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Gonadal Path Lab

Ovarian and Testicular Pathology

Stephen Ramsburgh, M.D., Richard Lieberman, M.D., F.A.C.O.G., F.C.A.P., Gerald Abrams, M.D.

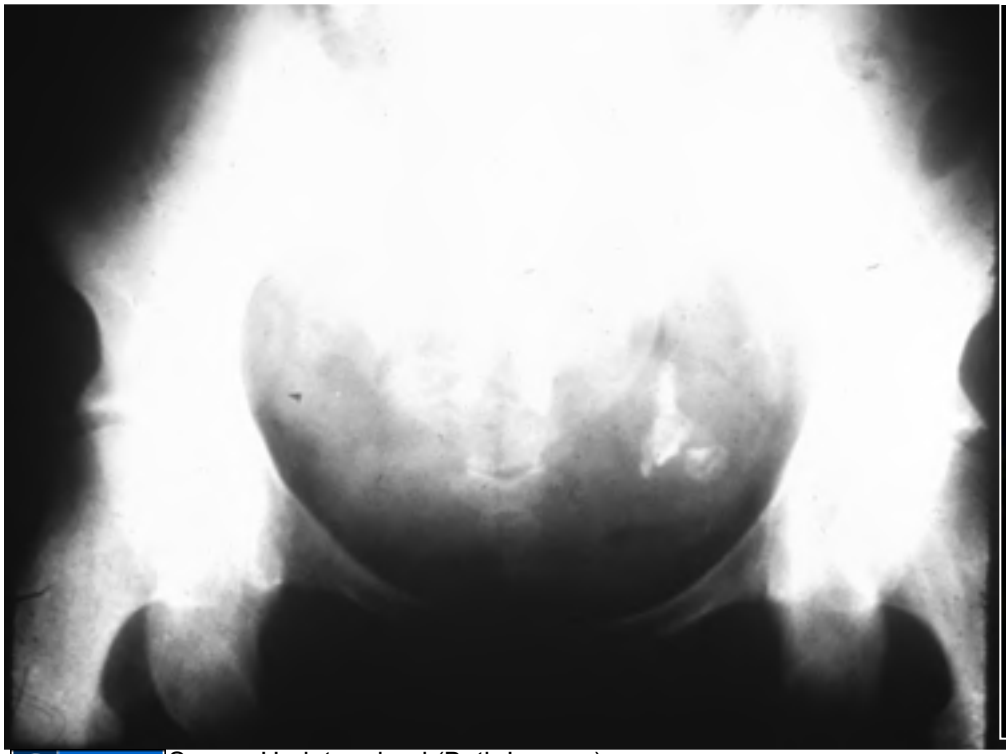
Winter
2009

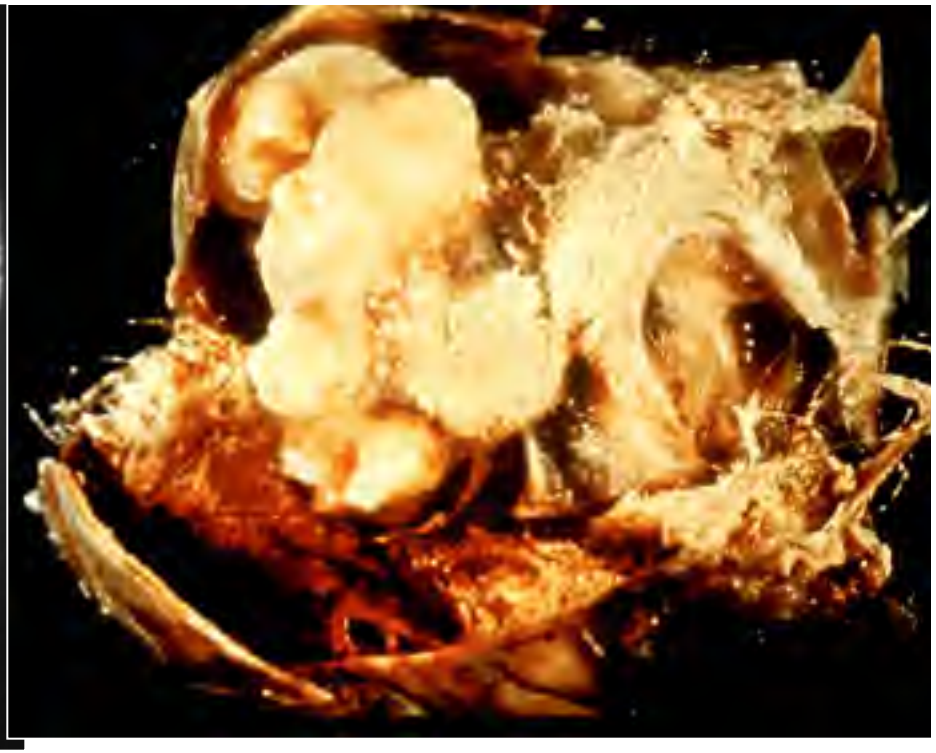
University of Michigan
Medical School

Ovary

18-year-old with an adnexal mass noted on her first pelvic examination. She relates no symptoms.

Benign Cystic Teratoma
Dermoid Tumor





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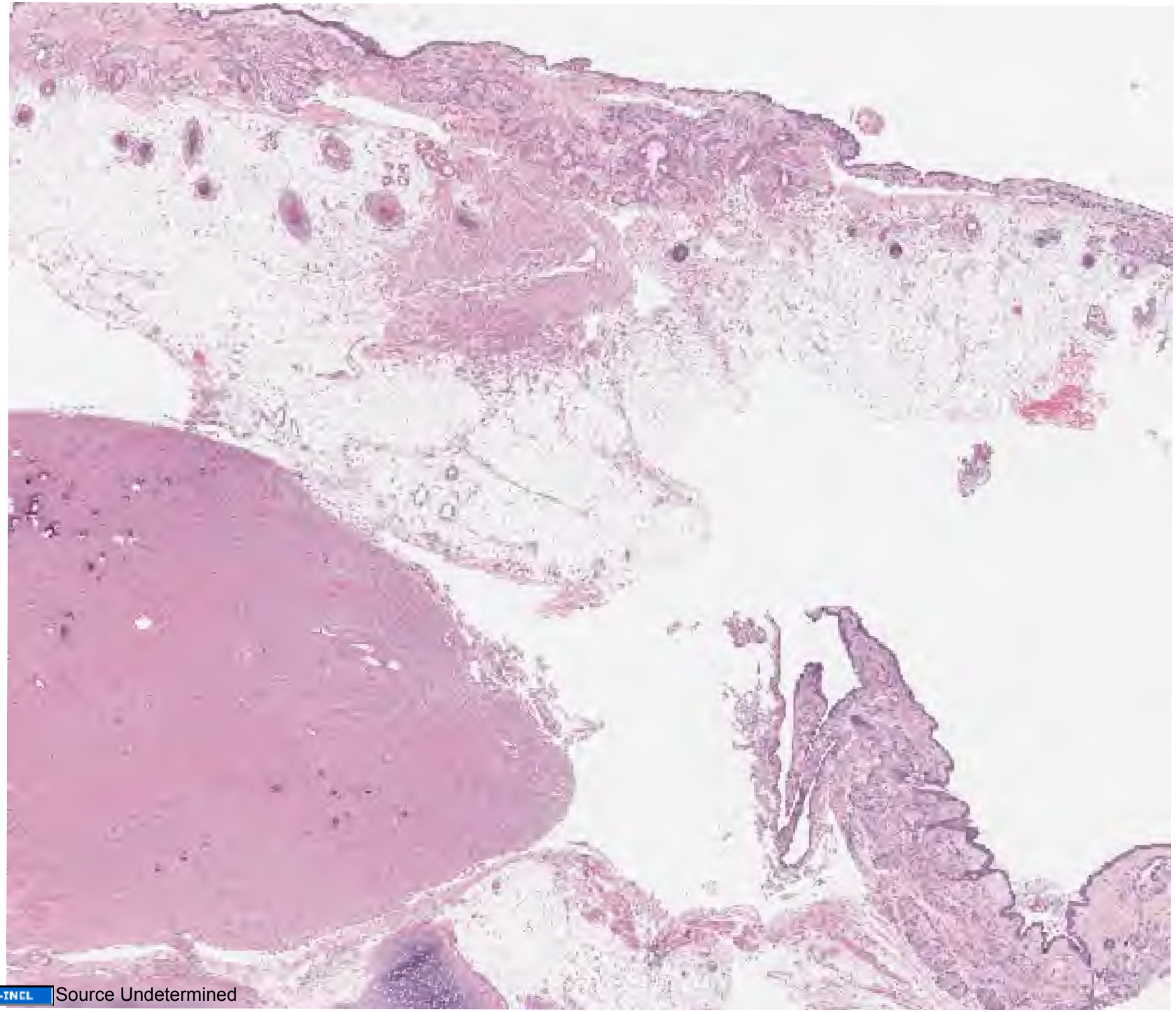
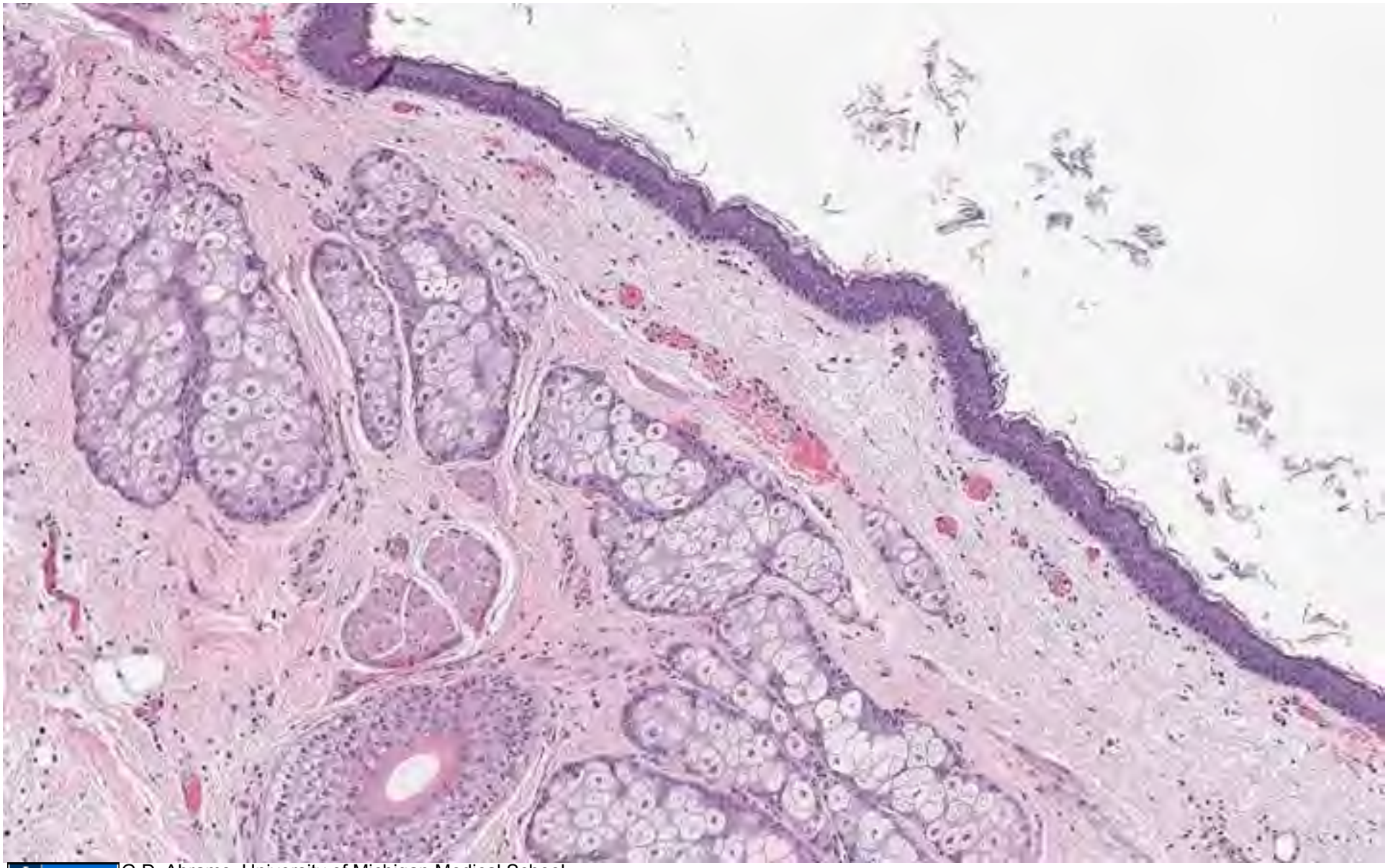
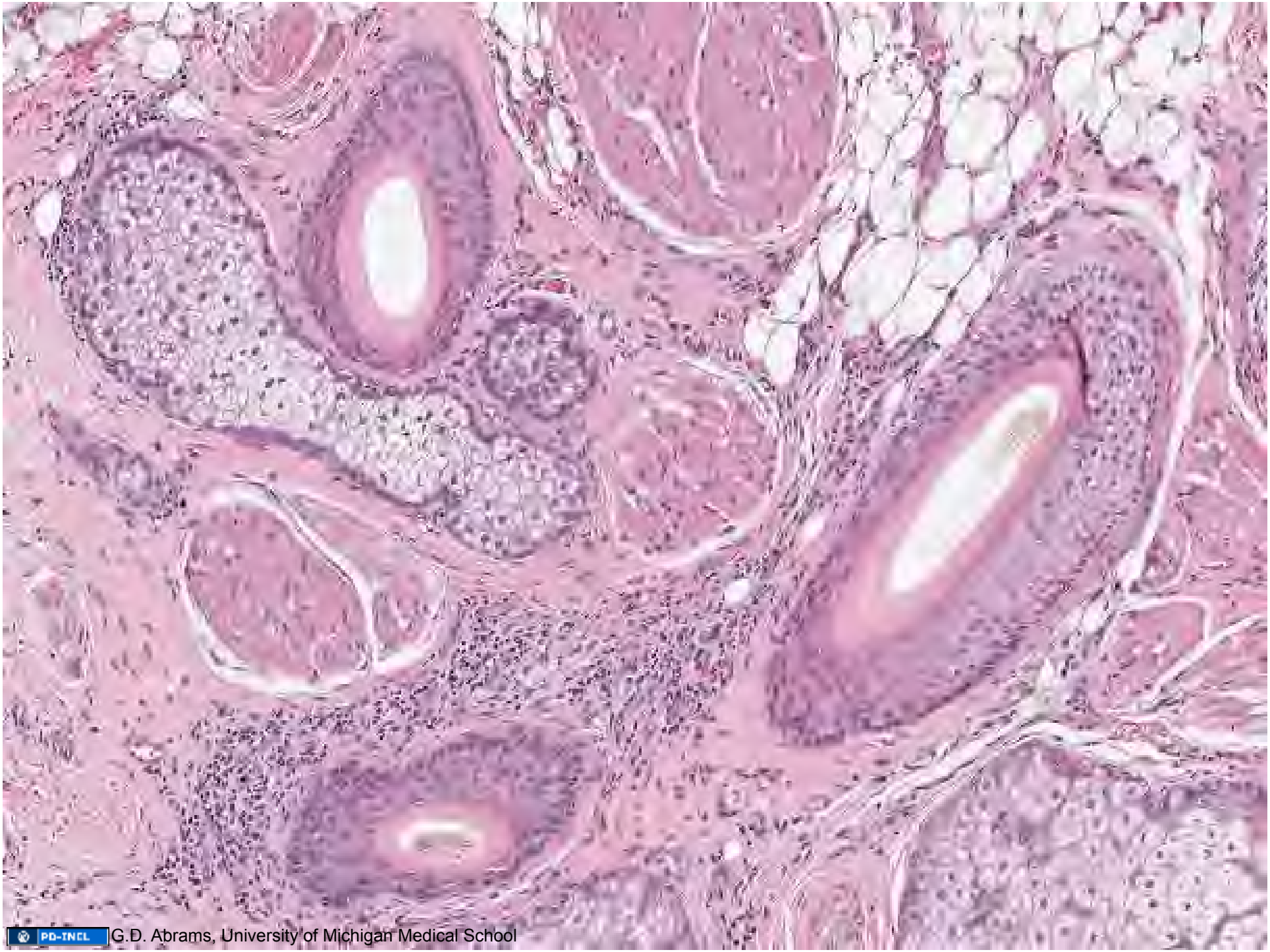
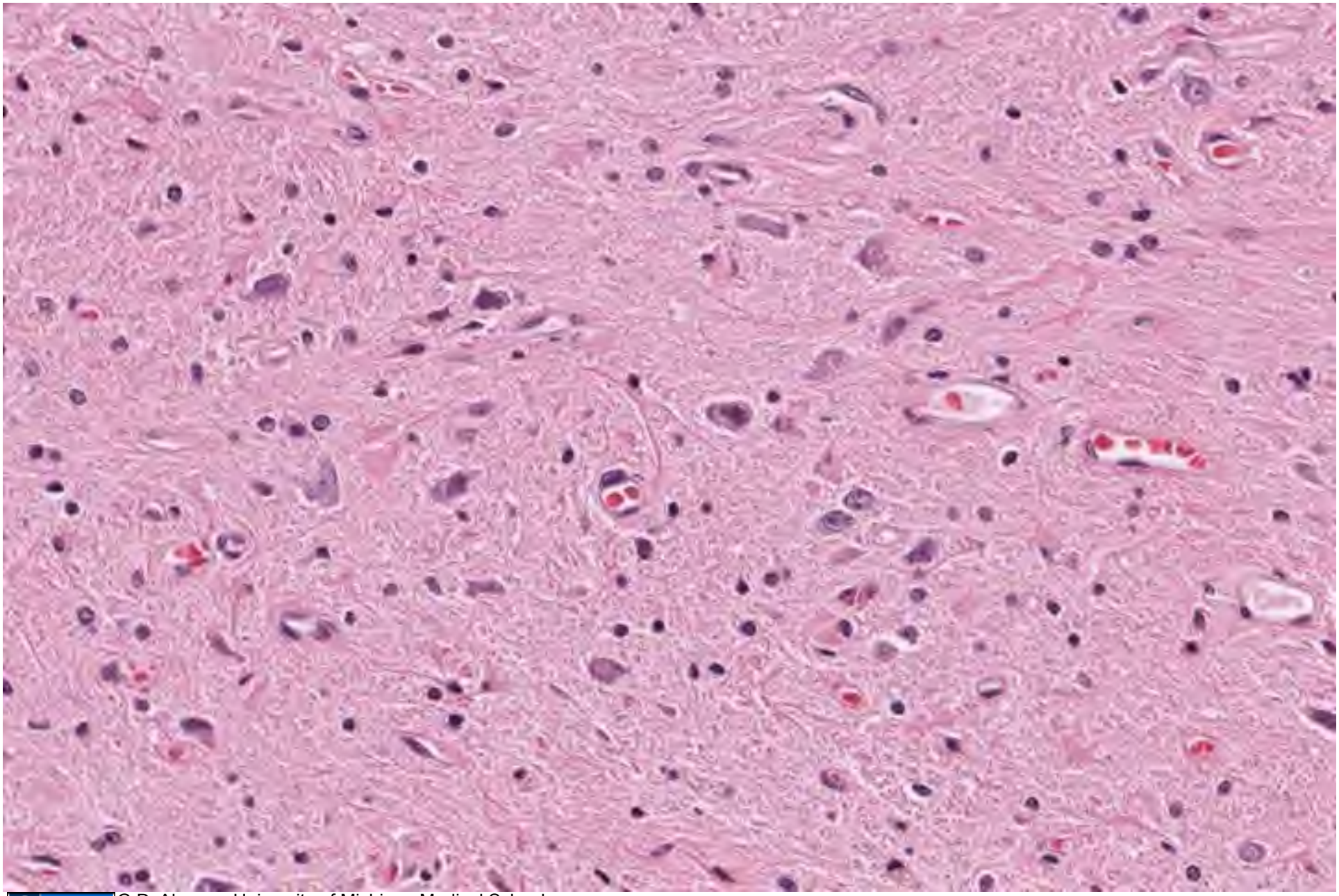
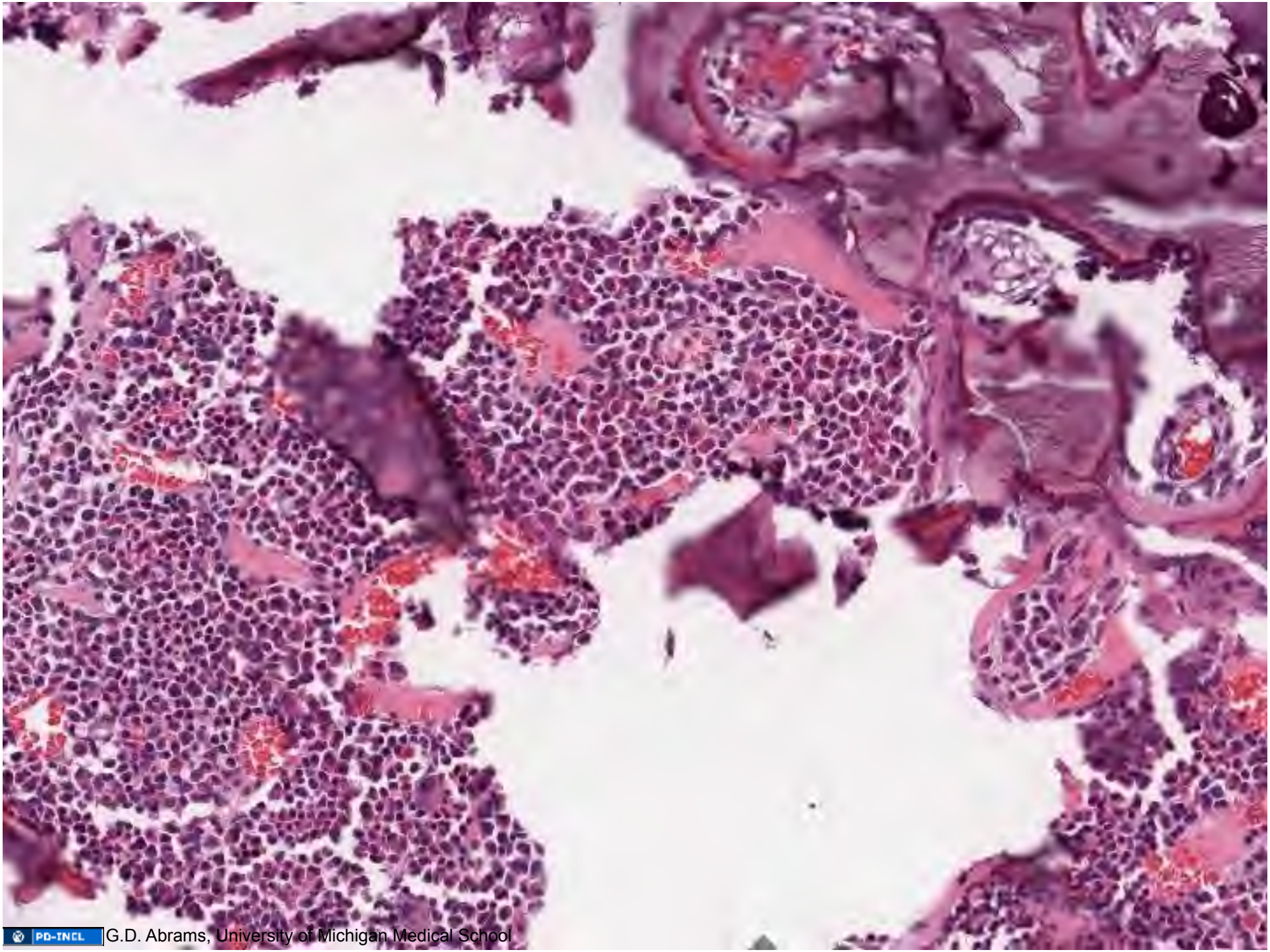
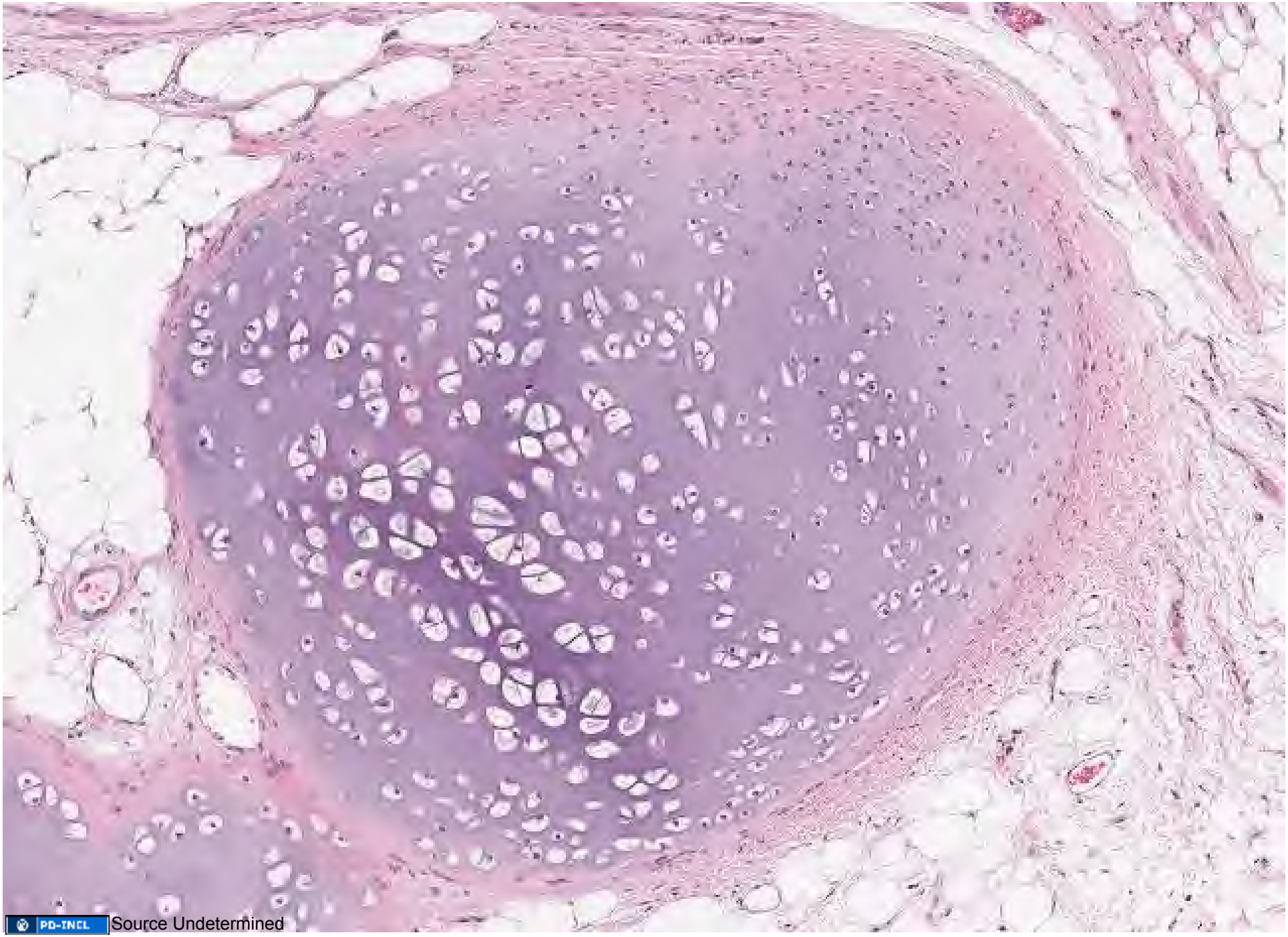


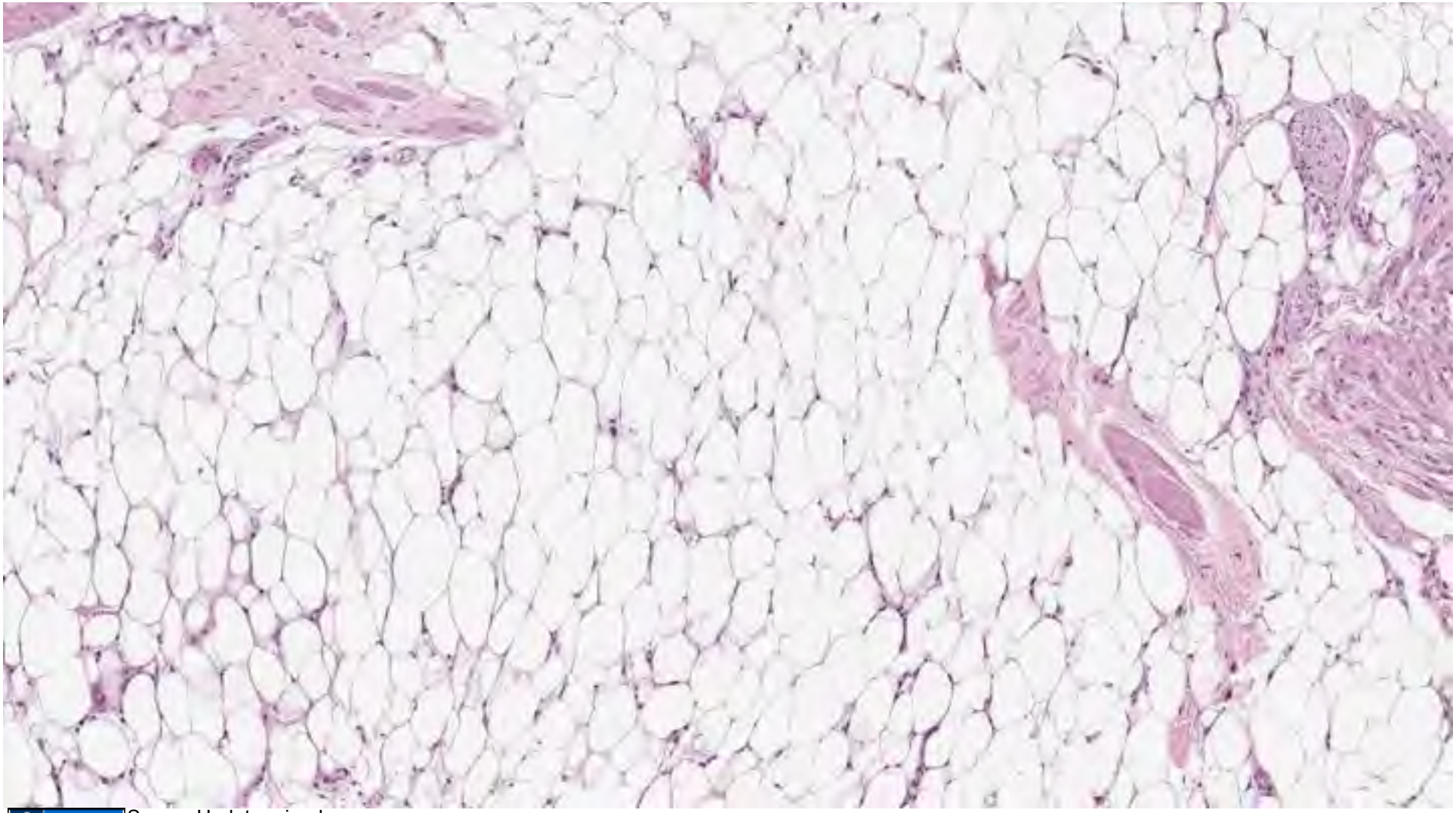


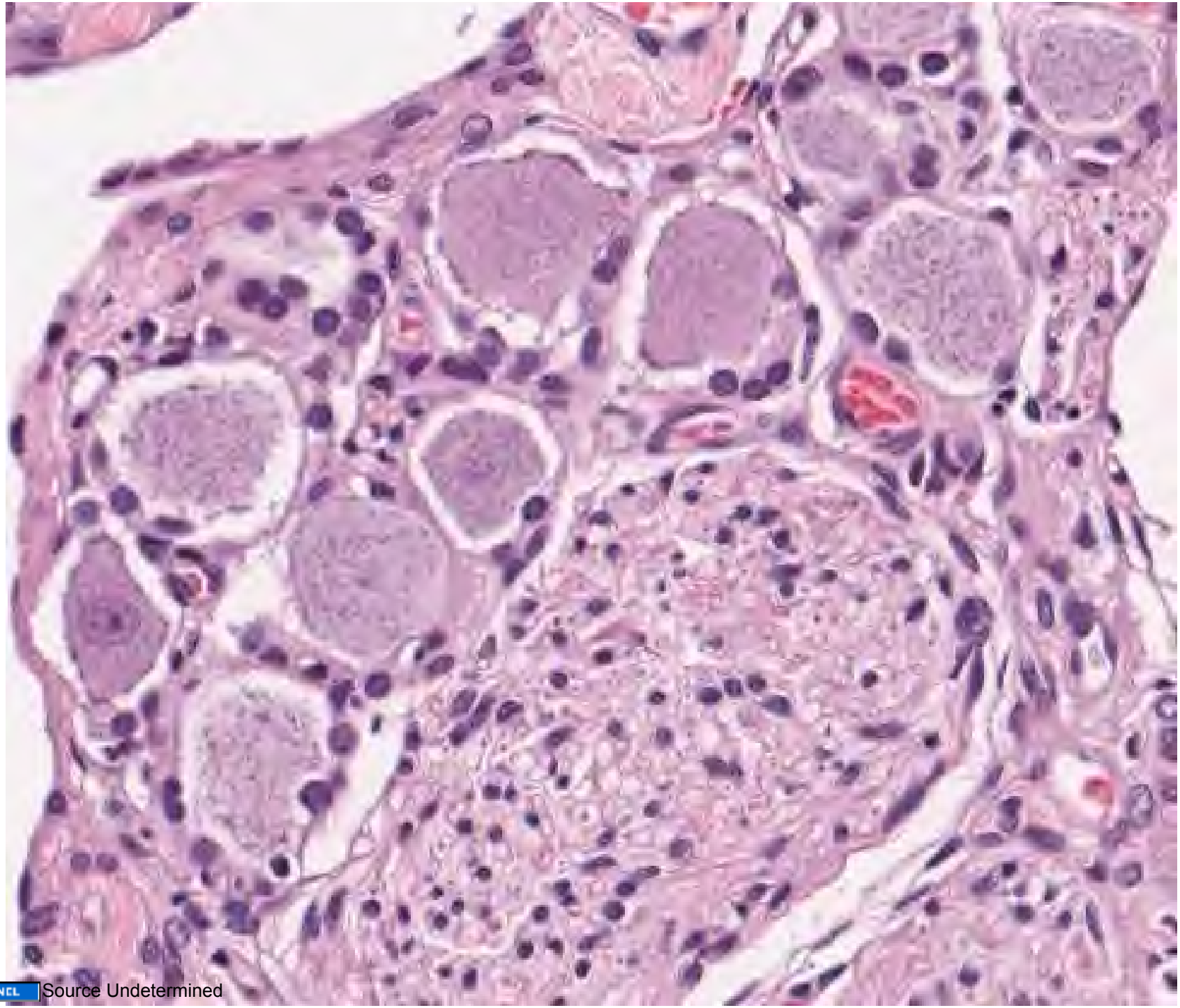












Benign Cystic Teratoma
Histologic Keys

One or more mature “-dermal” elements

- ectoderm (i.e., skin, hair, brain, etc.)
- mesoderm (i.e., bone, cartilage, etc.)
- endoderm (i.e., GI tract, respiratory, etc.)

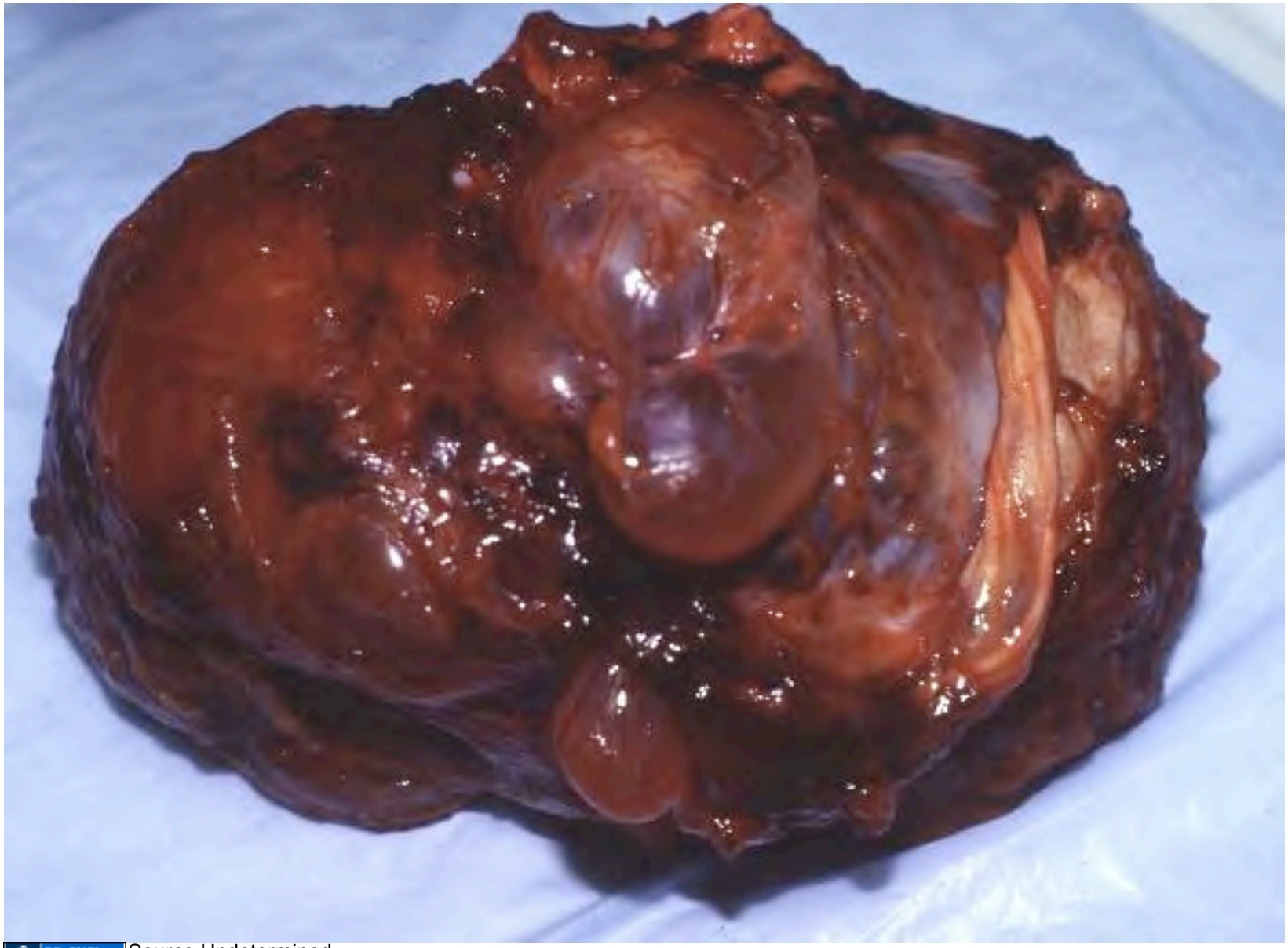
a.k.a. mature teratoma, dermoid cyst

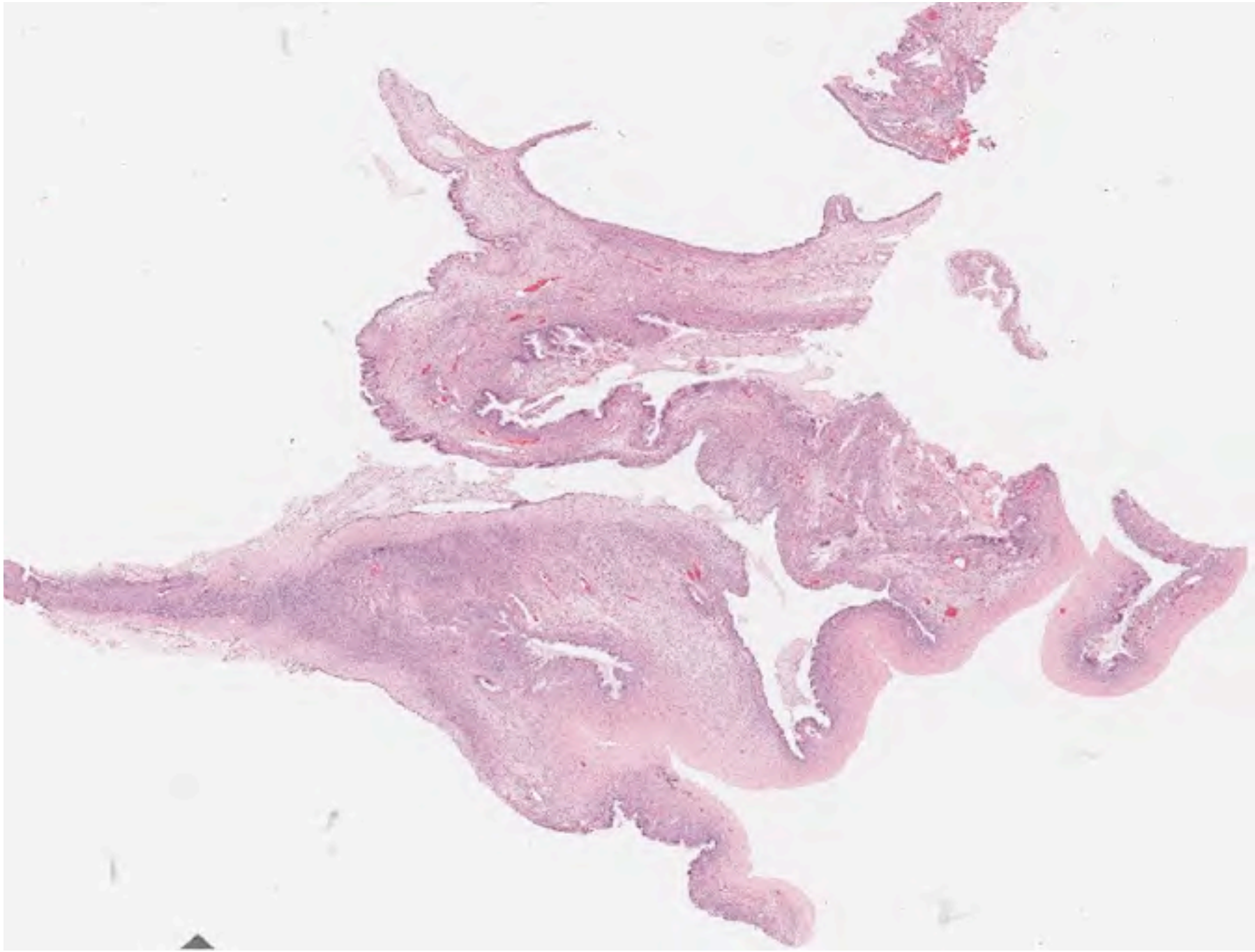
Ovary

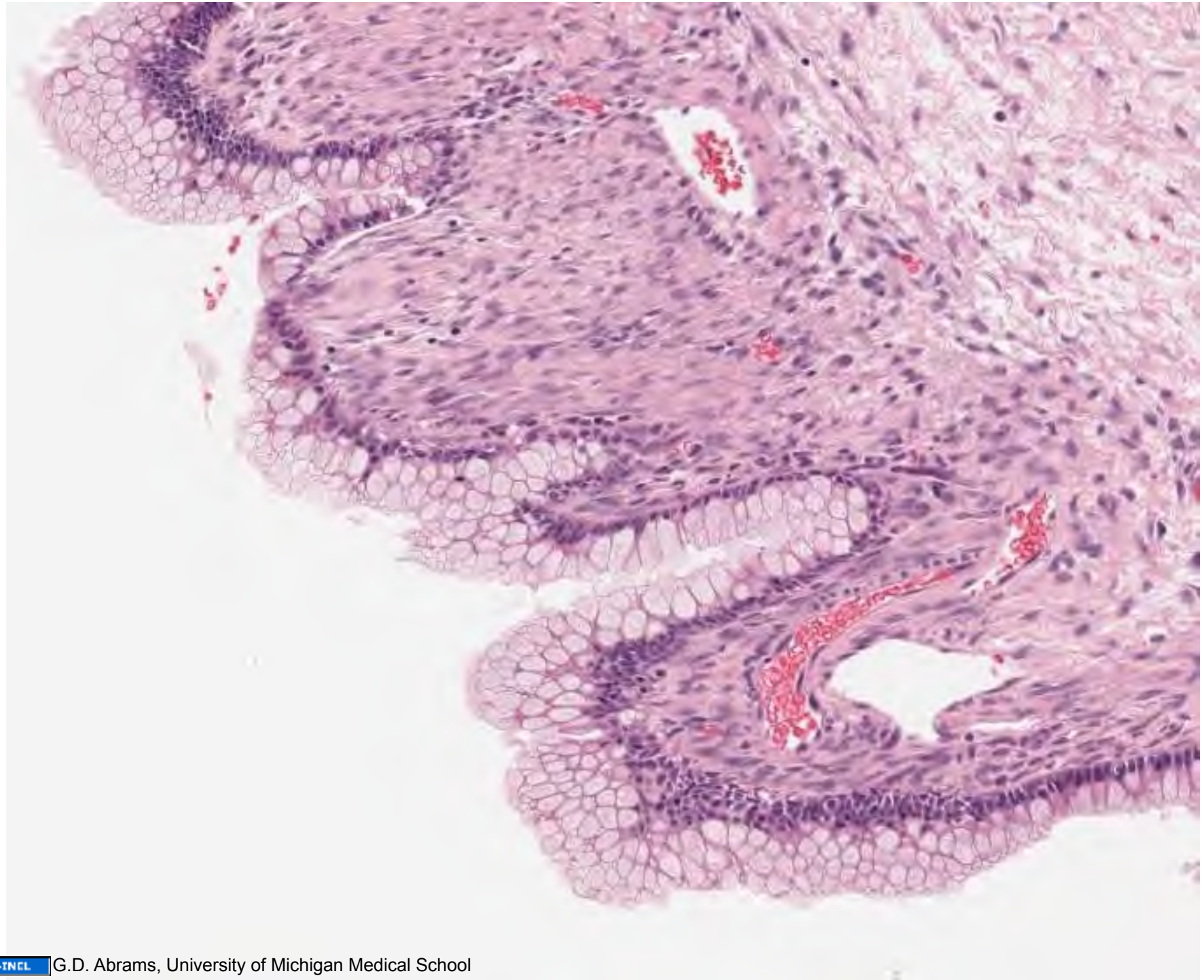
30-year-old with a protuberant abdomen and
50 pound weight gain over two years. A large, smooth-walled, multiloculated ovarian cyst is removed, filled with mucoid material.

Mucinous Cystadenoma

surface epithelial tumor







Mucinous Cystadenoma Histologic Keys

Multiloculated cysts lined by mucin producing epithelium

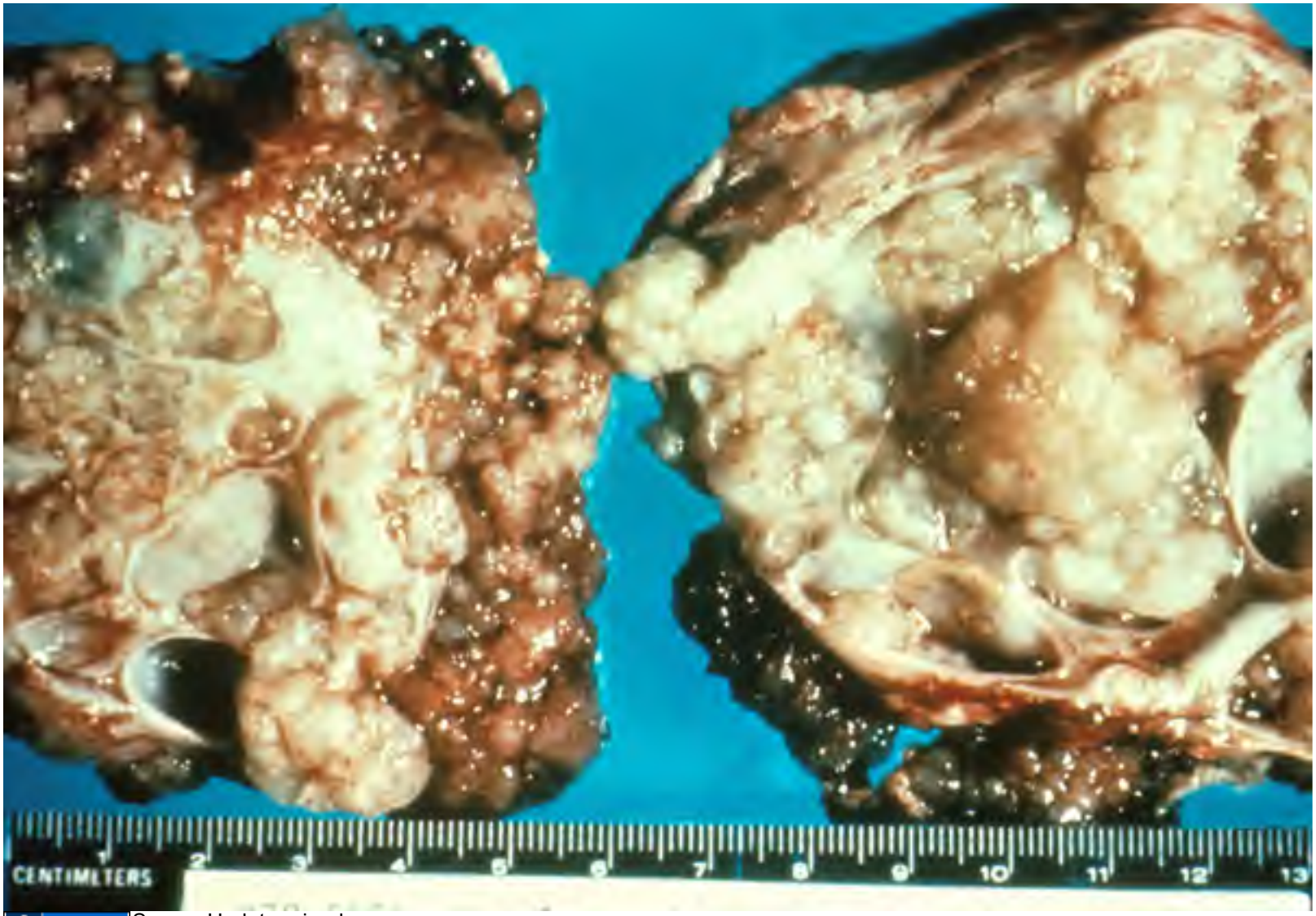
- gastrointestinal-type lining
  - (gastric antral in this case)
- basal, inconspicuous nuclei
- no “atypia”

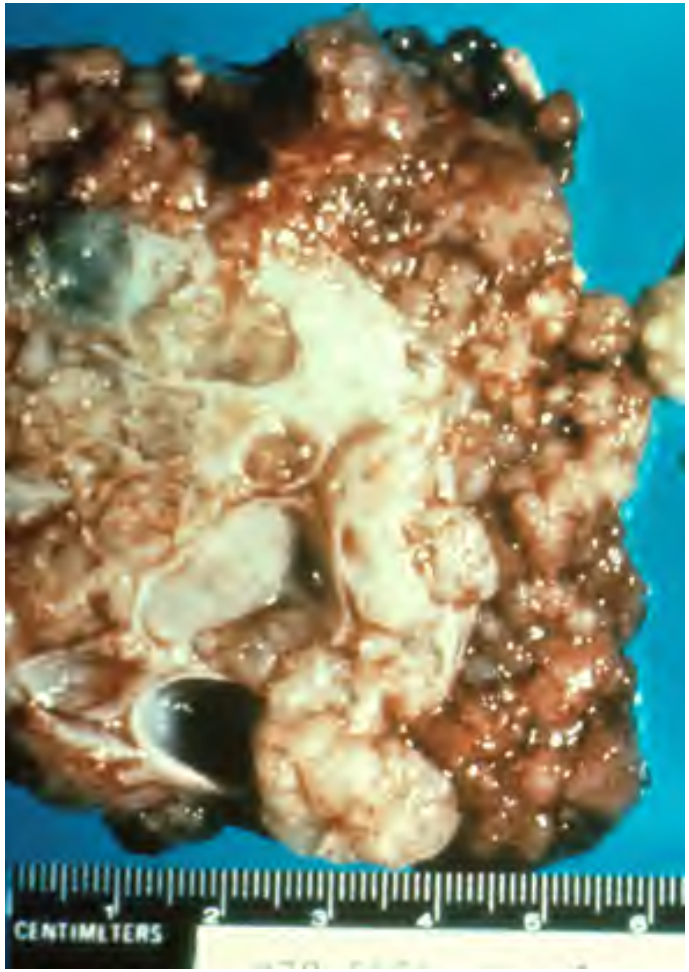
Ovary

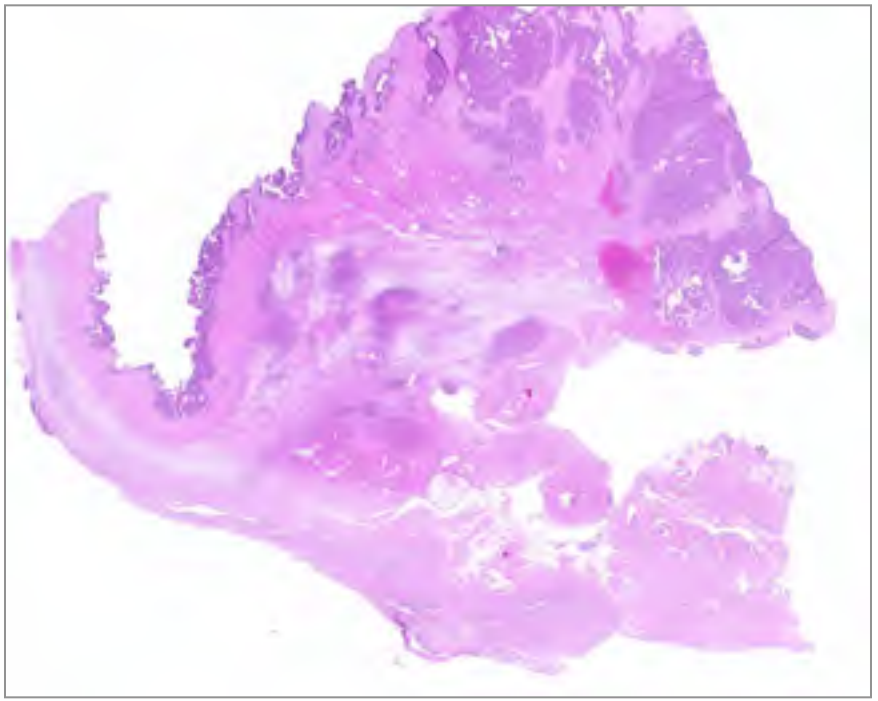
A 52-year-old presents with an elevated CA-125. On physical exam she has ascites and a pelvic-abdominal mass.

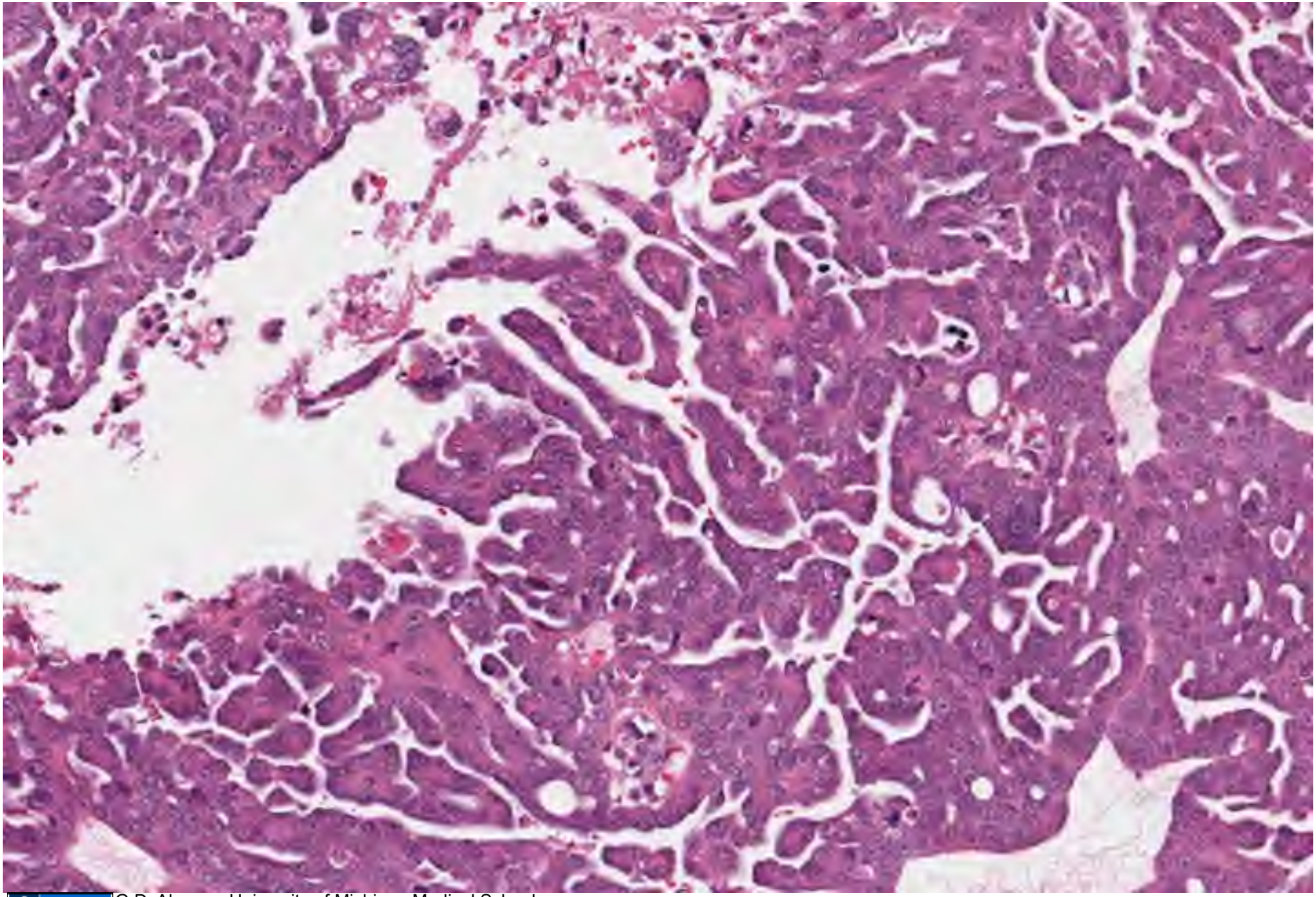
Papillary Serous Cystadenocarcinoma

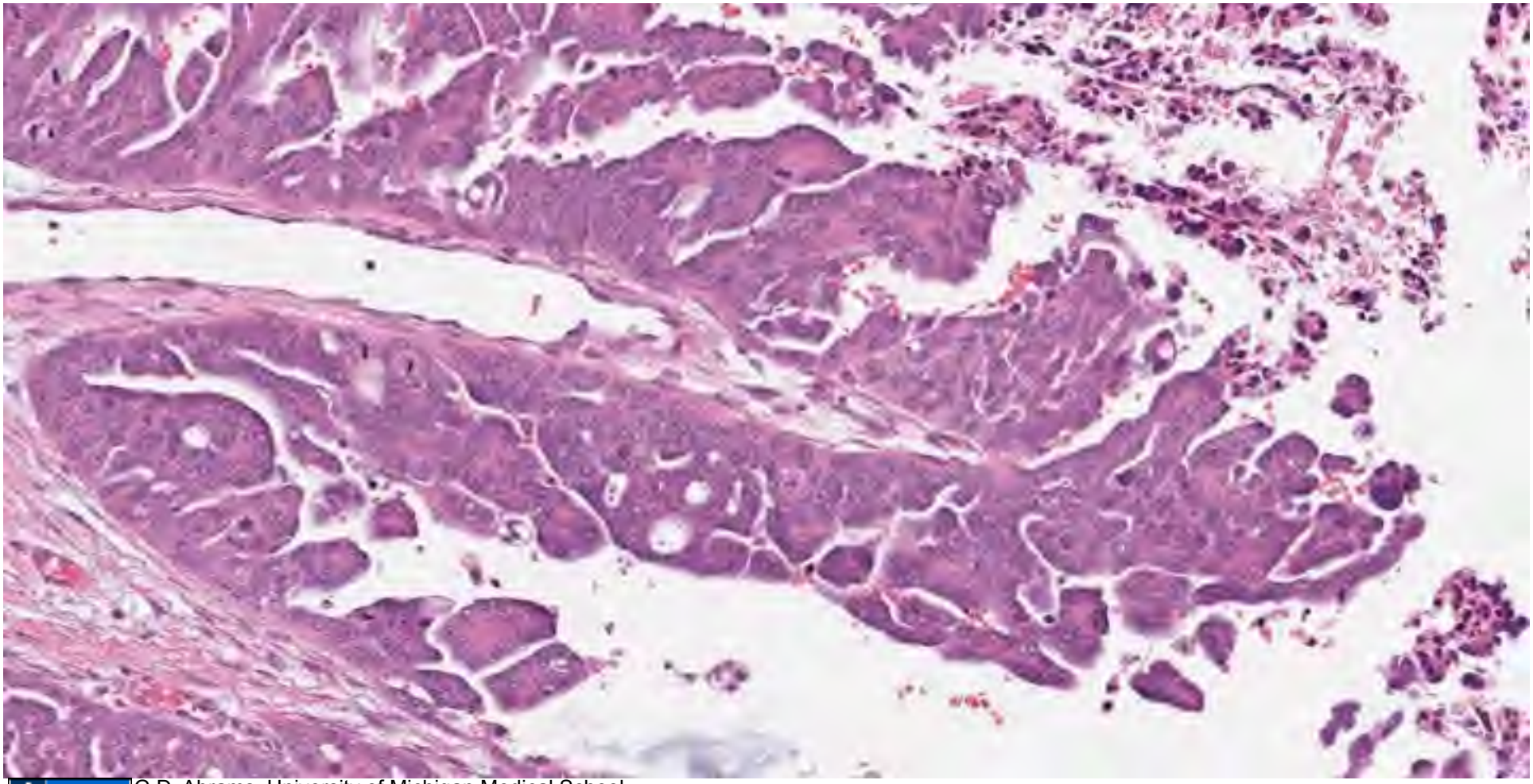
surface epithelial tumor











Ovarian Serous Carcinoma Histologic Keys

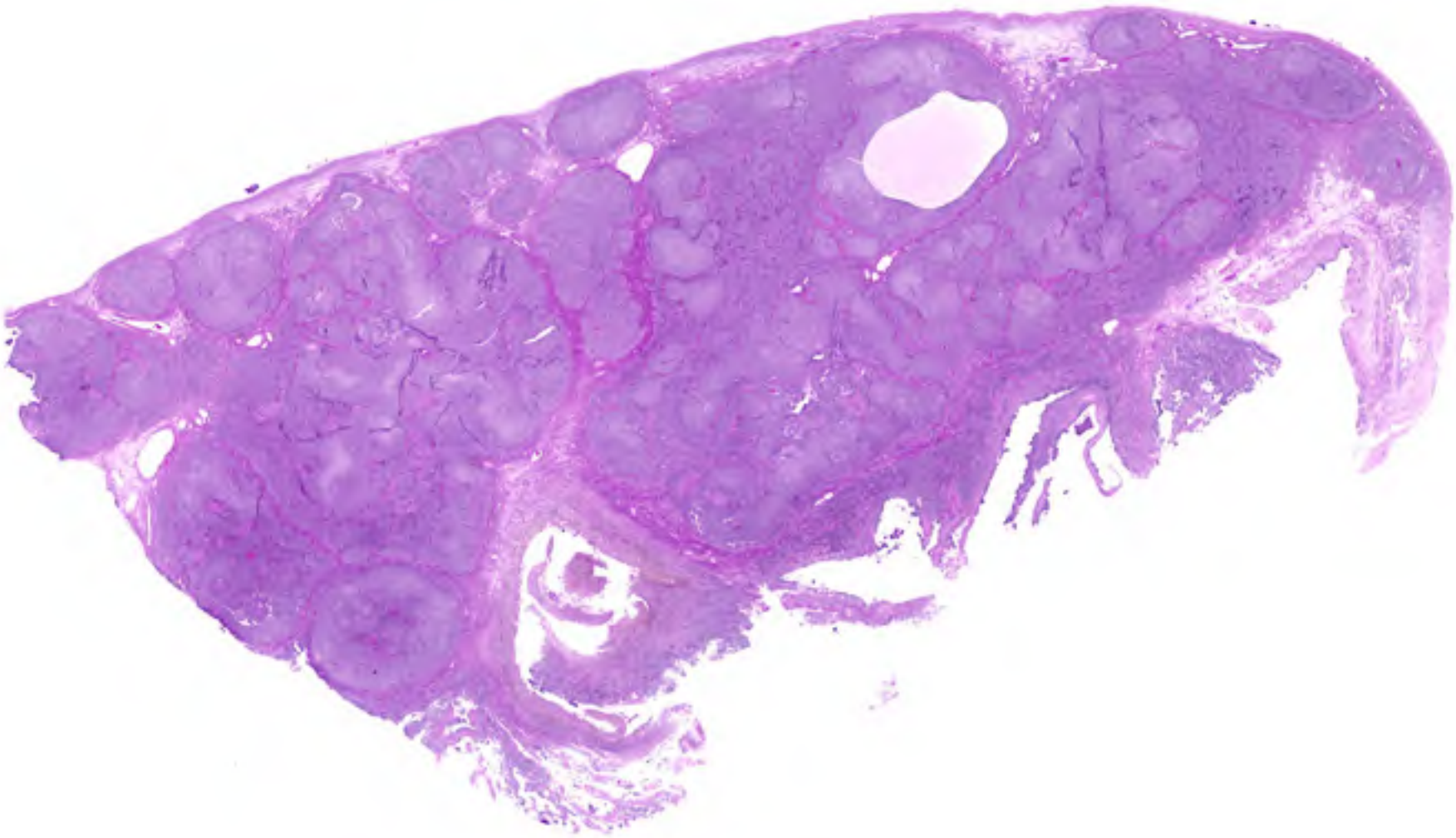
- papillary architecture
  - lined by cytologically malignant “serous” epithelium
  - papilla = finger-like projection, often on a fibrovascular core
- papillary exfoliation
  - small 3-D clusters pinched off the tips of the papillae
  - may or may not see psammoma bodies
- “destructive stromal invasion” = carcinoma
  - desmoplasia in ovarian stroma

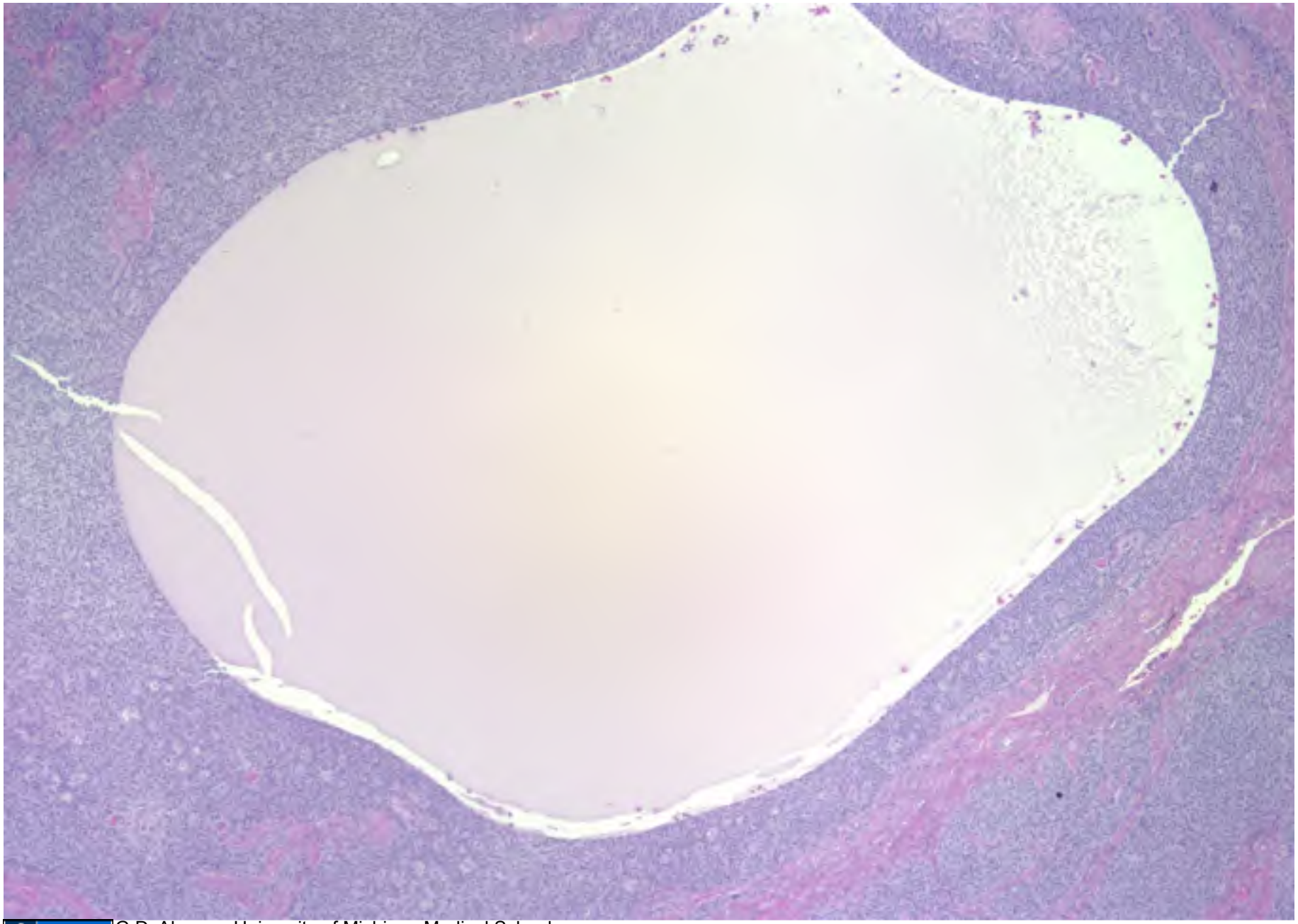
Ovary

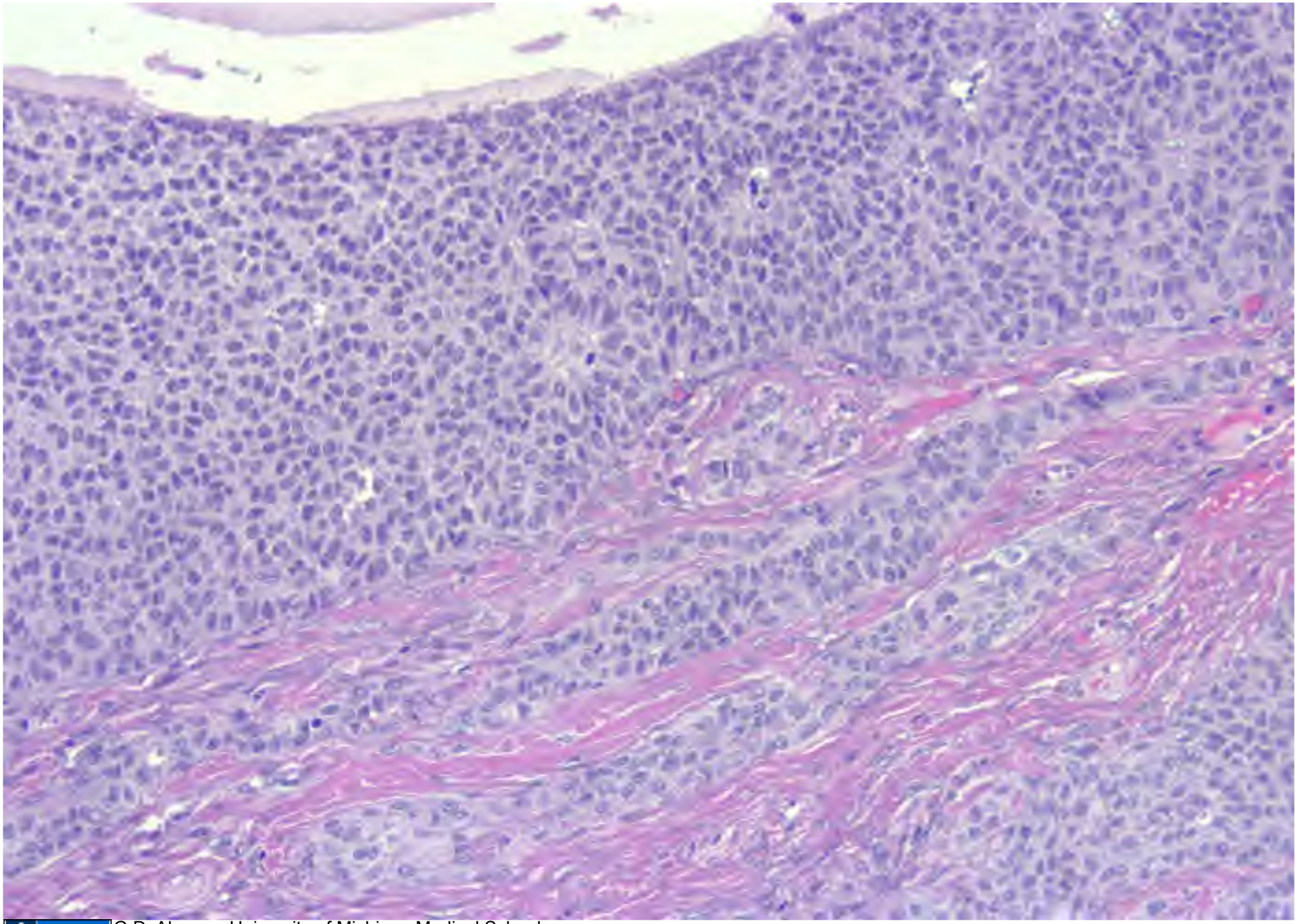
50-year-old with an endometrial biopsy demonstrating hyperplasia. A hysterectomy was performed and an incidental enlargement of the left ovary was noted. Cut section revealed a solid-yellow tumor with areas of hemorrhage. (See Slide 137 from Uterine Lab.)

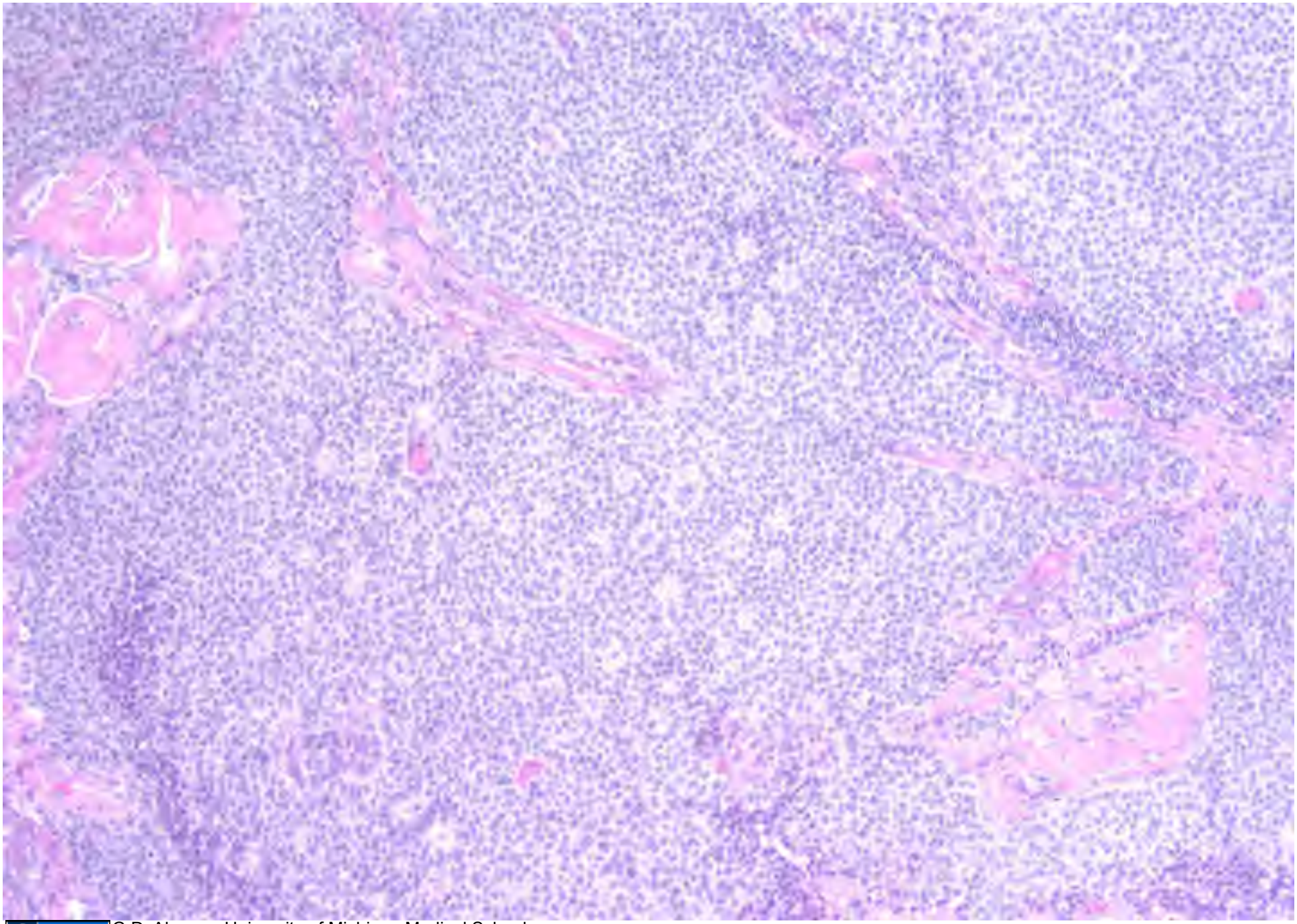
Granulosa Cell Tumor

Sex cord-stromal tumor

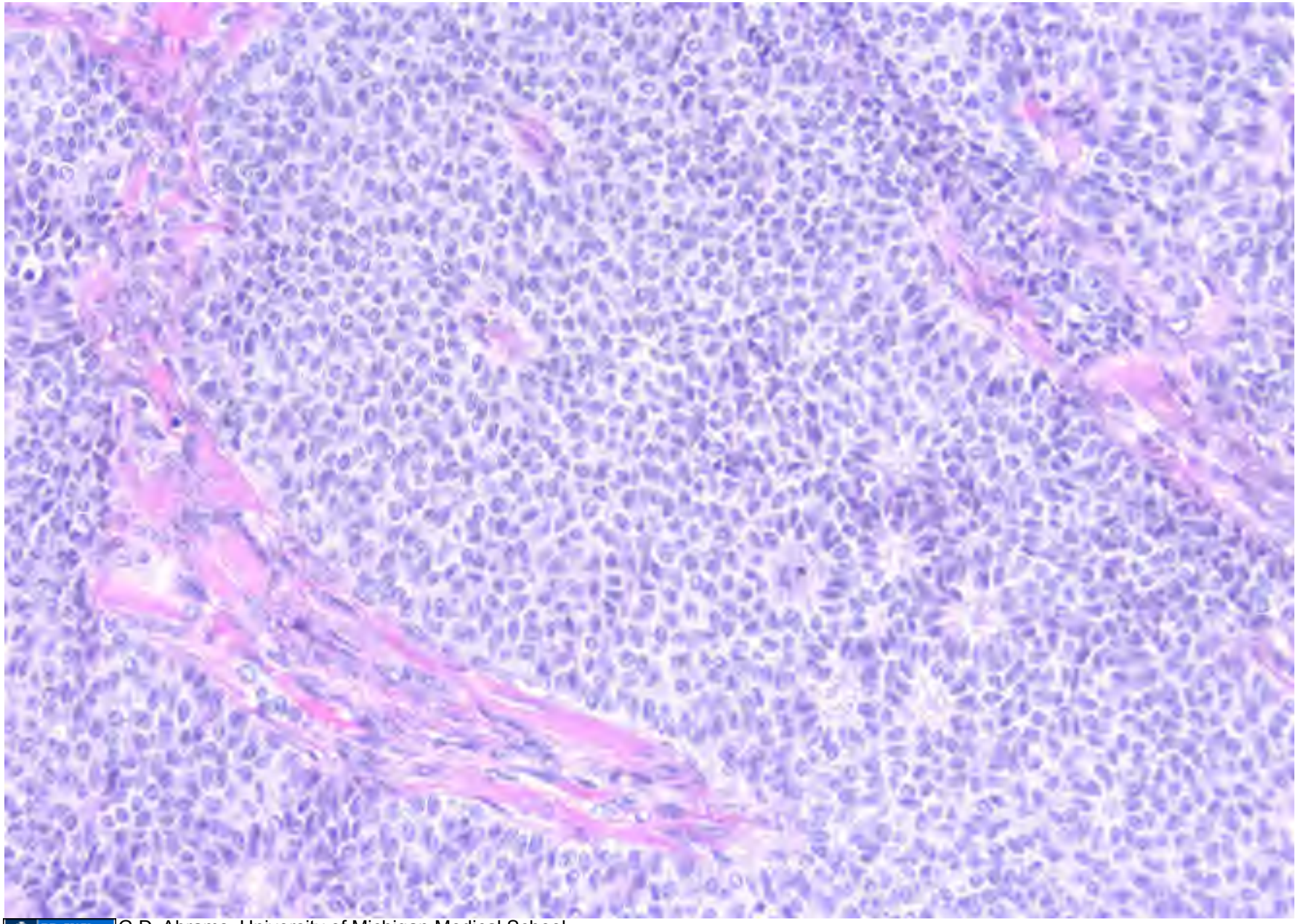


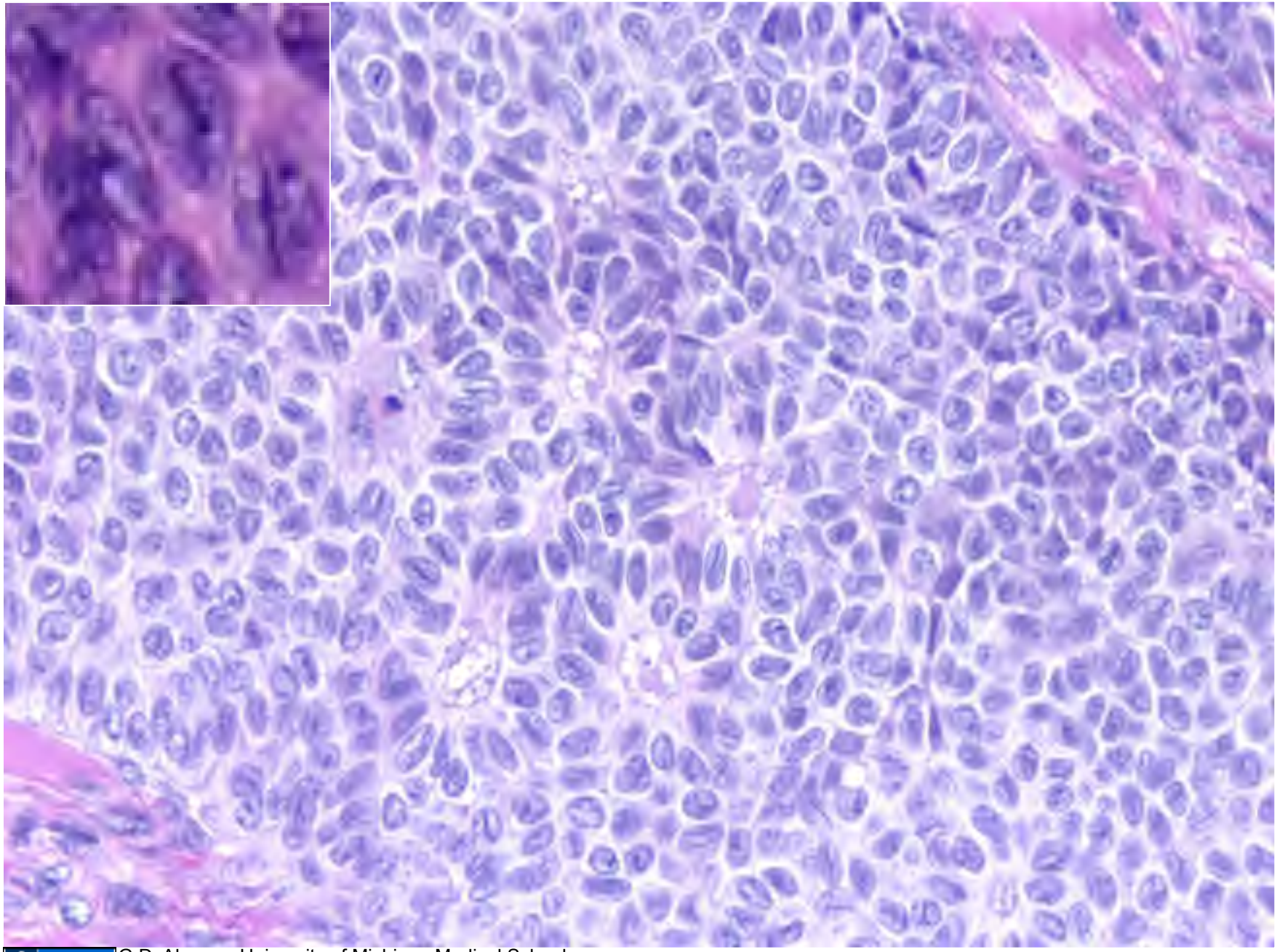






 G.D. Abrams, University of Michigan Medical School





Granulosa Cell Tumor
Histologic Keys

"Solid" tumor of granulosa cells

- "blue cells" with areas of hemorrhage & necrosis
- microfollicular pattern = **Call-Exner** bodies
- nuclear grooves - "coffee bean nuclei"

Estradiol & Inhibin are tumor serum markers

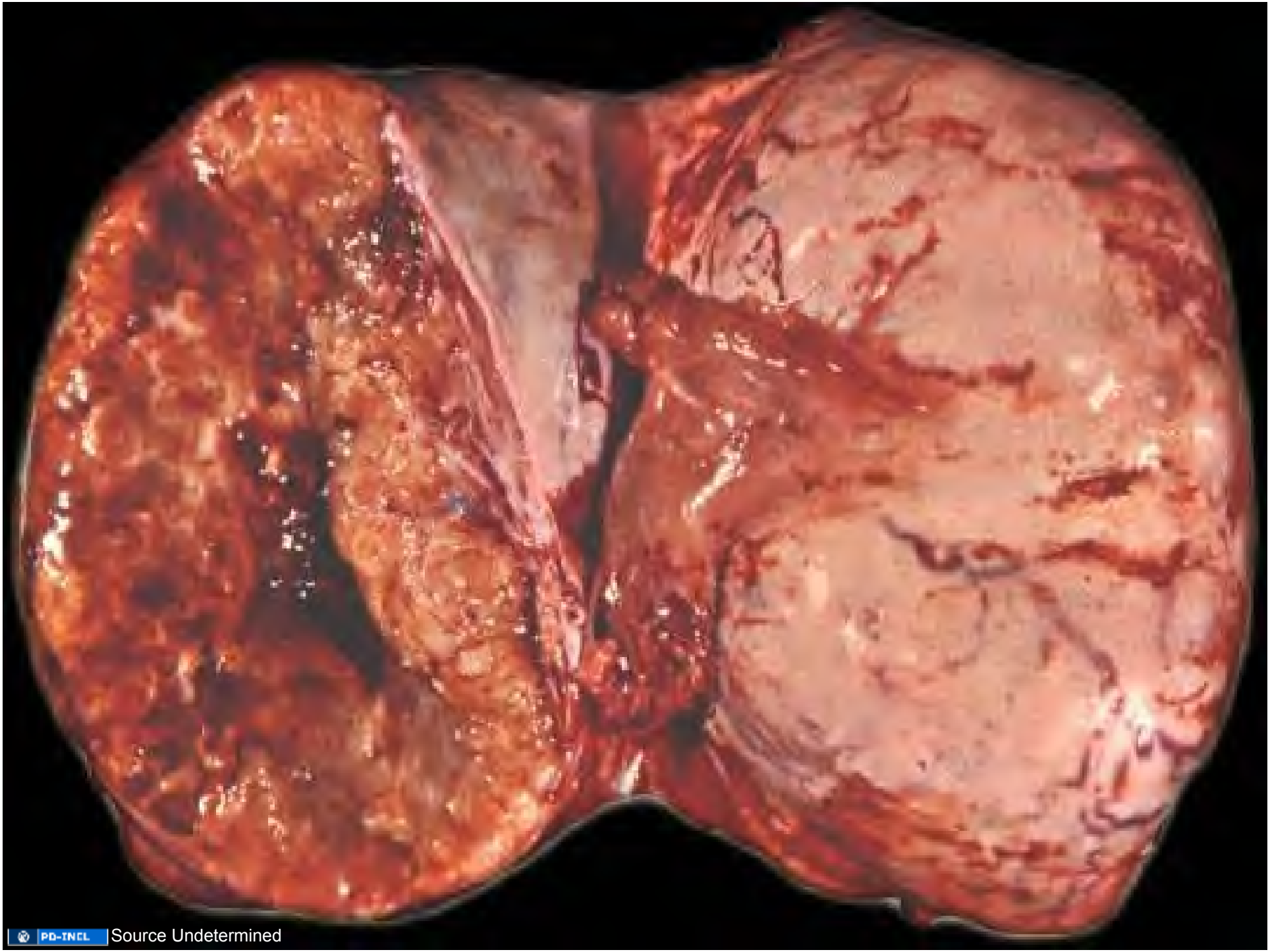
Ovary

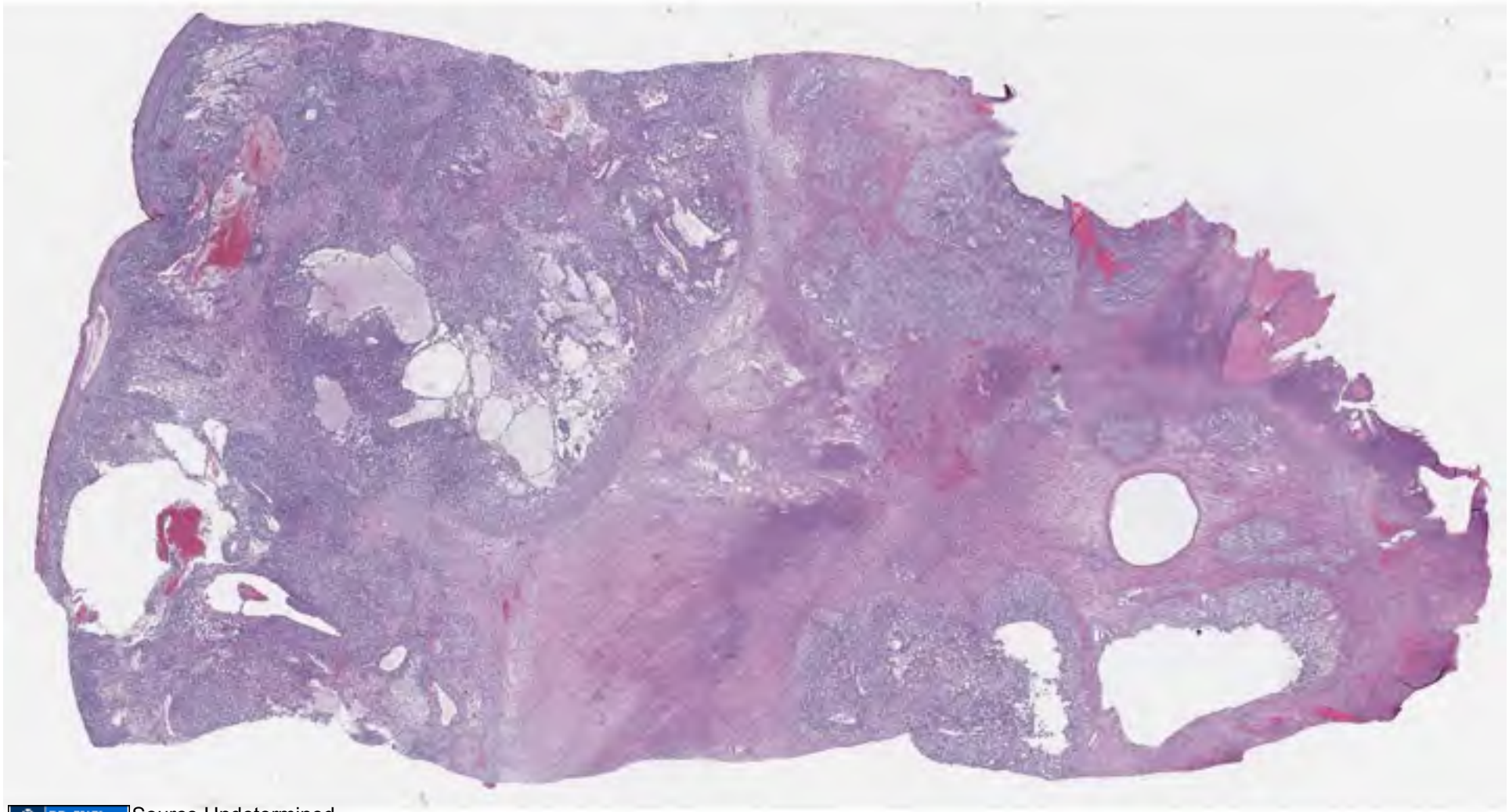
18-year-old with abdominal pain. A solid pelvic mass is noted on sonography. Serum AFP is elevated. Serum ß-hCG is negative. CA-125 is slightly elevated.

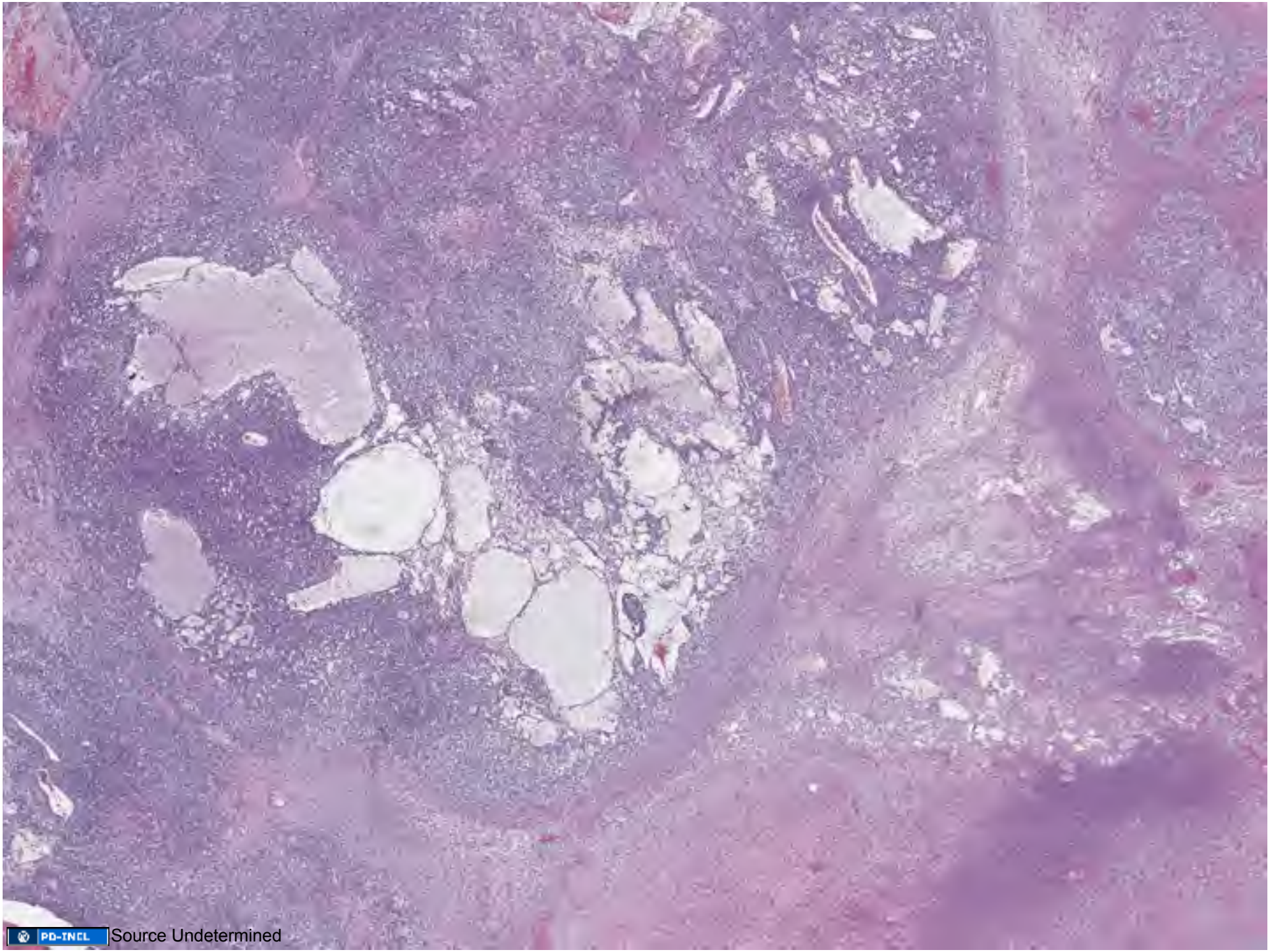
A unilateral ovarian mass is noted at surgery with no evidence of extra-ovarian pathology. The tumor is 15cm, solid with hemorrhage.

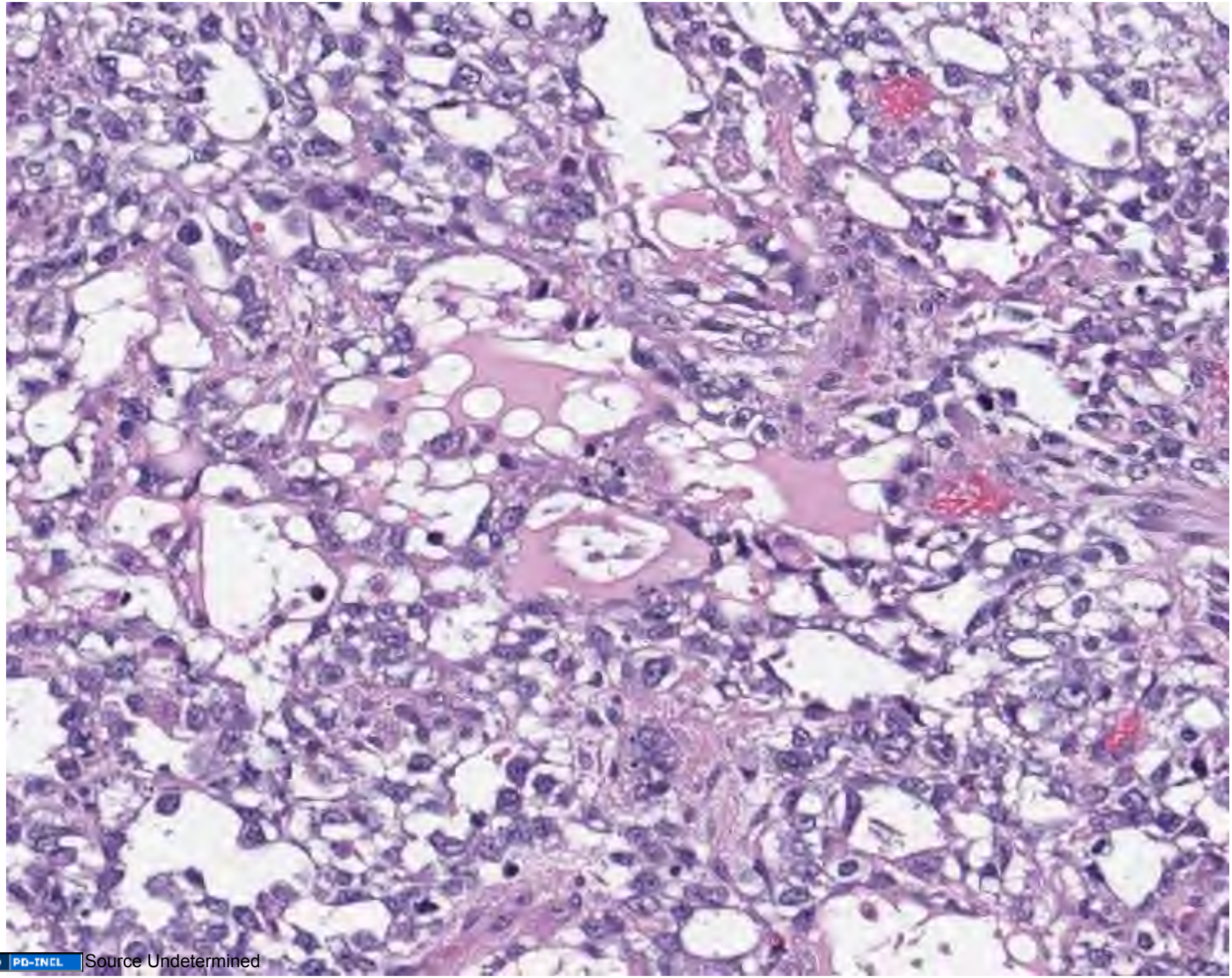
Endodermal Sinus Tumor
Yolk Sac Tumor

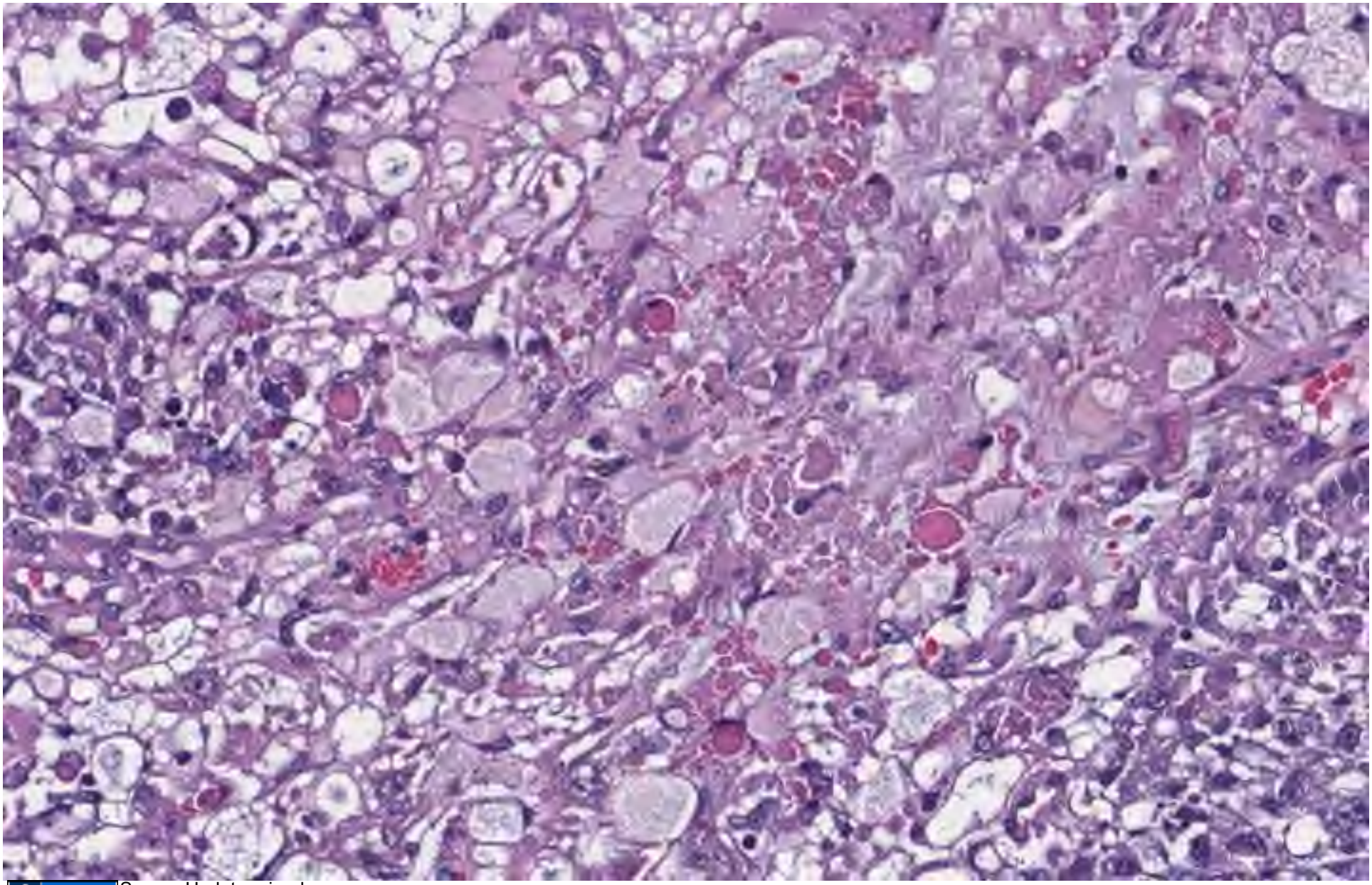
germ cell tumor

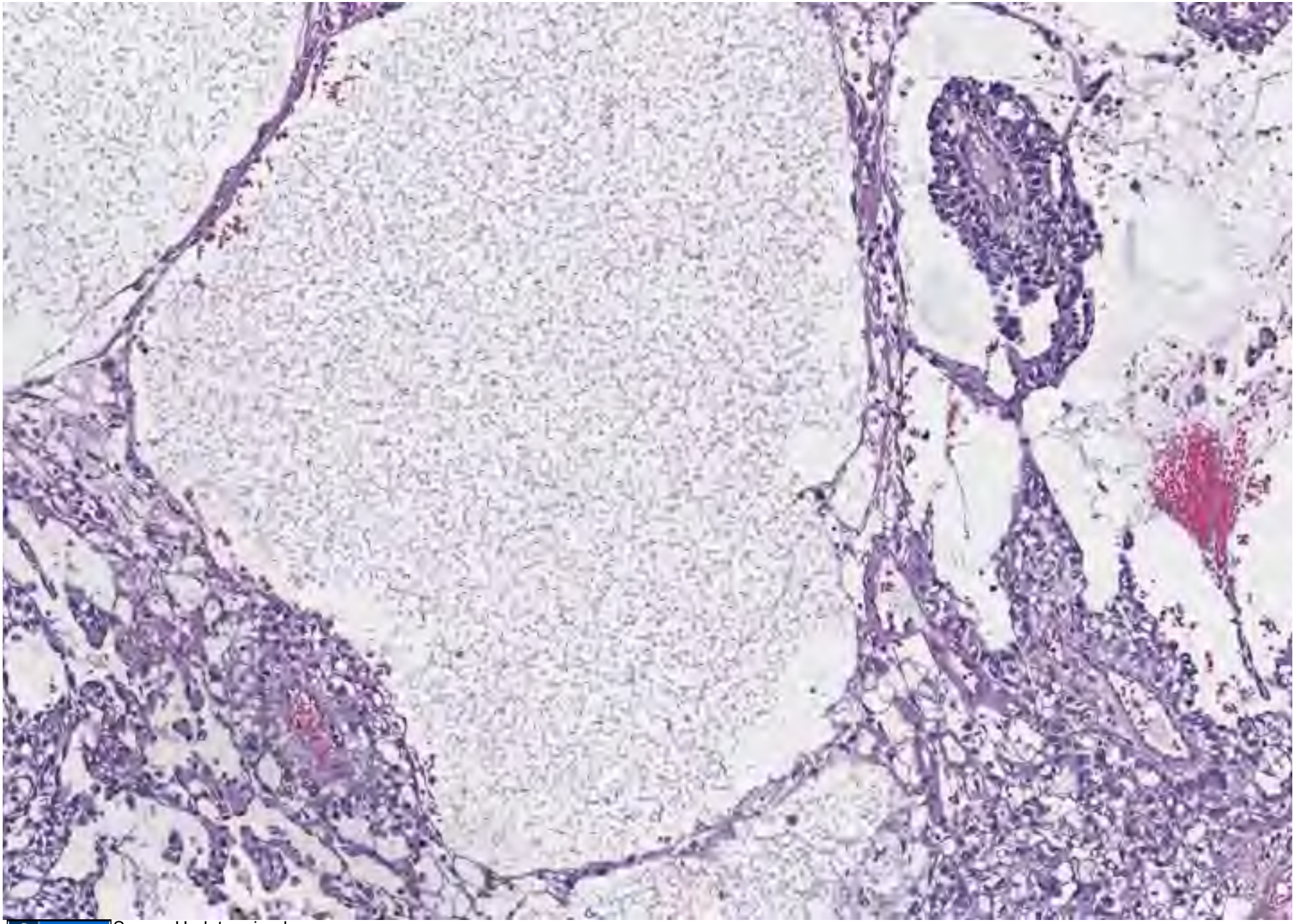


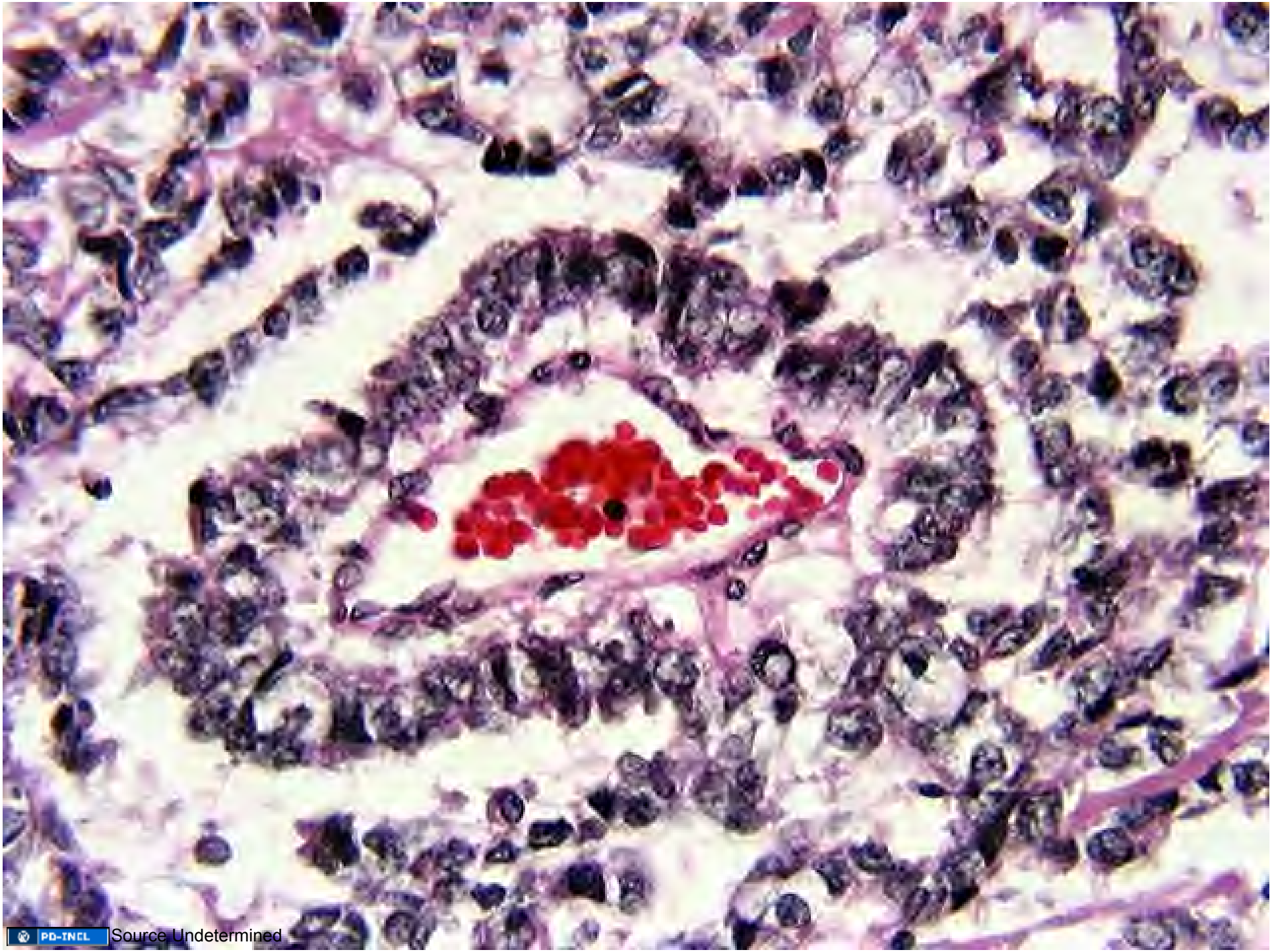












Endodermal Sinus Tumor Histologic Keys

Schiller-Duval Bodies

capillary lined by cuboidal or low columnar embryonal epithelial-like cells

Cytology

large, vesicular nuclei with prominent nucleoli

hyaline “globs” (PAS +, diastase resistant)

Patterns

endodermal sinus

reticular

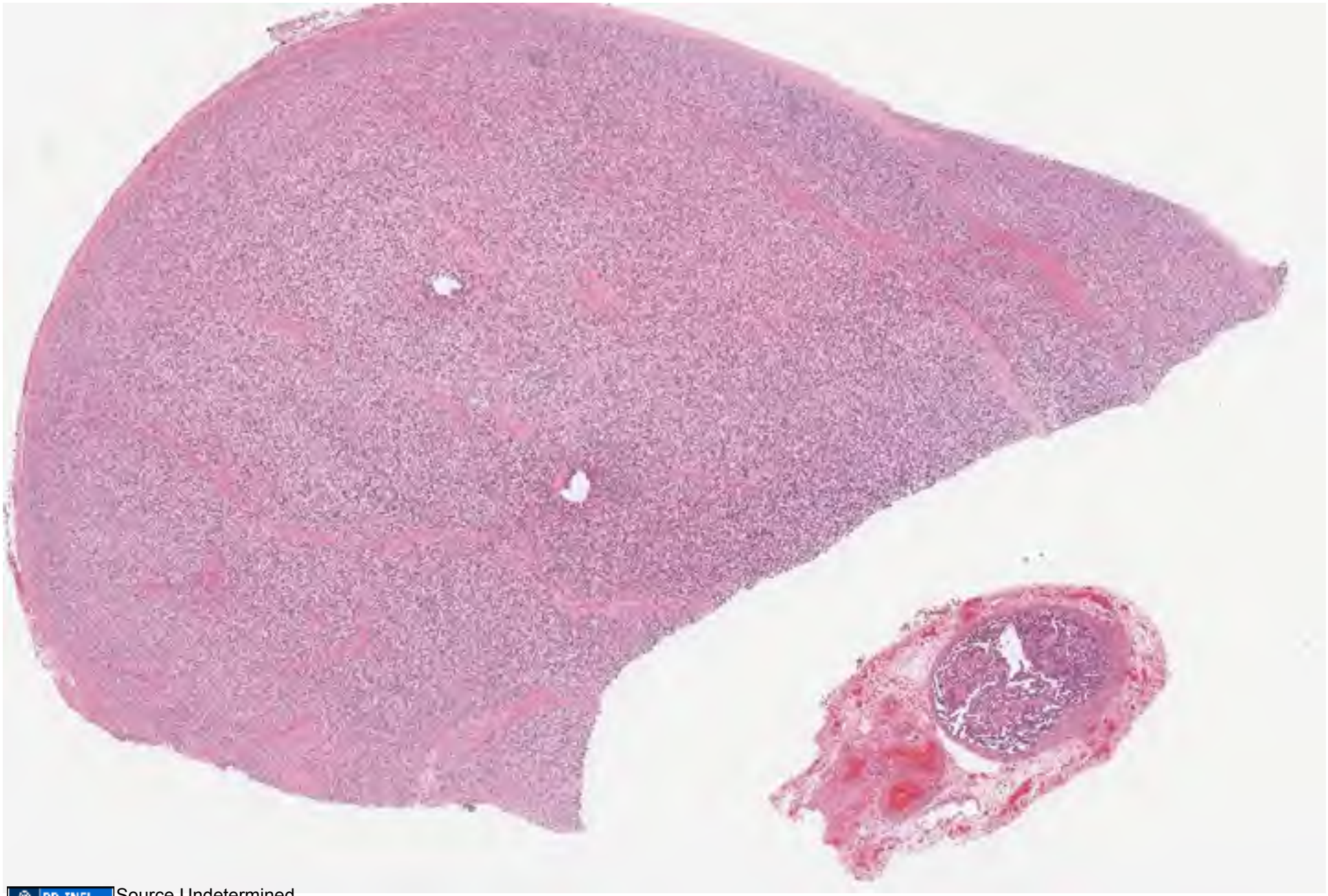
polyvesicular-vitelline

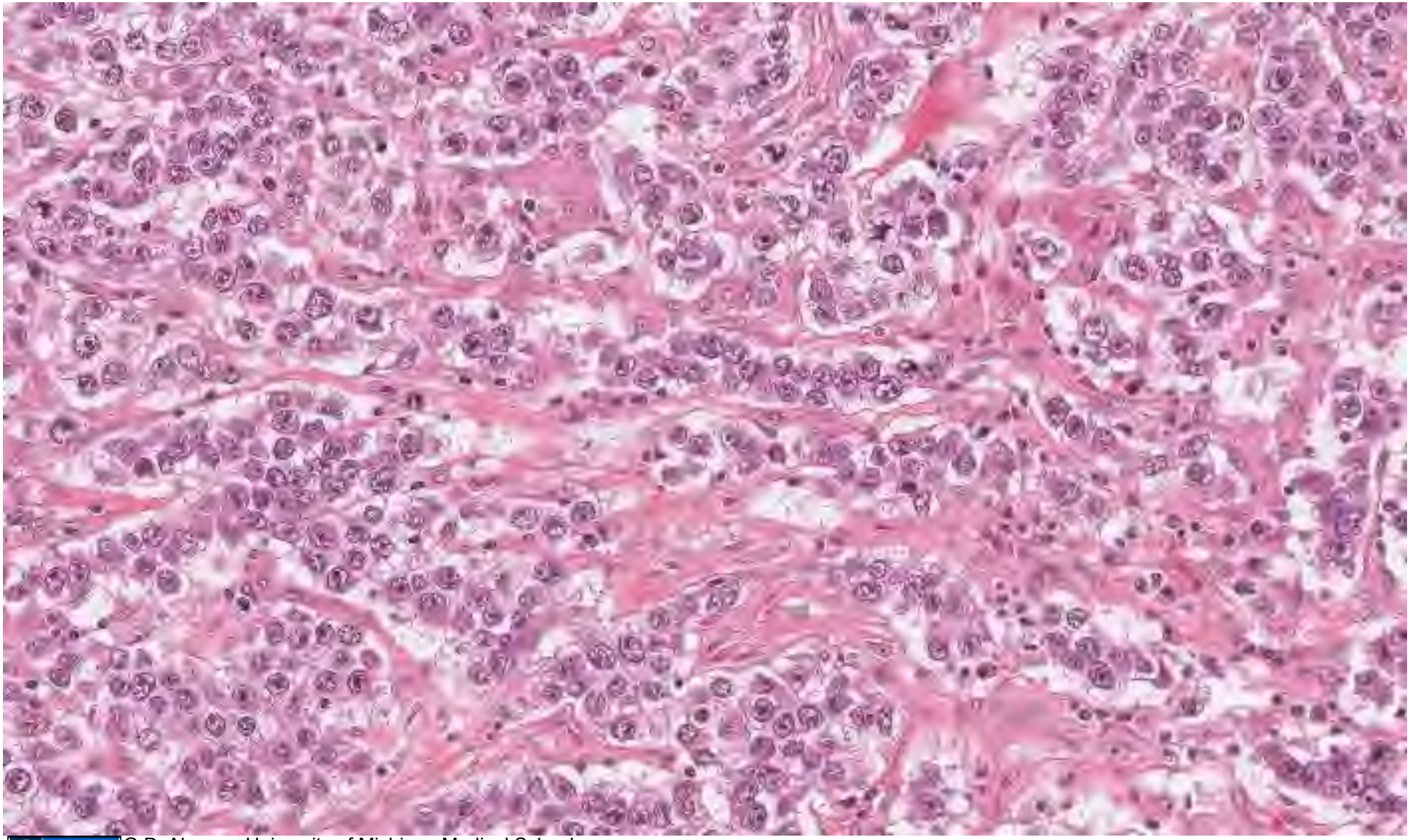
Tumor Marker

alpha-fetoprotein

Ovarian Dysgerminoma

germ cell tumor





Normal Testis

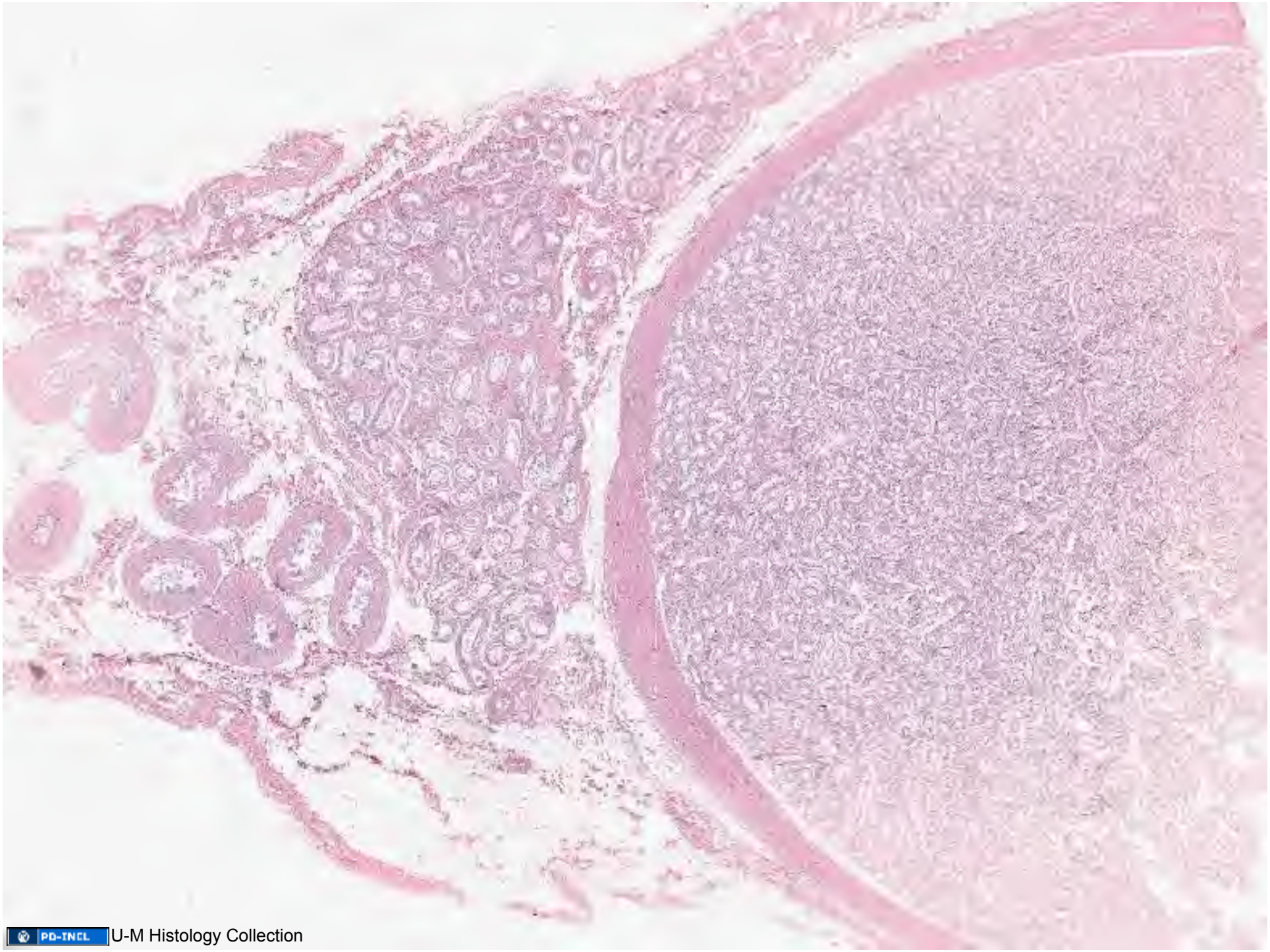
Testis

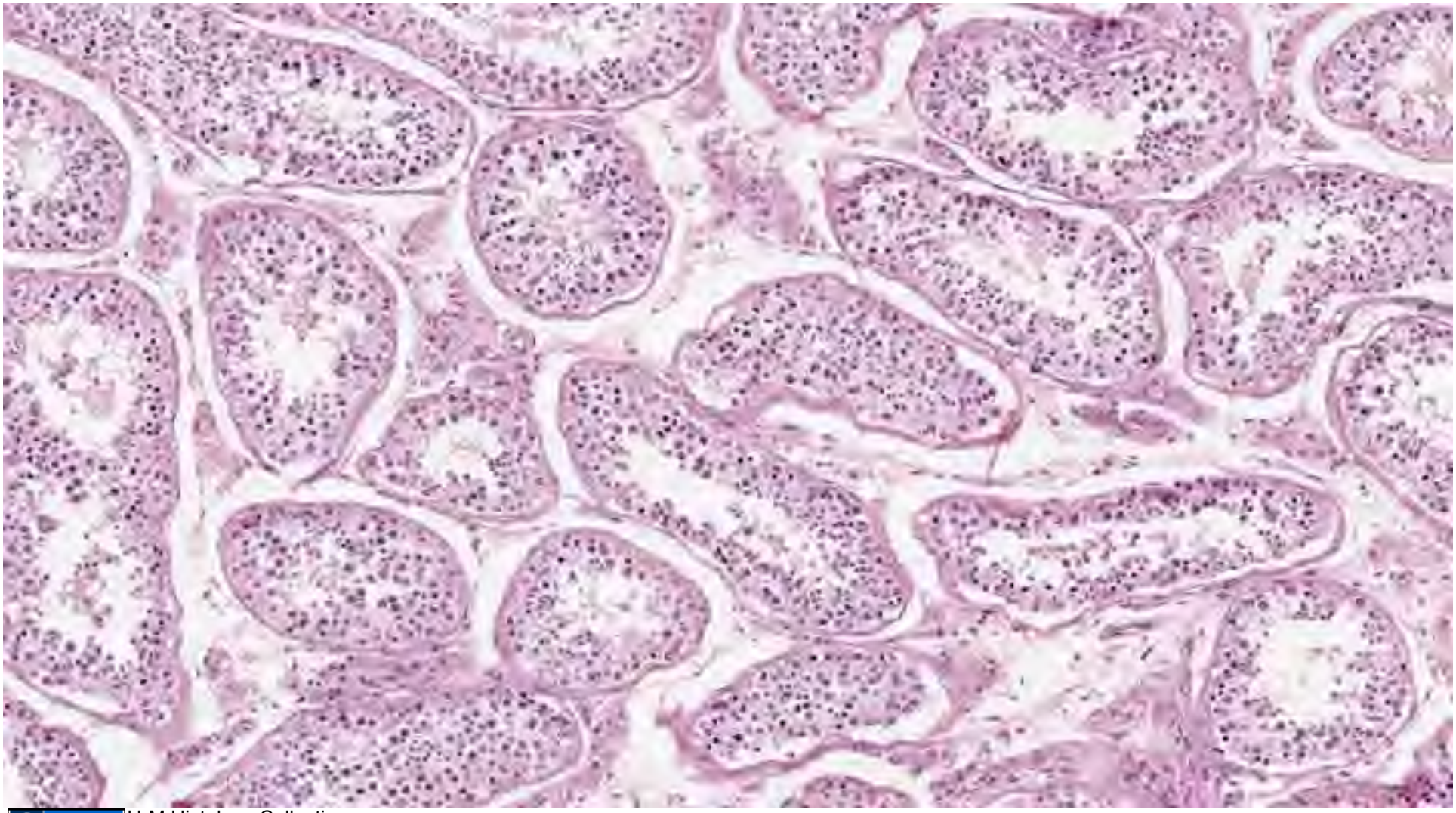
Normal Testis: From the tunica propria of seminiferous tubules to the lumen, one sees spermatogenic cells in the following order:

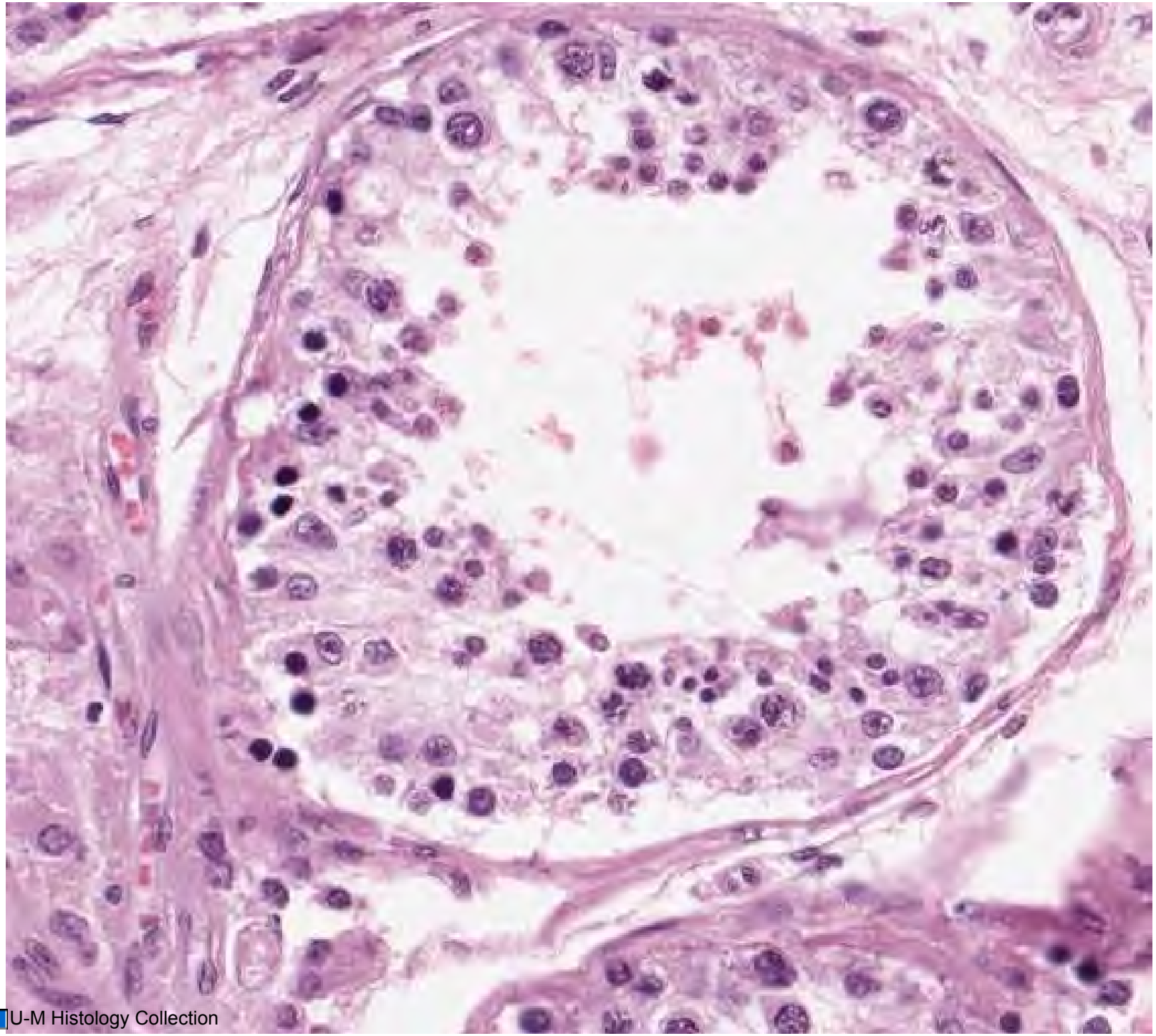
1. Spermatogonia (small dark nucleus)
2. Primary spermatocyte (largest cell in series)
3. Secondary spermatocyte (relatively transient cell)
4. Spermatids
5. Spermatozoa

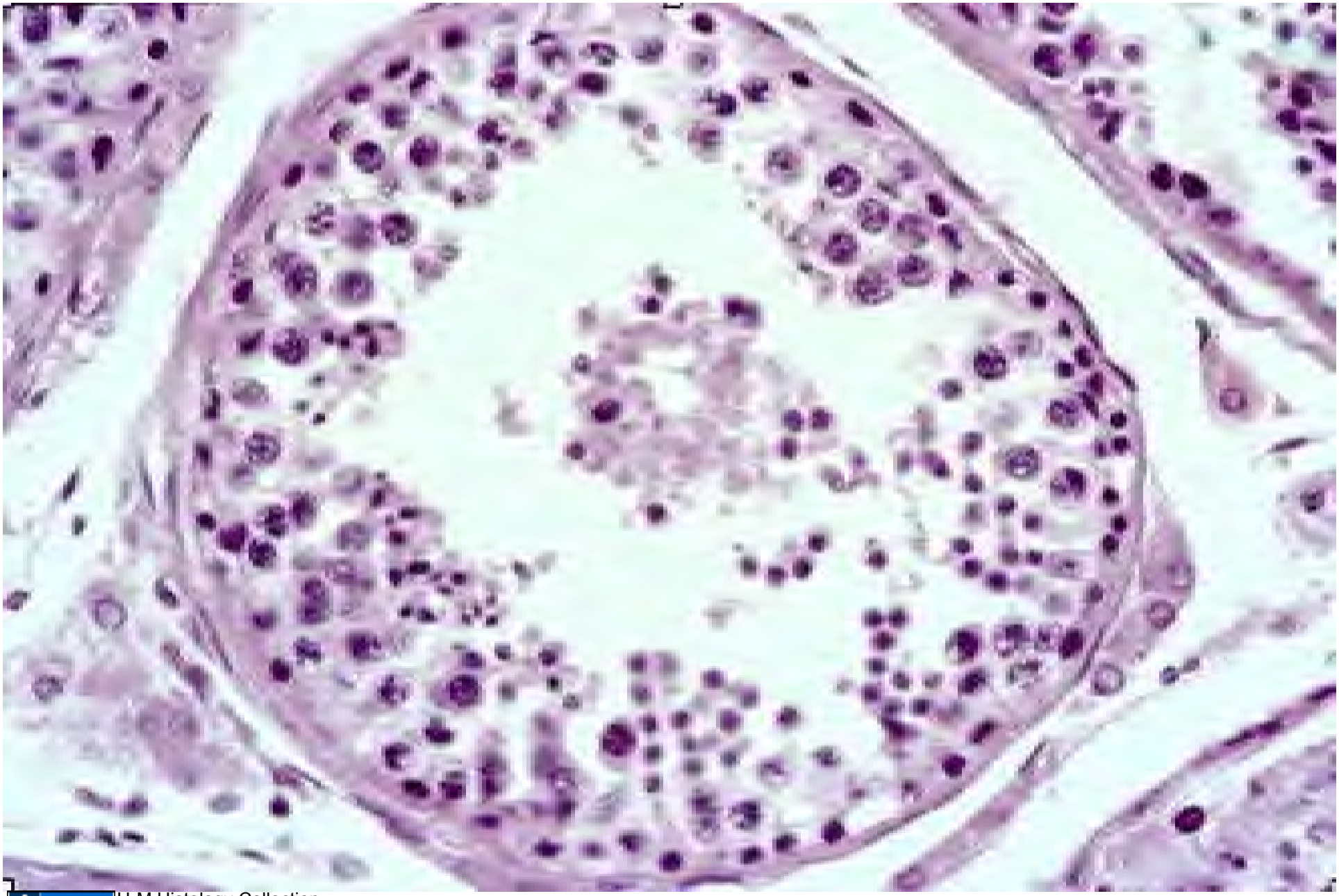
Sertoli cells are difficult to identify in tubules with normal spermatogenesis, which tends to obscure them.

Interstitial cells (Leydig cells) possess eosinophilic cytoplasm and are located between tubules.





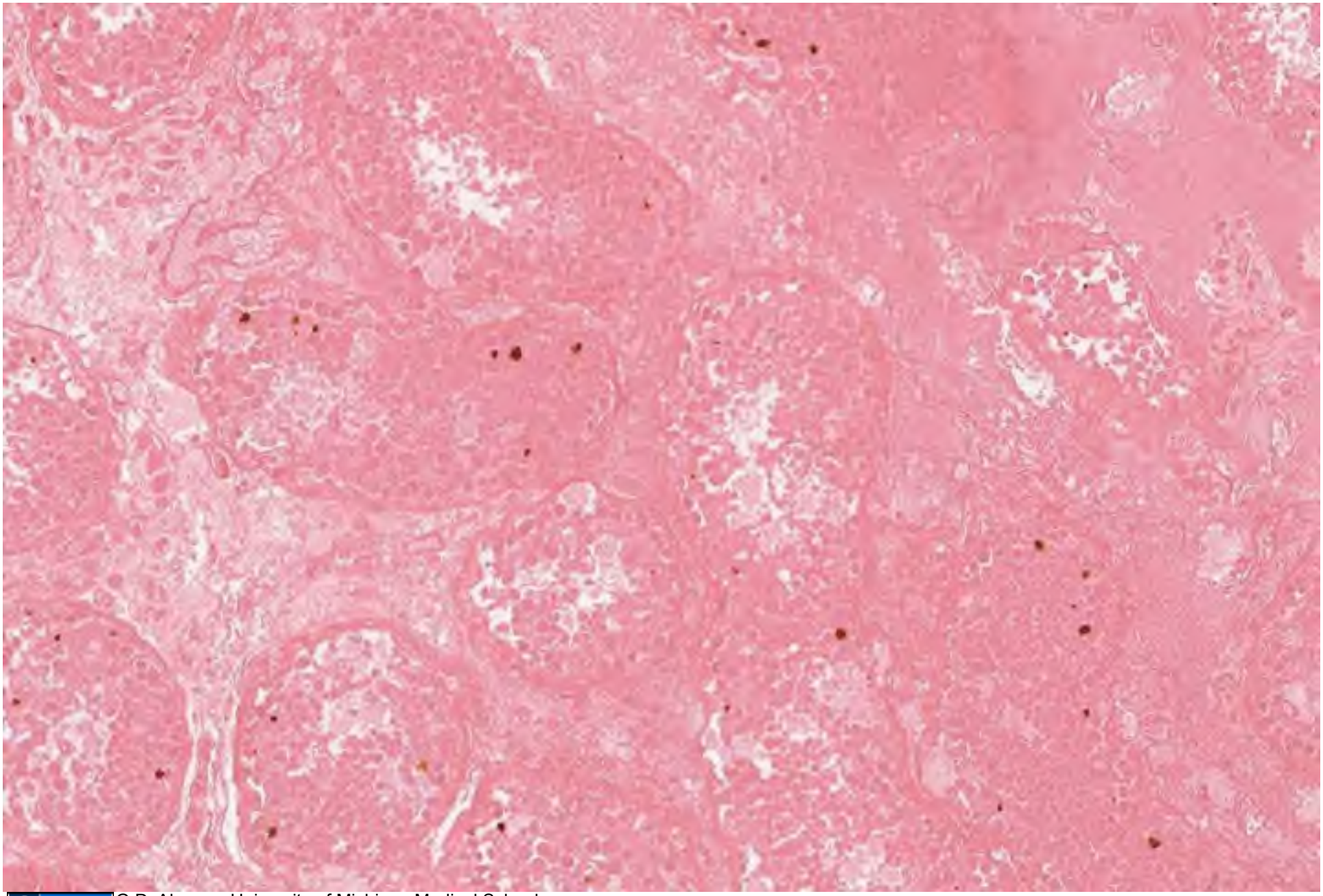


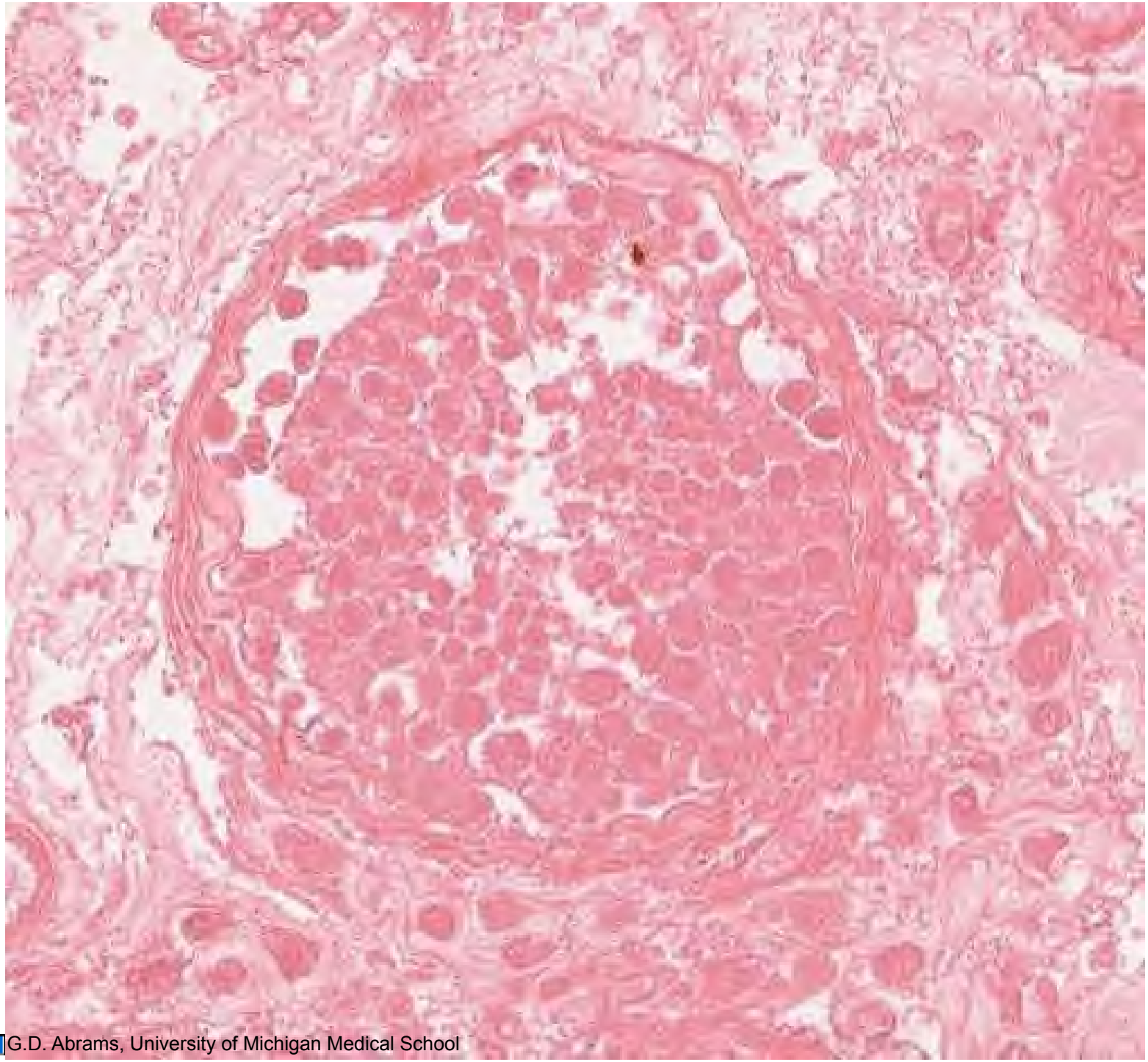


Testis

25-year old an with pain in right testicle of five weeks duration. Serum human chorionic gonadotropin and alpha-fetoprotein negative.

Testicular Infarction

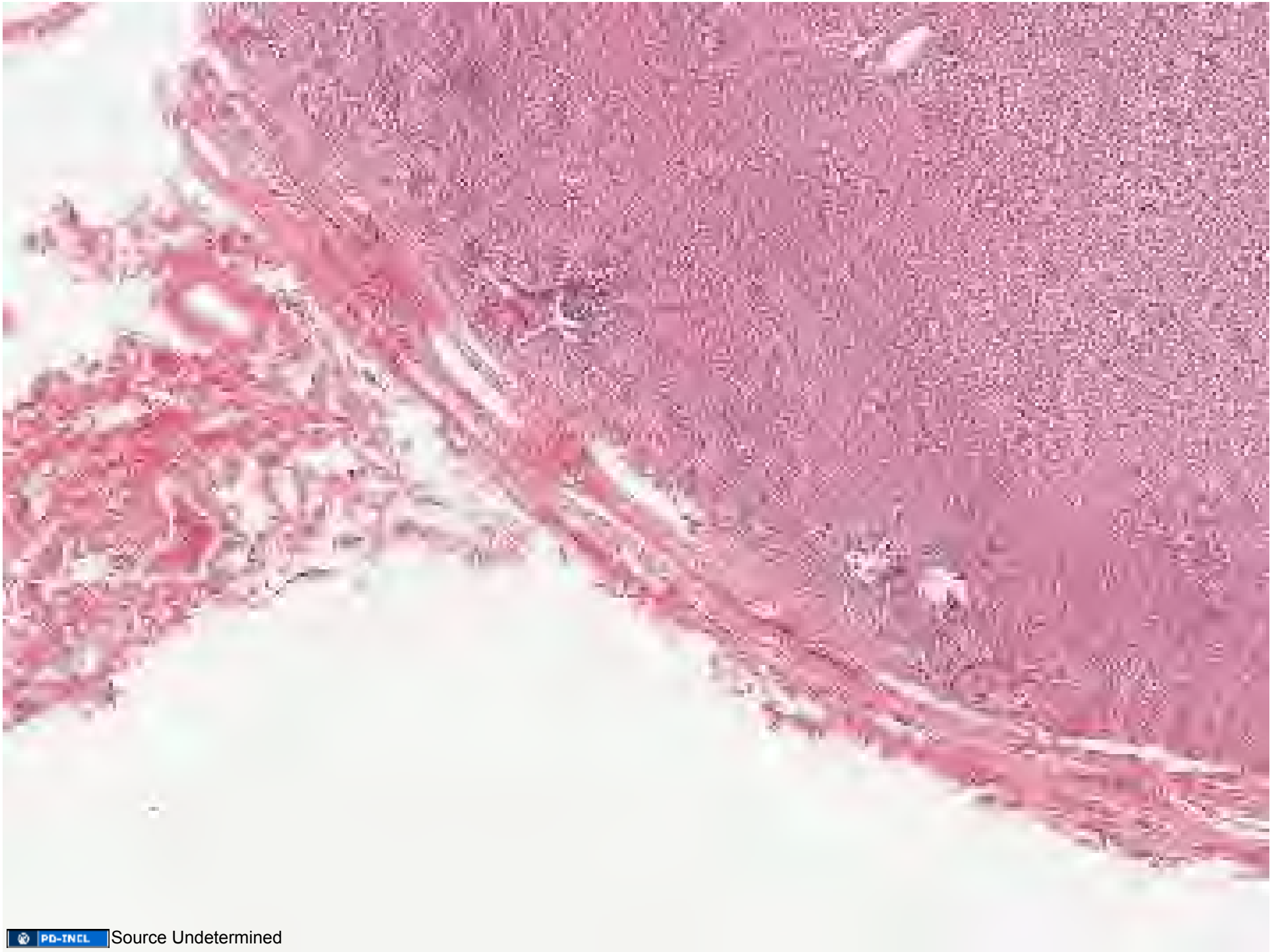


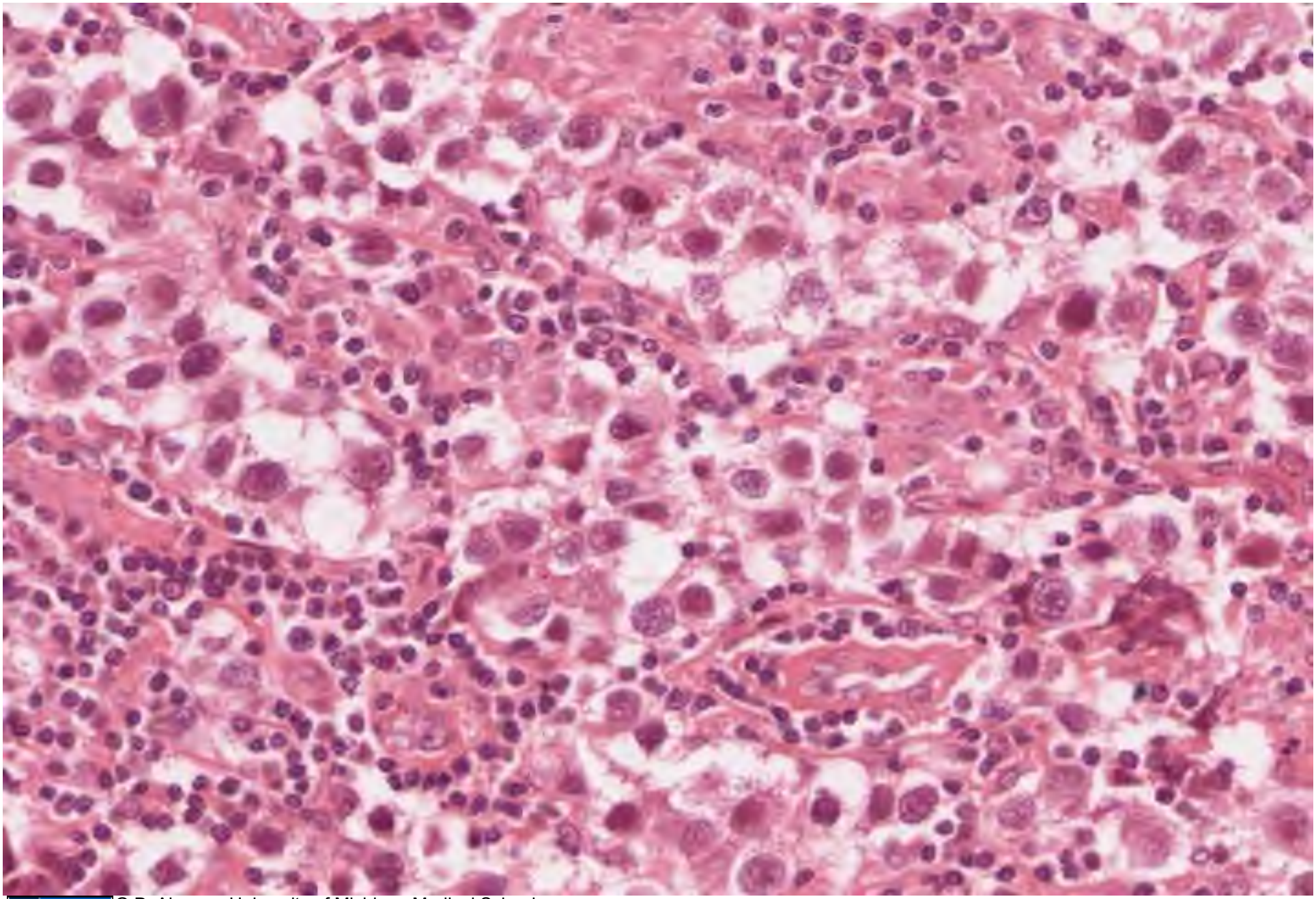


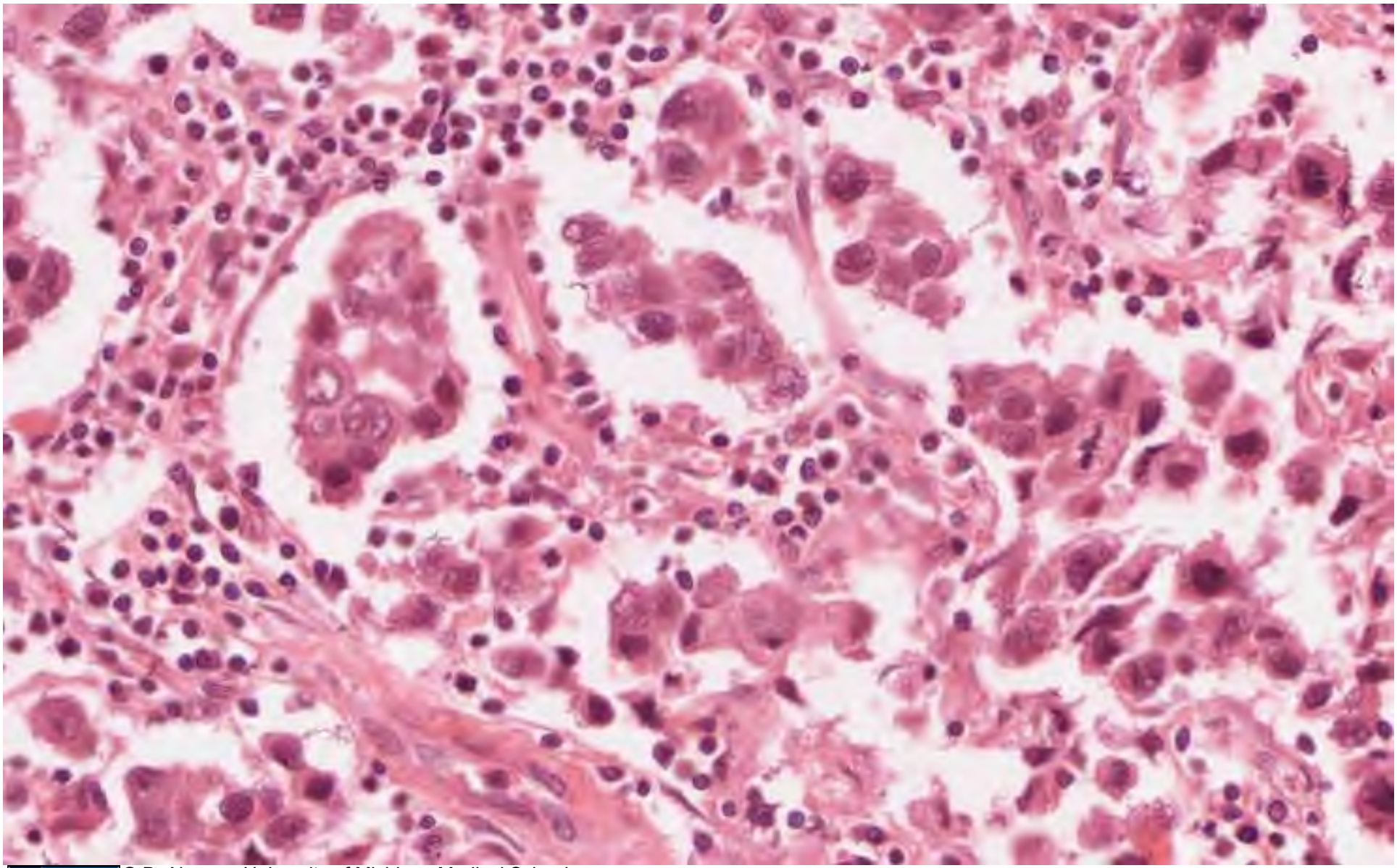
Testis

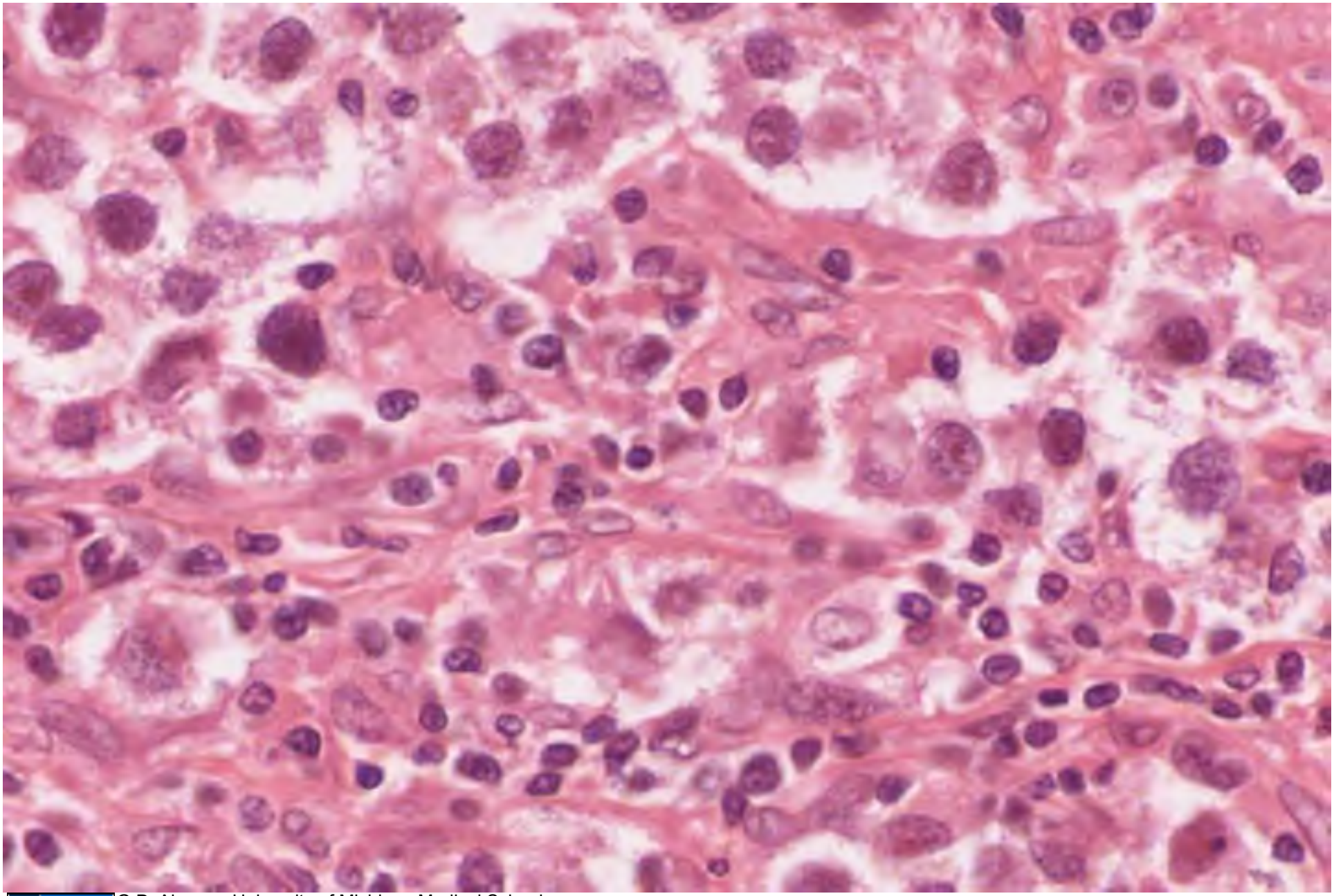
40-year-old man noted swelling and tenderness of his right testicle for several months prior to orchiectomy.

Testicular Seminoma









Dysgerminoma-Seminoma Histologic Keys

Undifferentiated malignant germ cells

- look like primitive oogonia-spermatogonia

Solid architecture

- ribbons and cords of tumor cells separated by fibrous septae
- fibrous septae sprinkled with lymphocytes

Comparing Male & Female Germ Cell Tumors

Male Tumors

90% of testicular ca

- majority are malignant

teratomas uncommon (3%)

- majority are “immature”

one-third (33%) are mixed tumors

spermatocytic seminoma has no female counterpart

Female Tumors

20% of ovarian tumors

- majority are benign

teratomas common (60%)

- majority are mature

mixed germ-cell tumors uncommon (8%)

Markers in Germ Cell Tumors

Tumor	AFP	hCG
Dysgerminoma	–	–/+
Endodermal sinus tumor	+	–
Immature teratoma	–	–
Choriocarcinoma	–	+
Embryonal carcinoma	+	+

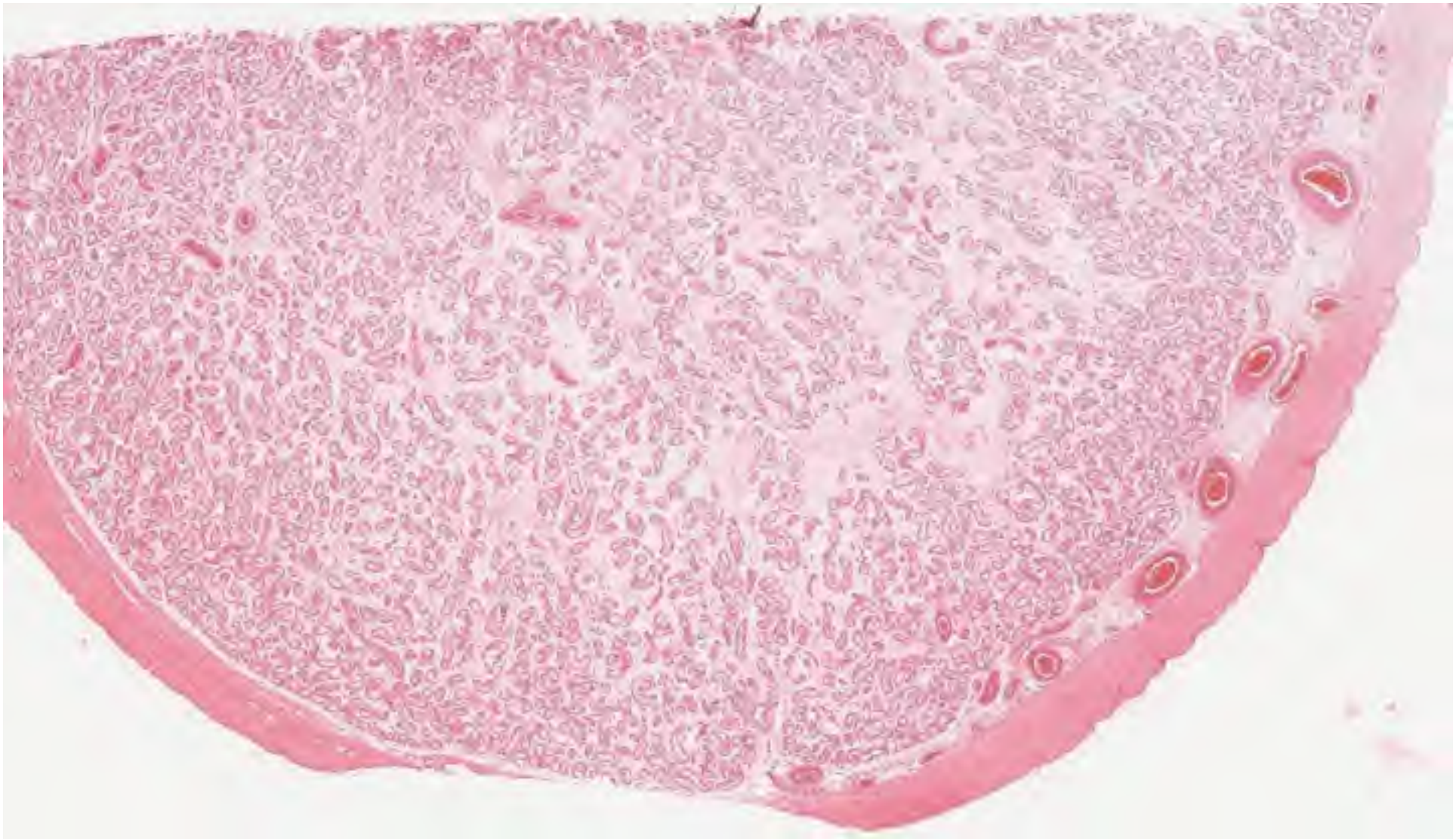
Multiple Series

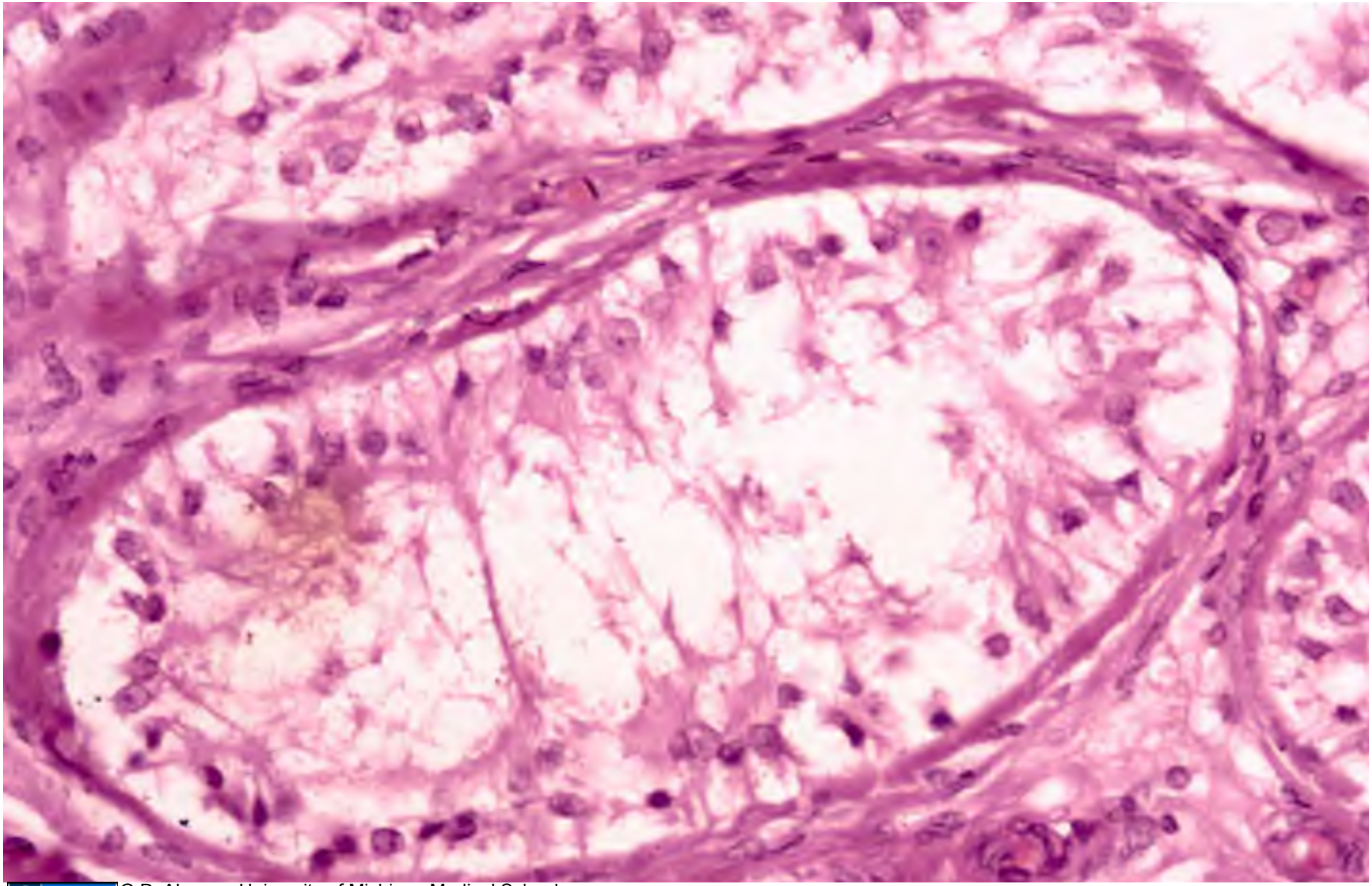
Testis

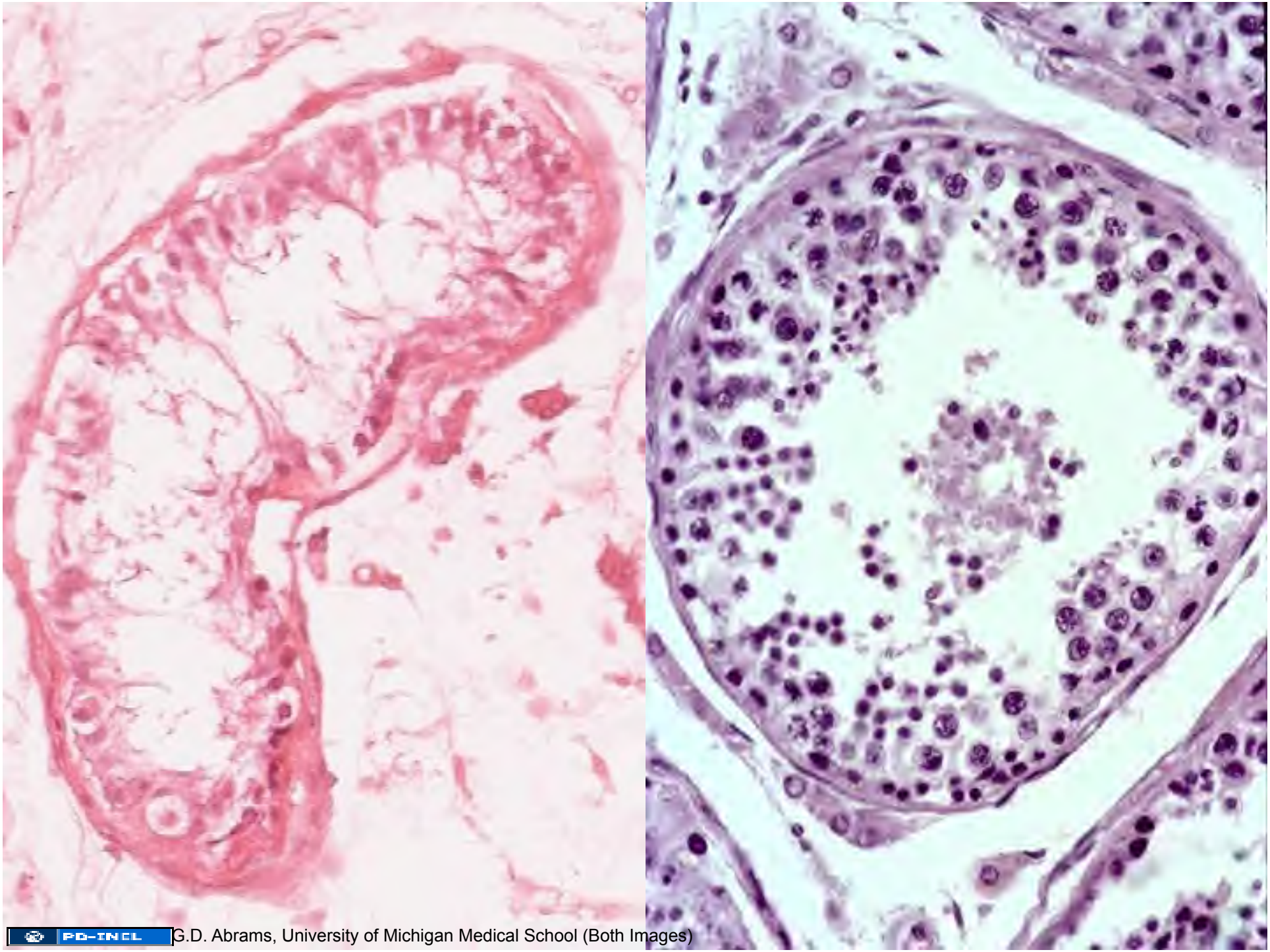
This patient had received radiation and cytotoxic drug therapy for a systemic neoplasm. The analysis of his semen revealed azospermia.

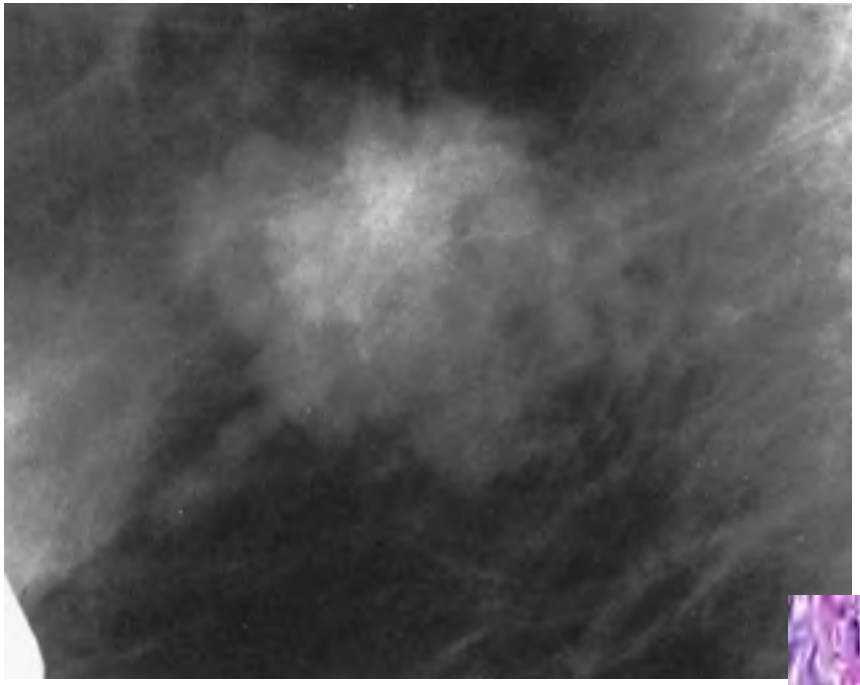
Also called the “Sertoli cell only” syndrome because all or most of the spermatogonia are absent, this represents germinal aplasia of the testis. There is no evidence of maturation of germ cells. The decrease in number of germ cells has unmasked the Sertoli cells which are the most prominent cells in the tubules. The tubular tunic propria is not significantly thickened.

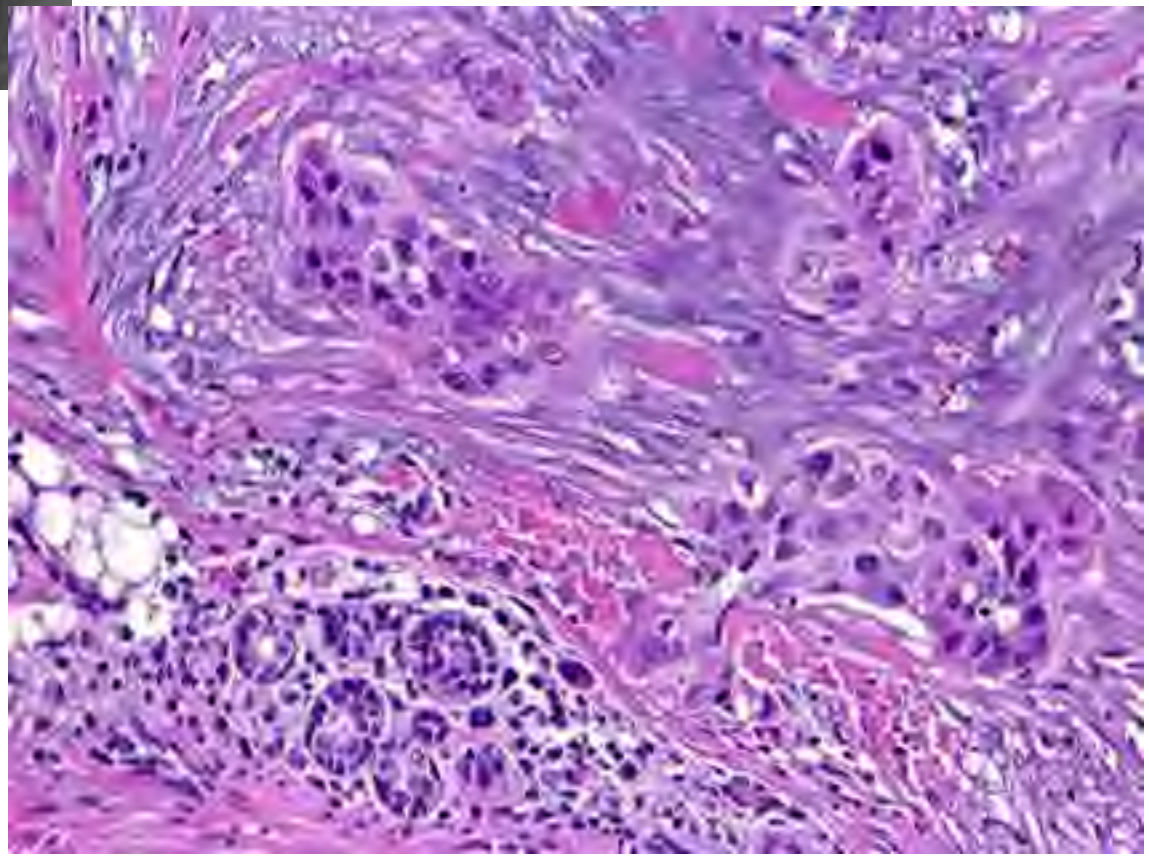
Germ Cell Aplasia
“Sertoli Only”

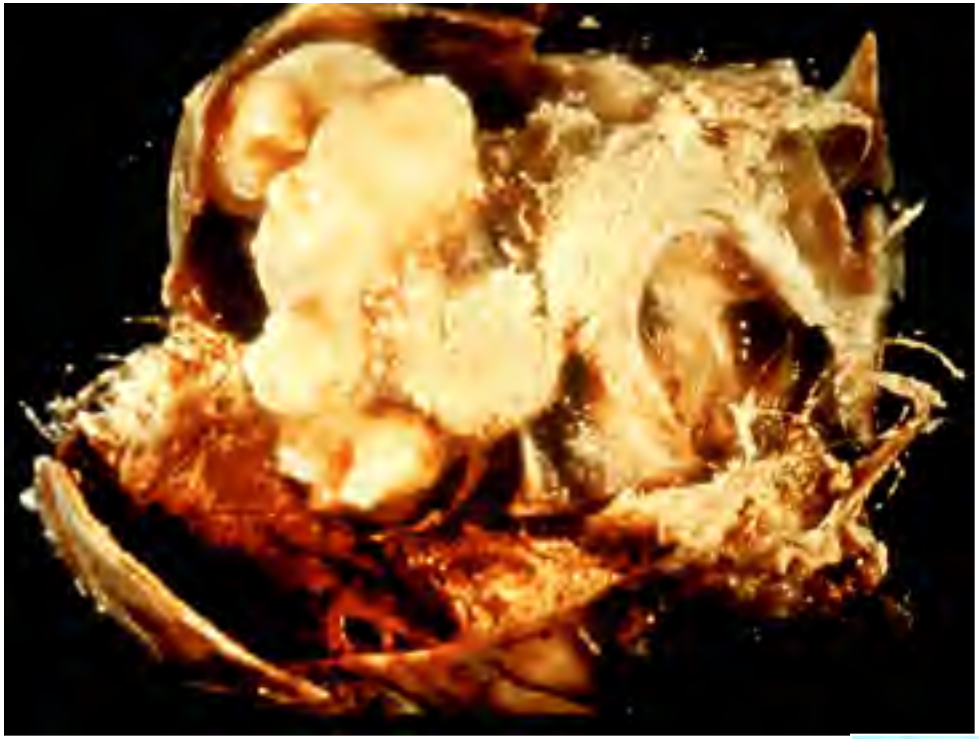


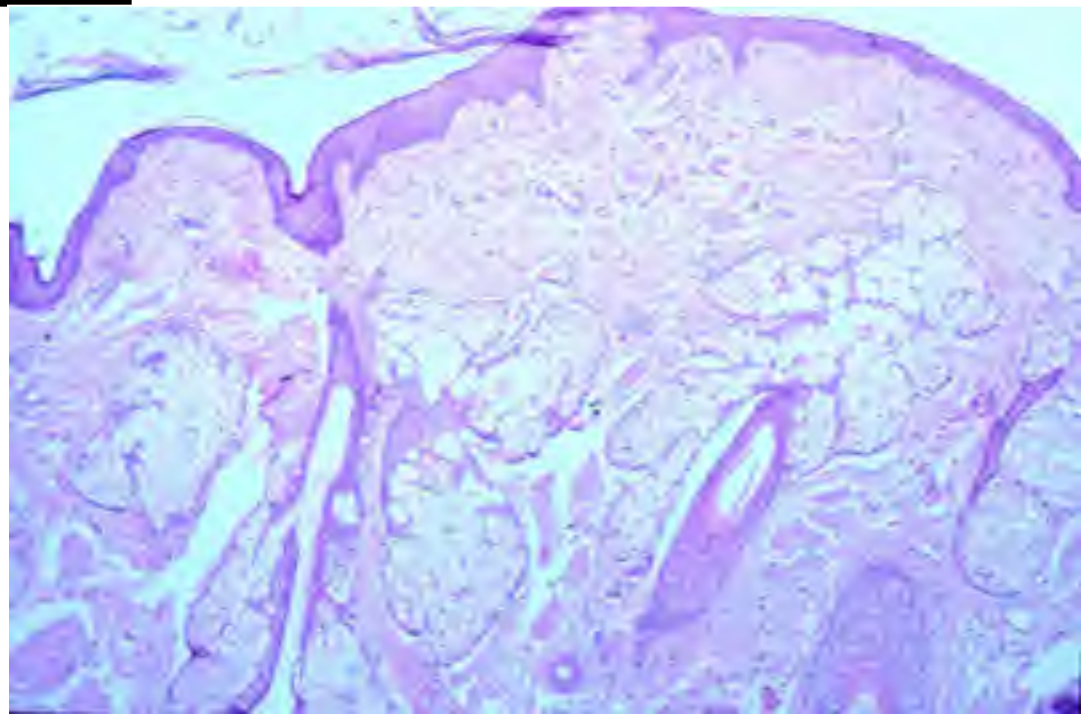


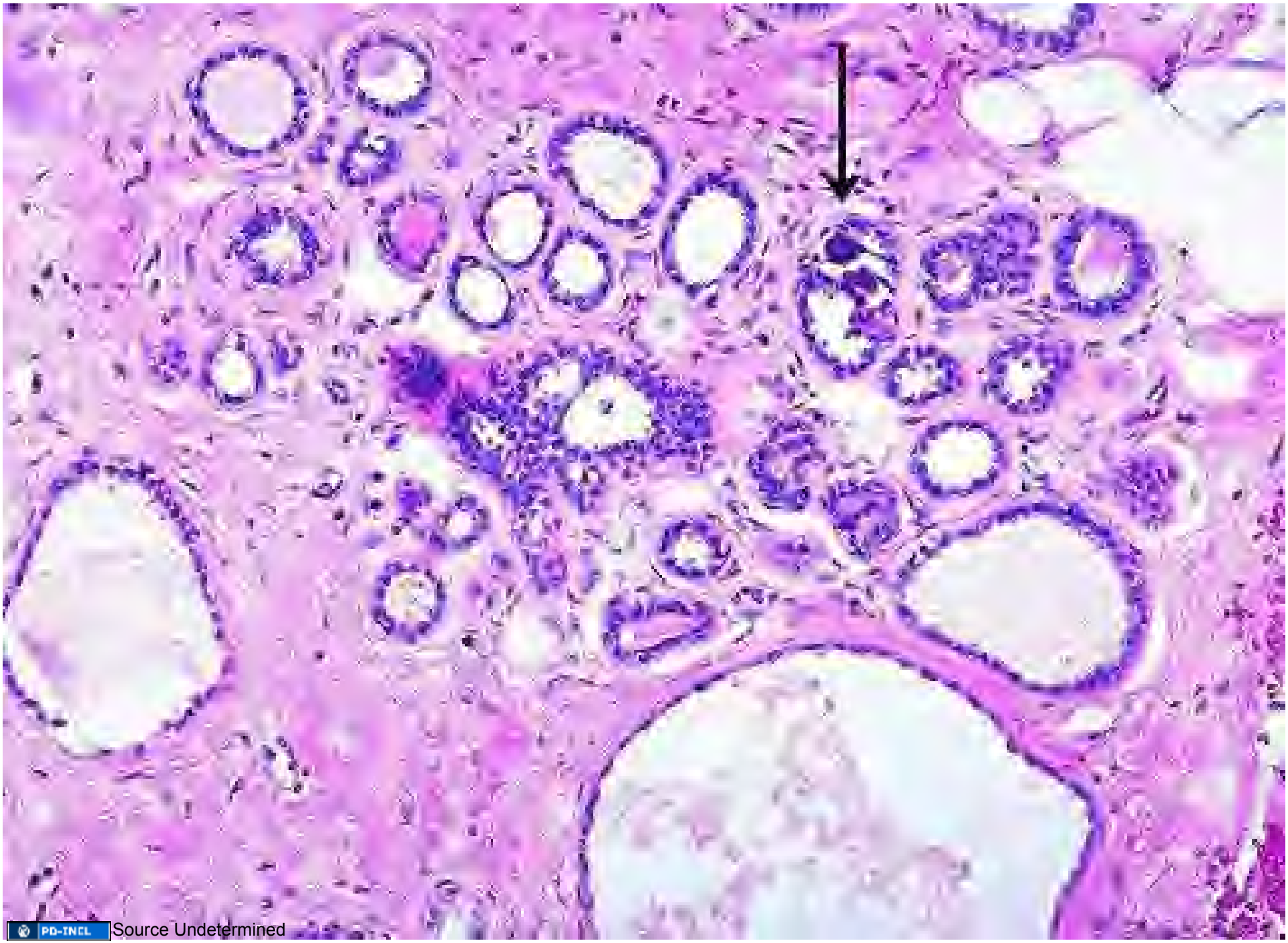


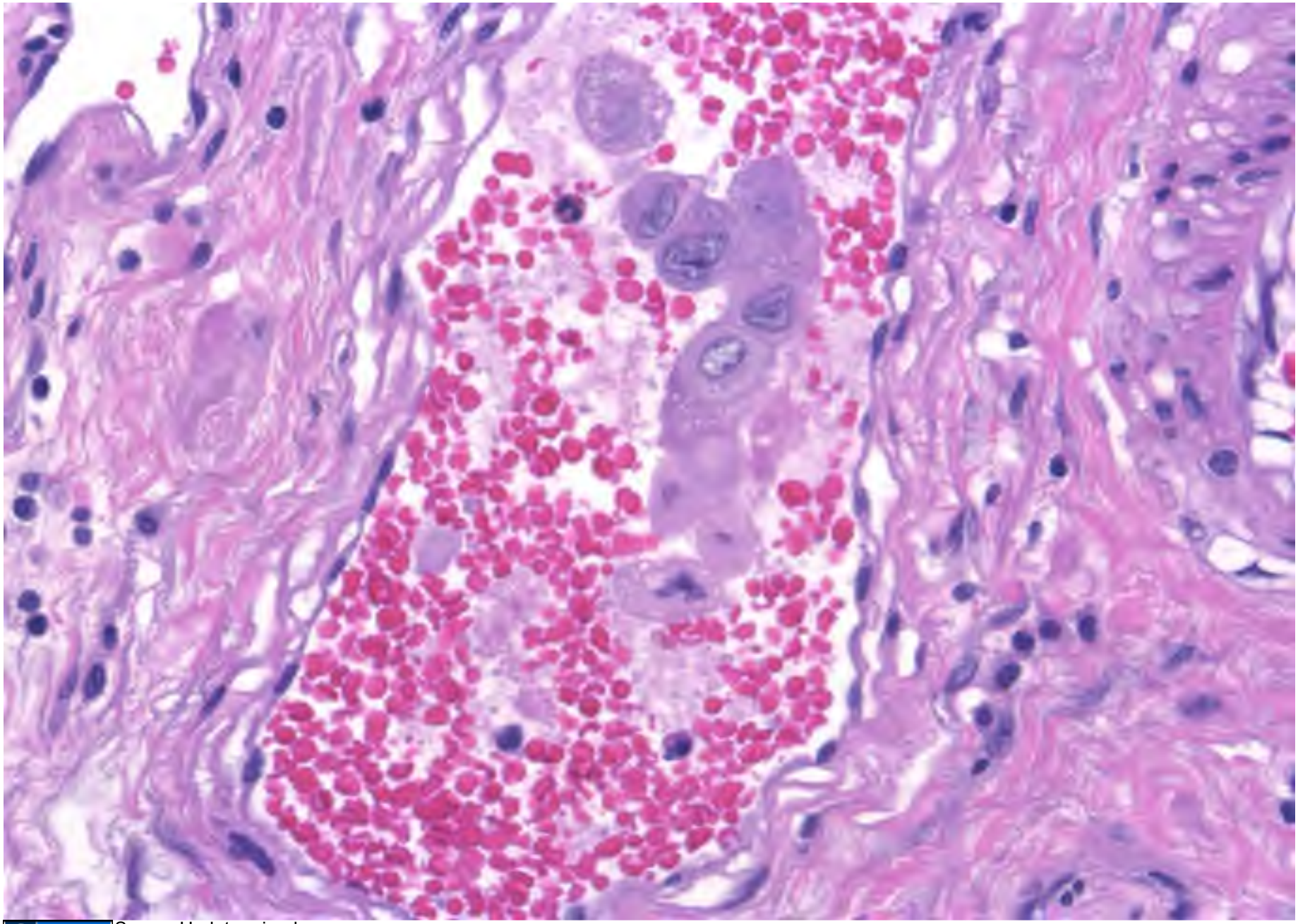


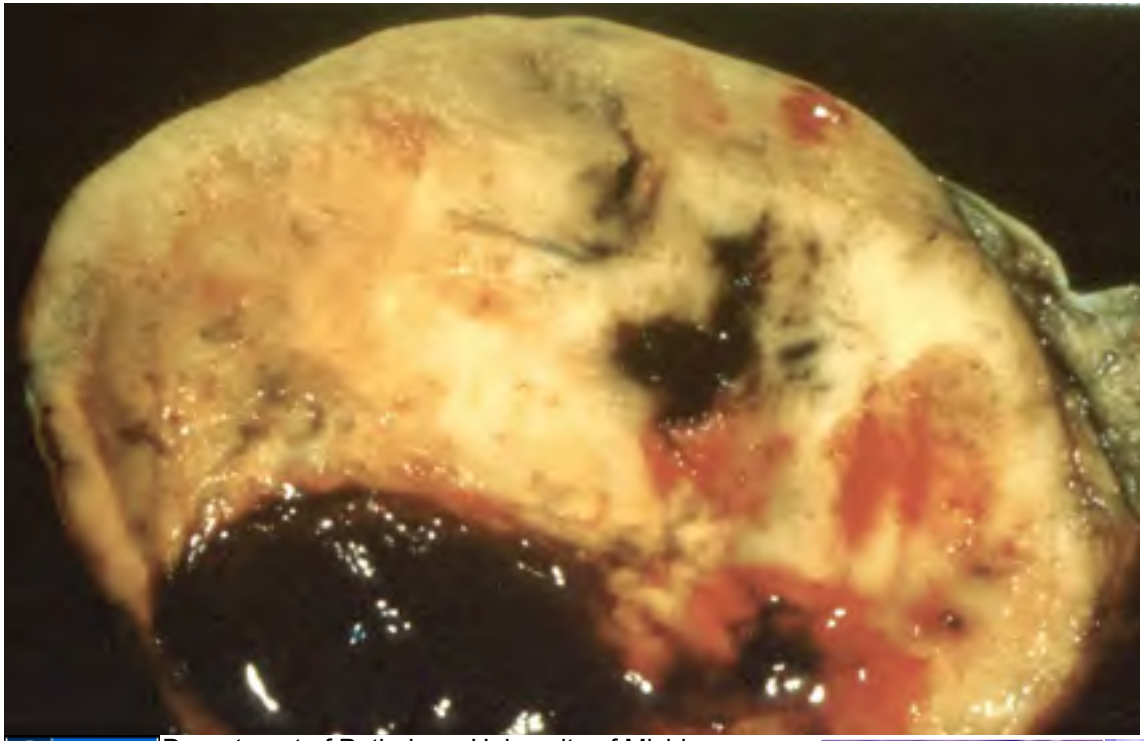












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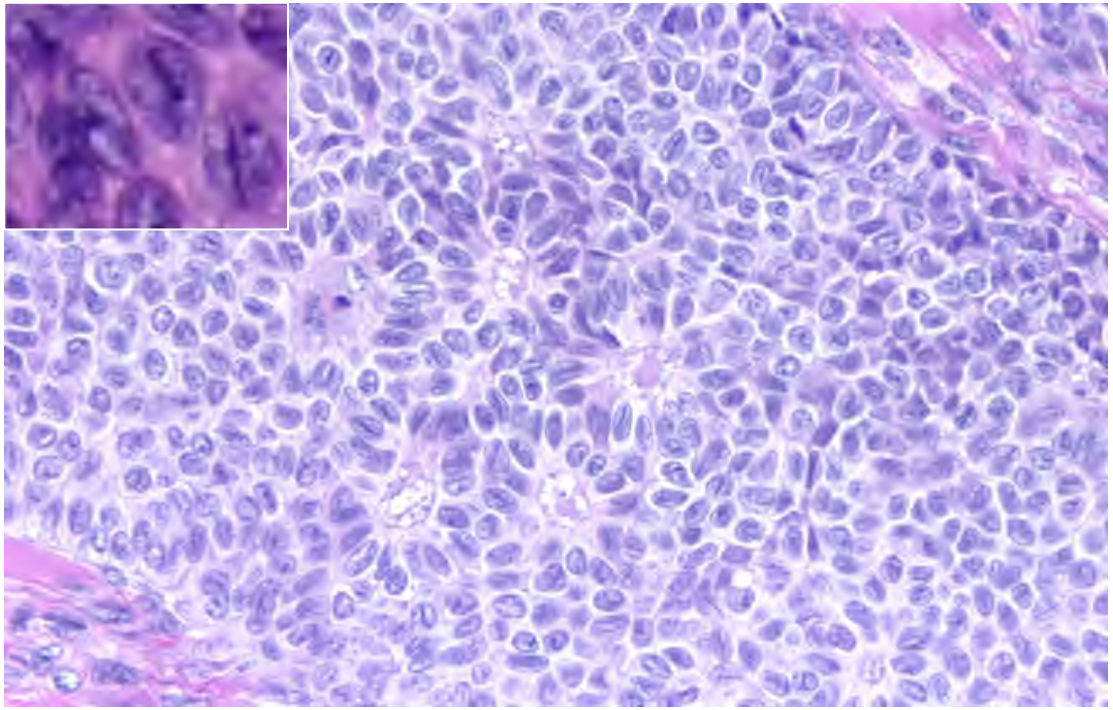

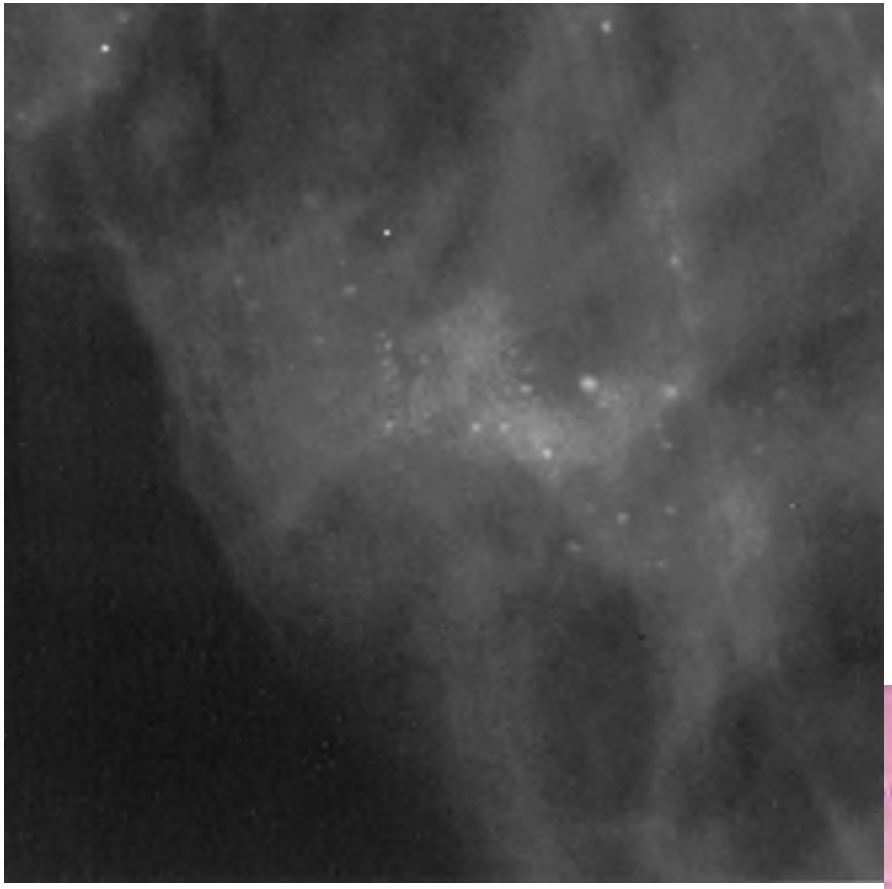

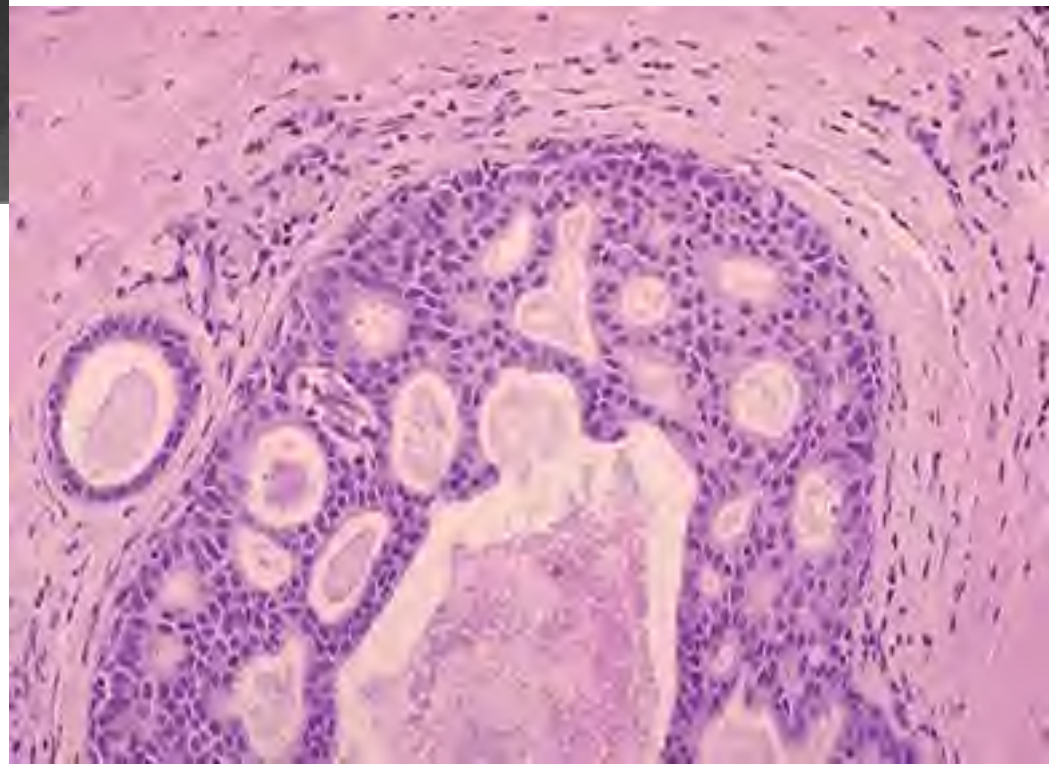

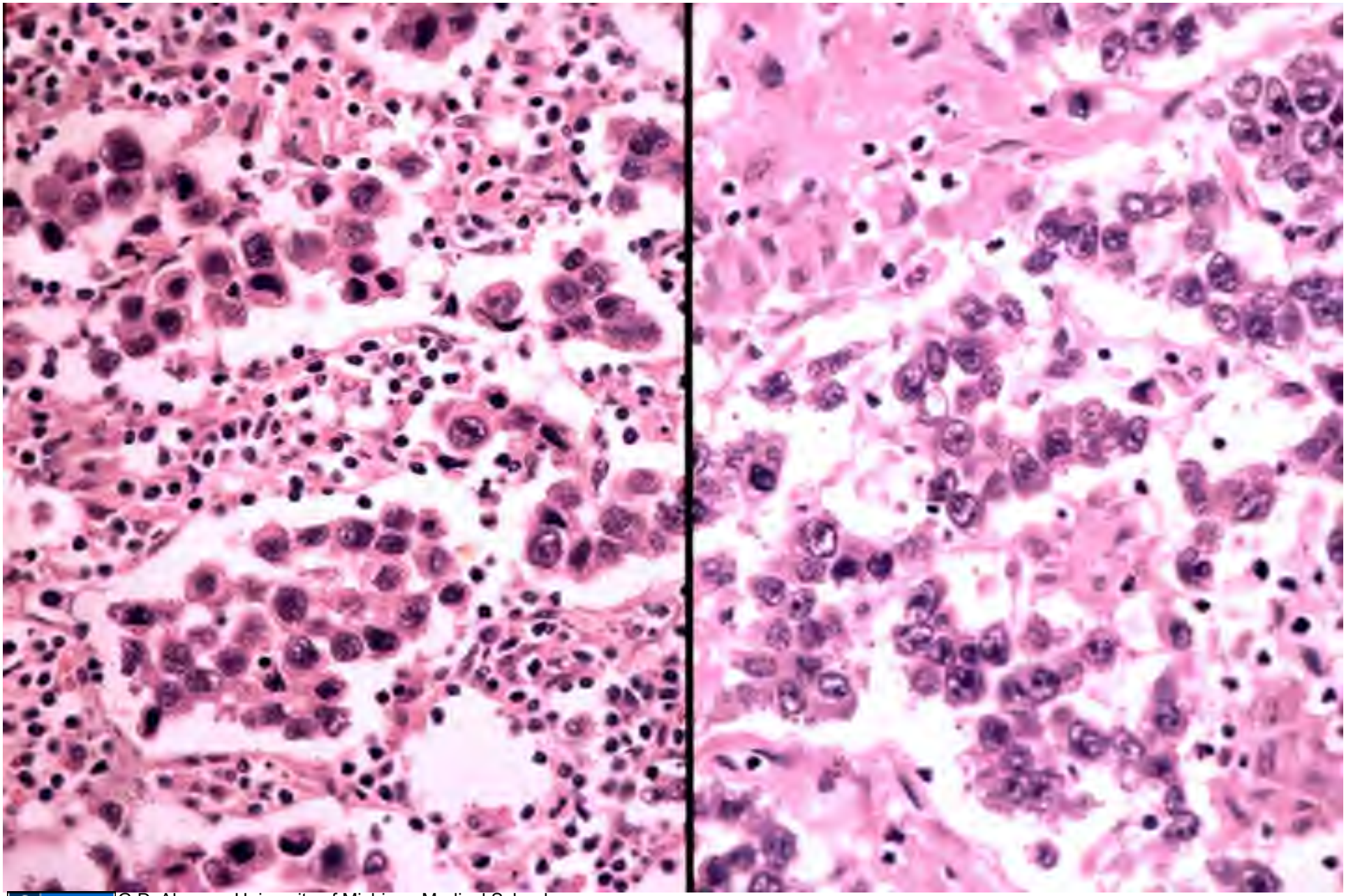

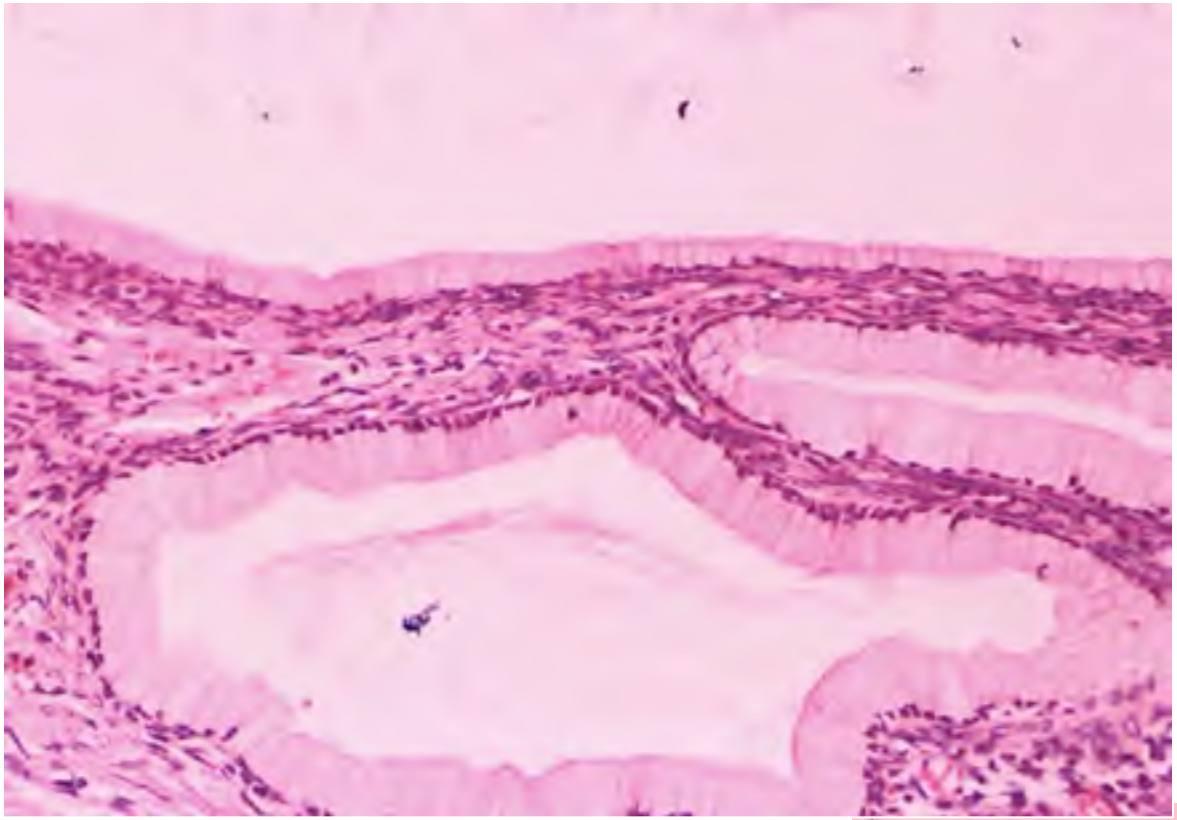

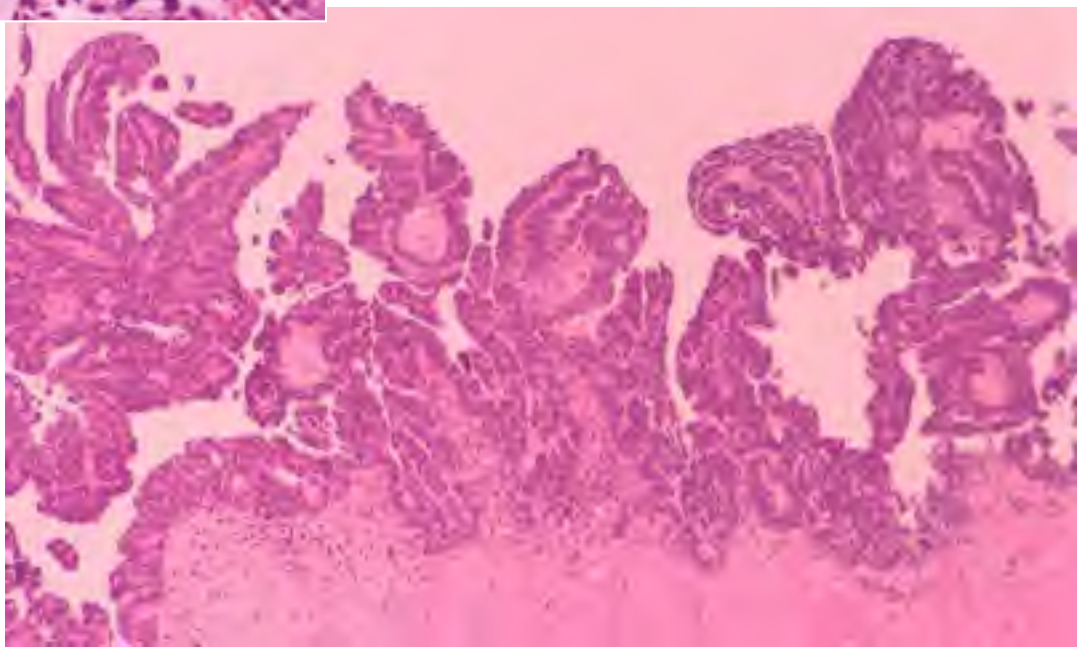

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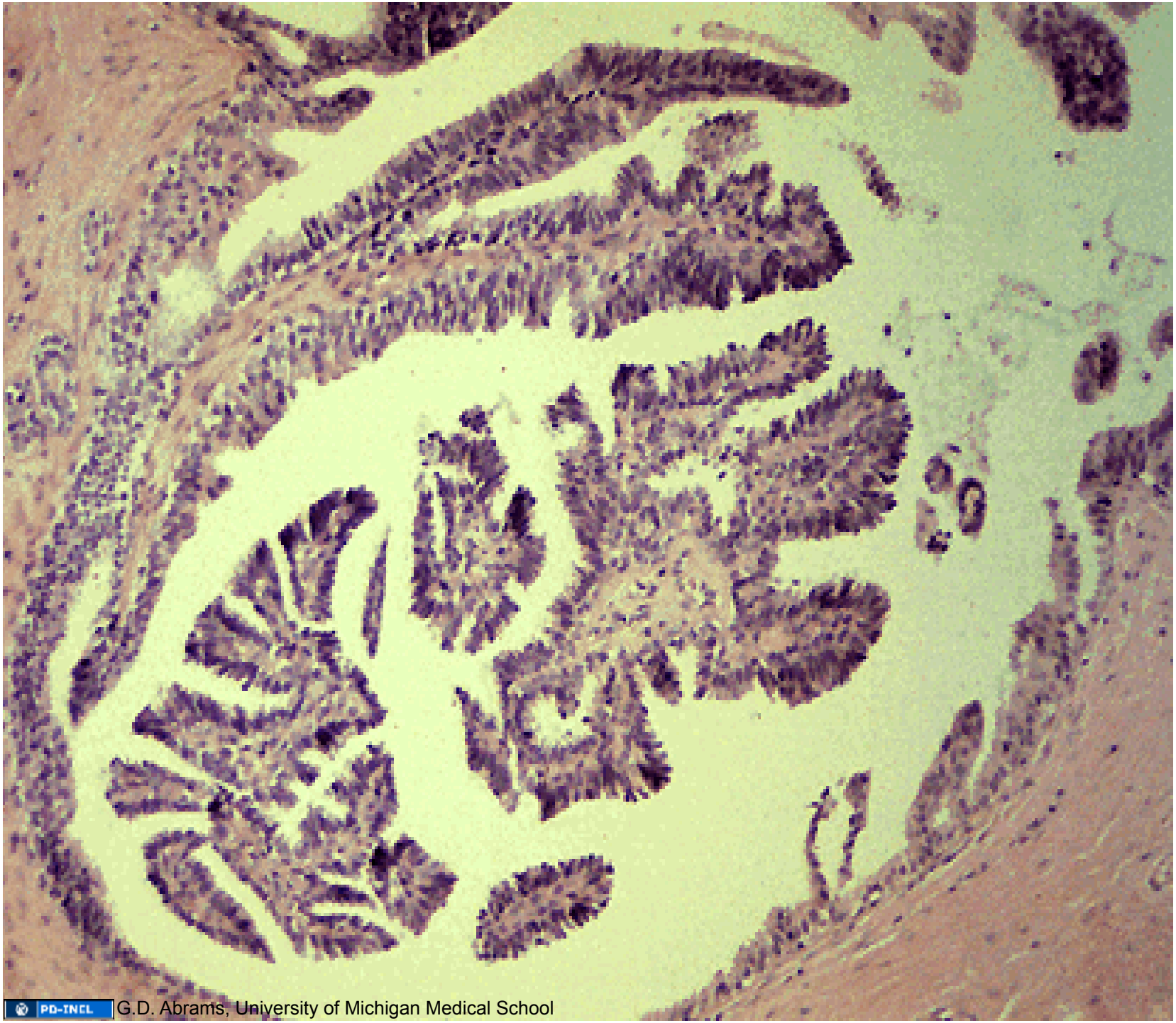
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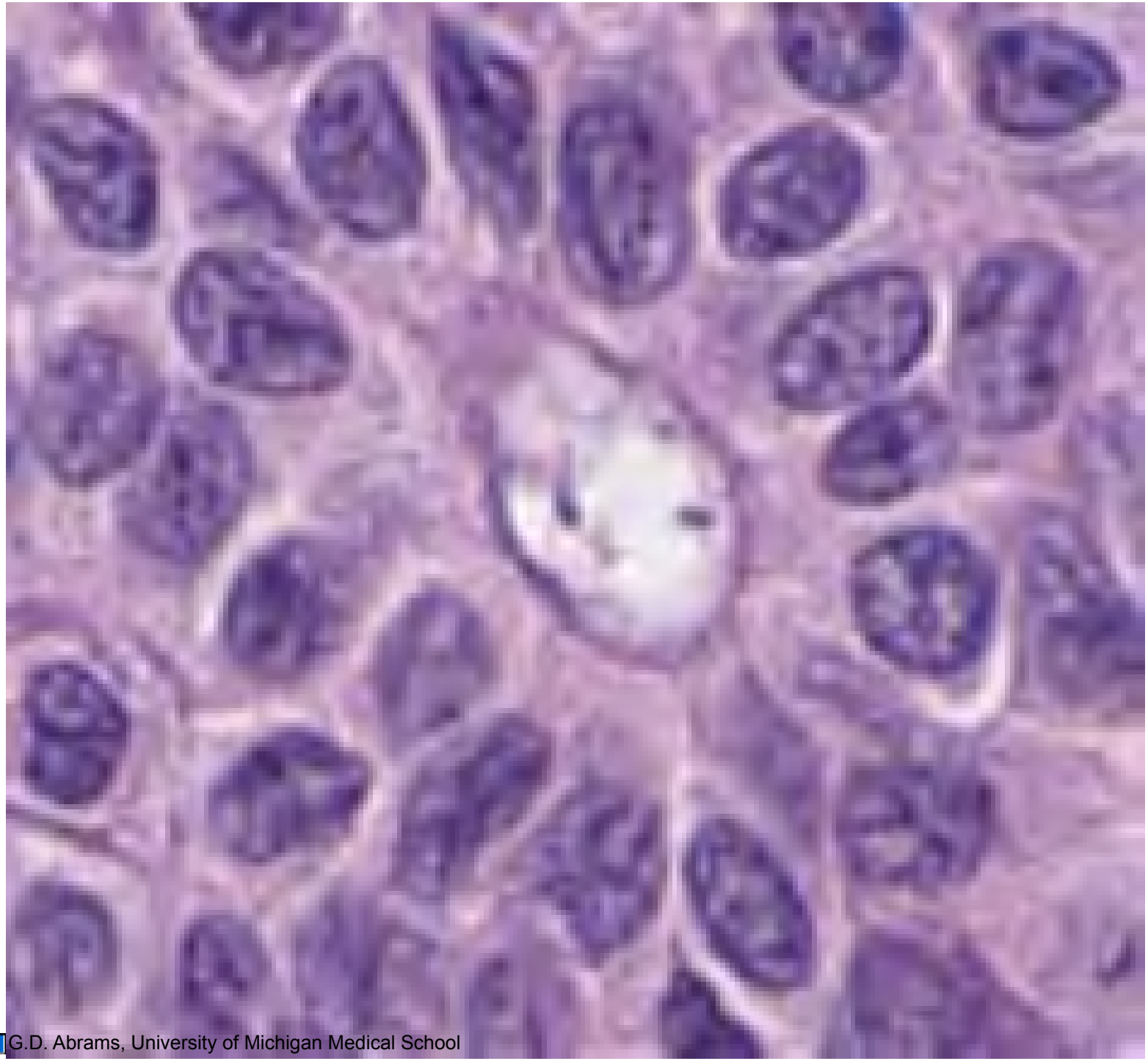

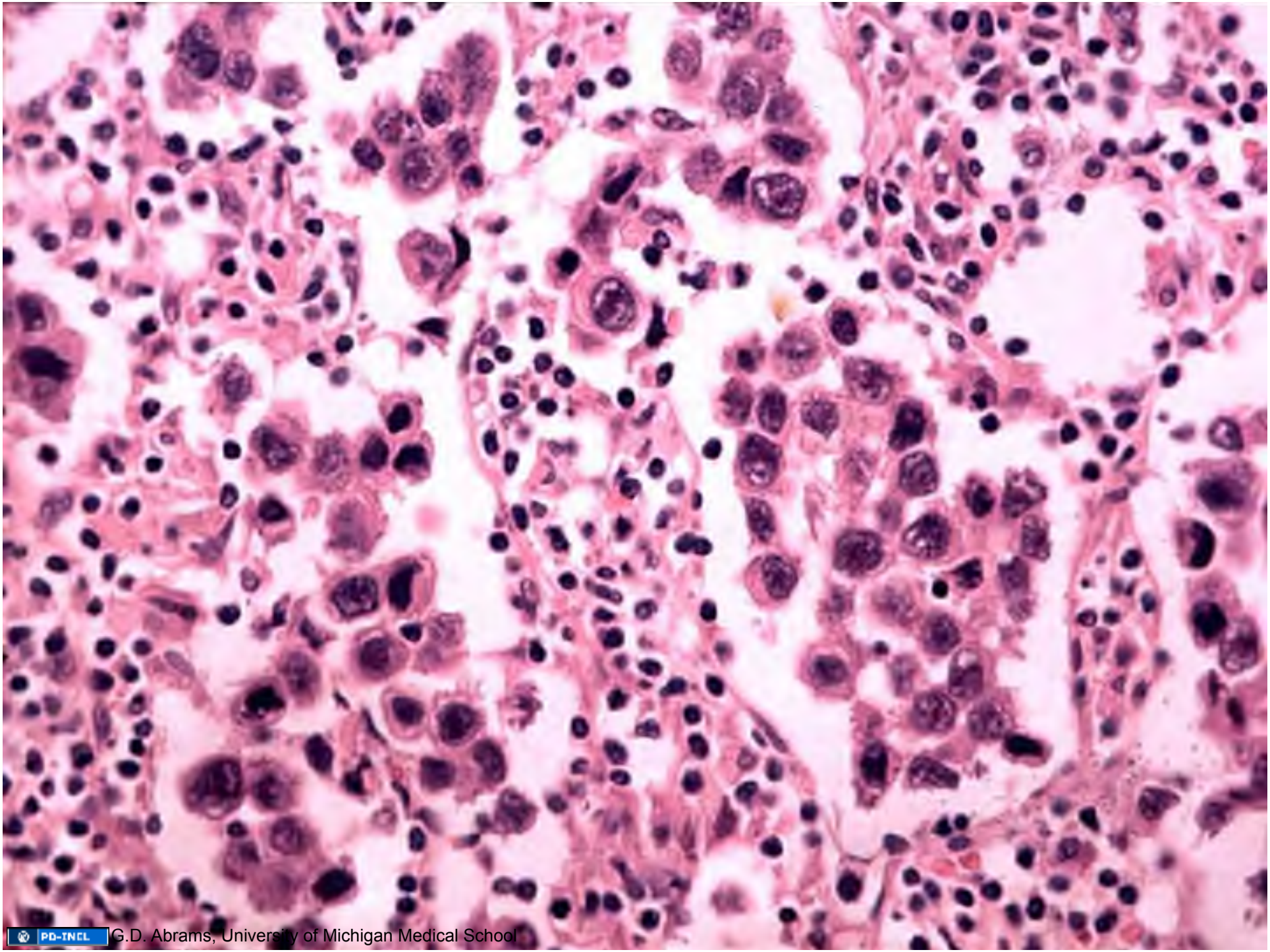

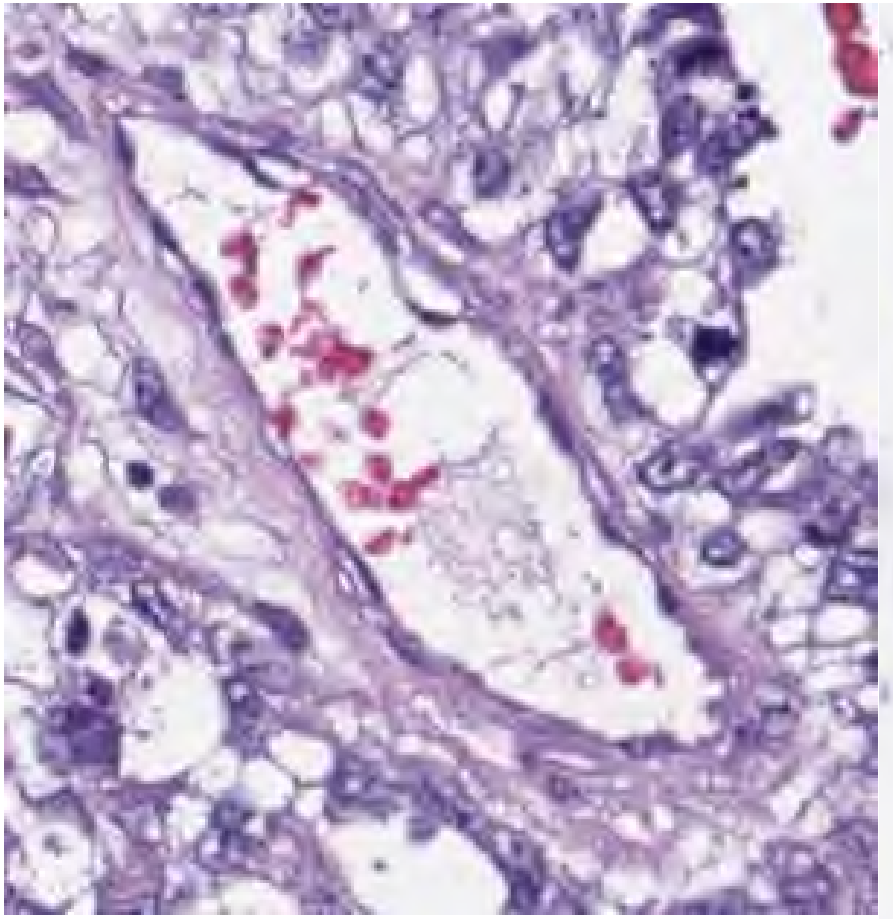

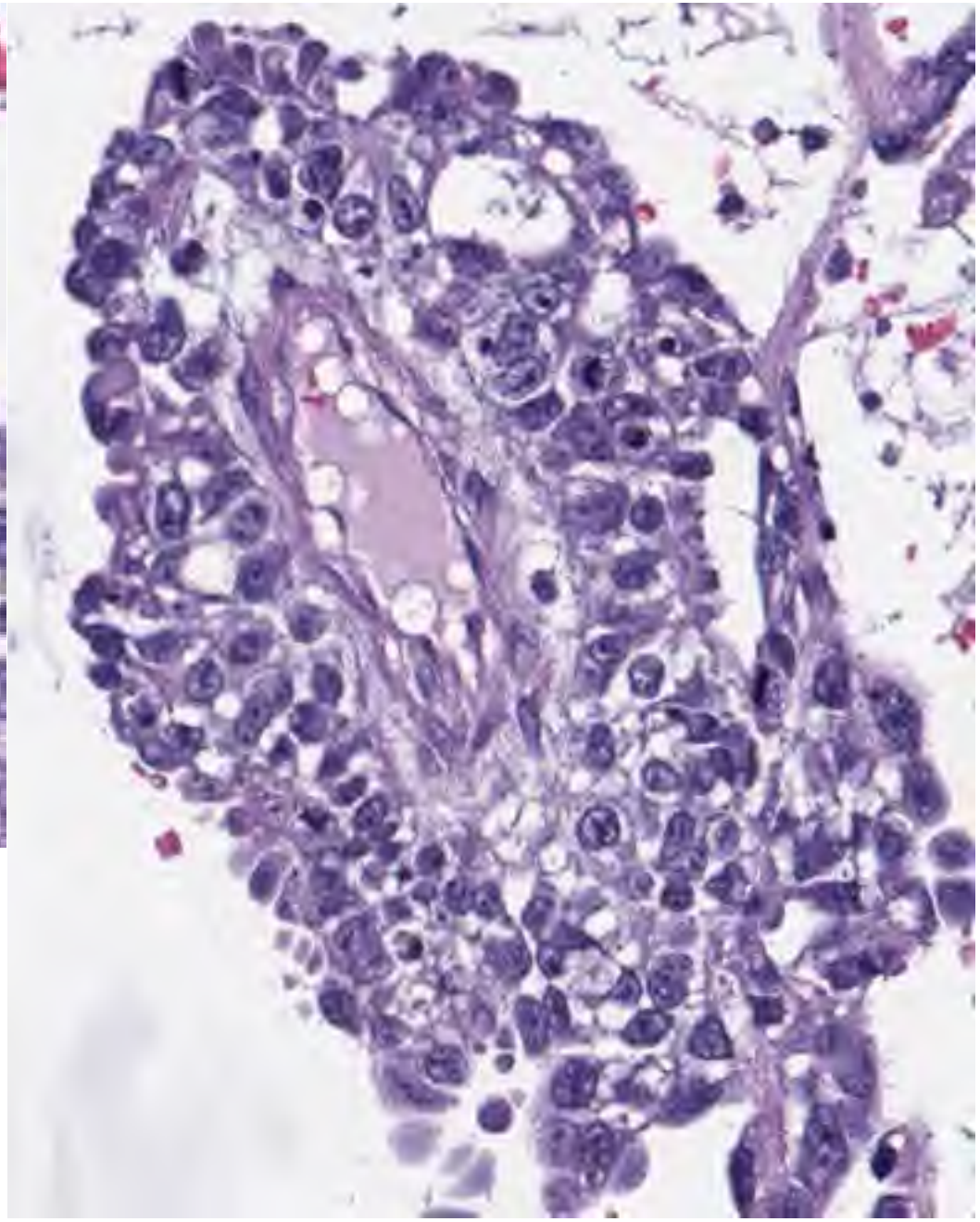

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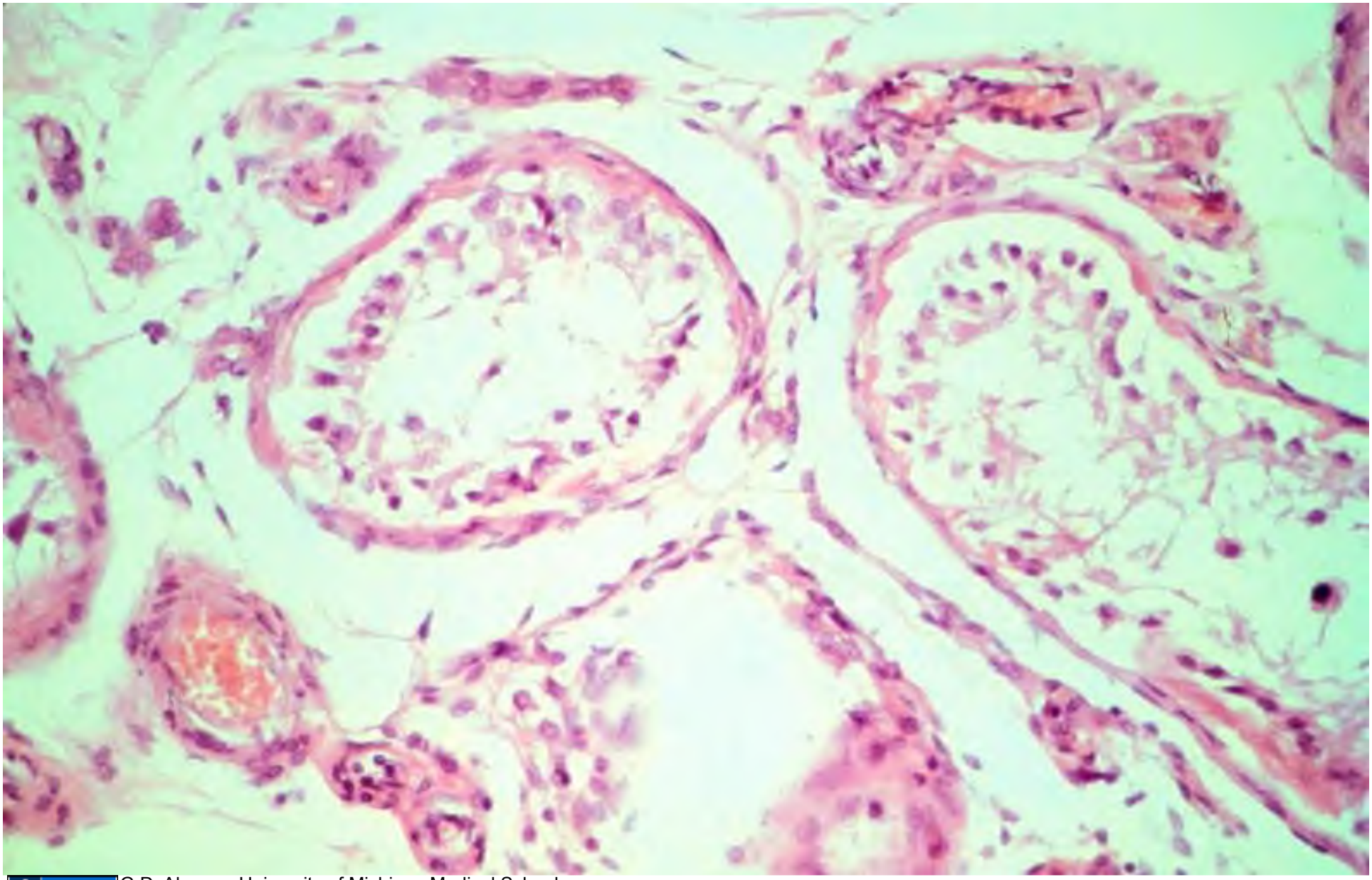

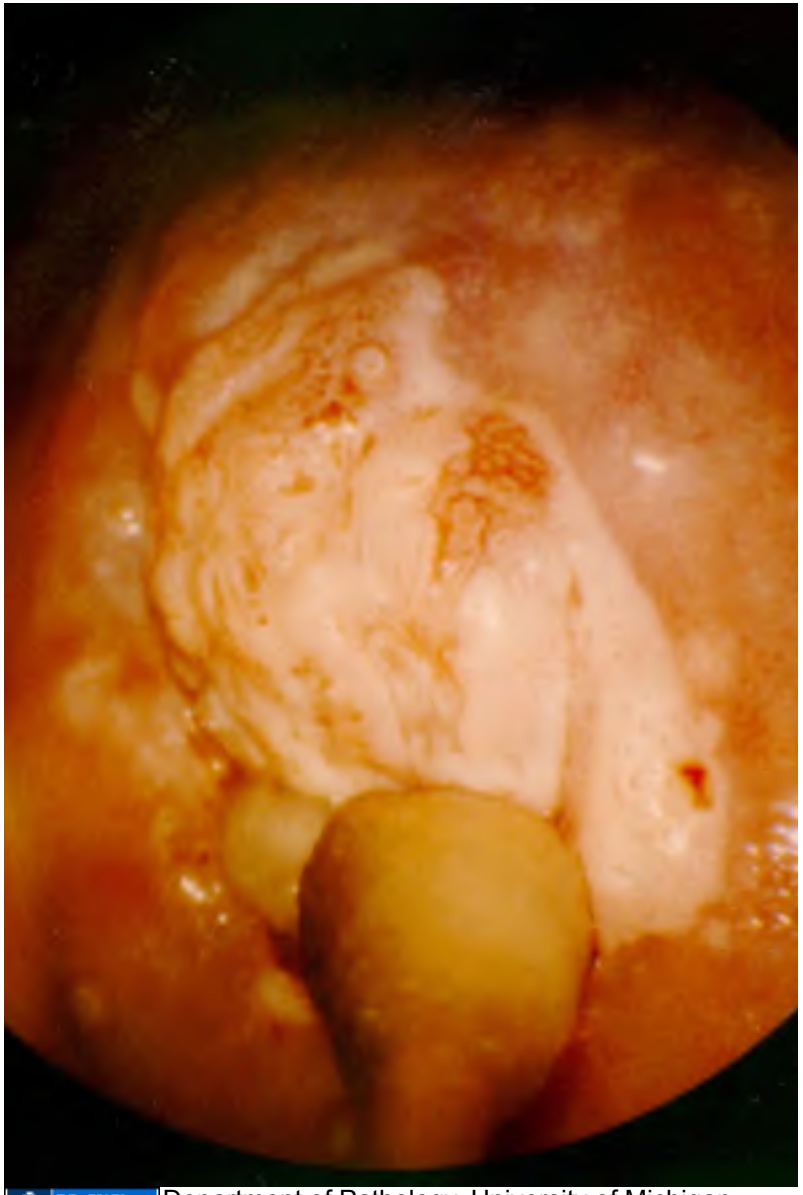

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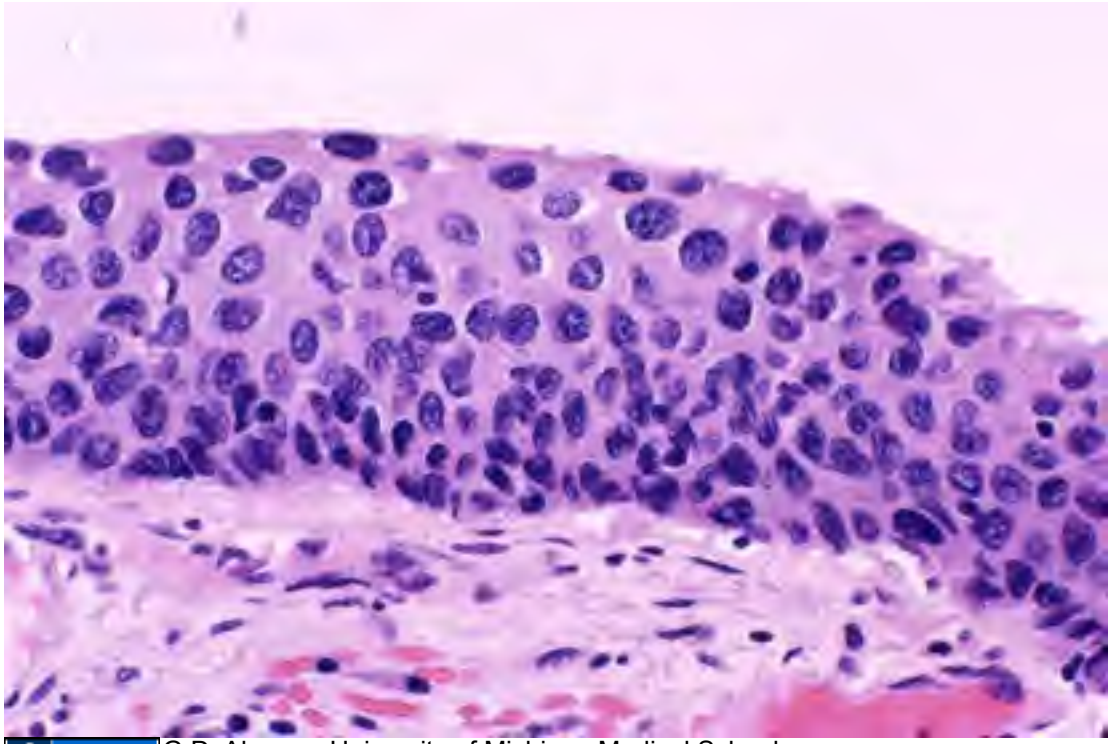

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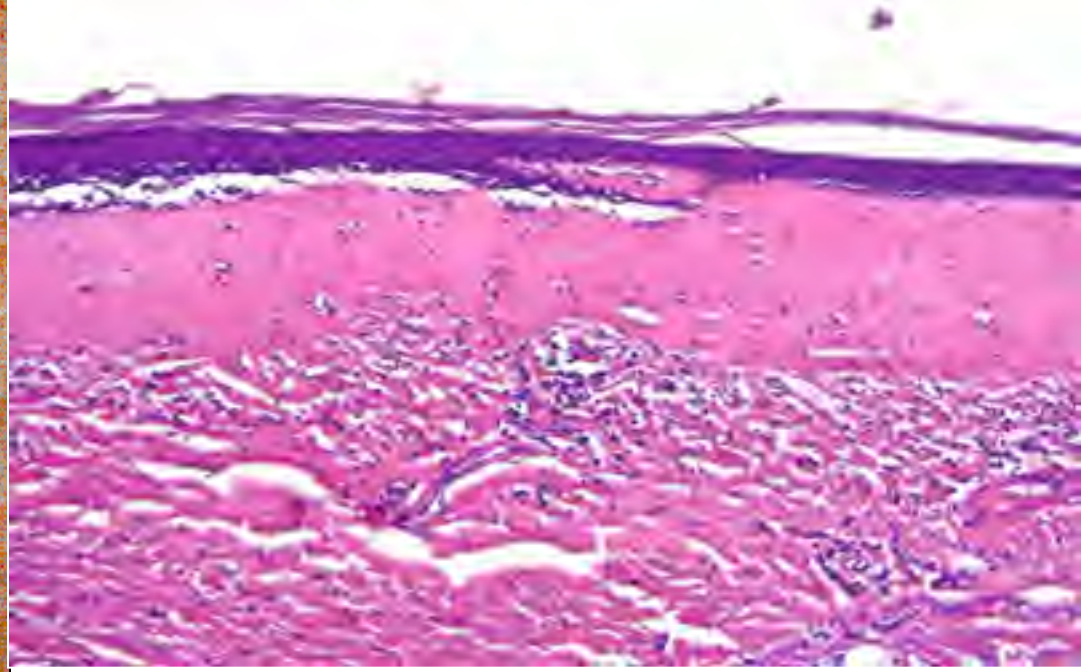

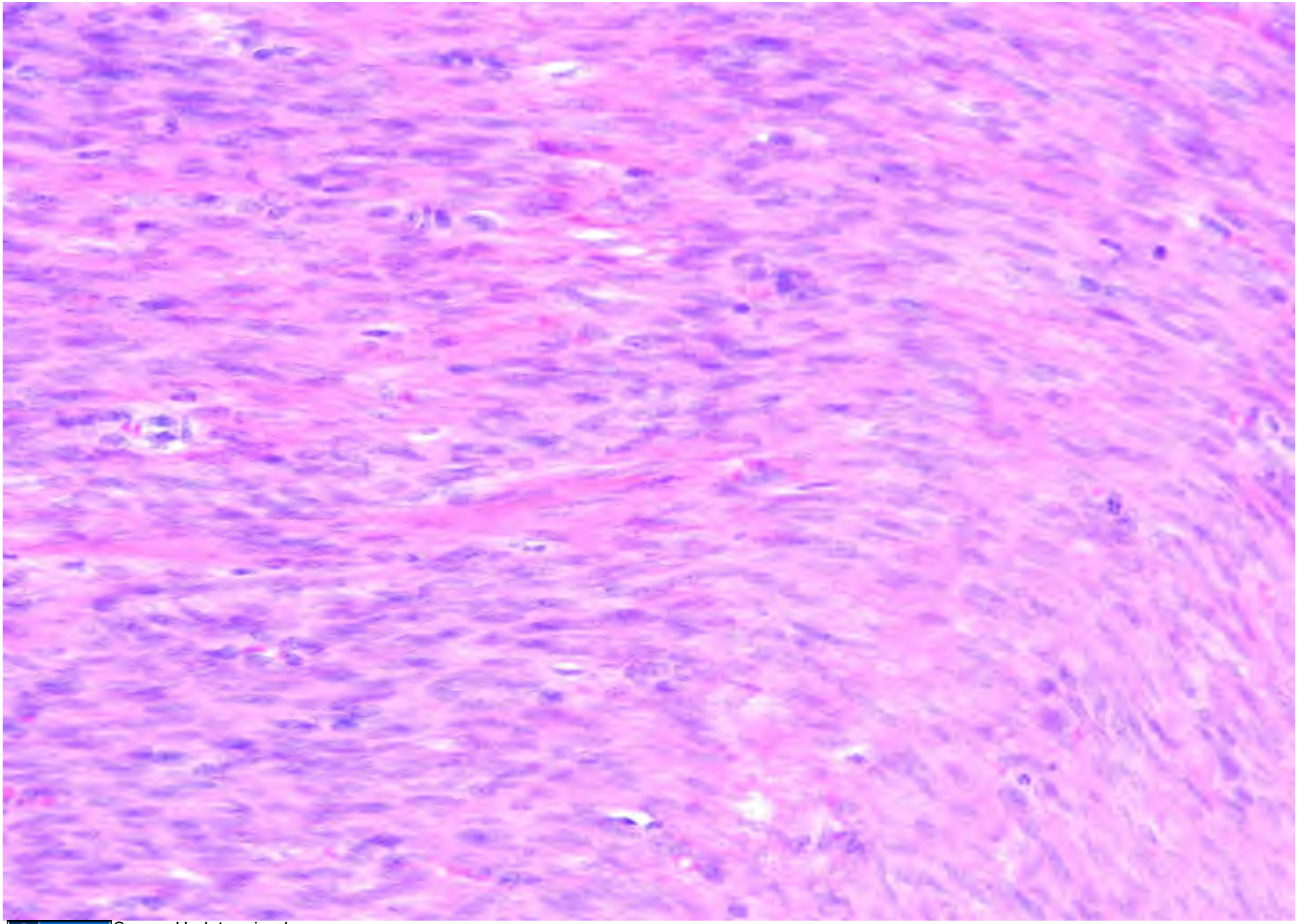

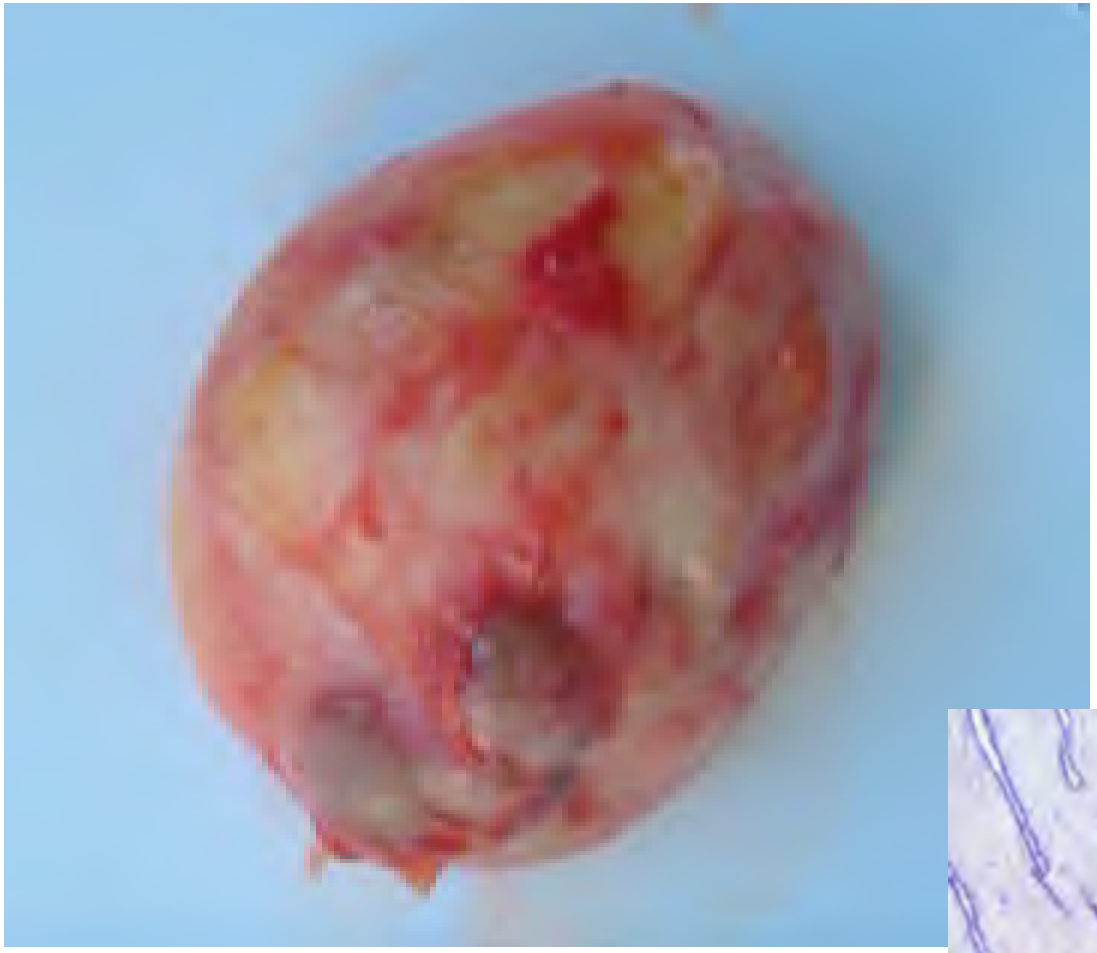

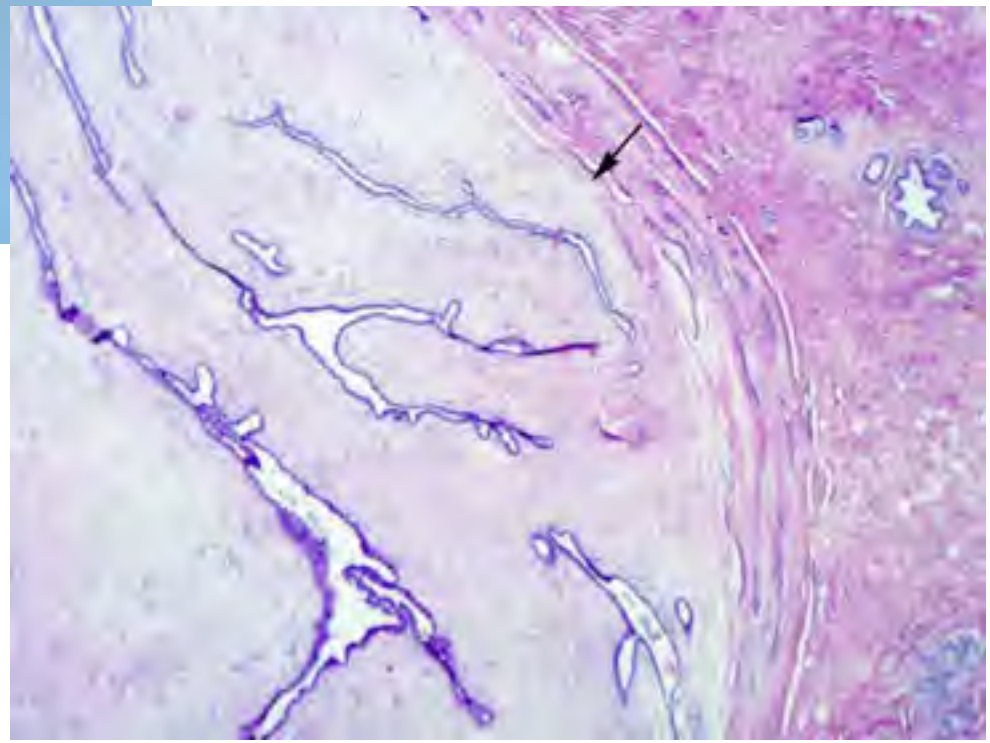

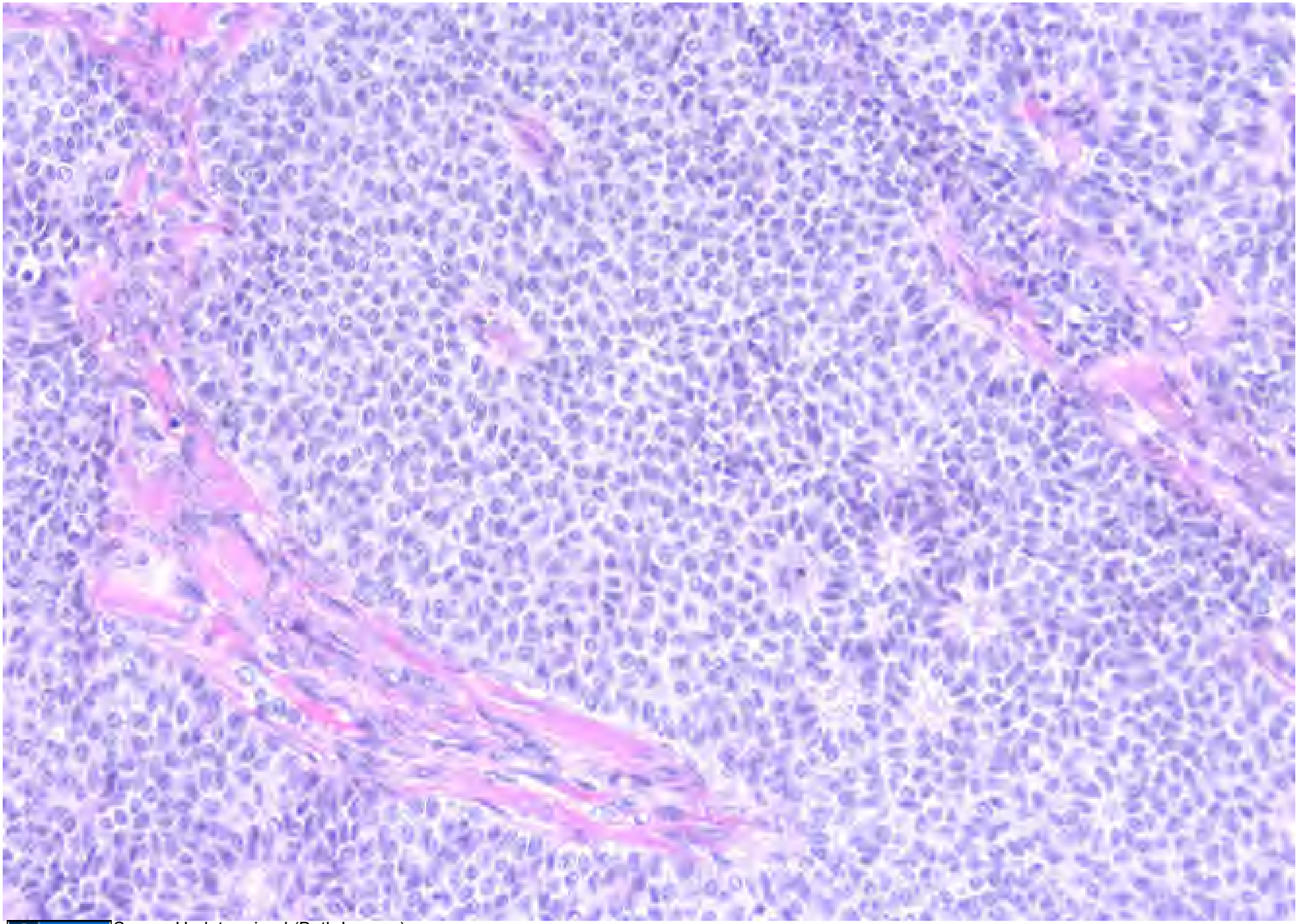

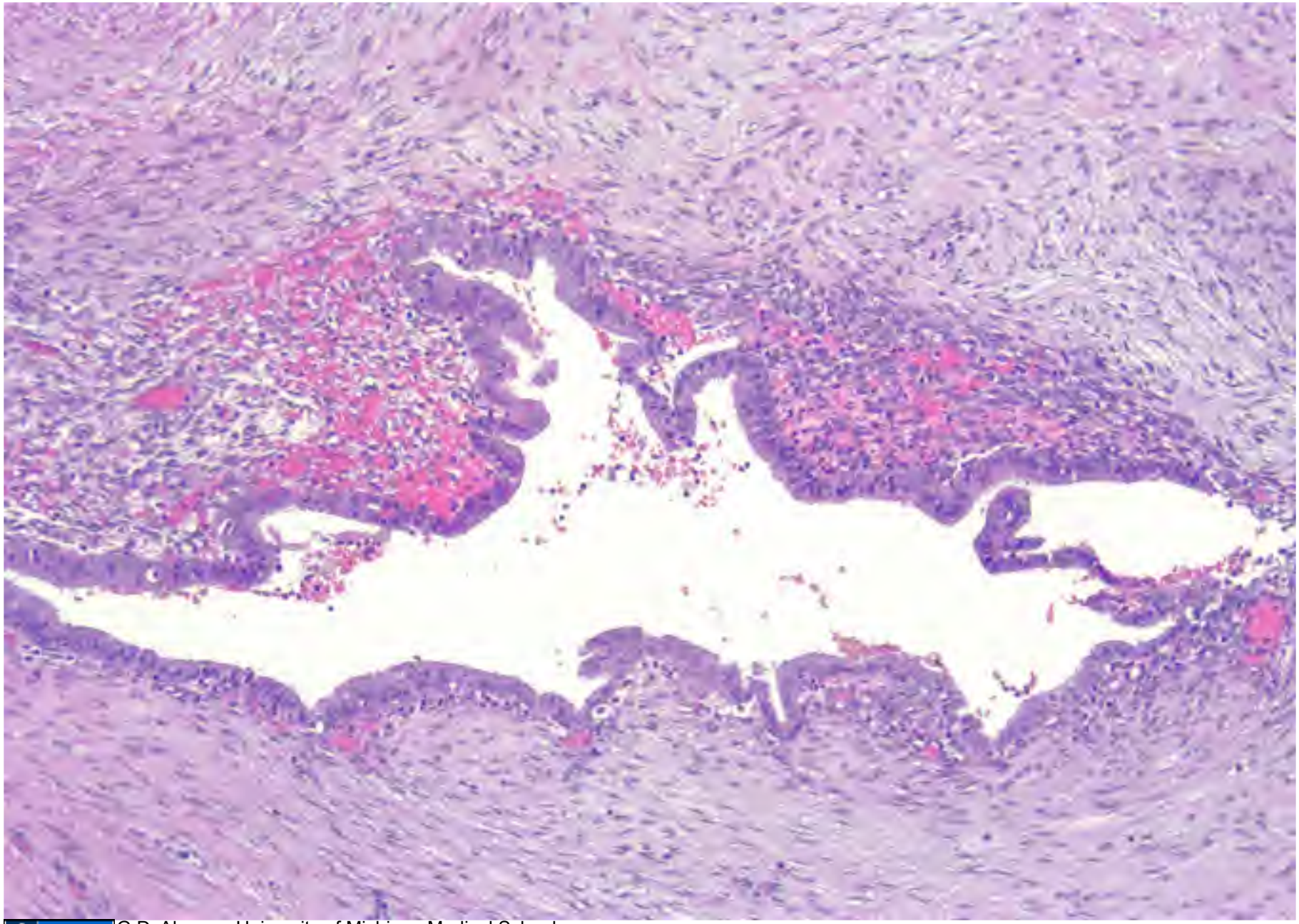

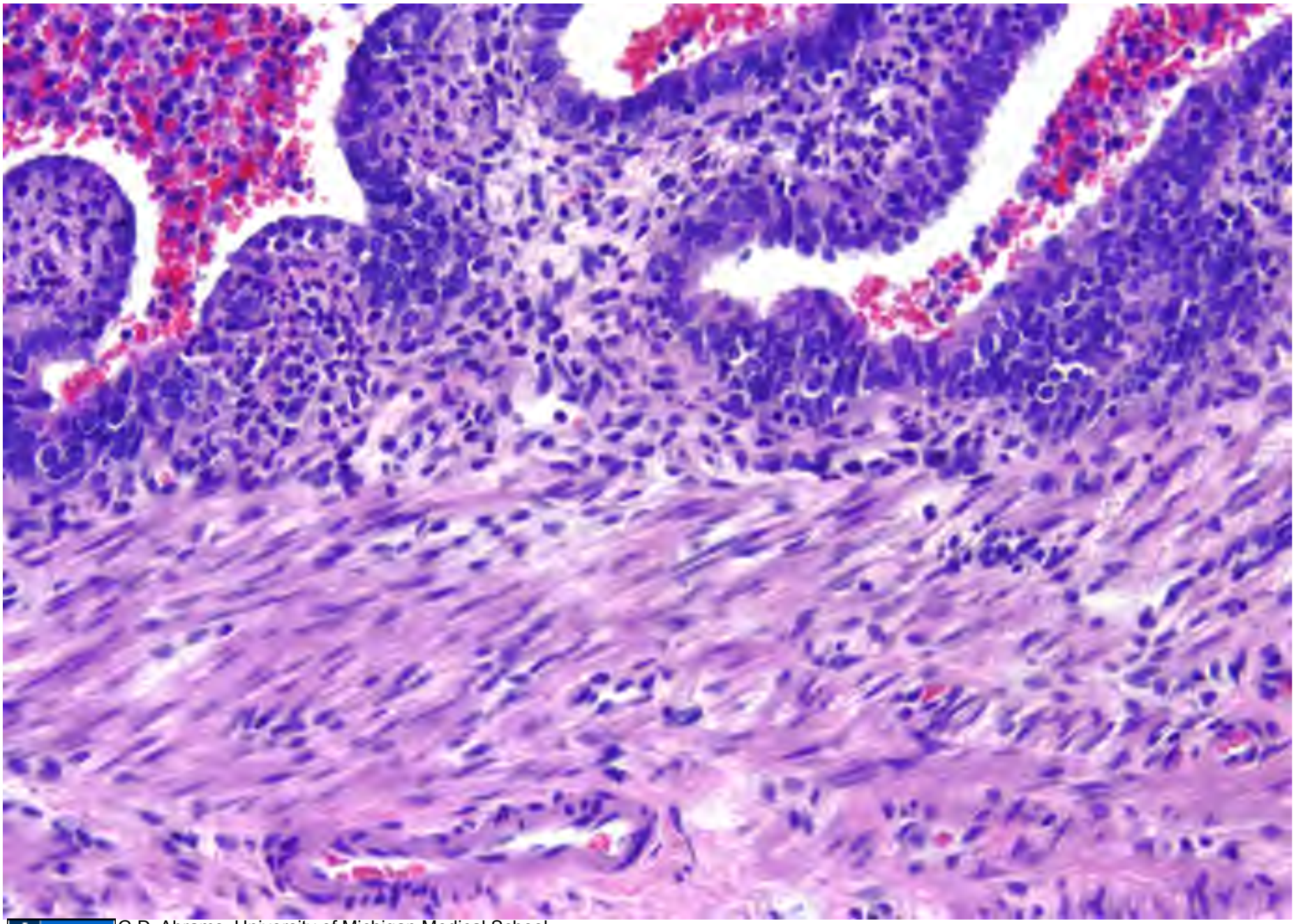

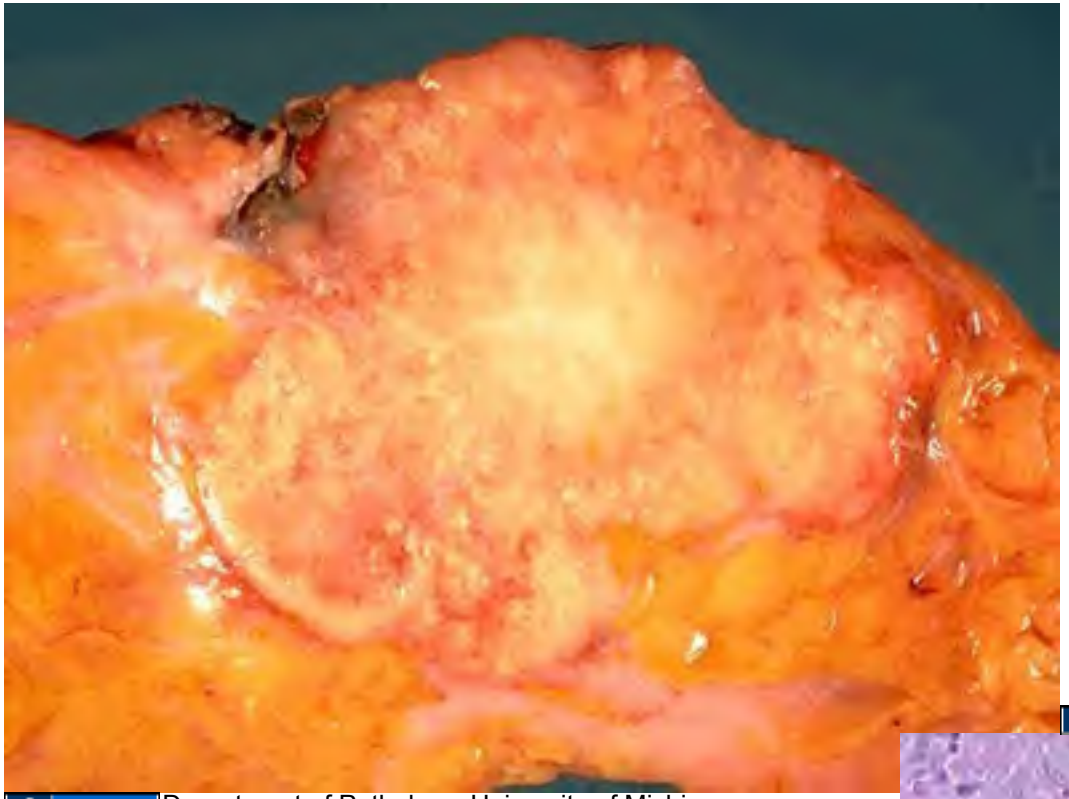

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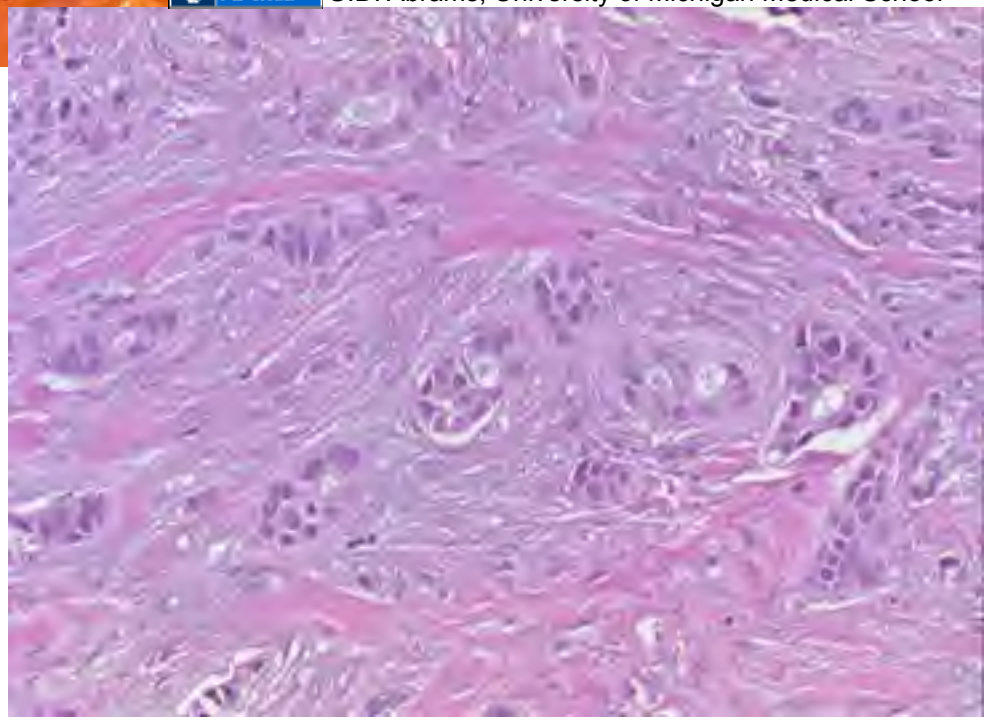

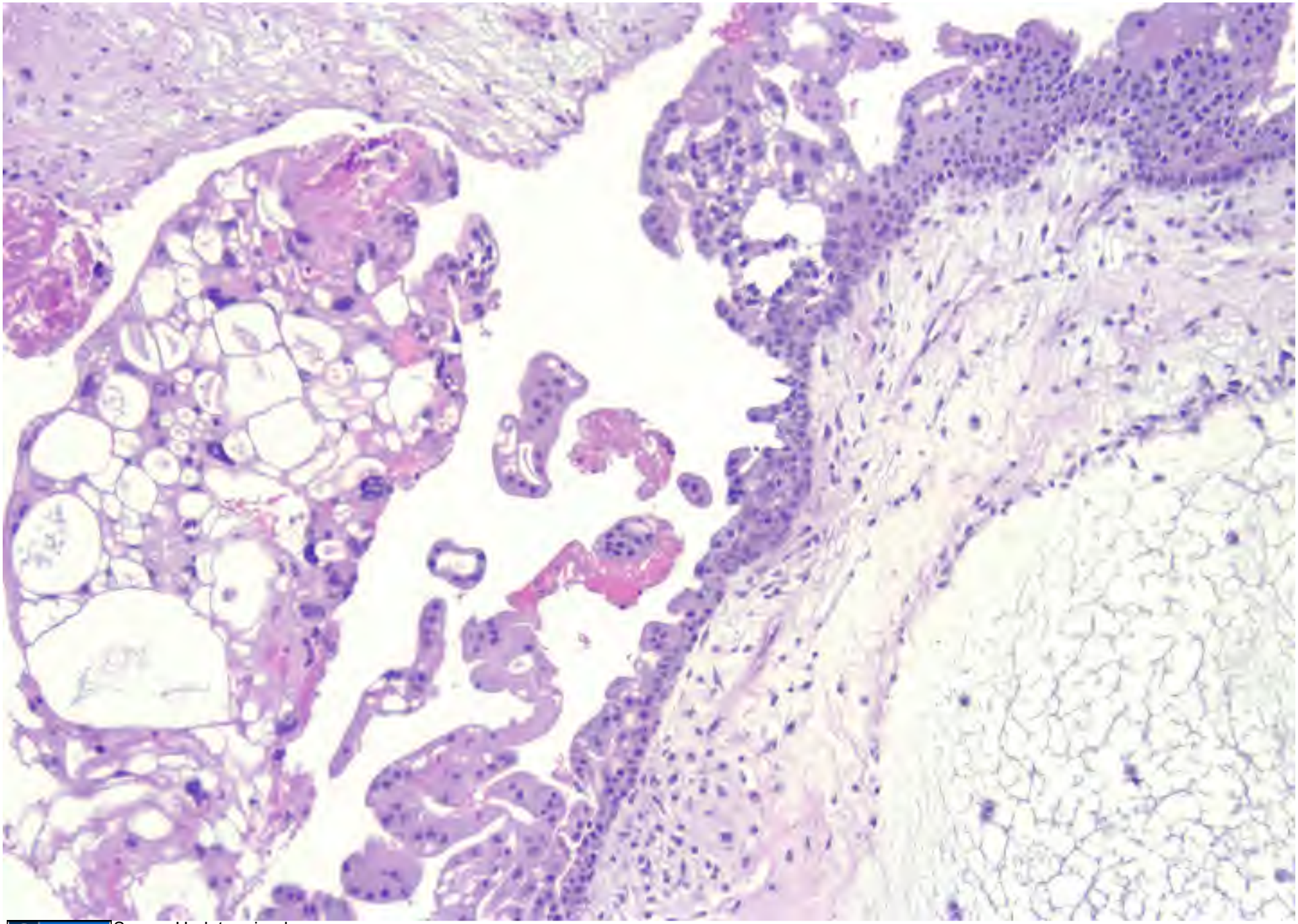

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