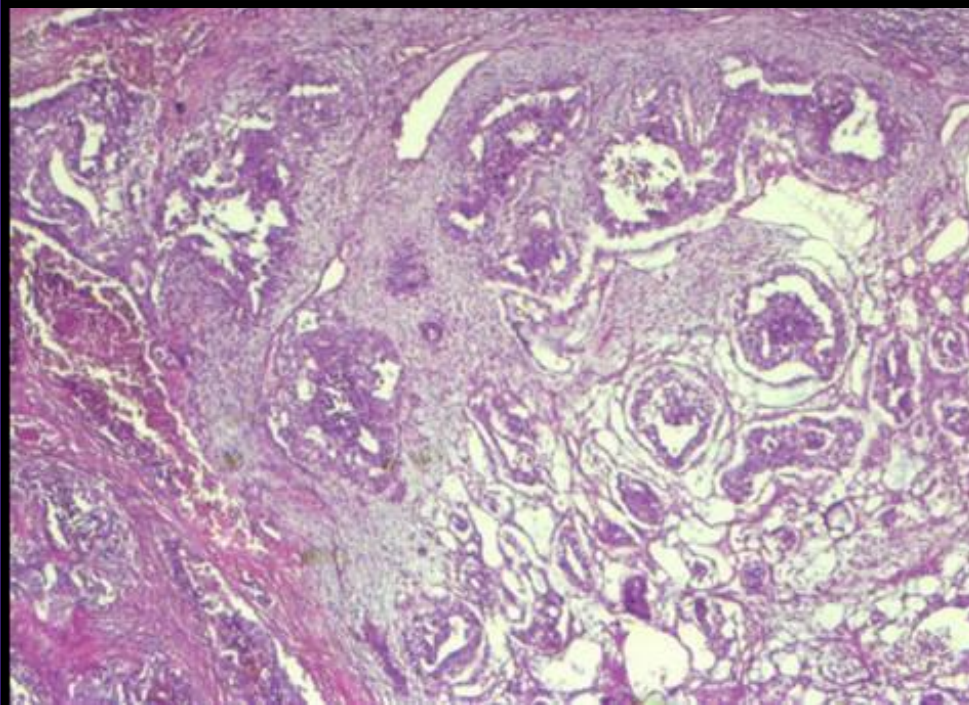
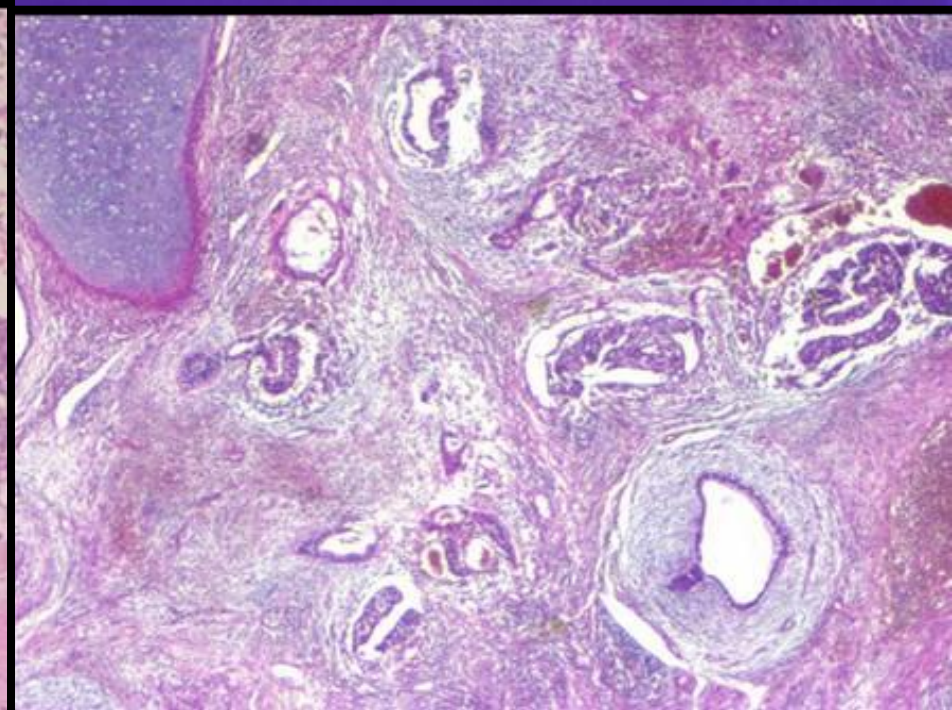
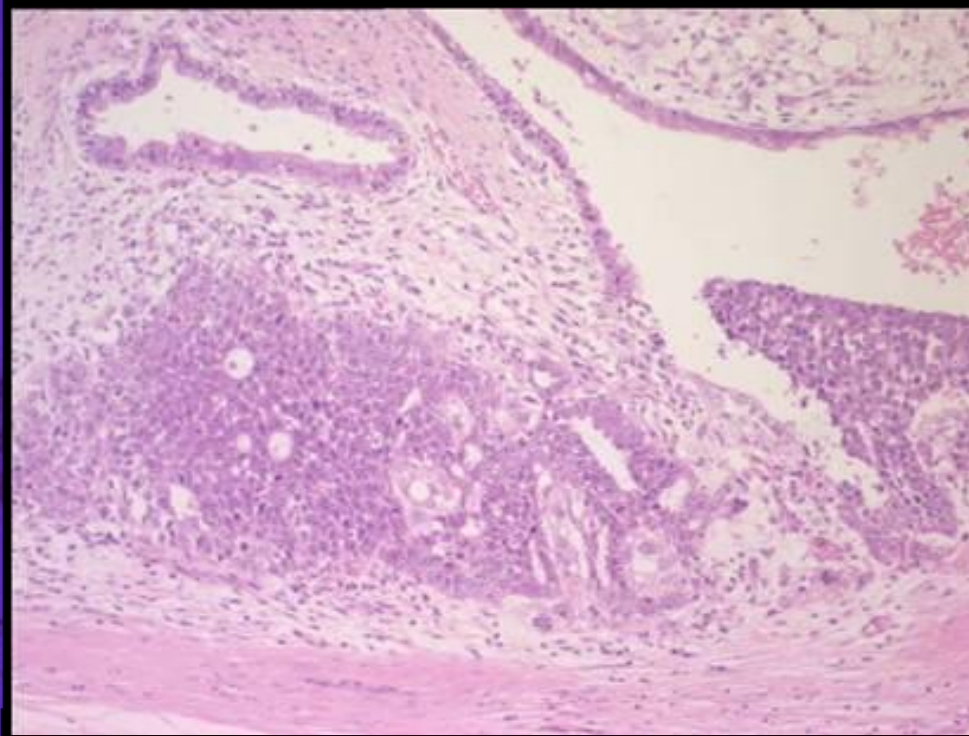


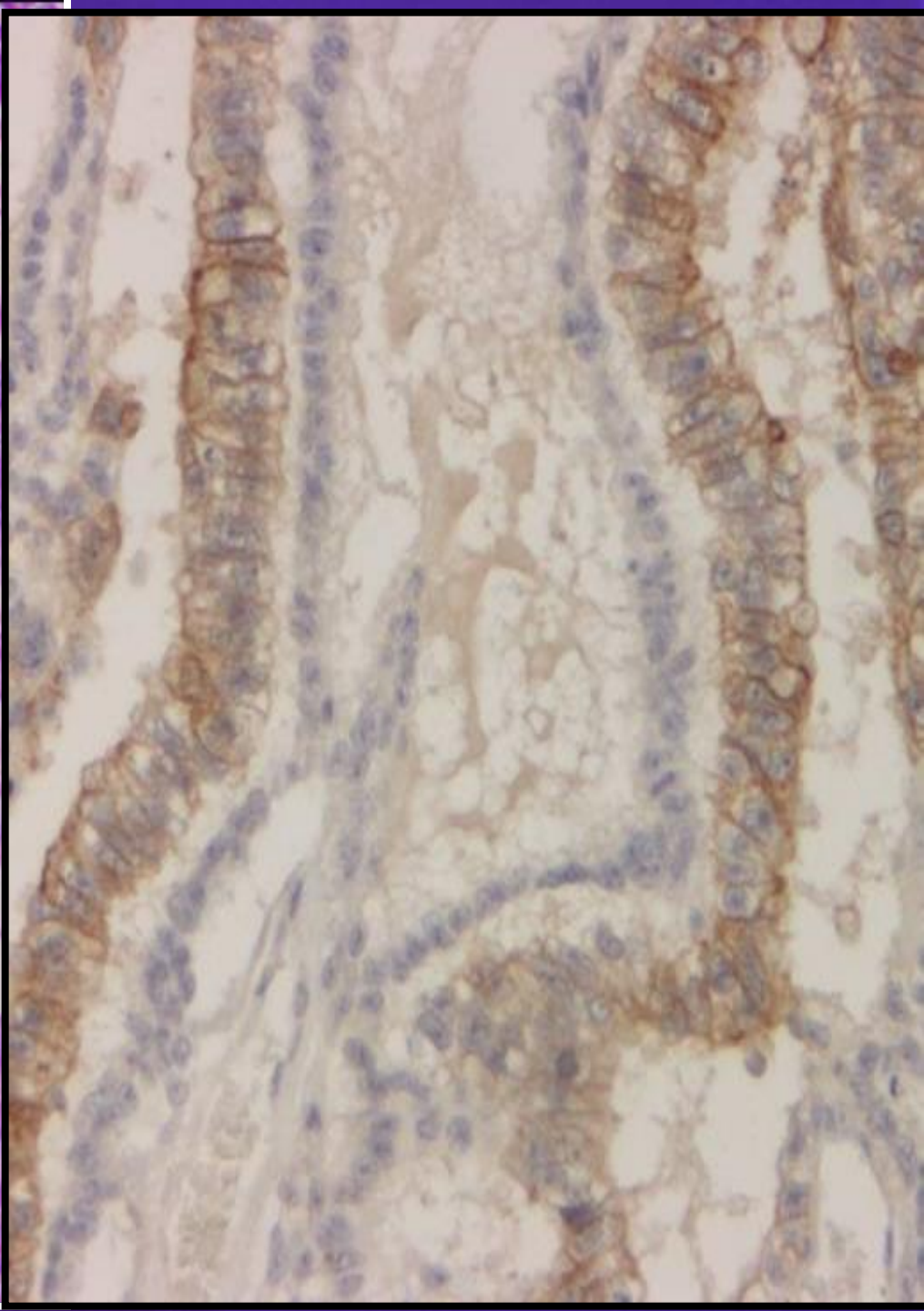
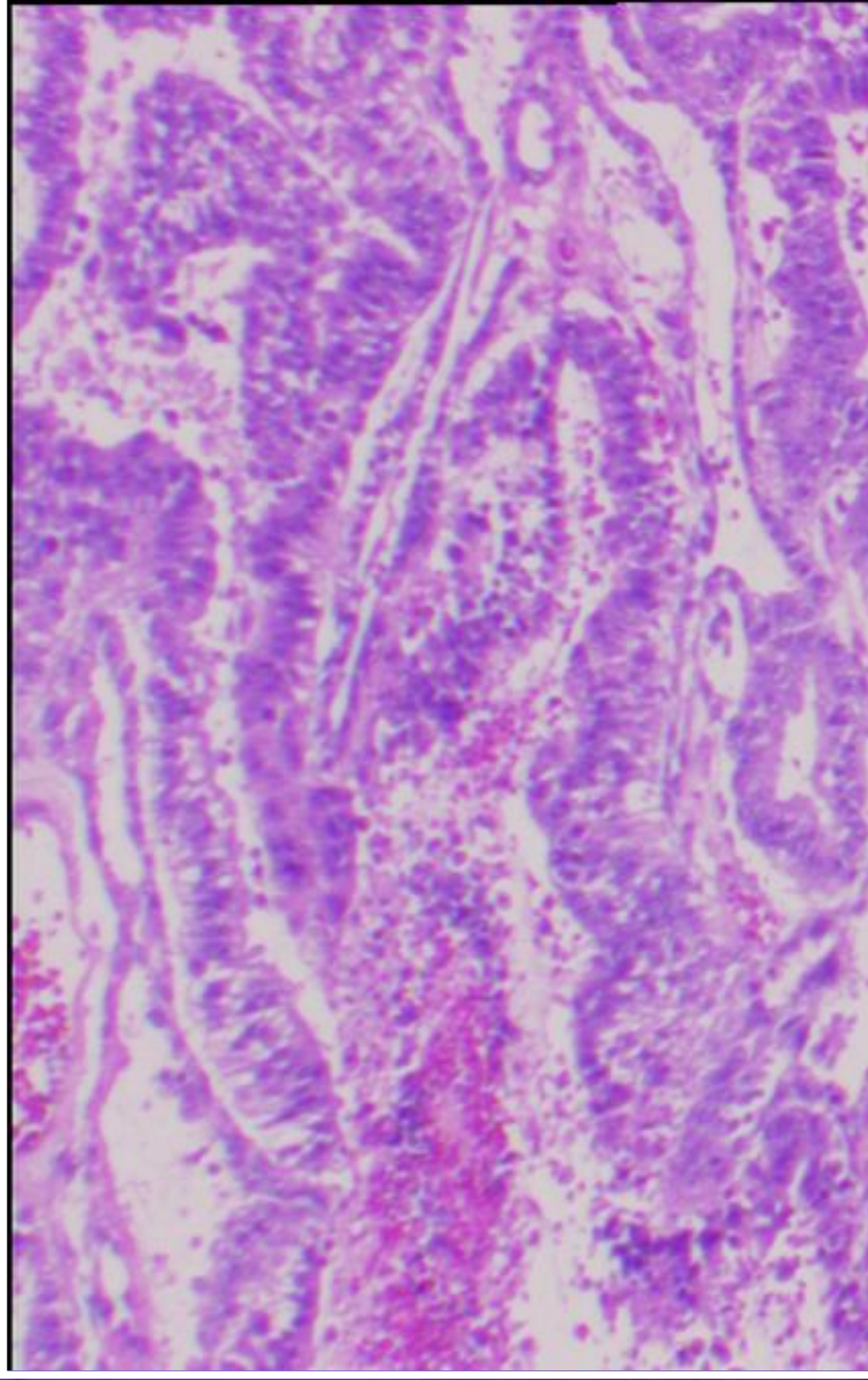
# Non-seminomatous germ cell tumours of more than one histological type

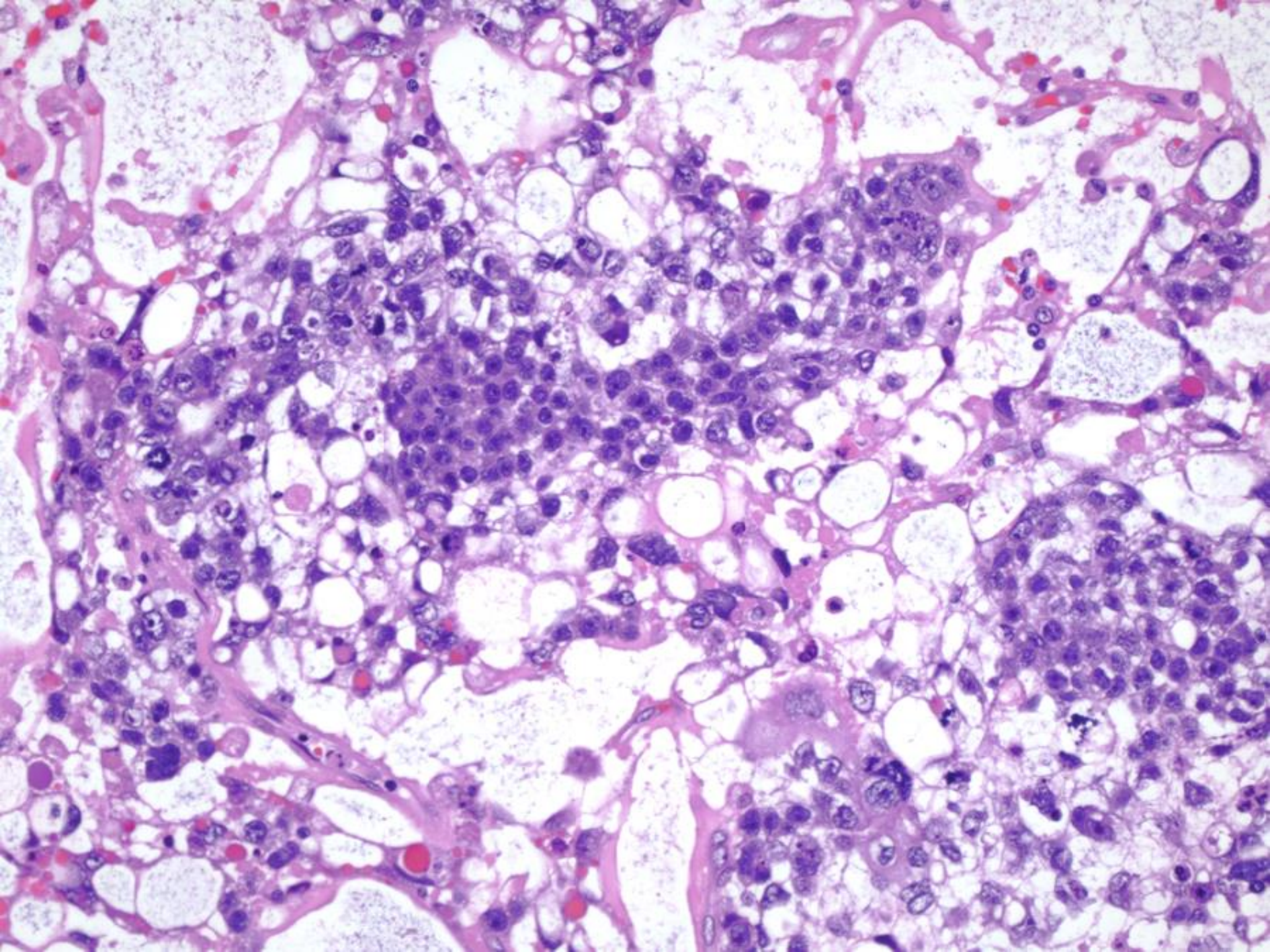
- Mixed germ cell tumours

# Germ cell tumours of unknown type

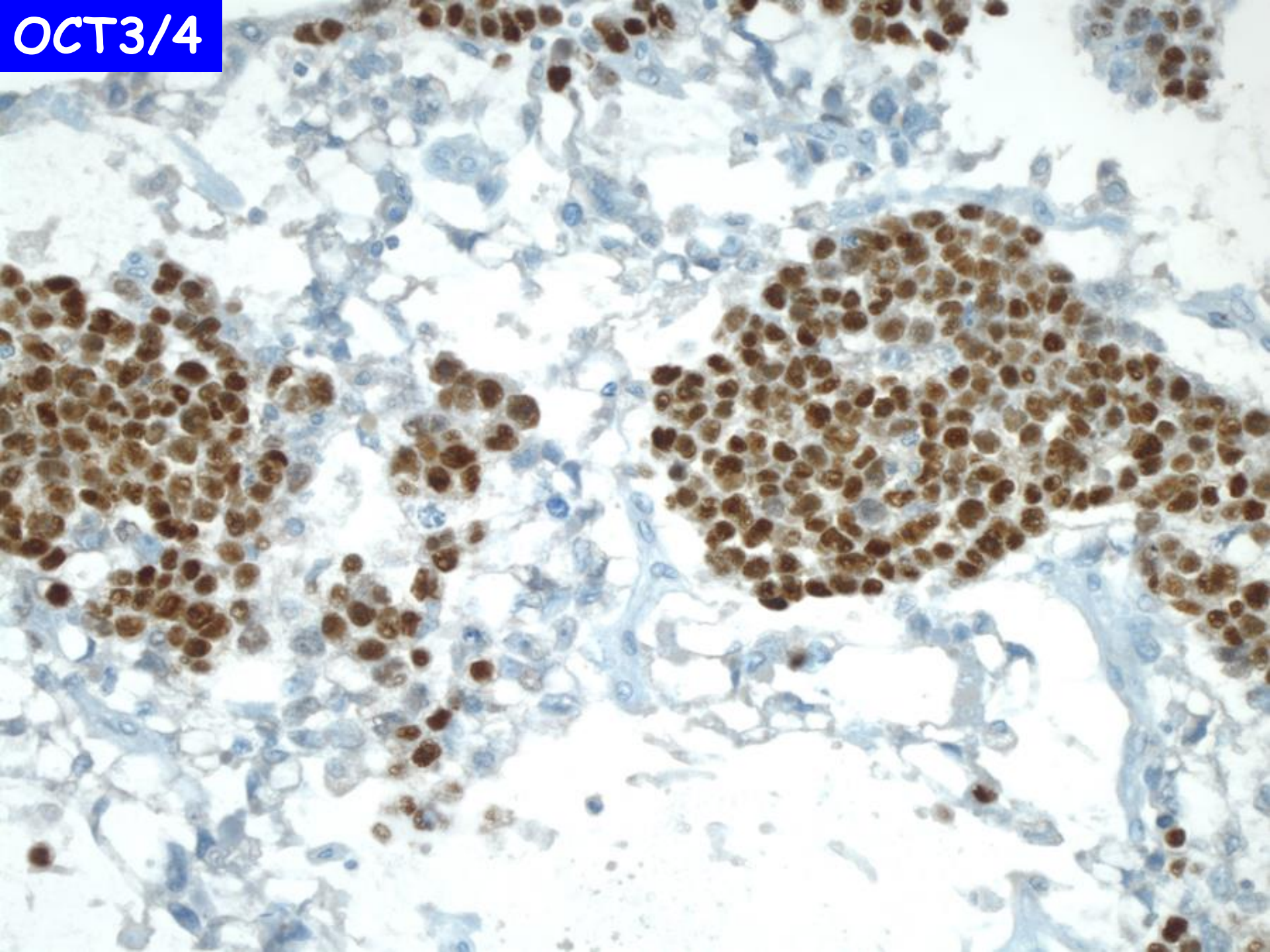
- Regressed germ cell tumours



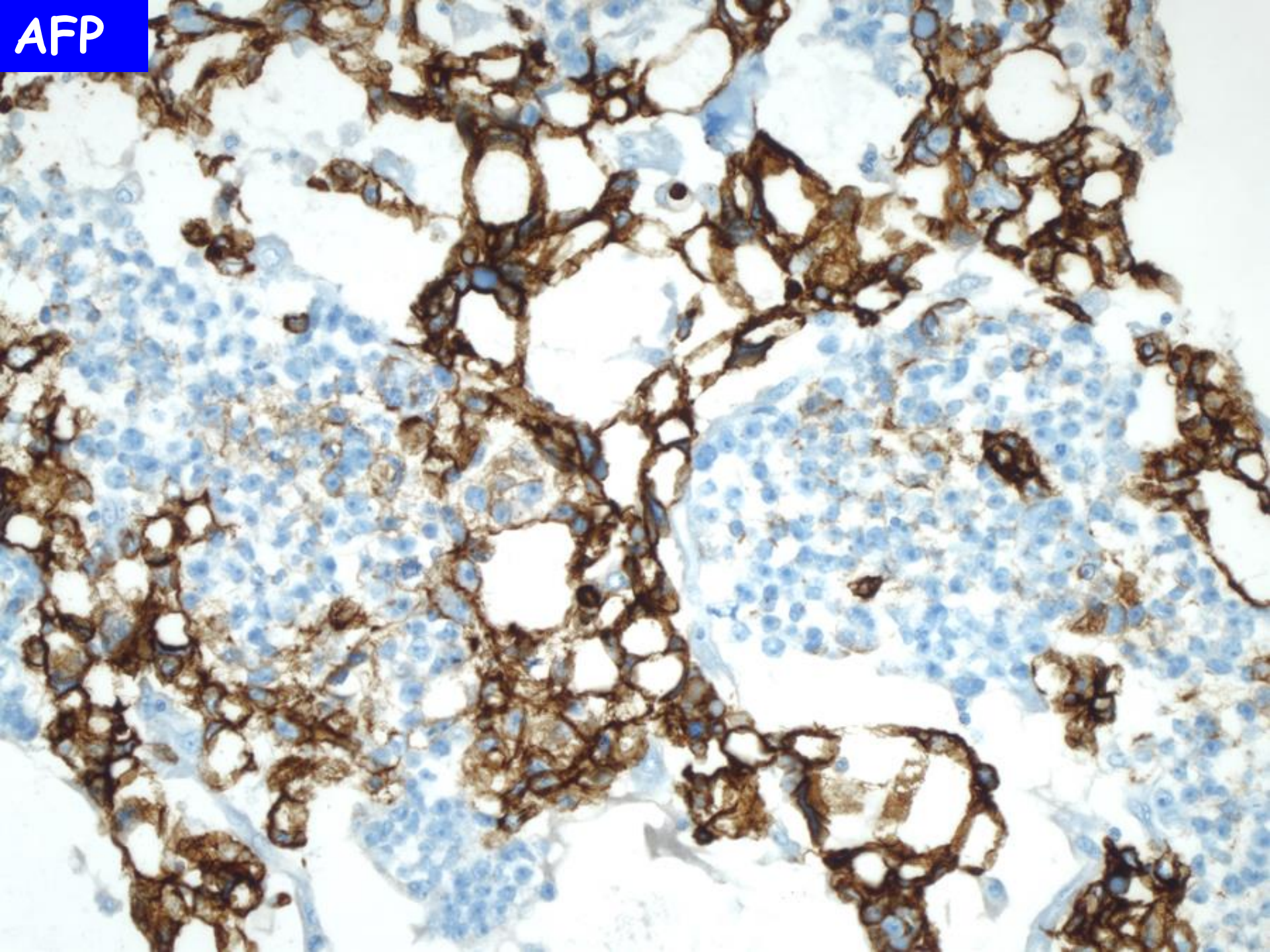




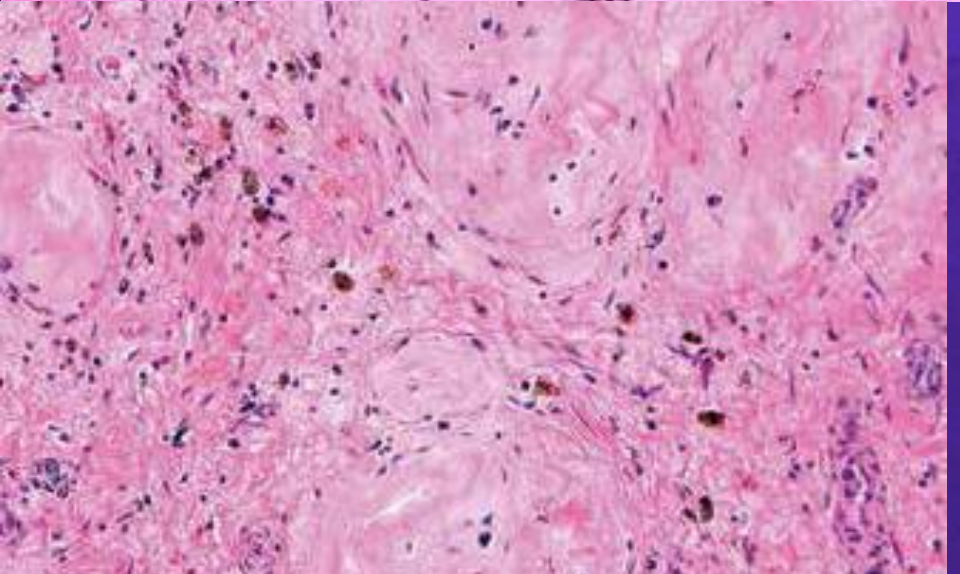
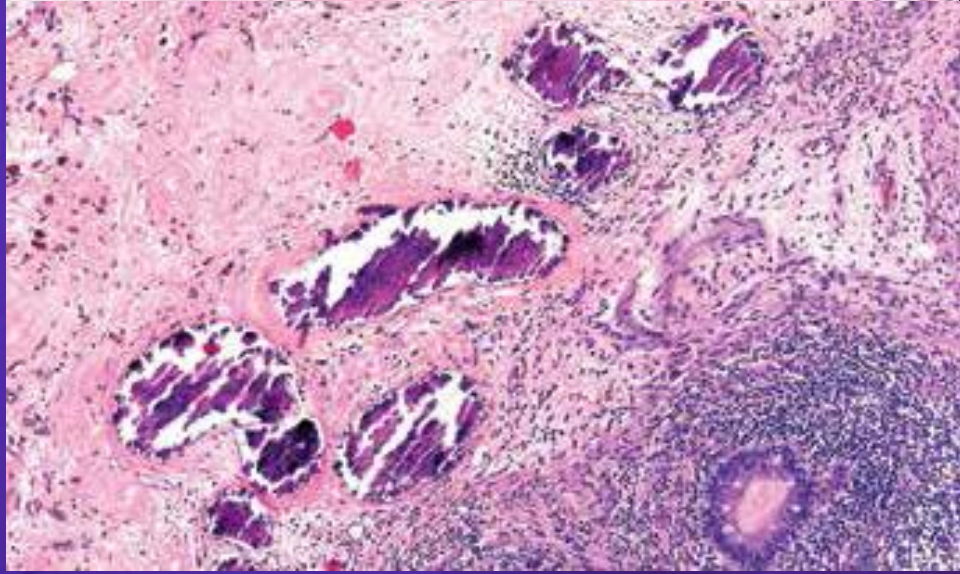
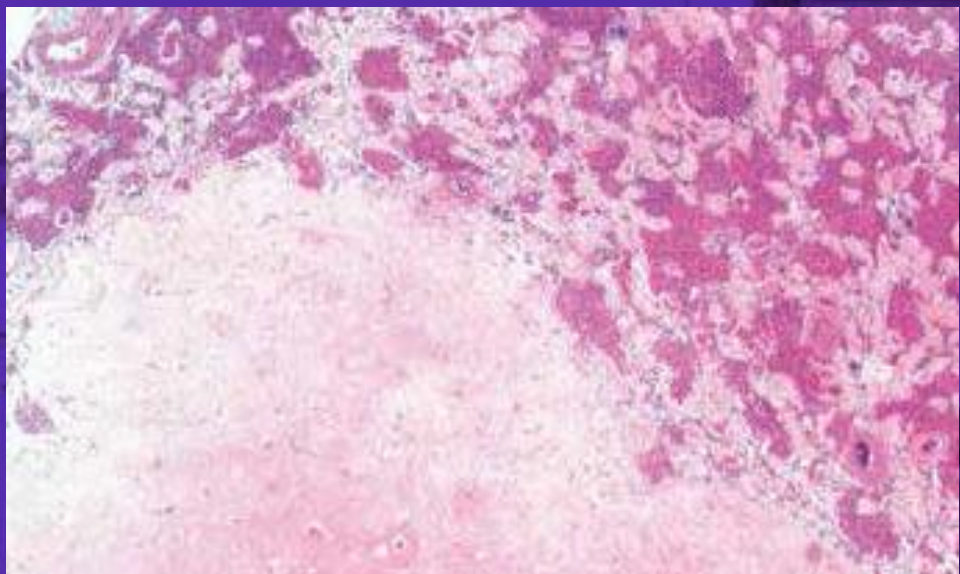
OCT3/4



AFP



# Regressed germ cell tumours



# Germ cell tumours unrelated to GCNIS

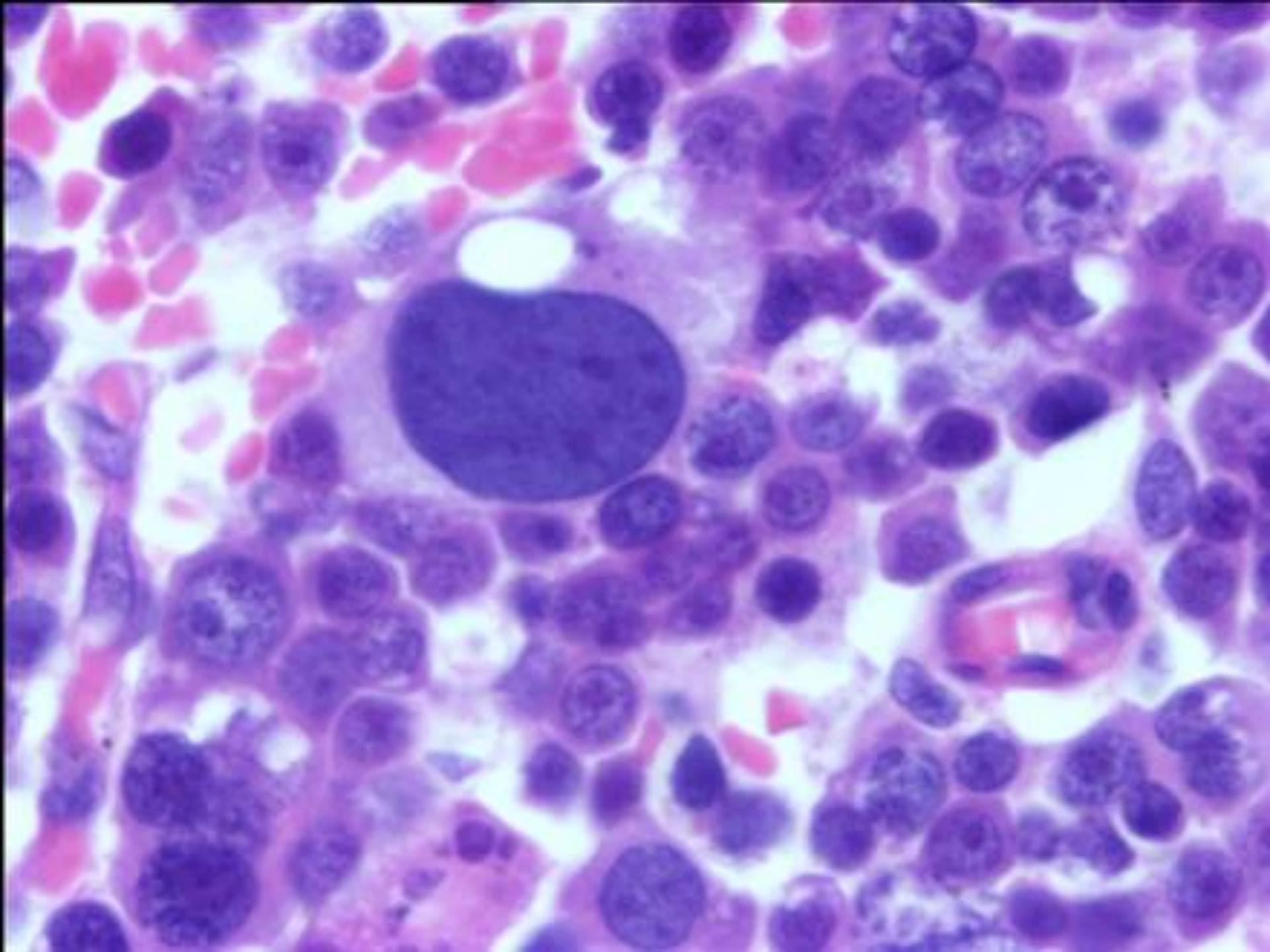
- Spermatocytic tumour
- Teratoma, prepubertal type
  - Dermoid cyst
  - Epidermoid cyst
  - Well-differentiated neuroendocrine tumour (monodermal teratoma)
- Yolk sac tumour, prepubertal-type
- Mixed teratoma and yolk sac tumour, prepubertal-type

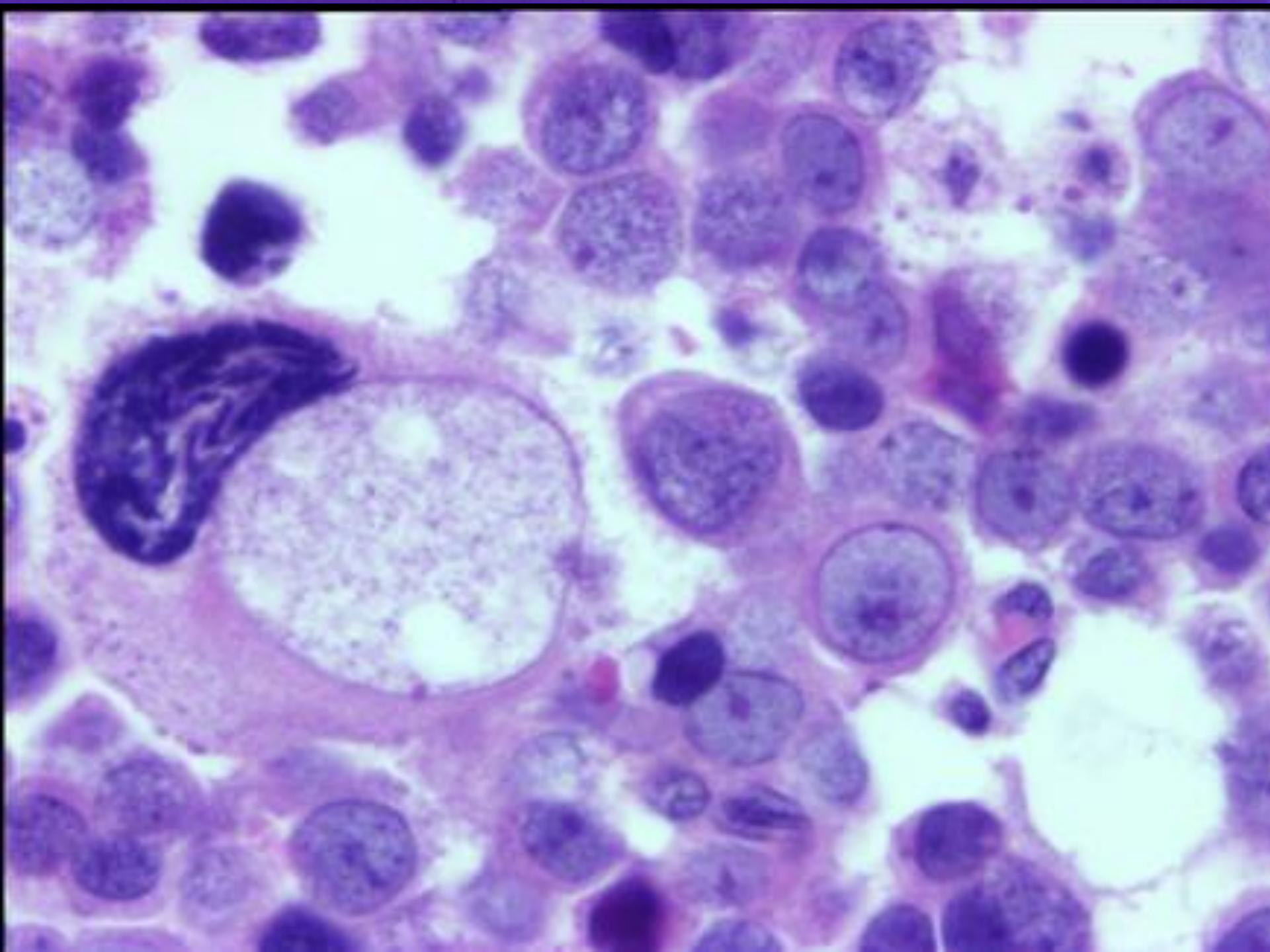


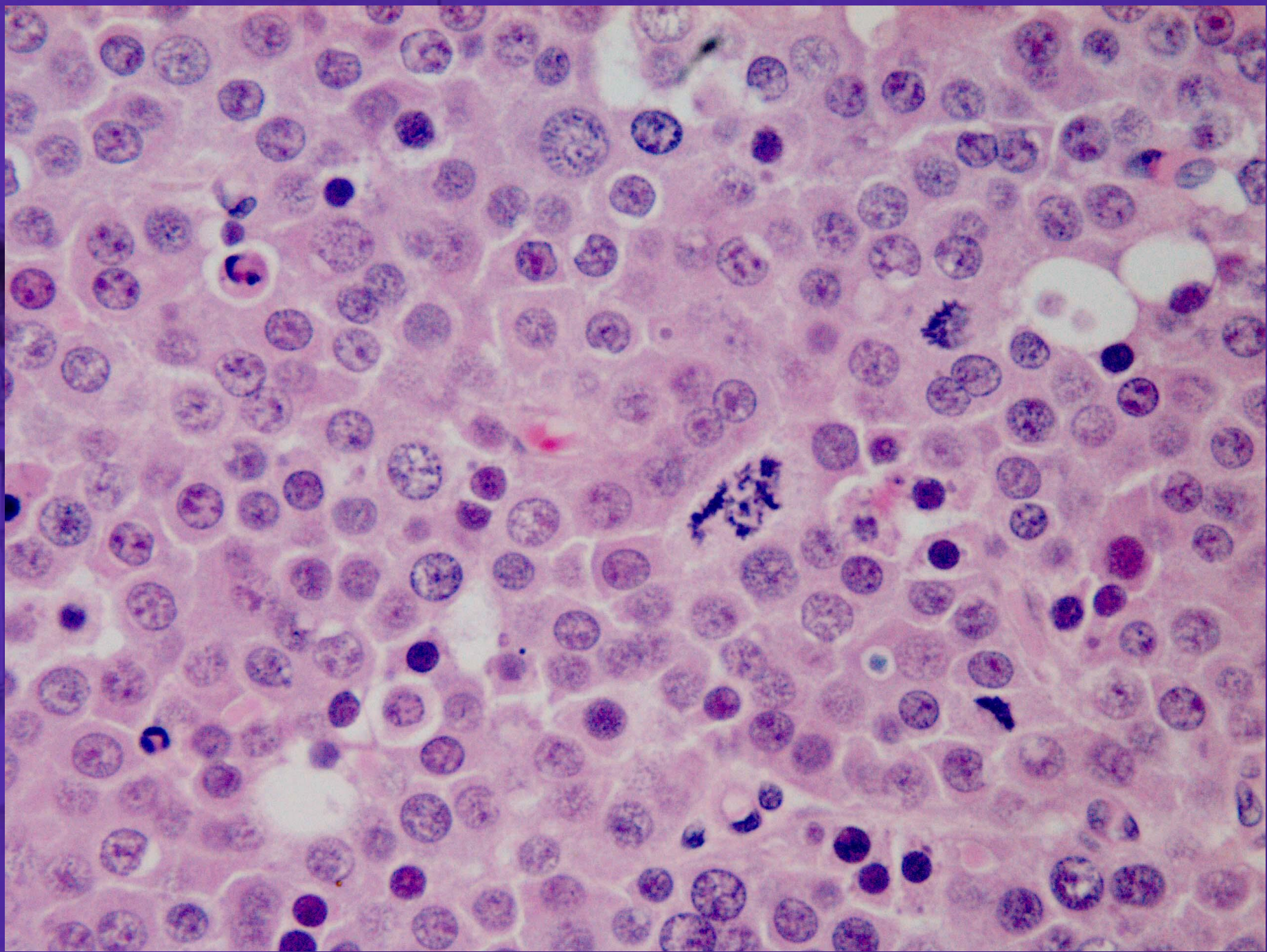
# Spermatocytic tumour

- Danger of inappropriate chemotherapy





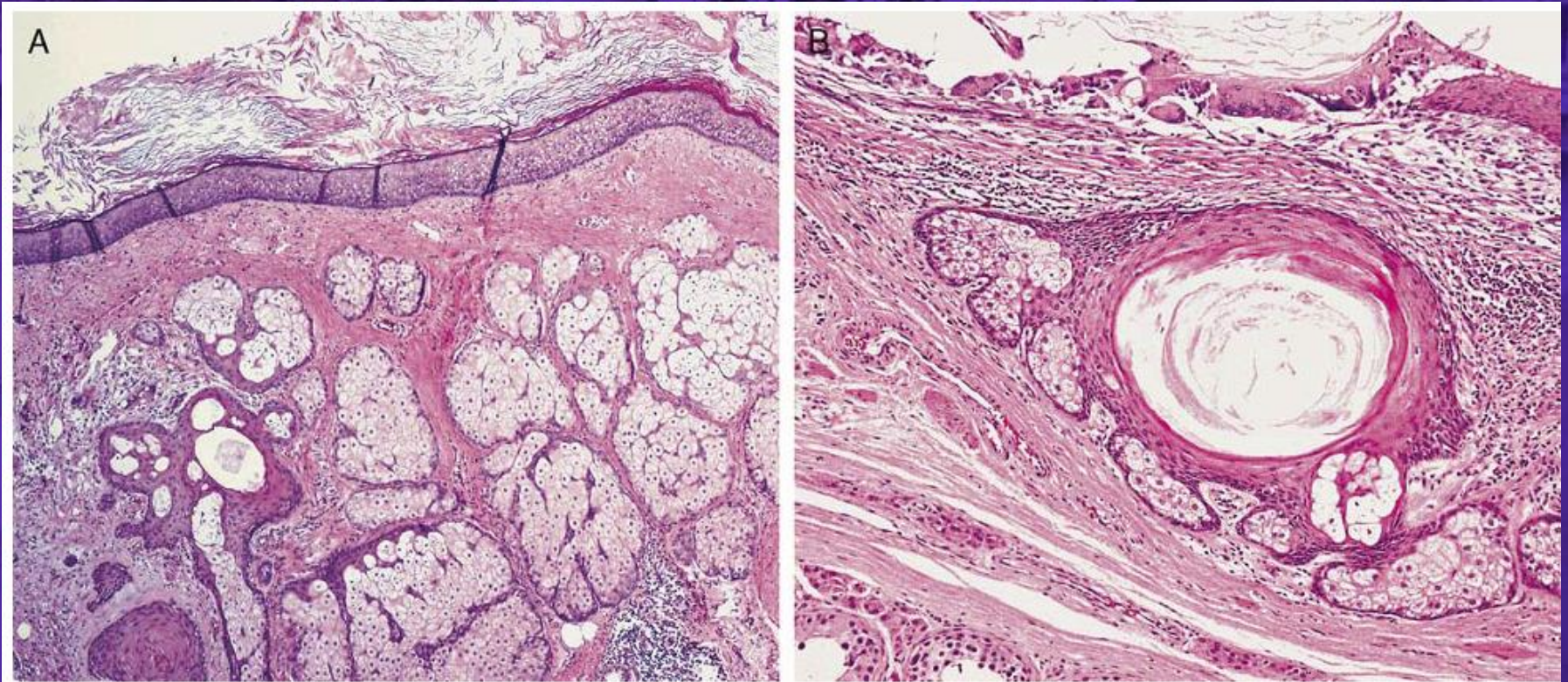




# Evidence Supporting the Existence of Benign Teratomas of the Postpubertal Testis

## *A Clinical, Histopathologic, and Molecular Genetic Analysis of 25 Cases*

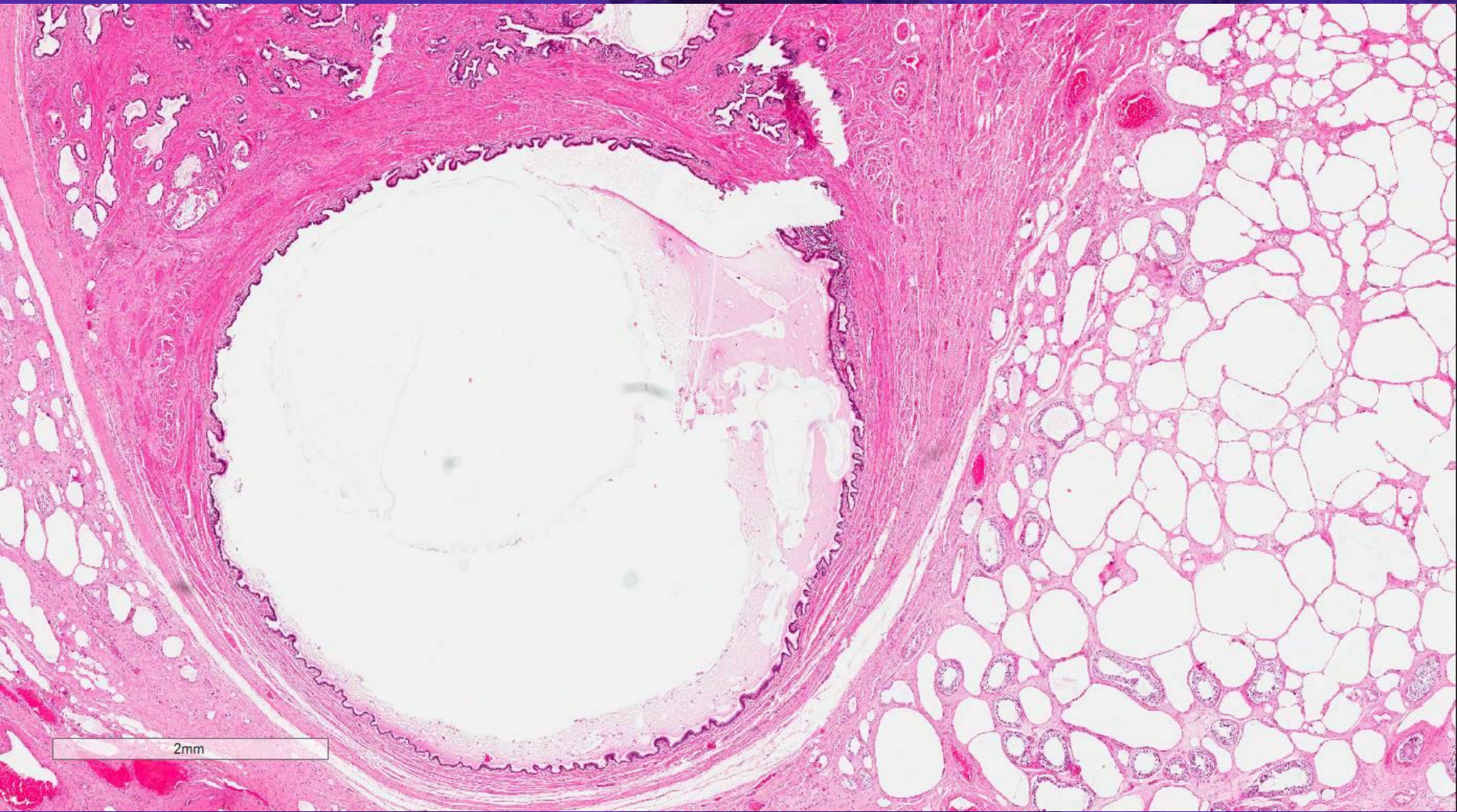
*Chen Zhang, MD, PhD,\* Daniel M. Berney, FRCPath,† Michelle S. Hirsch, MD, PhD,‡  
Liang Cheng, MD,\* and Thomas M. Ulbright, MD\**



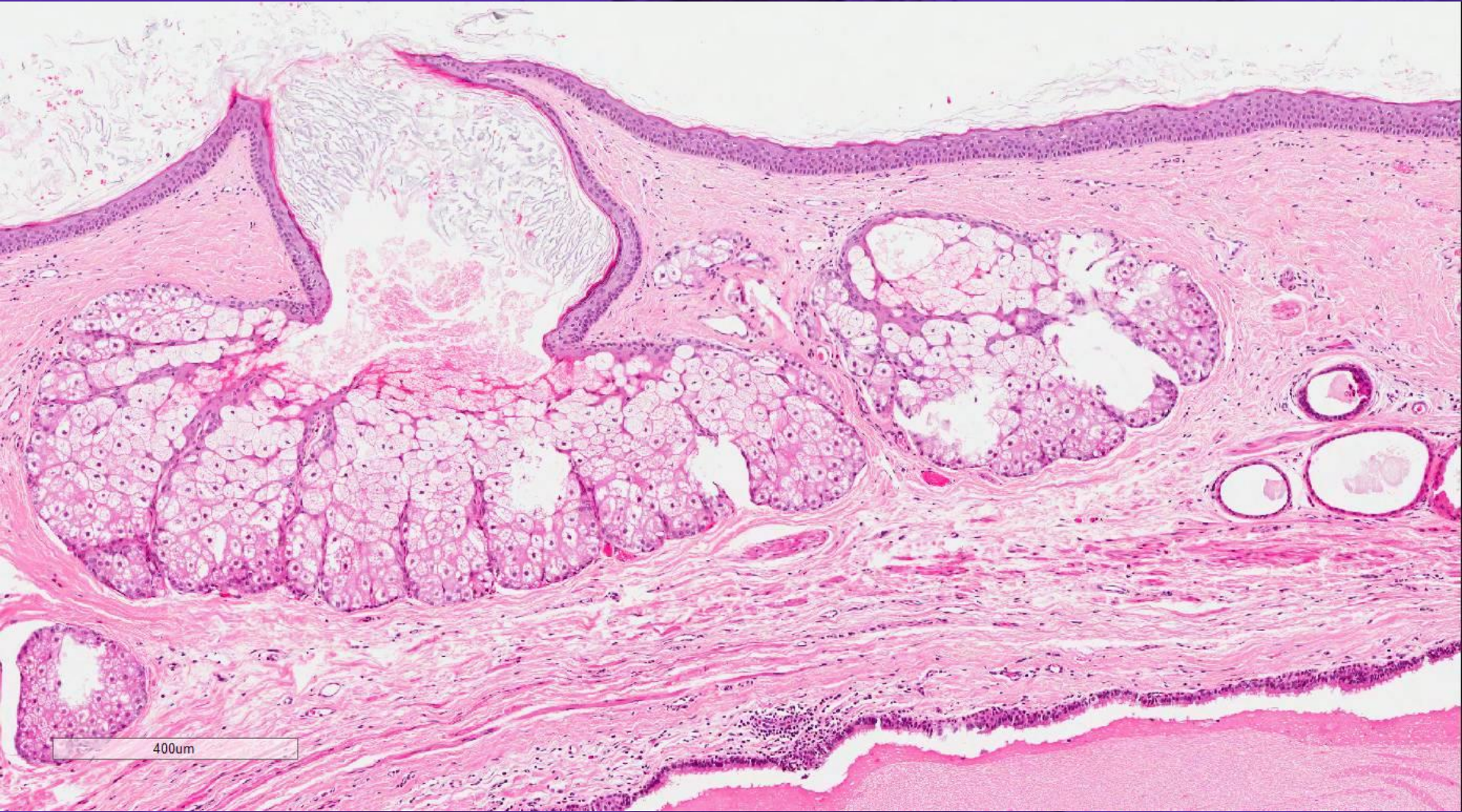
# Prepubertal type teratoma and variants, Epidermoid and dermoid cyst

- No GCNIS
- No immature areas
- No evidence of regression
- i12p?

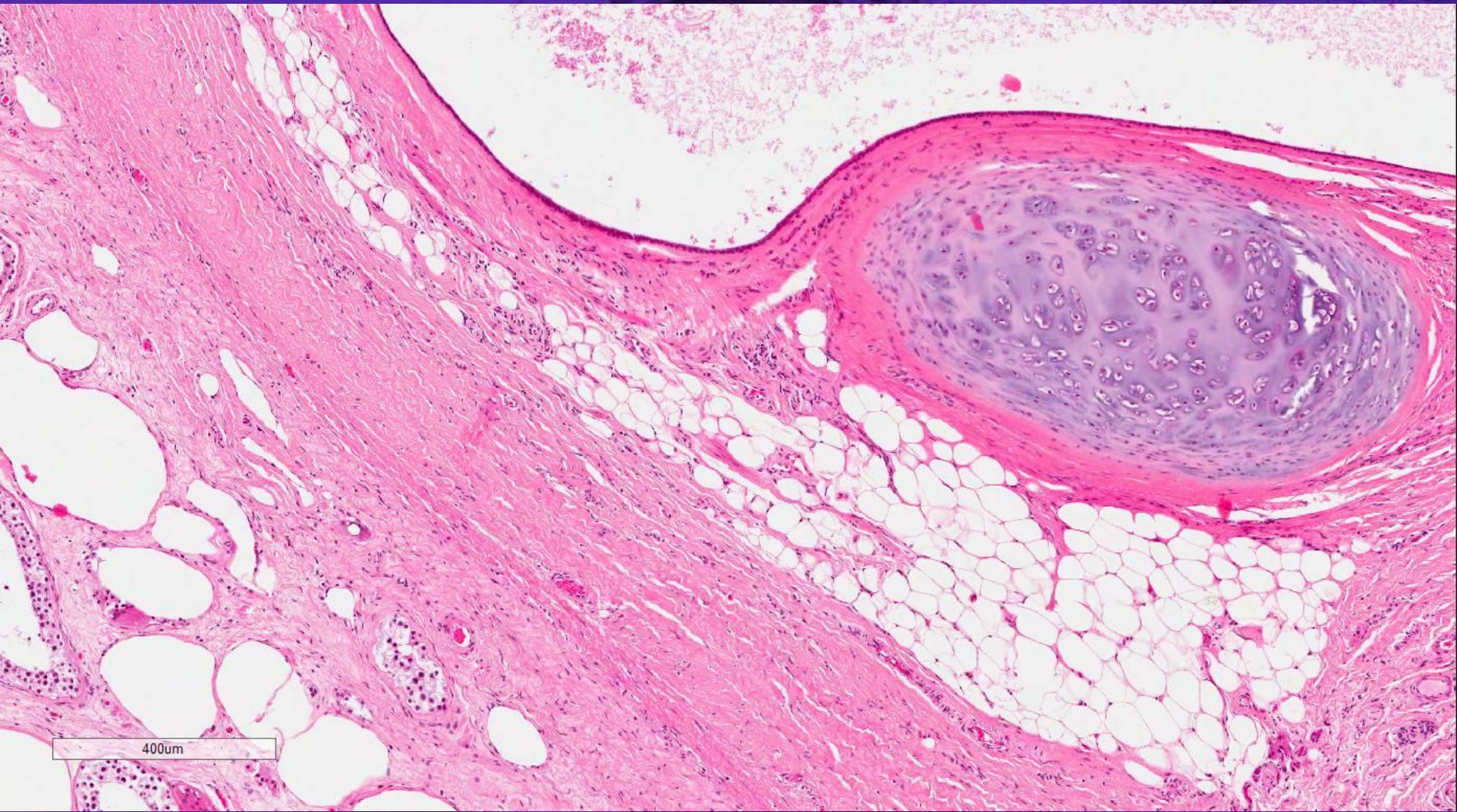








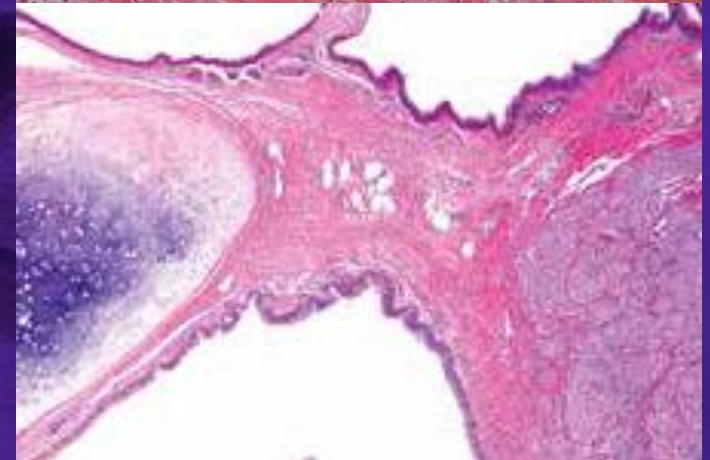
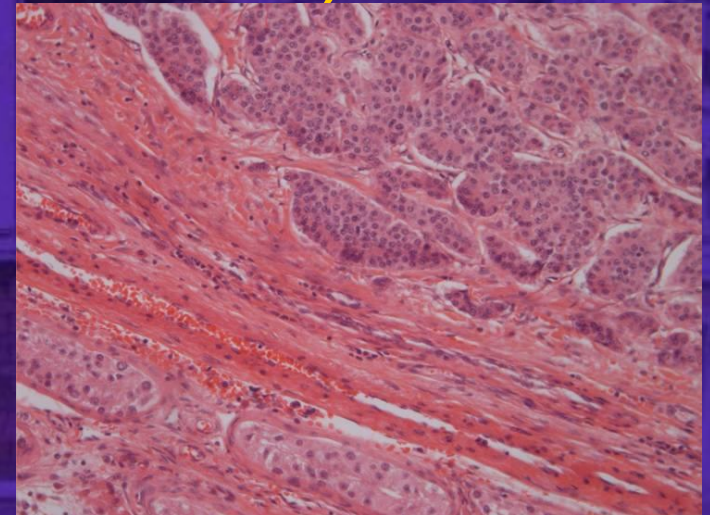
400um



400um

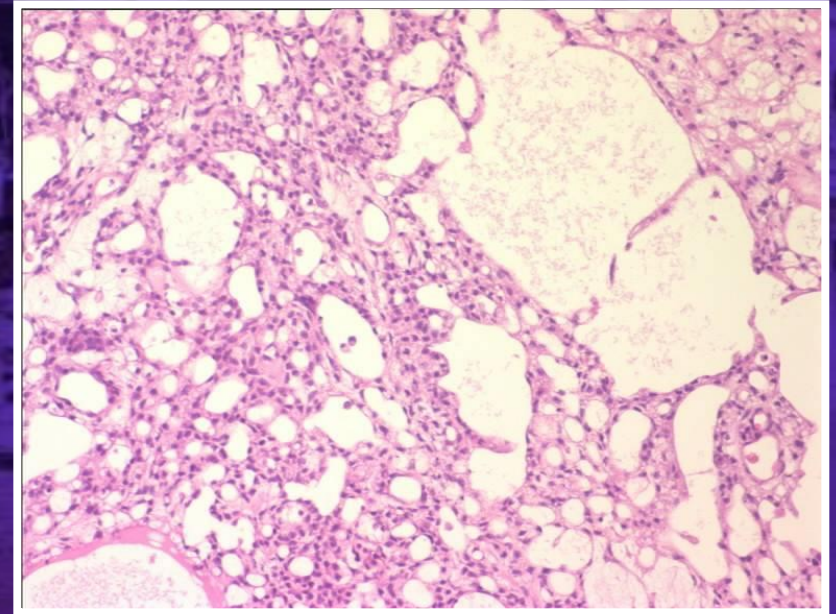
# Well differentiated neuroendocrine carcinoma (Monodermal teratoma)

Predominantly benign  
Mixed with teratoma  
Note mitoses



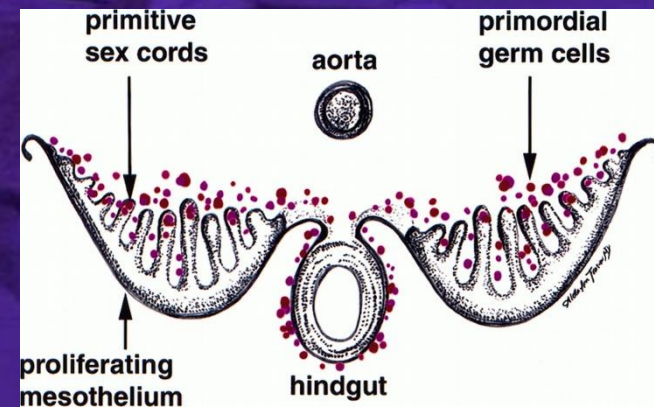
# Yolk sac tumour, prepubertal-type Mixed teratoma and yolk sac tumour, prepubertal-type

- V rare
- No GCNIS
- Metastatic disease does occur
- Survival approaches 100%



# Sex cord–stromal tumours

- Pure tumours
  - Leydig cell tumour
    - malignant
  - Sertoli cell tumour
    - Malignant
    - Large cell calcifying Sertoli cell tumour
    - Intratubular large cell hyalinizing Sertoli cell tumour
  - Granulosa cell tumour
    - Adult granulosa cell tumour
    - Juvenile granulosa cell tumour
  - Tumours in the fibroma-thecoma group
- Mixed and unclassified sex cord-stromal tumours
  - Mixed sex cord-stromal tumour
  - Unclassified sex cord-stromal tumour



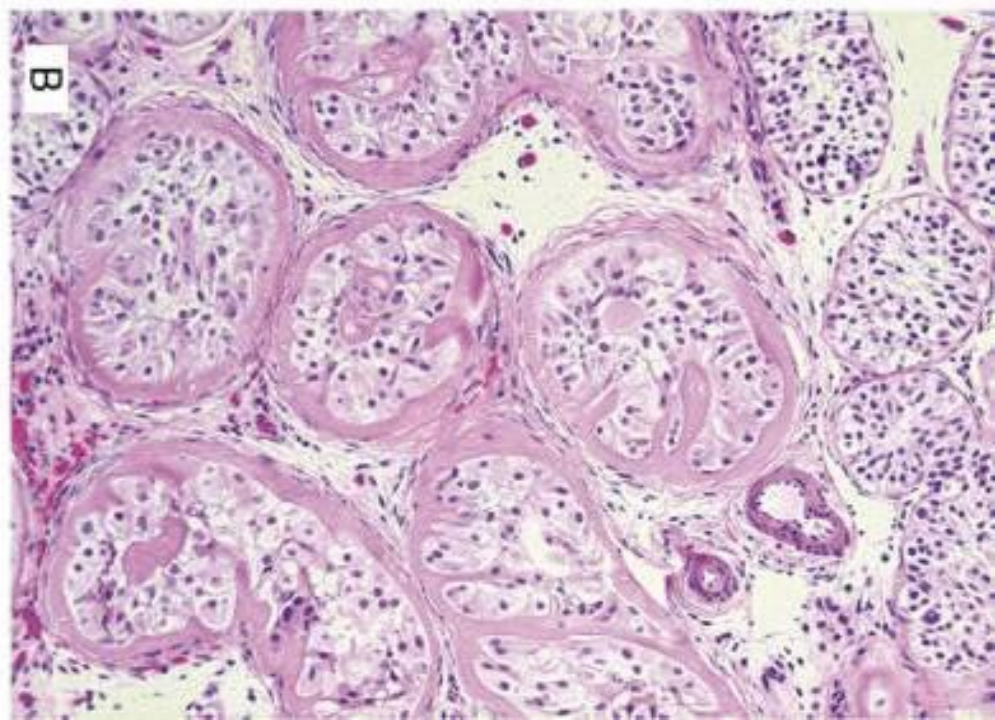
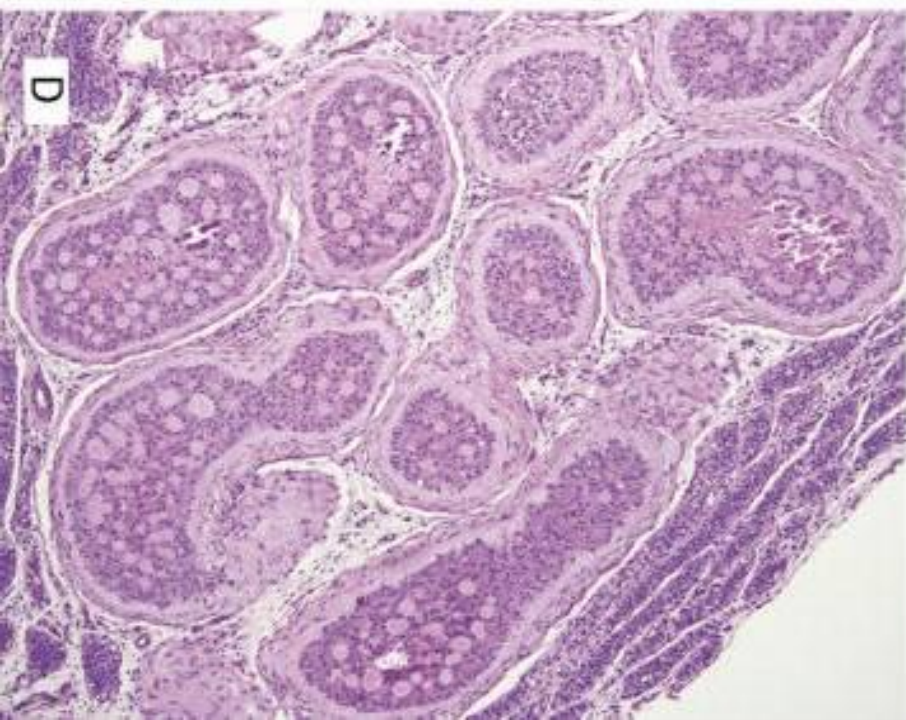
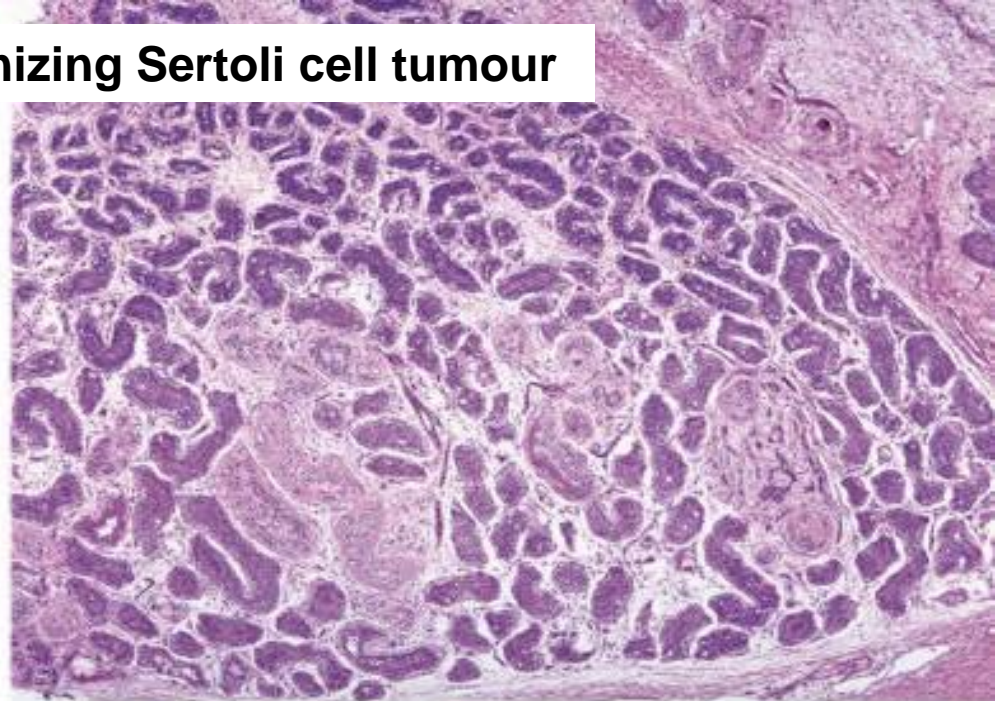


6mm

# Large cell calcifying Sertoli cell tumour

- Carney complex
  - myxomas
  - lentiginos
  - blue naevi
  - Cushing's 2ary to PANH
  - PRKAR1A germ line mutation

**Intratubular large cell hyalinizing Sertoli cell tumour**





# A new classification

- GCNIS
- Aligns with the pathogenesis of the disease
- Avoids dangers of mistreatment
- Accepted worldwide??...