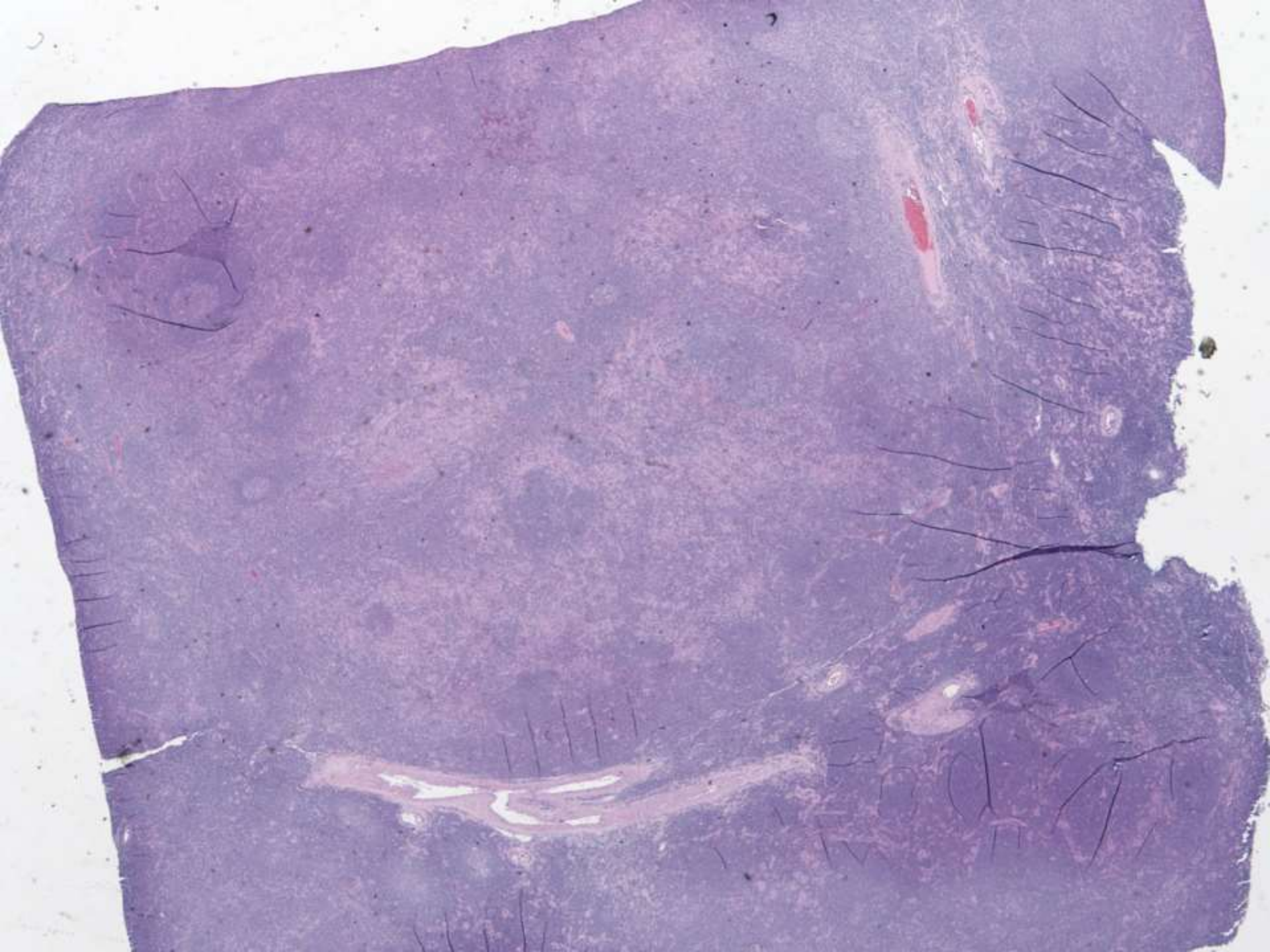
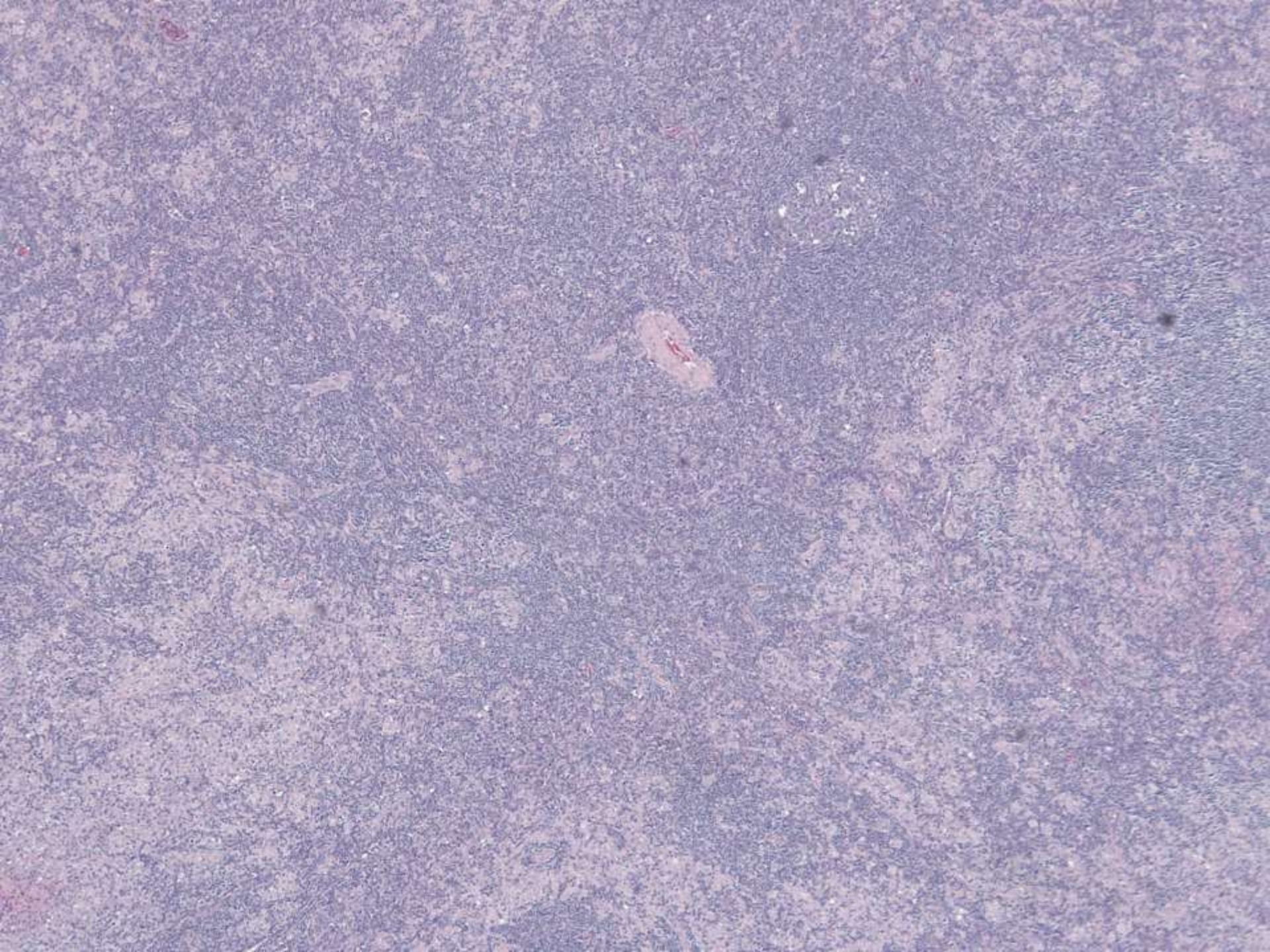
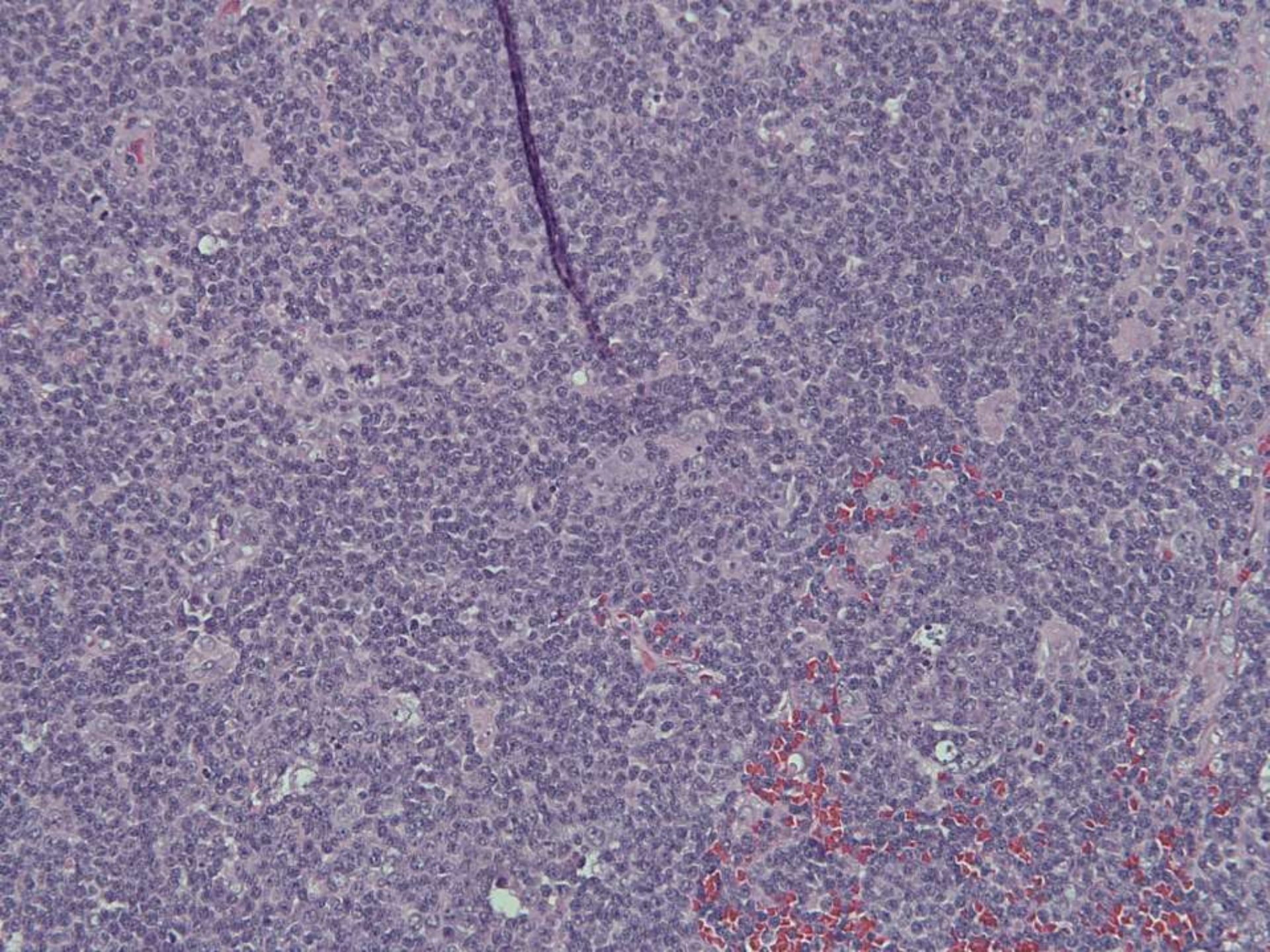
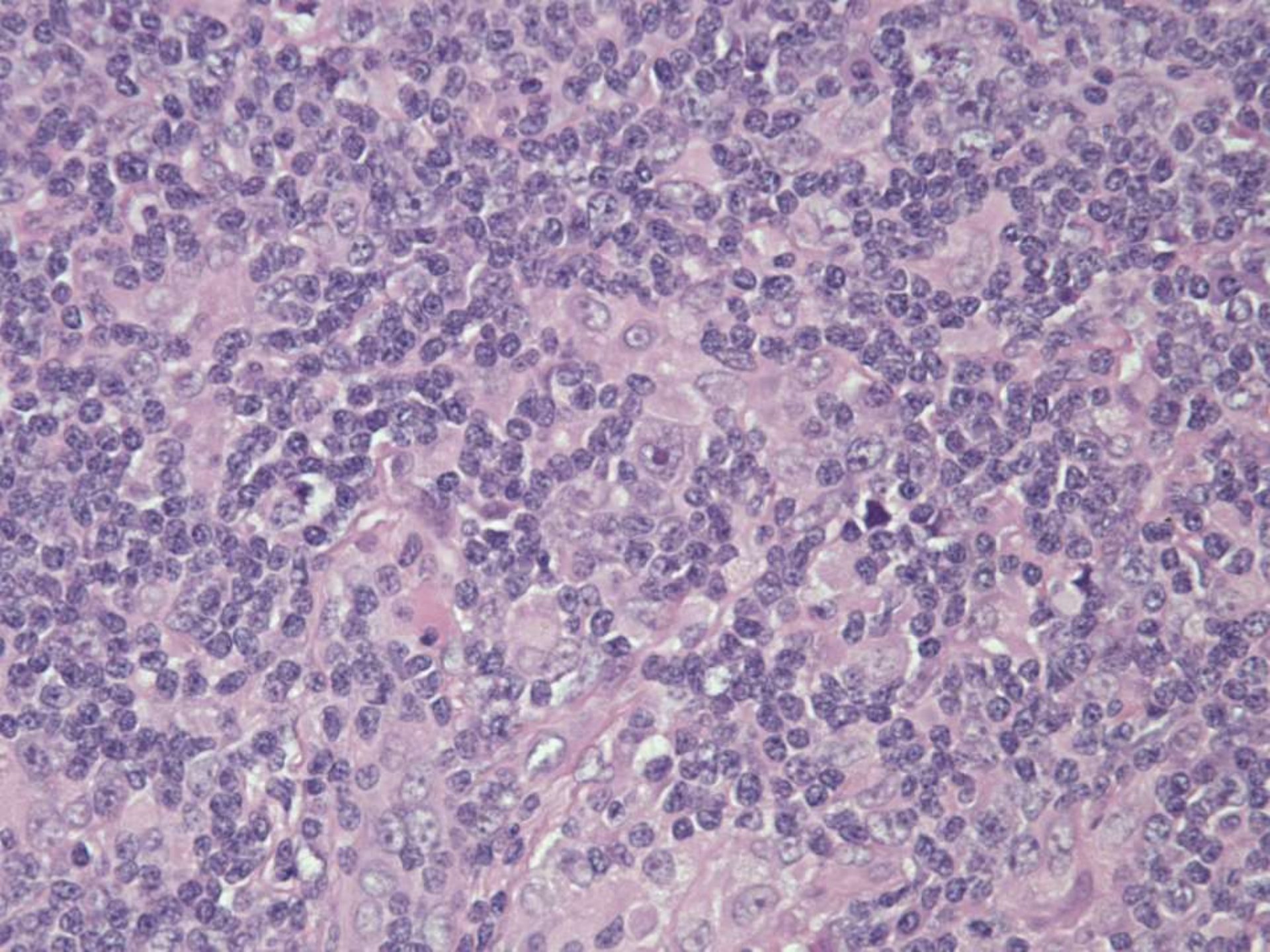
SB 6201
Sebastian Fernandez-Pol/Yaso Natkunam/Roger Warnke; Stanford

70-year-old man who has recently completed 3 cycles of adjuvant gemcitabine given in the setting of resected stage IB adenocarcinoma of the pancreas. A recent CT shows a 4cm left axillary lymph node. No other evidence of malignancy was seen. The patient feels well clinically and there is no other report of abnormal lymph nodes.



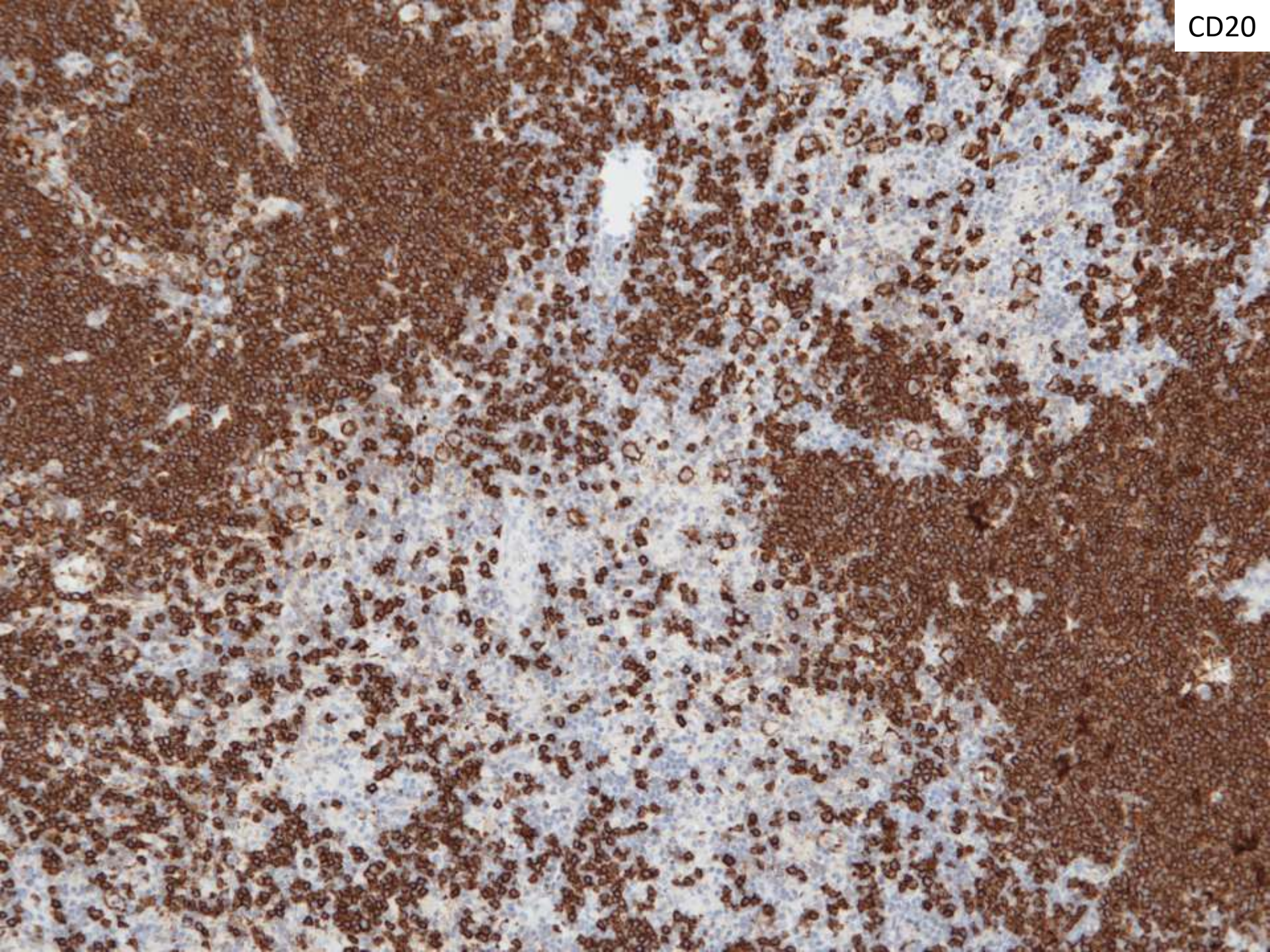


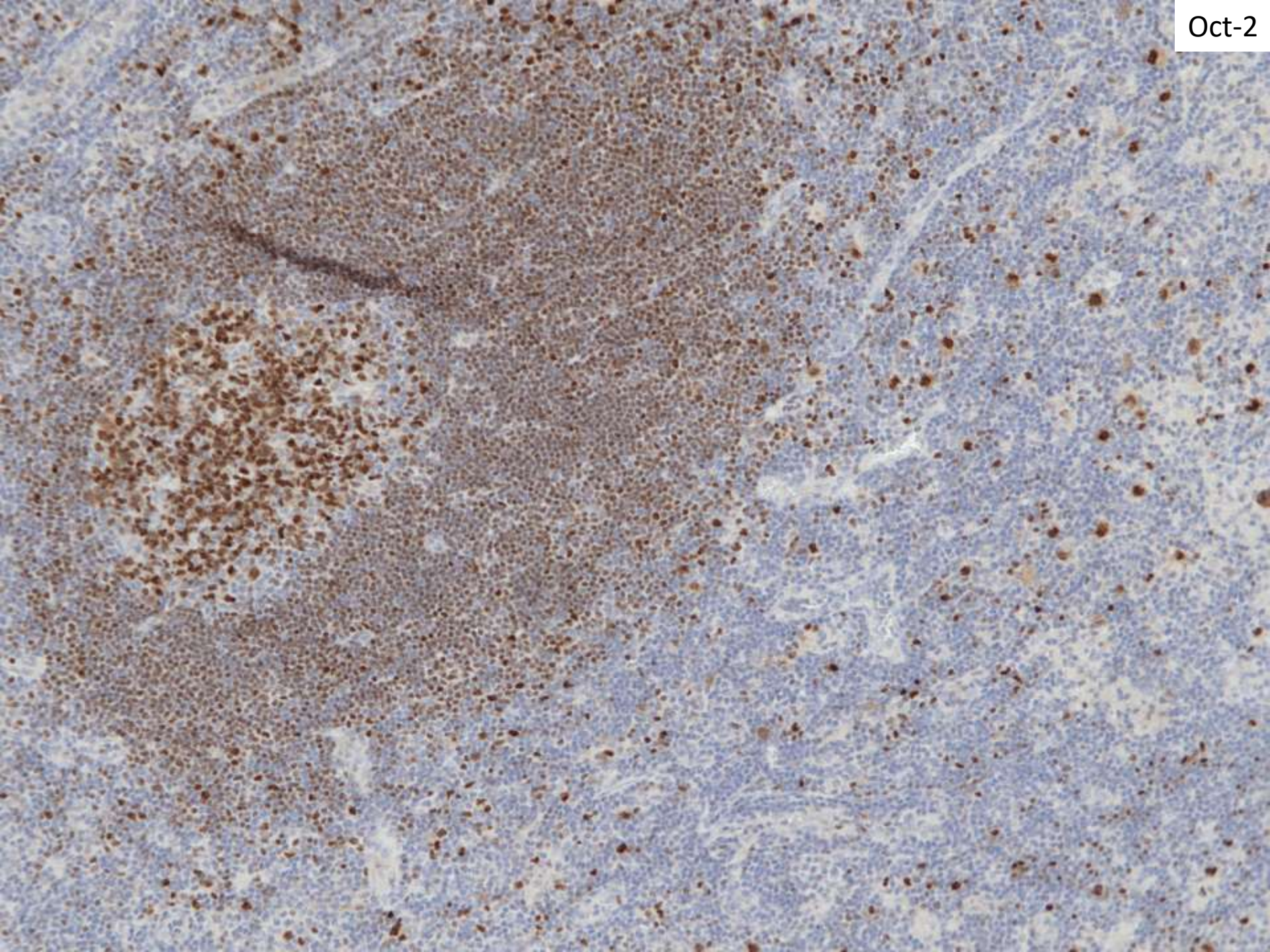




Nodular lymphocyte predominant Hodgkin lymphoma with variant nodular pattern with many extranodular lymphocyte predominant cells


CD20


CD20


Oct-2

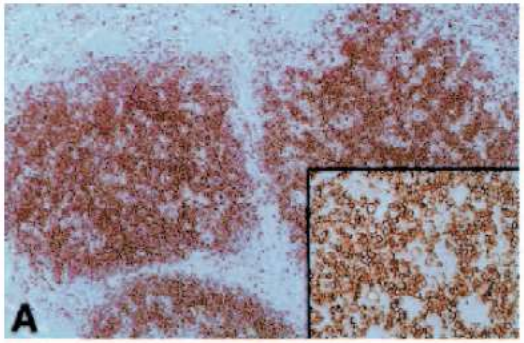
Am J Surg Pathol • Volume 27, Number 10, October 2003 Nodular Lymphocyte Predominant Hodgkin Lymphoma

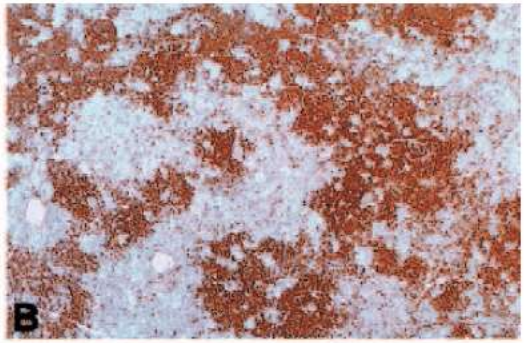
Characterization of Variant Patterns of Nodular Lymphocyte Predominant Hodgkin Lymphoma with Immunohistologic and Clinical Correlation

Zhen Fan, MD, Yasodha Natkunam, MD, PhD, Eric Bair, BS, MS, Robert Tibshirani, PhD, and Roger A. Warnke, MD

CD20 stain

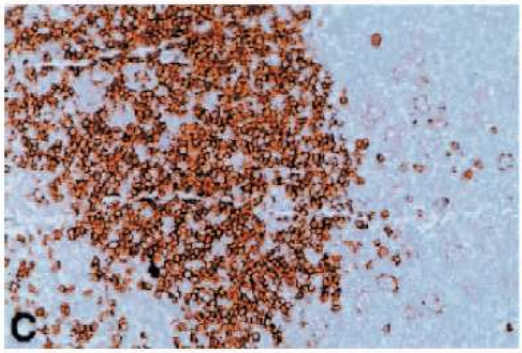
"Classic" B-cell-rich nodular pattern

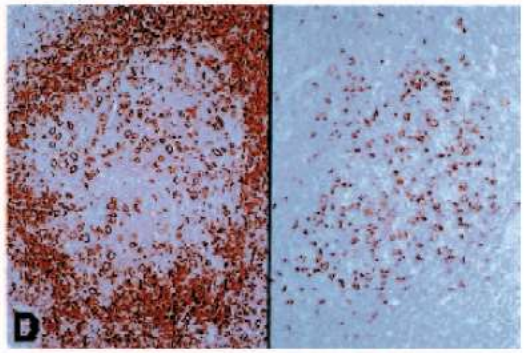




Serpiginous nodular pattern

Nodular pattern with many extranodular L&H cells

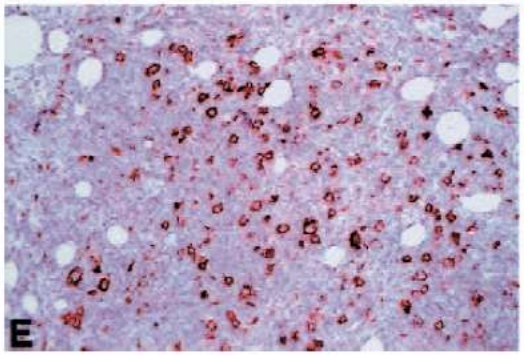


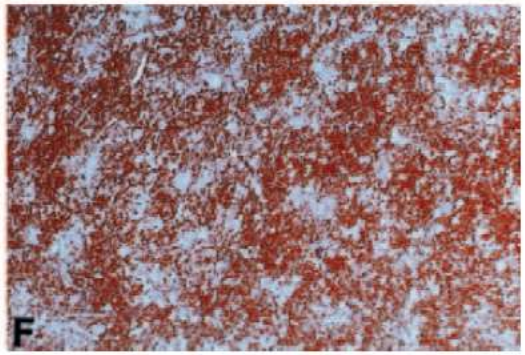


T-cell-rich nodular pattern

Diffuse, T-cell-rich (TCRBCL-like) pattern

- More common in patients with recurrent disease
- Independent predictor of recurrence

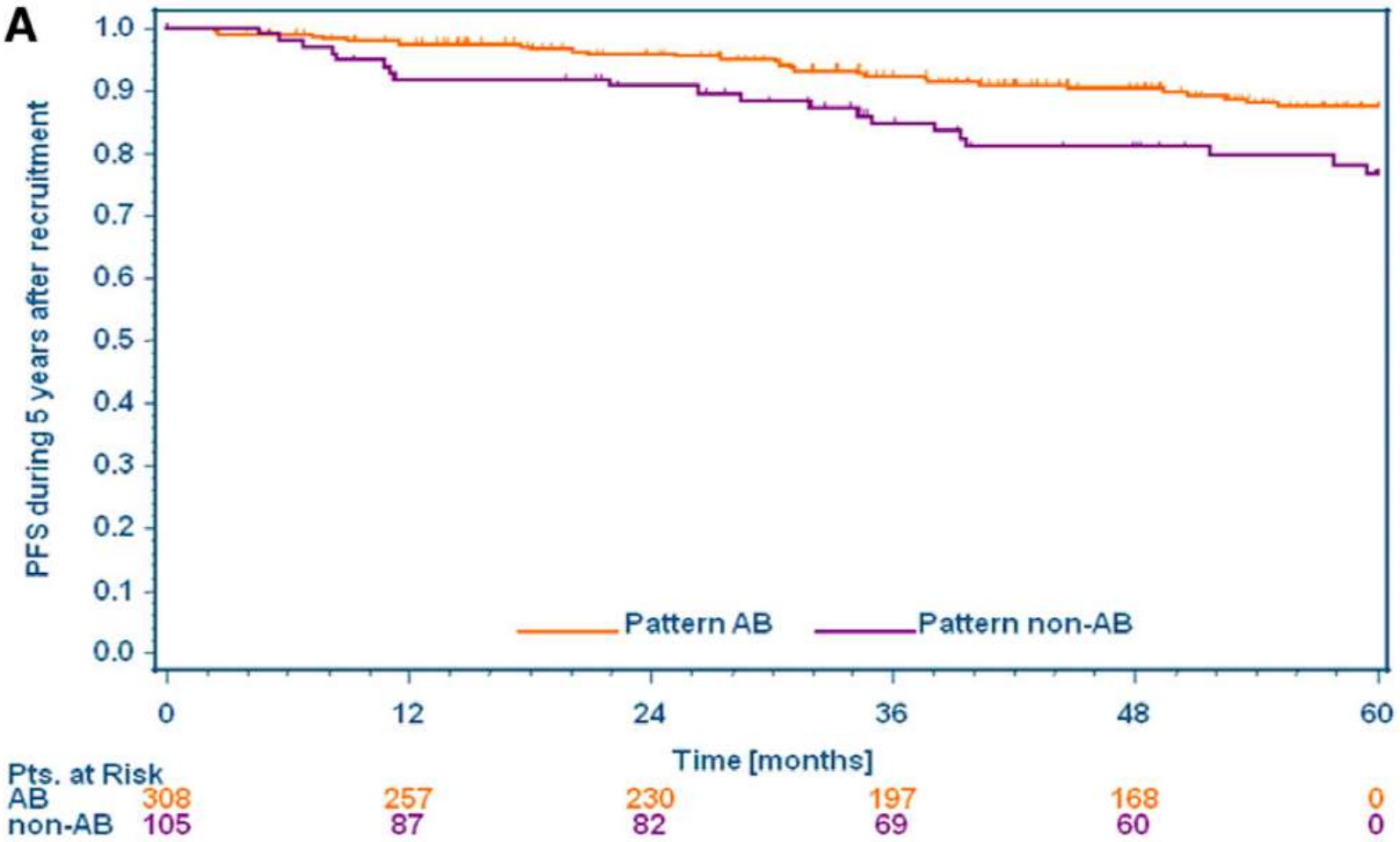




(Diffuse), moth-eaten (B-cell-rich) pattern

The prognostic impact of variant histology in nodular lymphocyte-predominant Hodgkin lymphoma: a report from the German Hodgkin Study Group (GHSG)

Sylvia Hartmann,[1] Dennis A. Eichenauer,[2,3] Annette Plütschow,[2,3] Anja Mottok,[4] Roshanak Bob,[5] Karoline Koch,[6] Heinz-Wolfram Bernd,[7] Sergio Cogliatti,[8] Michael Hummel,[9] Alfred C. Feller,[7] German Ott,[10] Peter Möller,[11] Andreas Rosenwald,[4] Harald Stein,[5] Martin-Leo Hansmann,[1] Andreas Engert,[2,3] and Wolfram Klapper[6]



The 2016 revision of the World Health Organization classification of lymphoid neoplasms

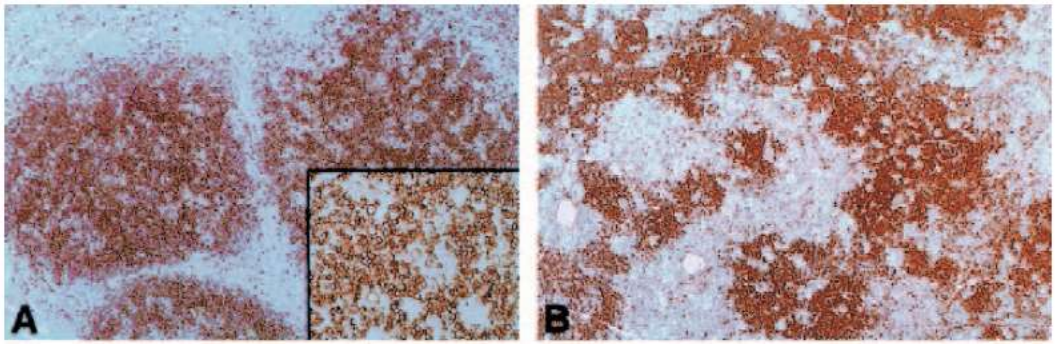
Steven H. Swerdlow,[1] Elias Campo,[2] Stefano A. Pileri,[3] Nancy Lee Harris,[4] Harald Stein,[5] Reiner Siebert,[6] Ranjana Advani,[7] Michele Ghielmini,[8] Gilles A. Salles,[9] Andrew D. Zelenetz,[10] and Elaine S. Jaffe[11]

Table 2. Highlights of changes in 2016 WHO classification of lymphoid, histiocytic, and dendritic neoplasms

Entity/category	Change
Nodular lymphocyte–predominant Hodgkin lymphoma	• Variant growth patterns, if present, should be noted in diagnostic report, due to their clinicopathologic associations. • Cases associated with synchronous or subsequent sites that are indistinguishable from T-cell histiocyte-rich large B-cell lymphoma (THRLBCL) without a nodular component should be designated THRLBCL-like transformation.

Summary

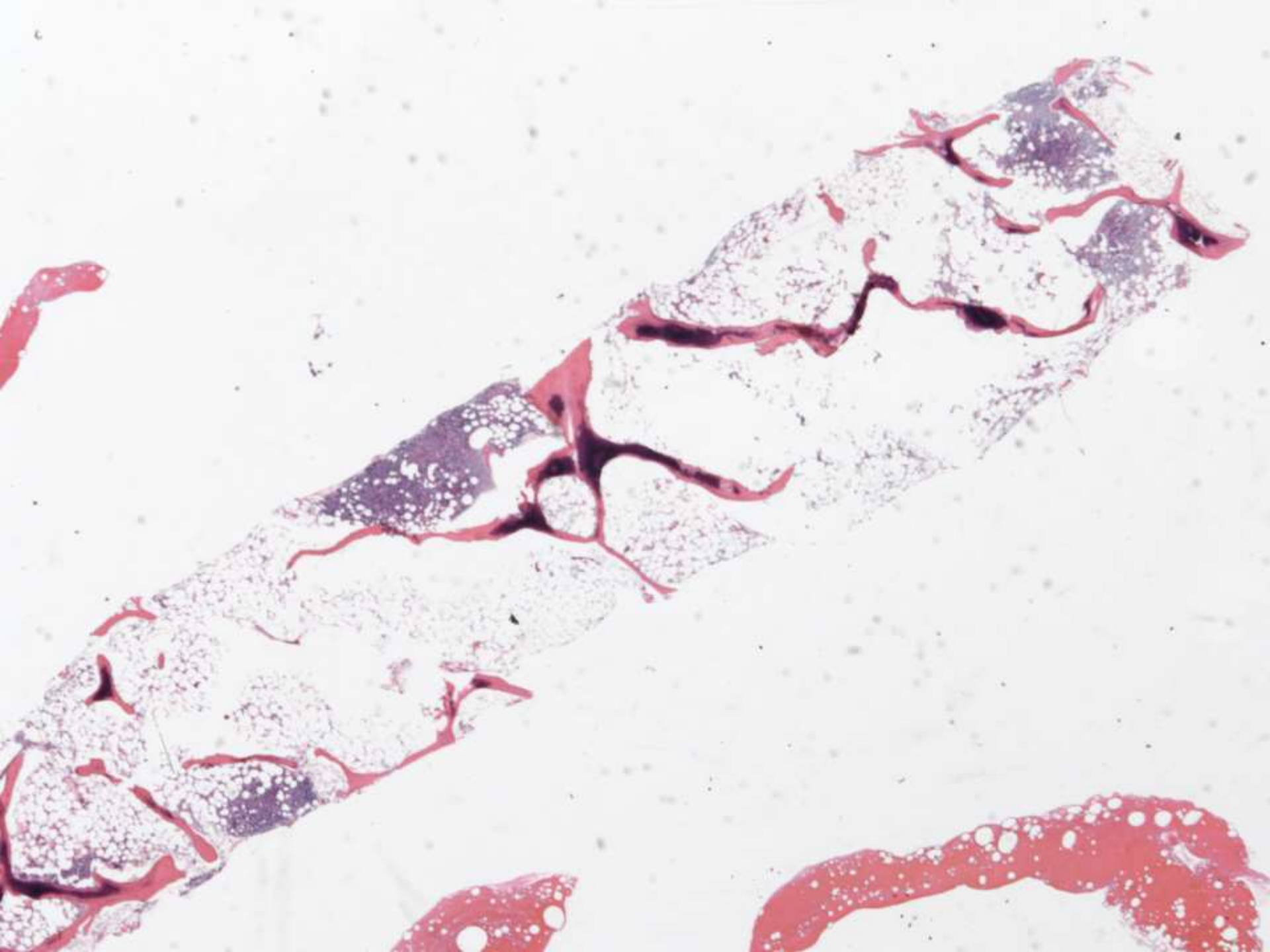
- The presence of patterns other than A) “Classic” B-cell-rich nodular pattern or B) serpiginous nodular pattern should be noted in the diagnostic report

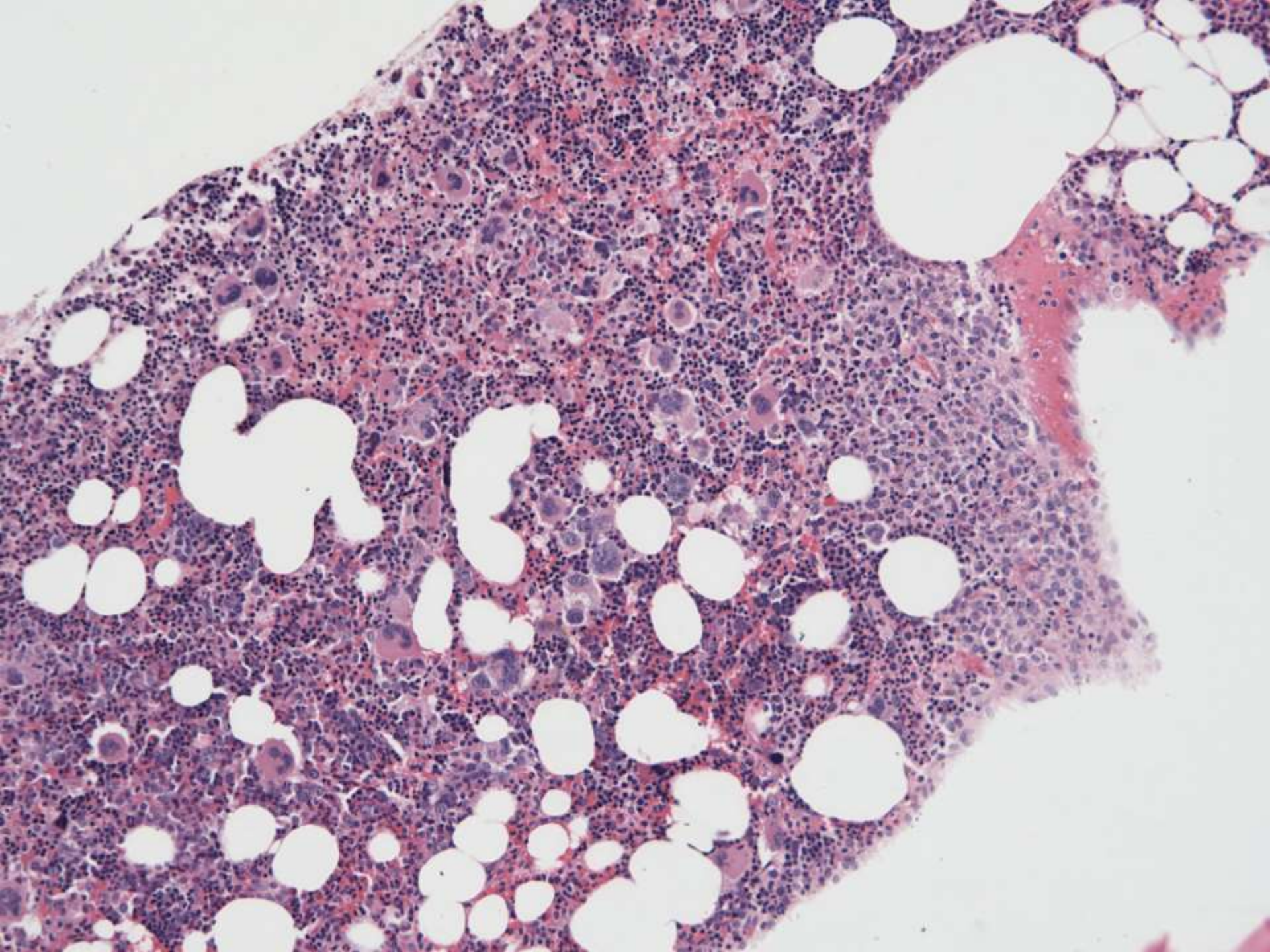


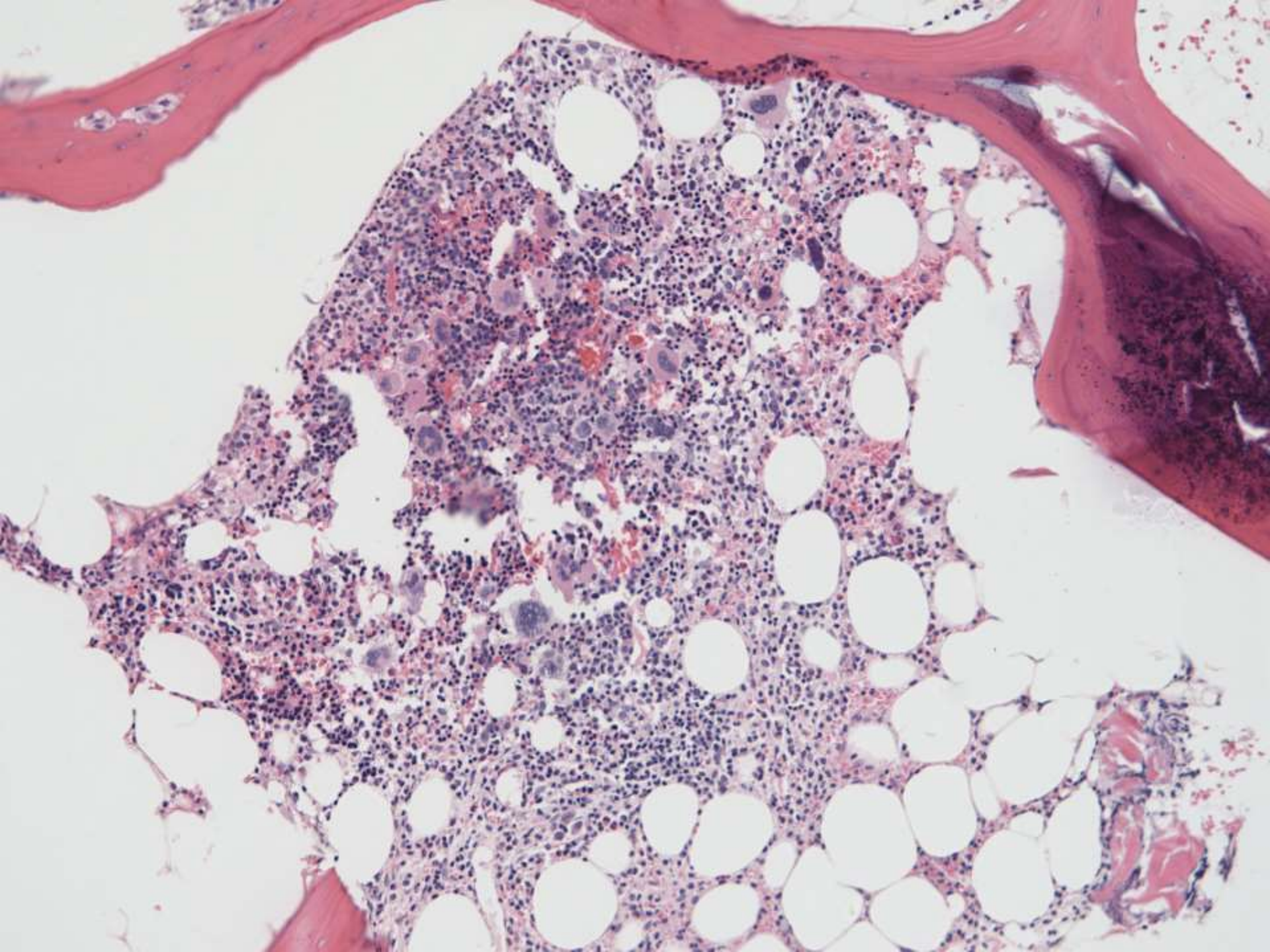
- Variant histologic patterns of NLPHL have been associated with **advanced disease** and a **higher relapse rate**, but these cases are still associated with good survival

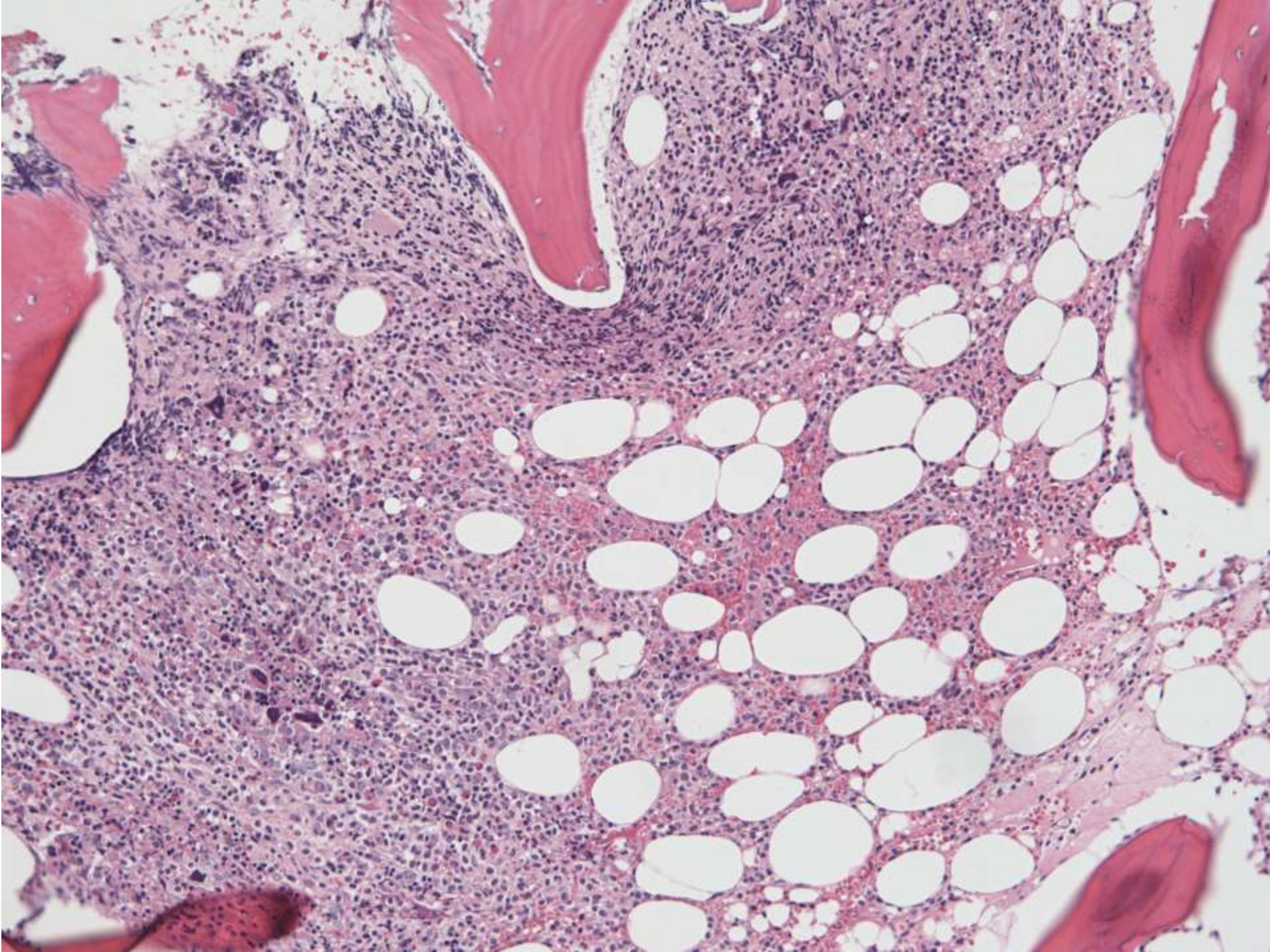
SB 6202
Sebastian Fernandez-Pol/Yaso Natkunam; Stanford

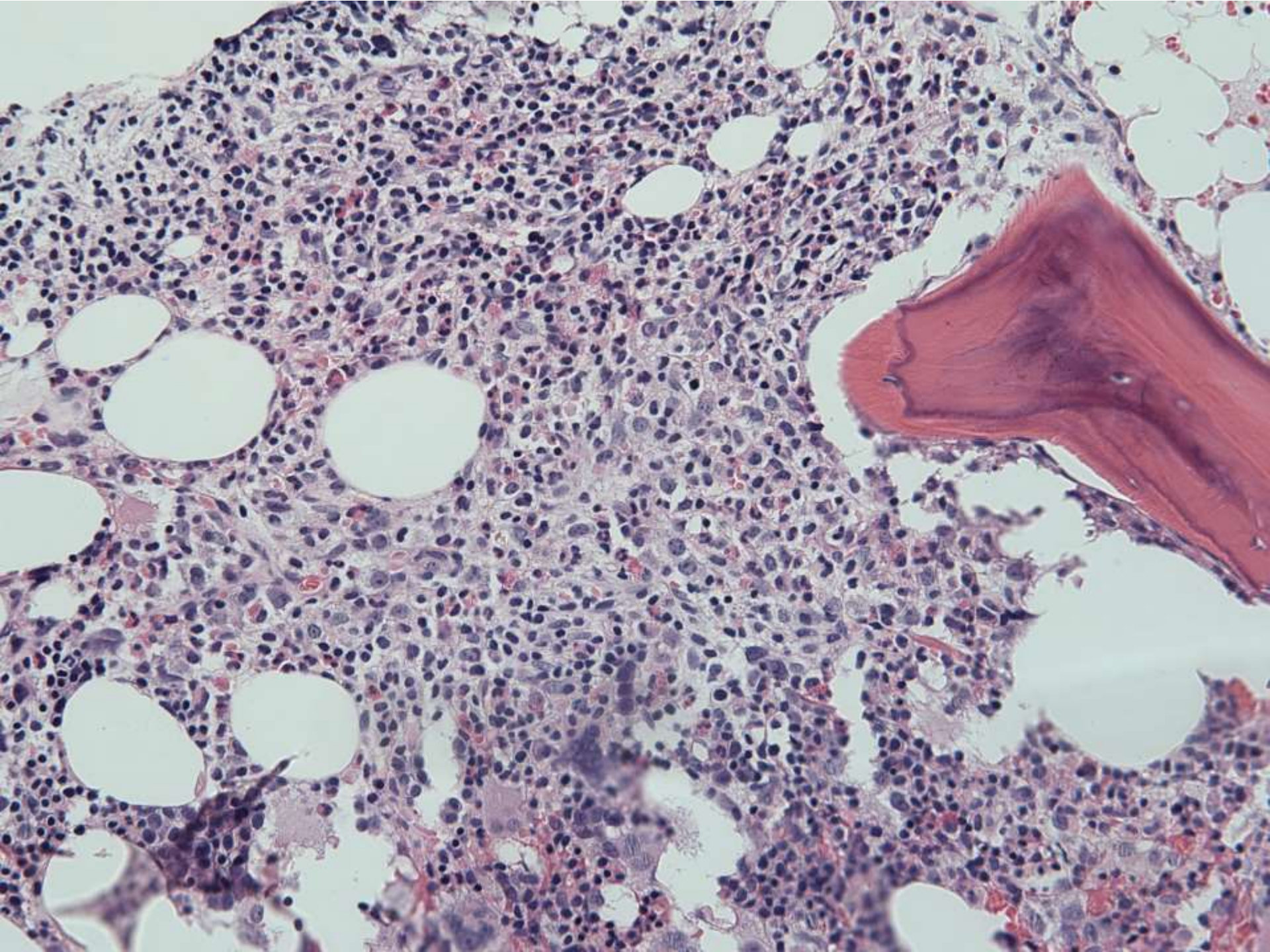
69-year-old man with pancytopenia. Bone marrow biopsy performed.

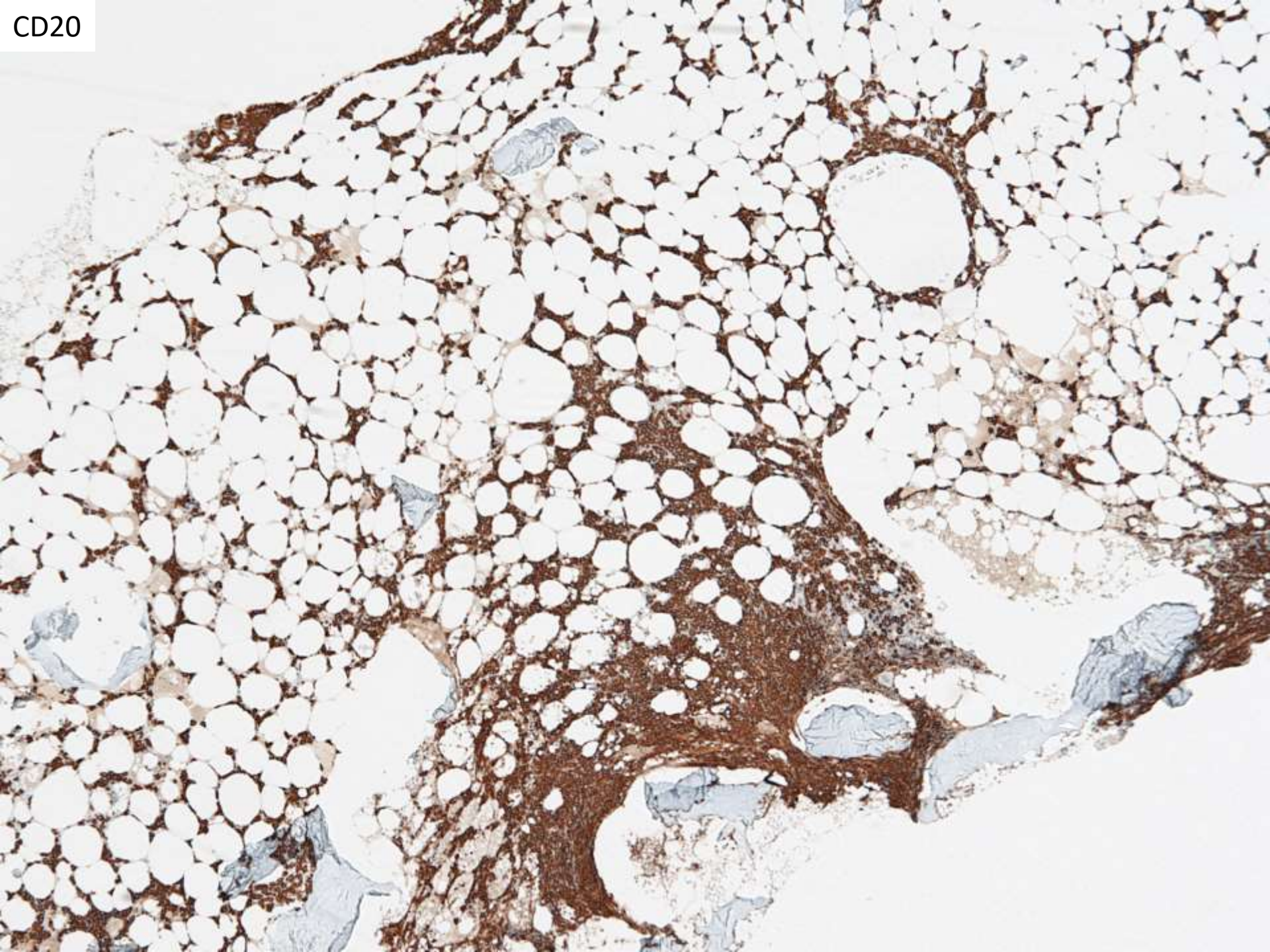


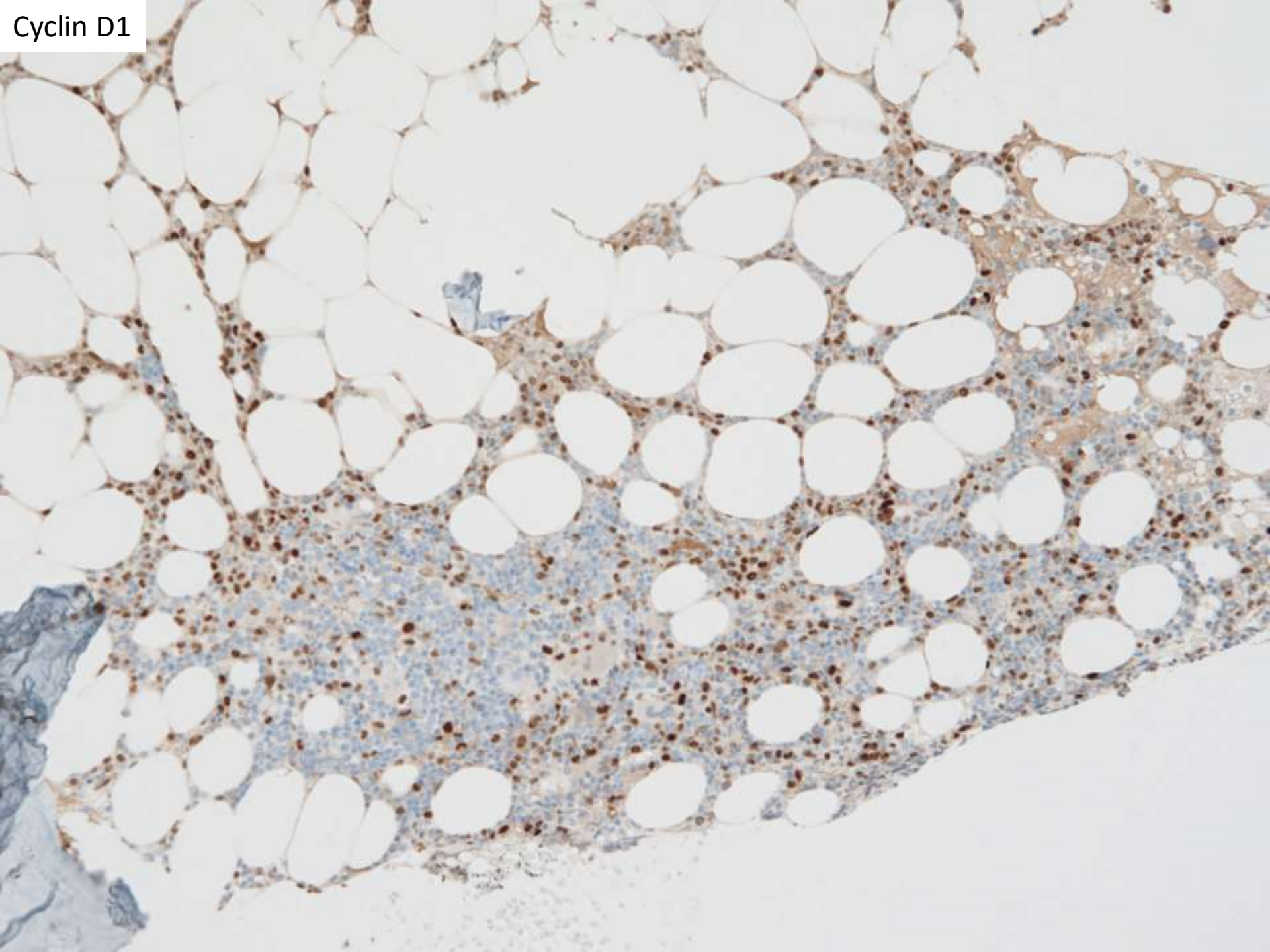


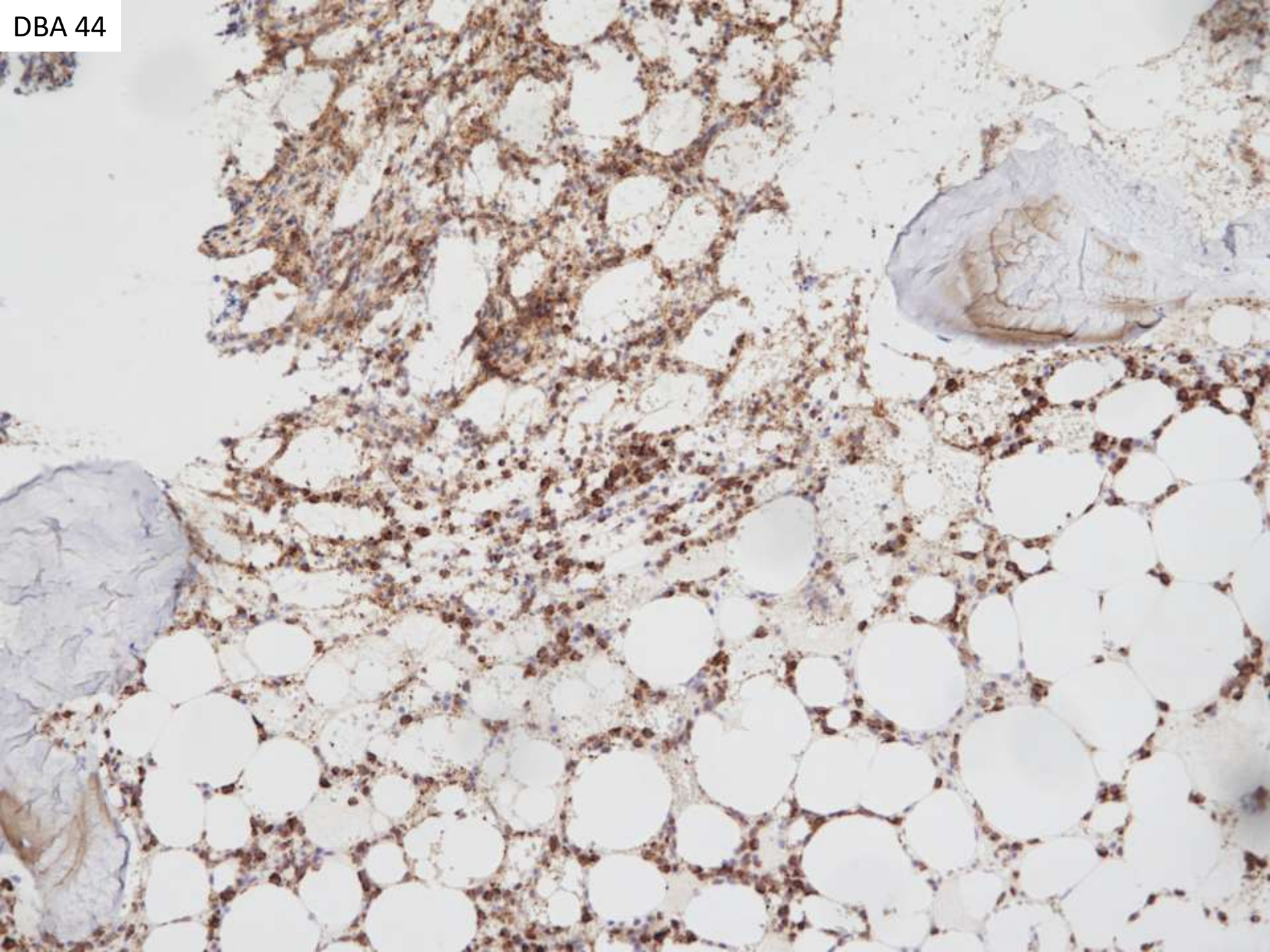


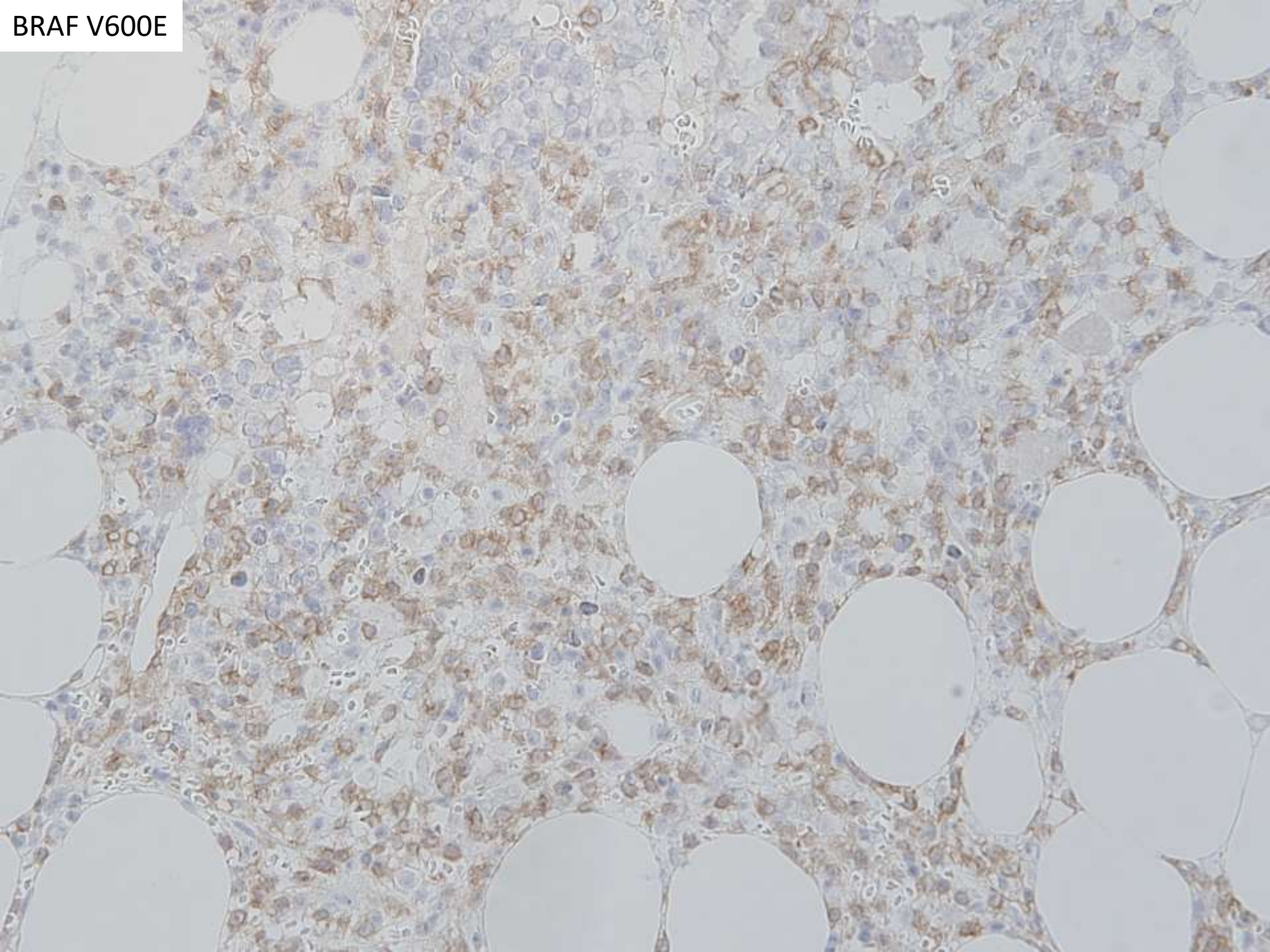





CD20


Cyclin D1


DBA 44

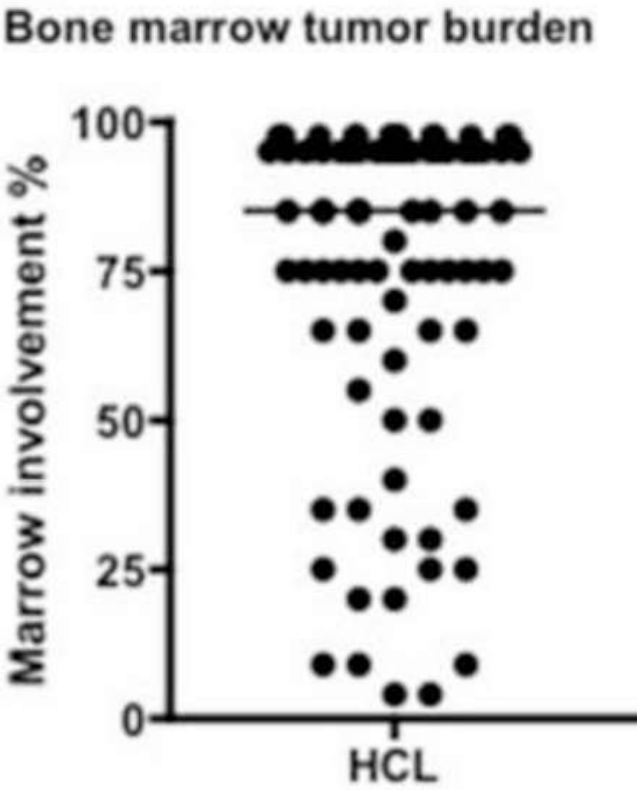

BRAF V600E

Flow cytometry

- **Abnormal B-cell population with high side scatter expressing equivocal kappa light chain, CD19, CD20 (bright), CD22, CD11c, CD103, and CD25**

- Abnormal lambda monotypic B-cell population expressing CD5, CD19, CD20 (dim to negative), and CD23
  - Background CLL/SLL-like proliferation

28% of hairy cell leukemia cases are hypocelluar



Summary of morphologic findings

	HCL
BONE MARROW	
Cellularity	
Hypercellular	54% (44/82)
Normocellular	18% (15/82)
Hypocellular	28% (23/82)

Shao H, et al. Distinguishing hairy cell leukemia variant from hairy cell leukemia: development and validation of diagnostic criteria. Leuk Res. 2013;37:401–409. doi: 10.1016/j.leukres.2012.11.021.

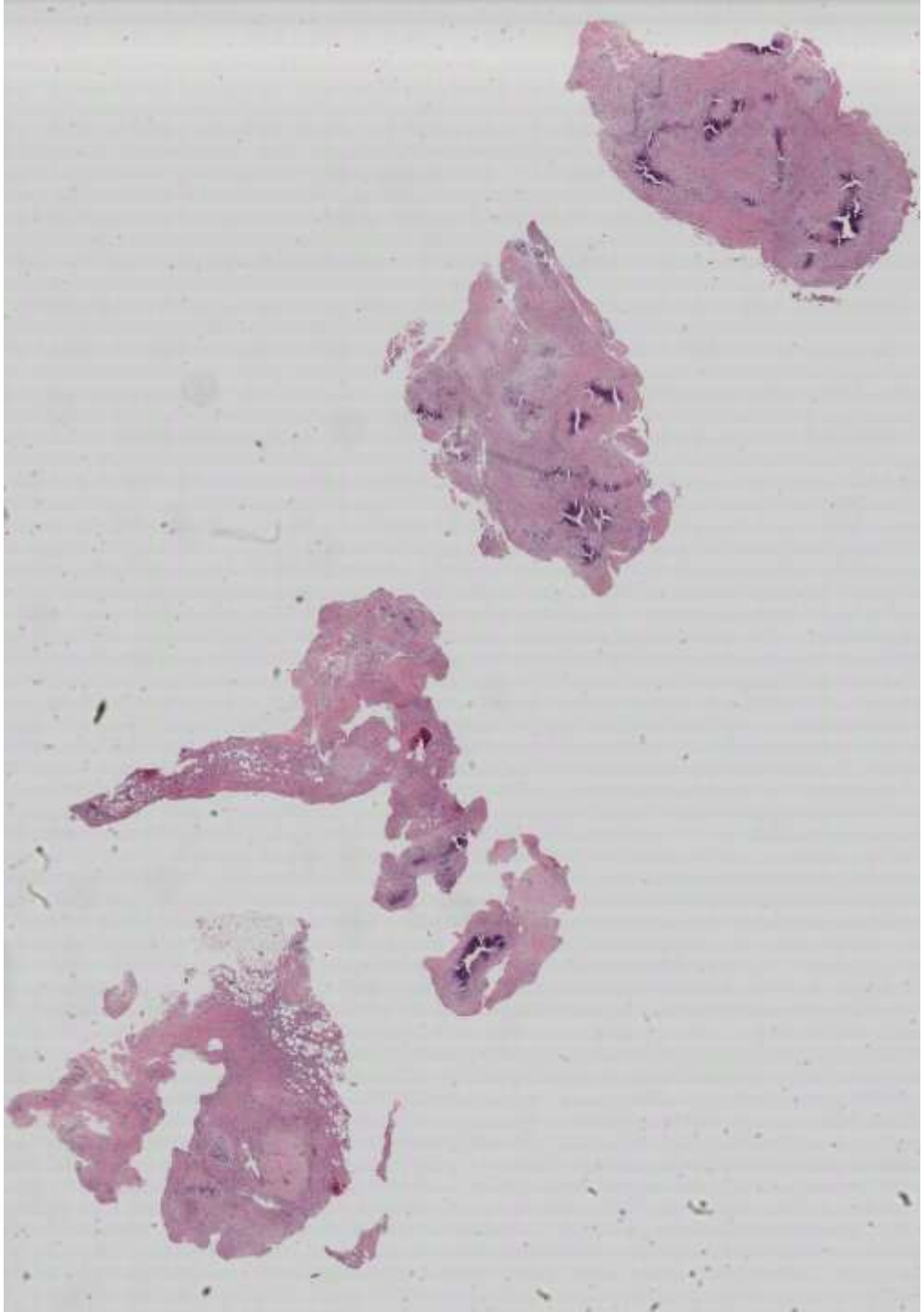
Hairy cell leukemia

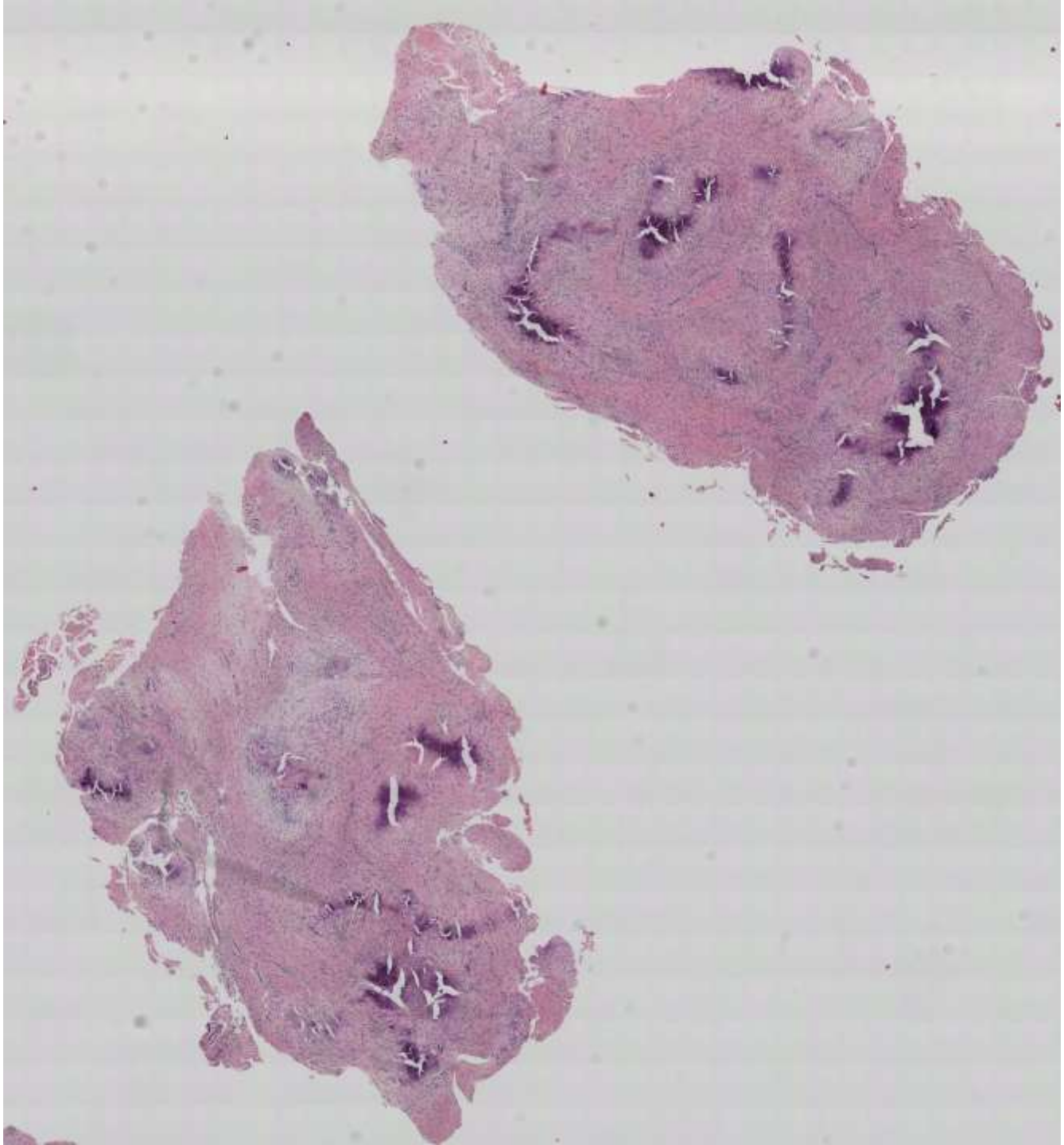
- Think about hairy cell leukemia when a patient has **pancytopenia (not just monocytopenia)**
  - Pancytopenia is seen in about 50%–70% of patients, while 30%–50% show varying degrees and combinations of cytopenias
  - Consider this in the differential diagnosis of hypocellular myelodysplastic syndrome, aplastic anemia, etc.

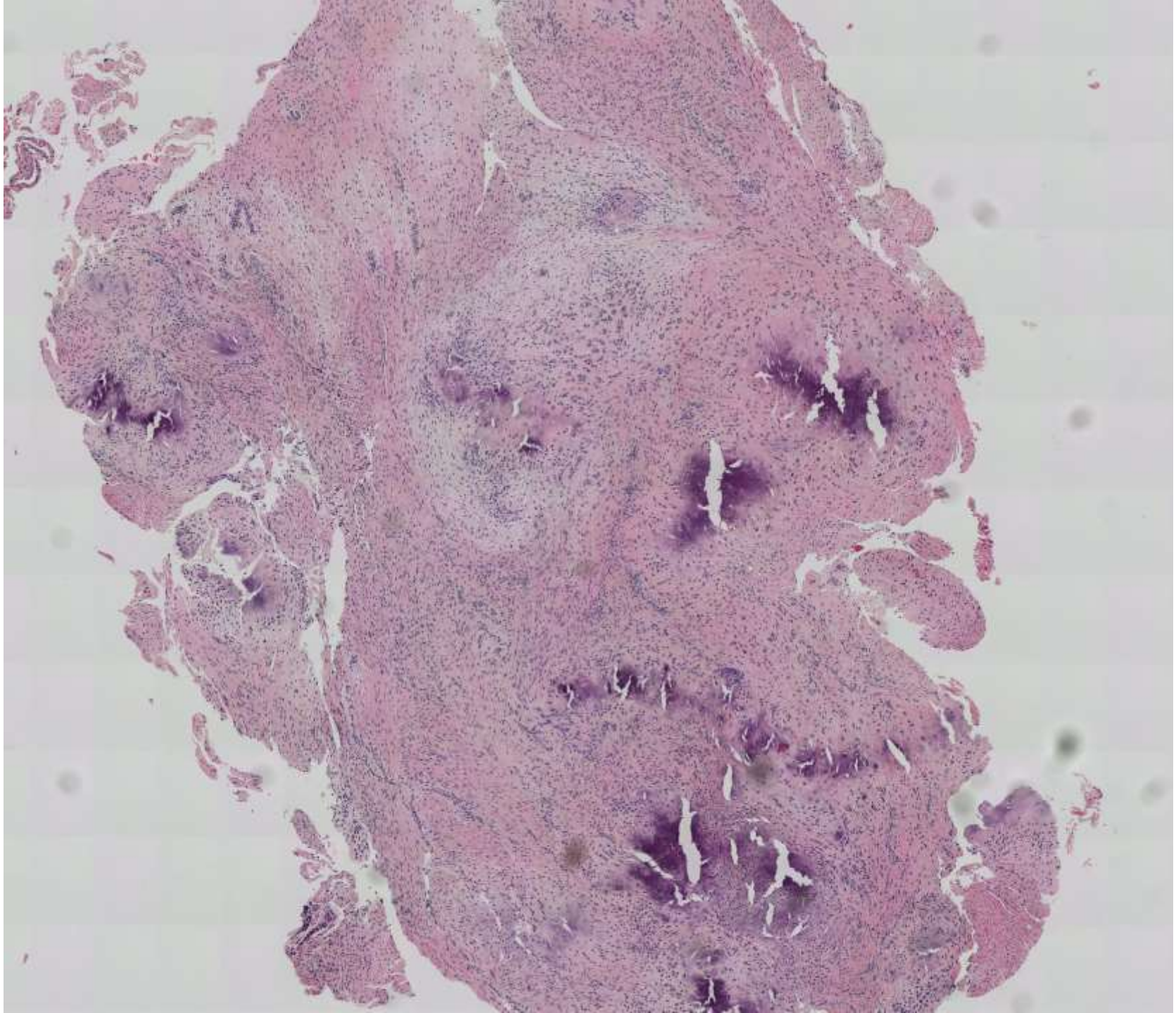
- Flow cytometry can initially appear negative because the hairy cells may not be included in typical “lymphocyte” or “small cell” gates

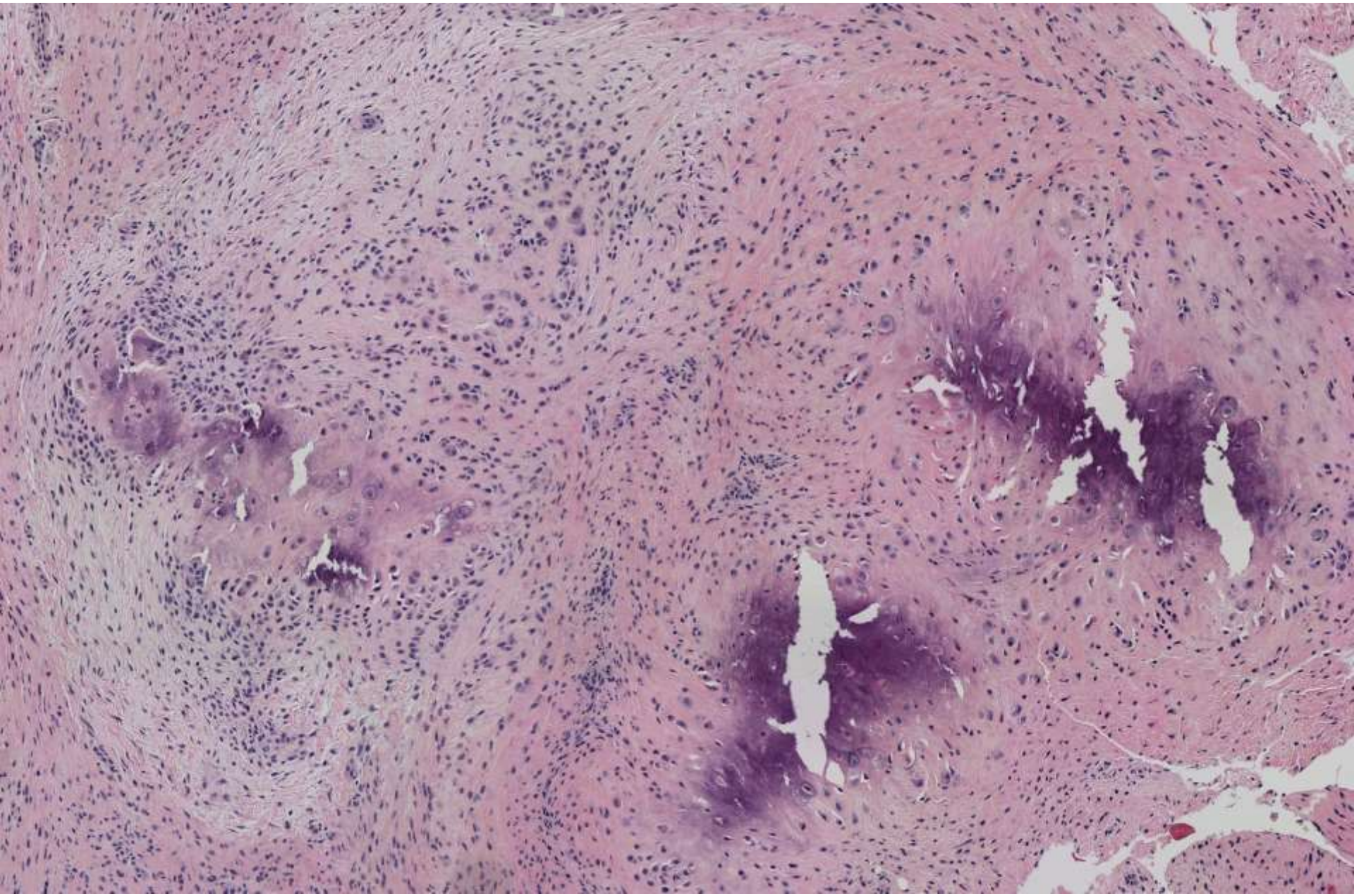
SB 6203
(scanned slide available)
Keith Duncan; Mills-Peninsula Hospital

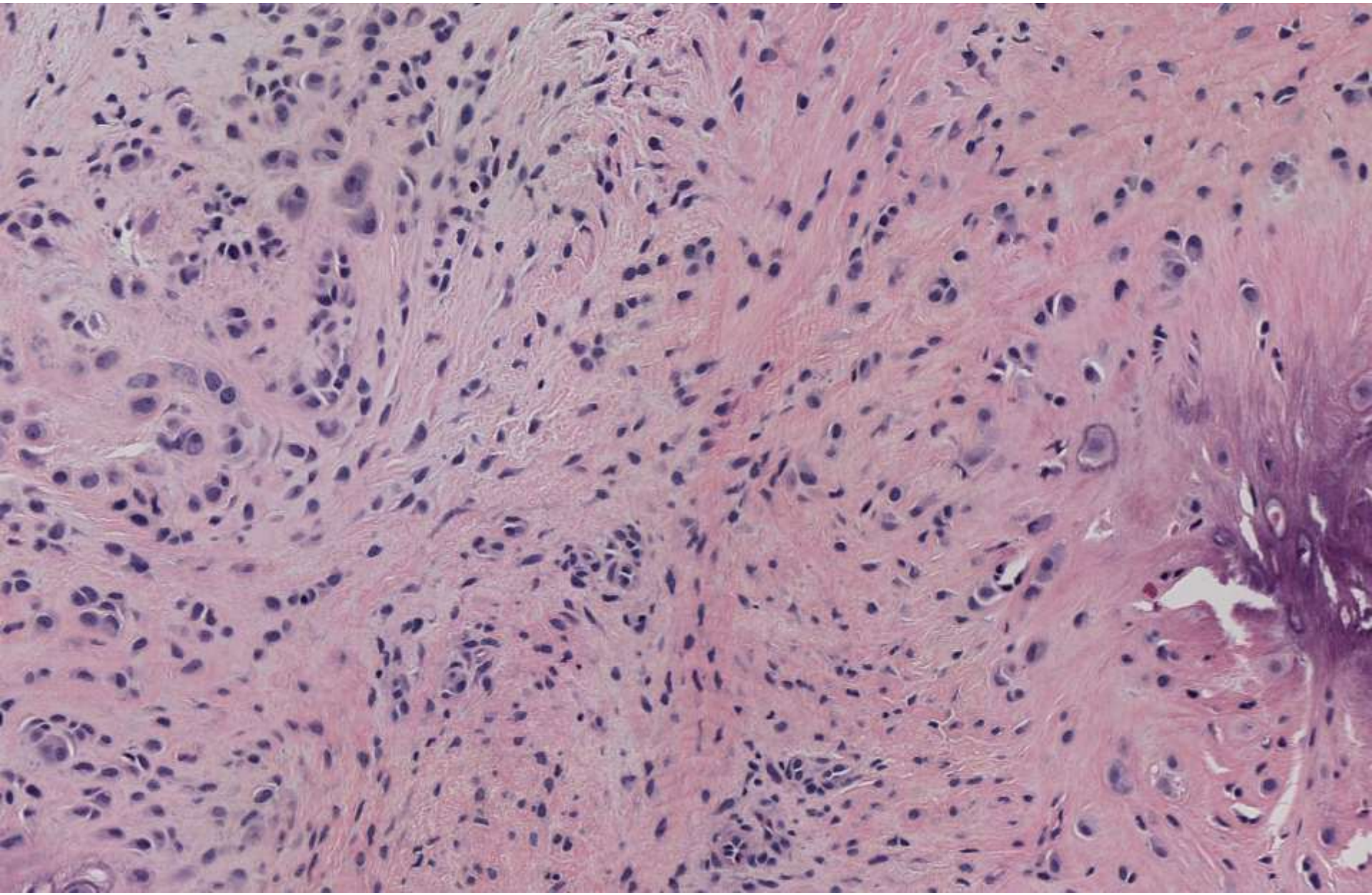
13-year-old girl with 1.3cm right middle finger mass.

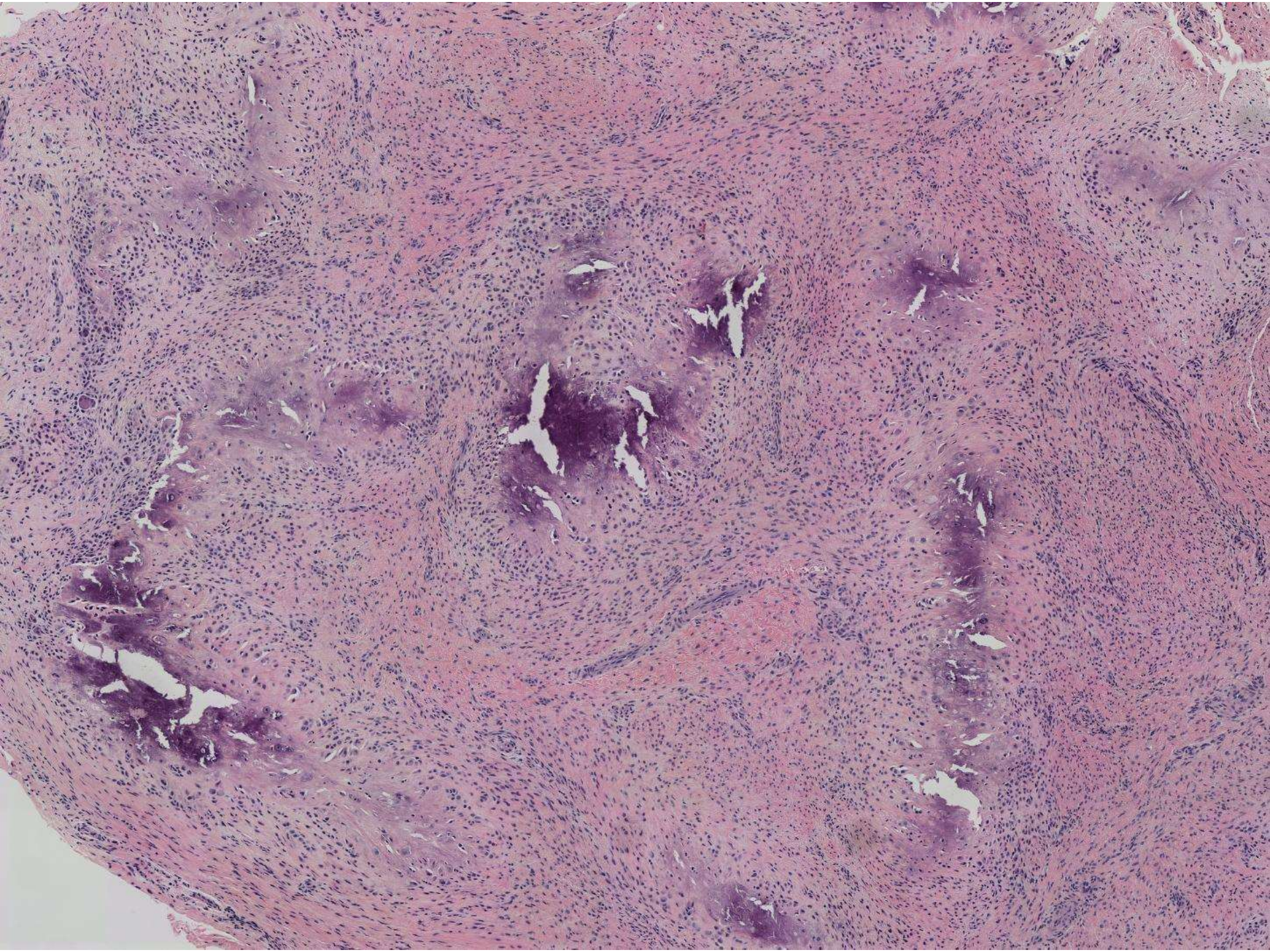


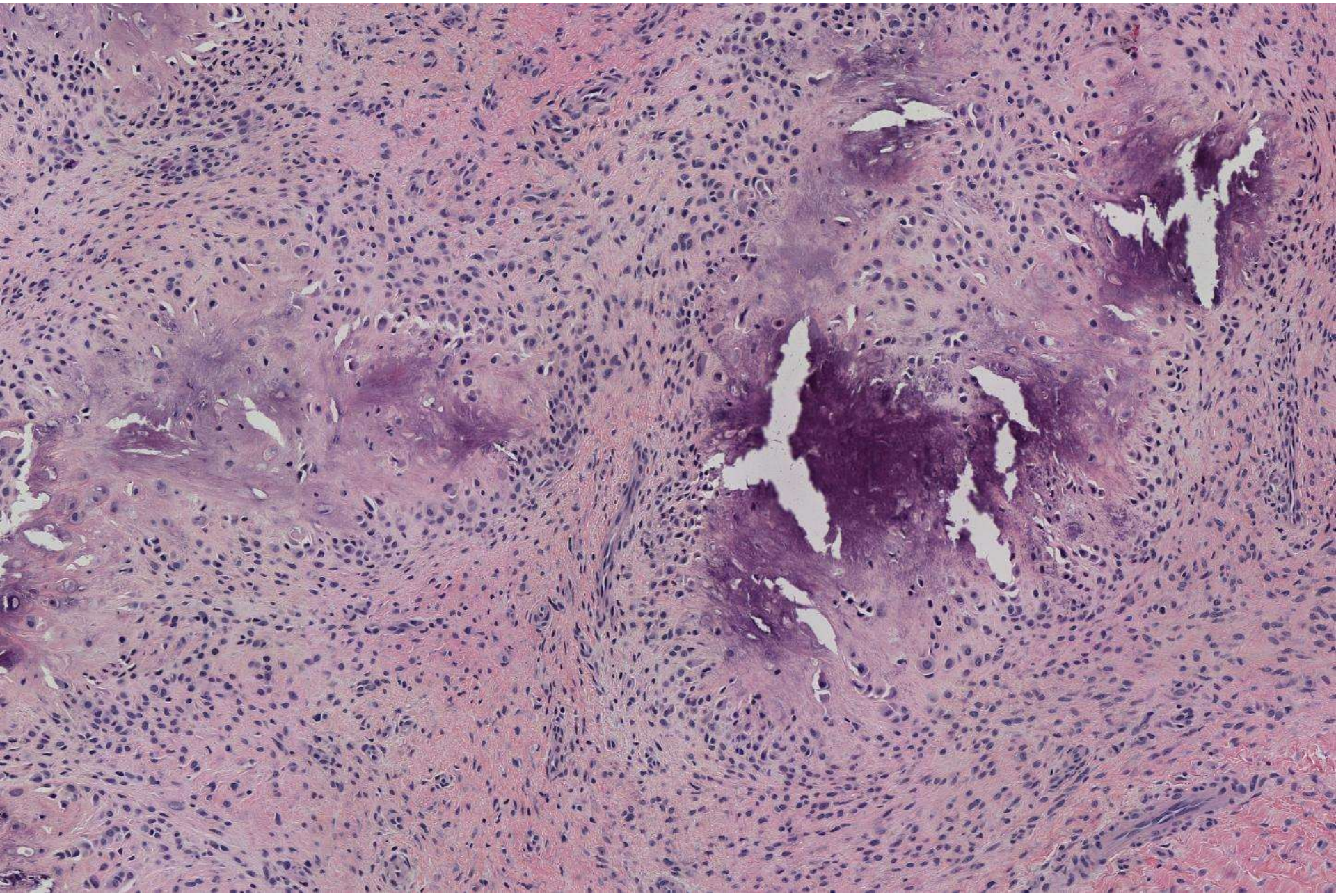


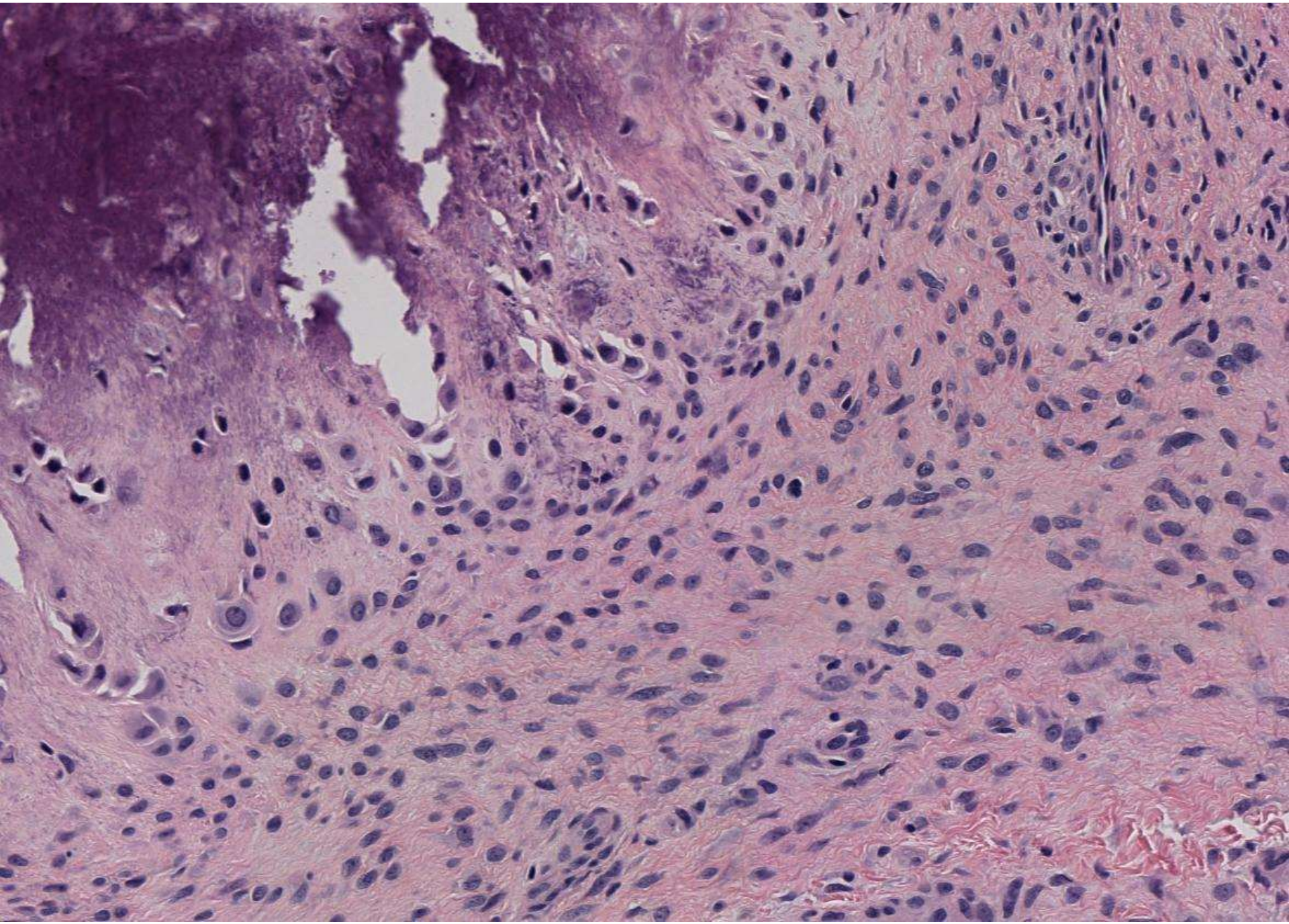












CALCIFYING APONEUROTIC FIBROMA

Rare, slow growing, painless tumor with fibroblasts palisading around chondroid or calcified nodules, usually in hands and feet of children; (Hum Pathol 1998;29:1504)

Also called:

juvenile aponeurotic fibroma

CLINICAL FEATURES
CALCIFYING APONEUROTIC FIBROMA

50% recur, especially in children

Does not metastasize

May be cartilaginous analog of fibromatosis

MICROSCOPIC FEATURES

Nodules of plump/epithelioid fibroblasts palisading around cartilage and spotty calcification

Cells have indistinct and variable cytoplasm, plump nuclei with vesicular chromatin

Fibroblasts between nodules have dense, evenly dispersed chromatin

May infiltrate fat or muscle

Osteoclast-like giant cells

Rare mitotic figures, no atypia

IPOX STAINS

Positive stains

Vimentin, CD68, CD99, S100,

actin (50%)

Negative stains

(Usually) CD34, PR

DIFFERENTIAL DIAGNOSIS

Chondroma of soft parts: may involve hands, but usually well circumscribed with well developed chondroid differentiation, no infiltration of adjacent tissue

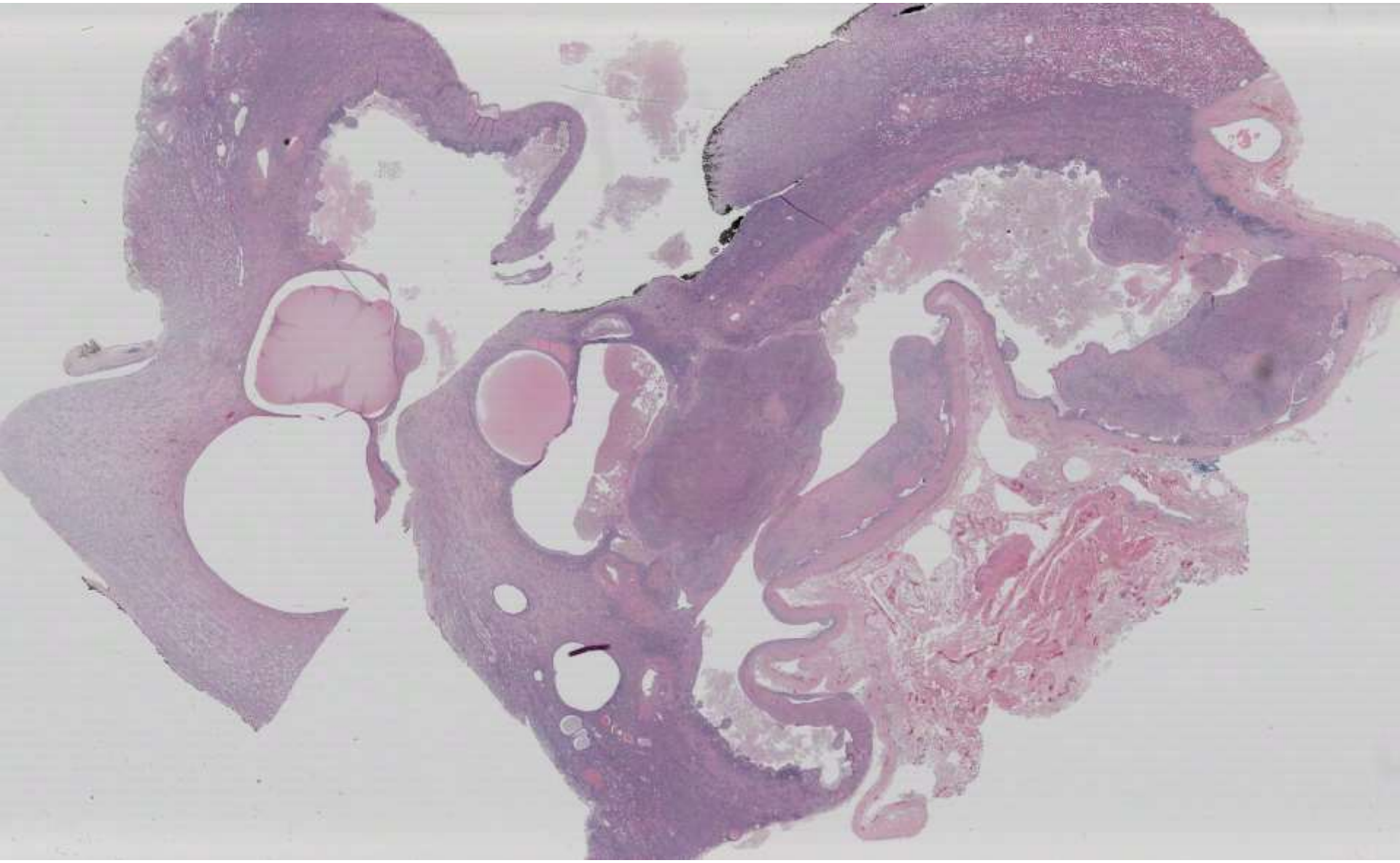
Fibrous hamartoma of infancy: immature mesenchyme, fibroblasts are arranged in trabeculae but no palisading, no cartilage or calcification, not hands and feet

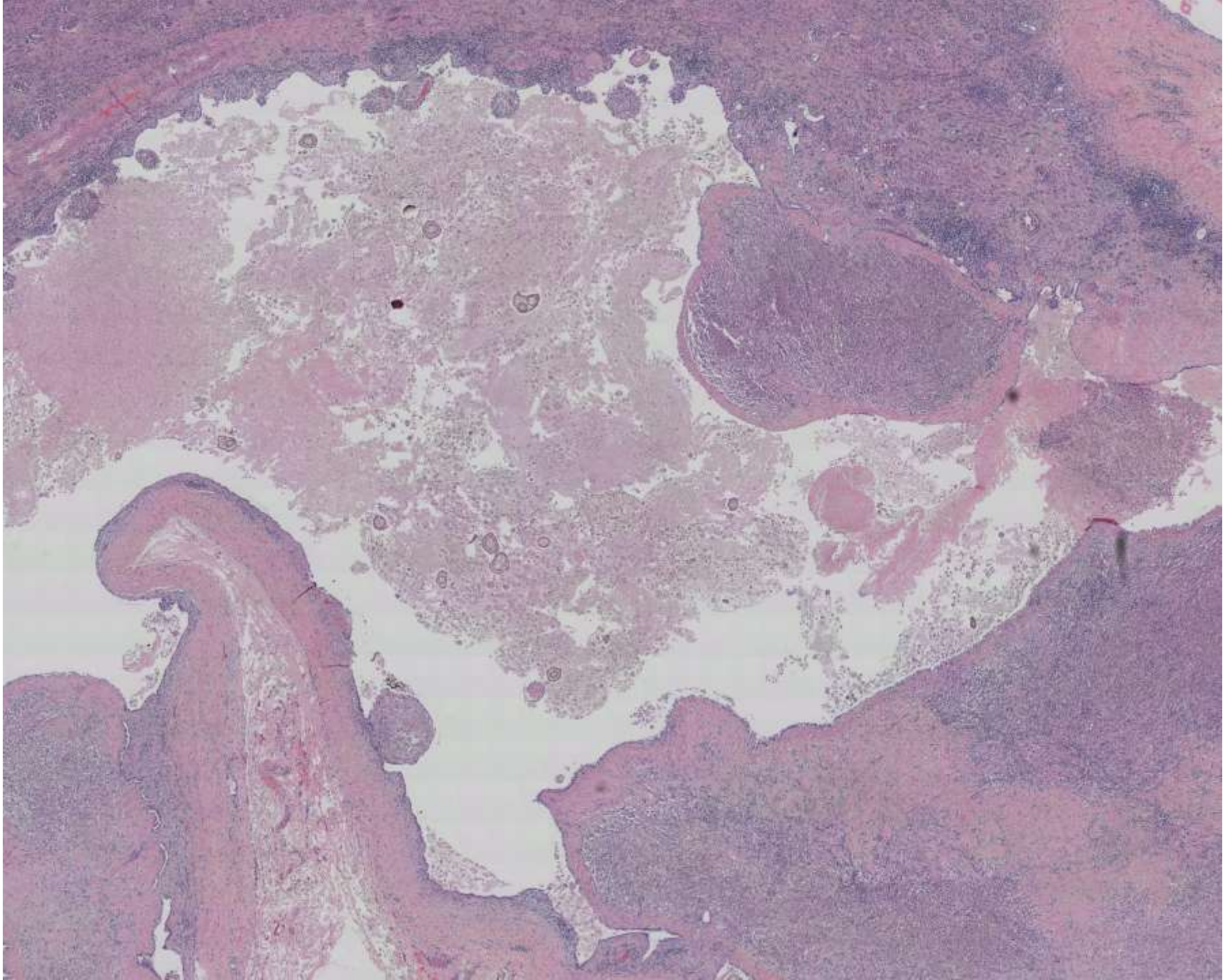
Infantile fibromatosis: usually involves head, neck and proximal extremities in infants, background is more myxoid than chondroid, calcification is rare

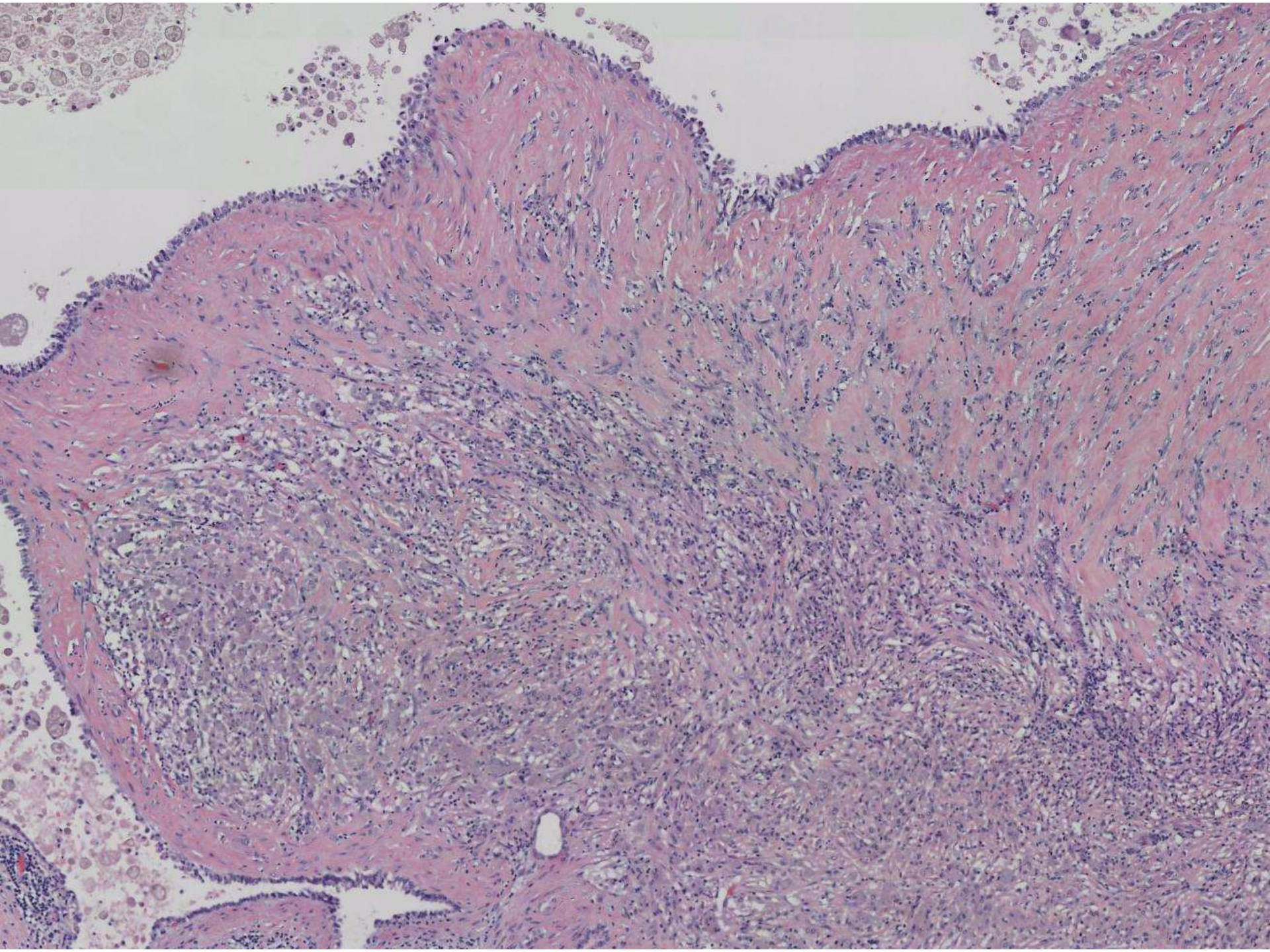
Superficial [palmar and plantar] fibromatosis: usually no calcification or chondroid differentiation

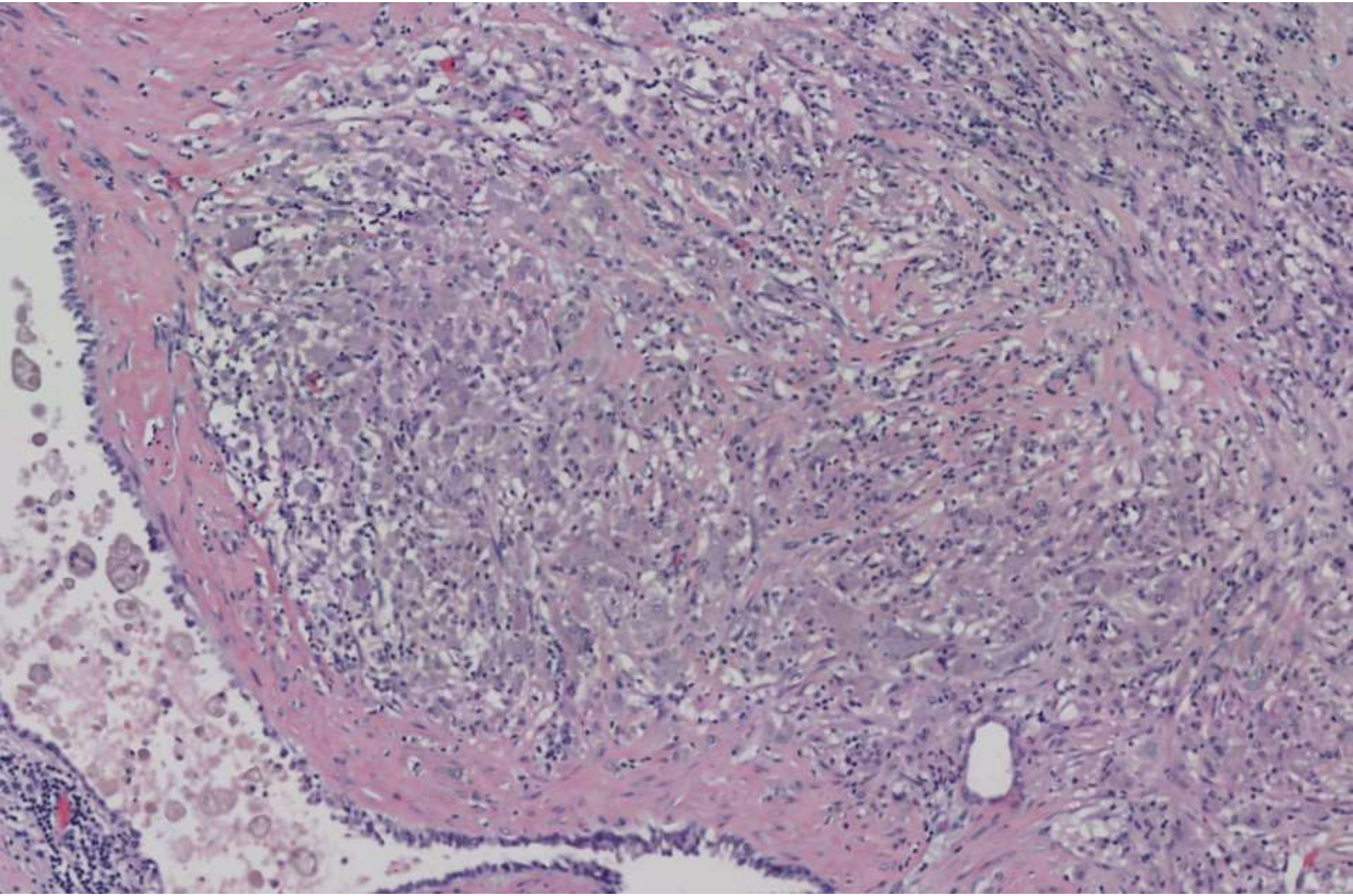
SB 6204
(scanned slide available)
Sunny Kao; Stanford

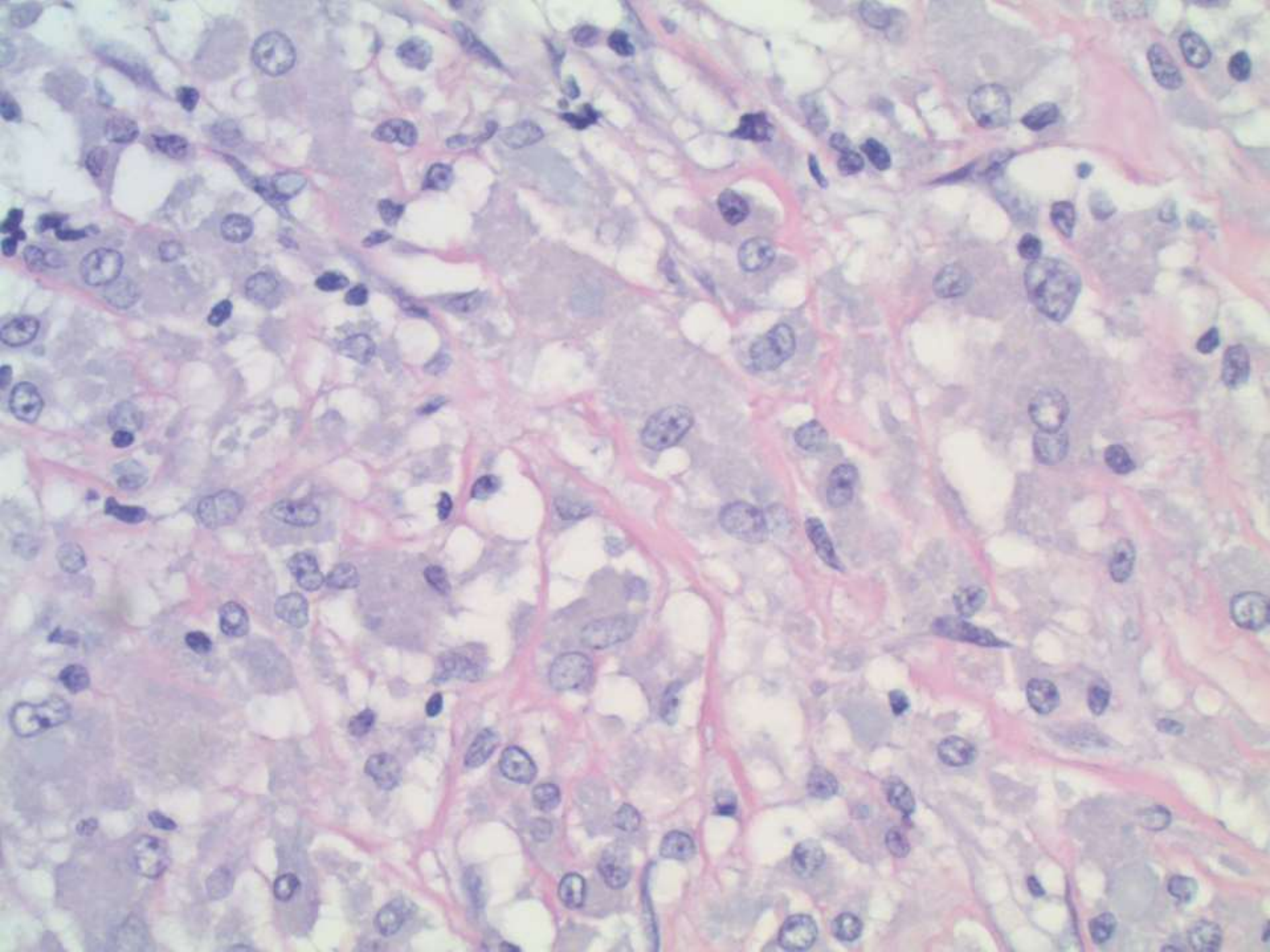
45-year-old woman with 4cm left renal cyst.

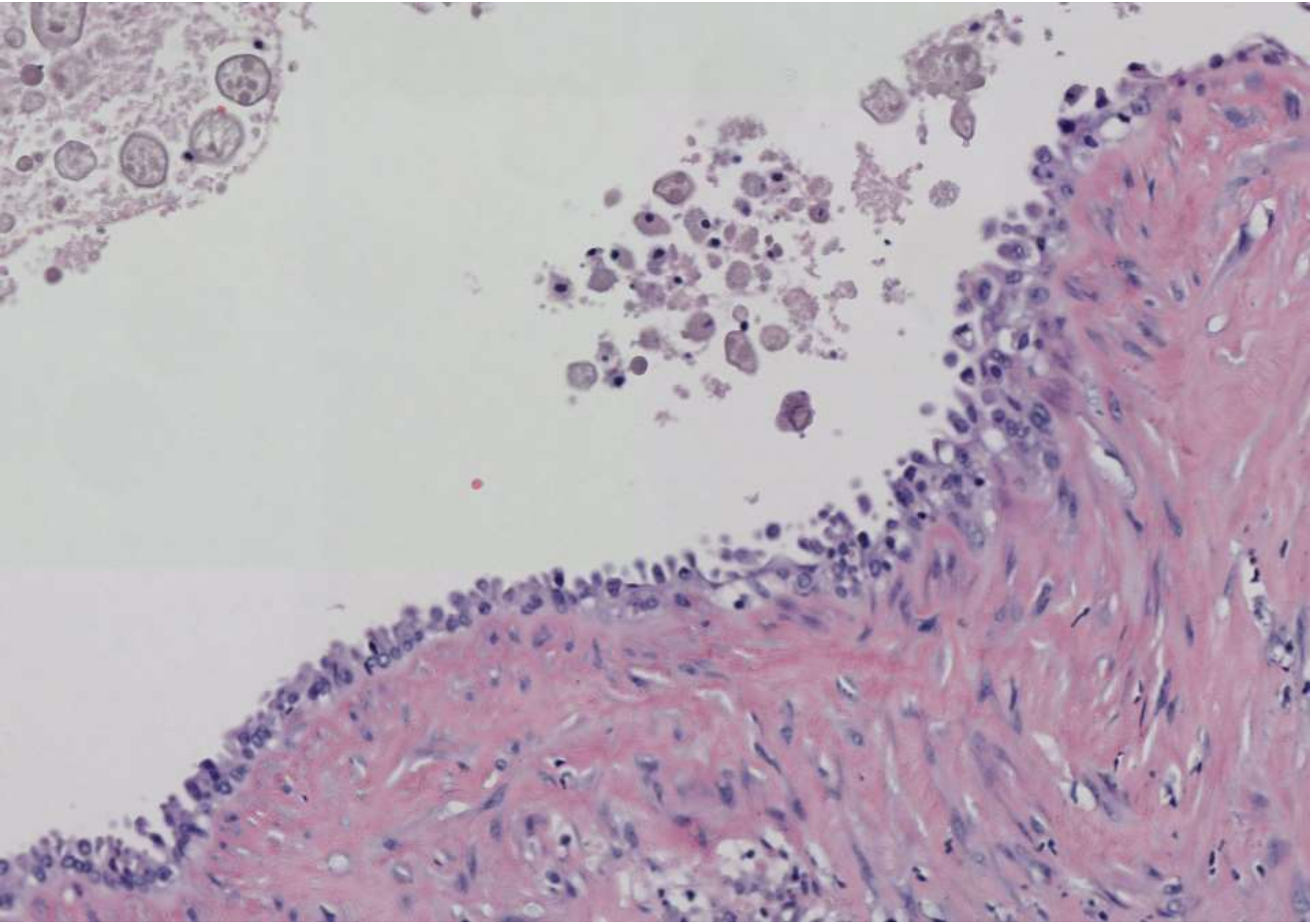


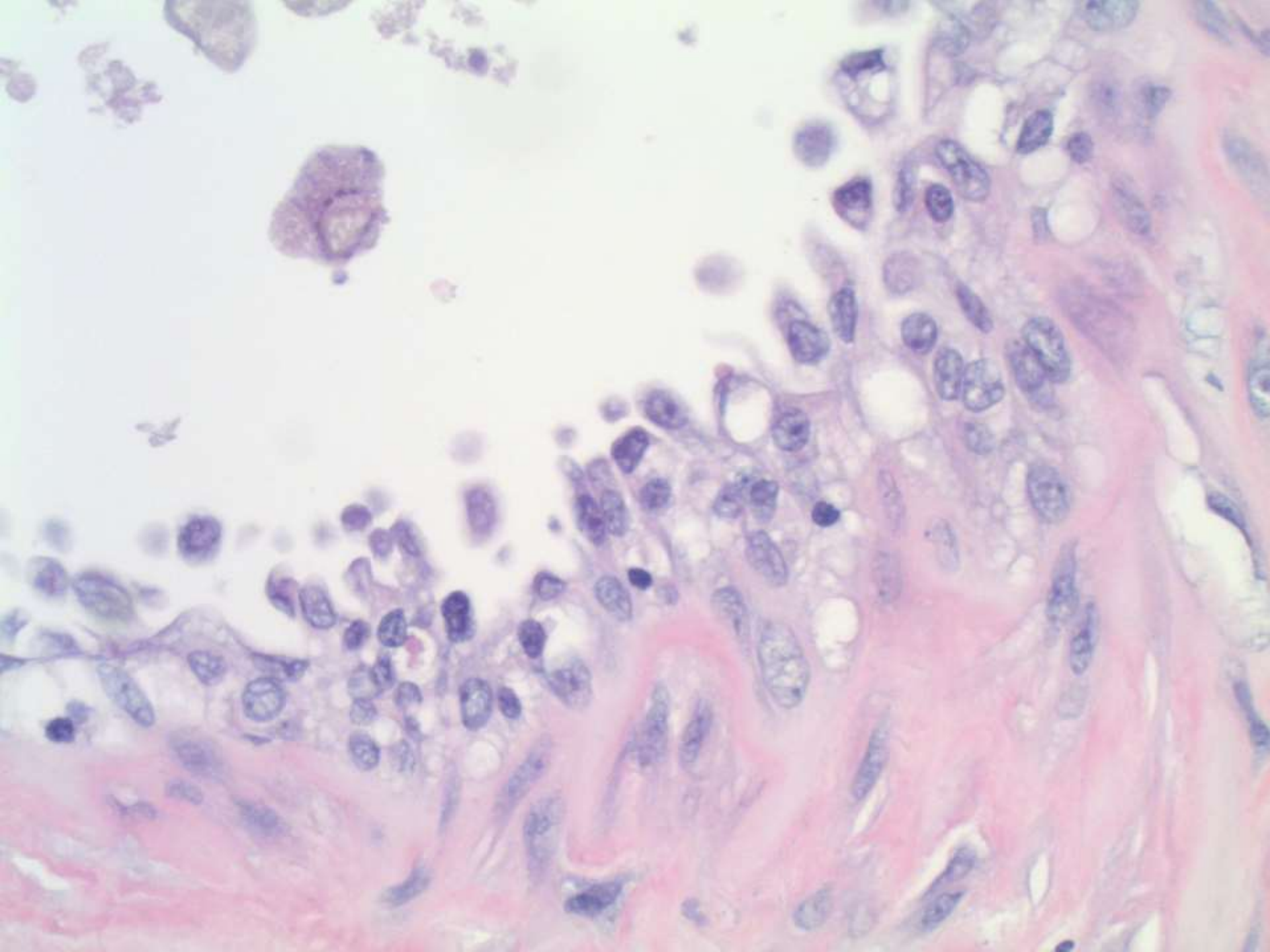


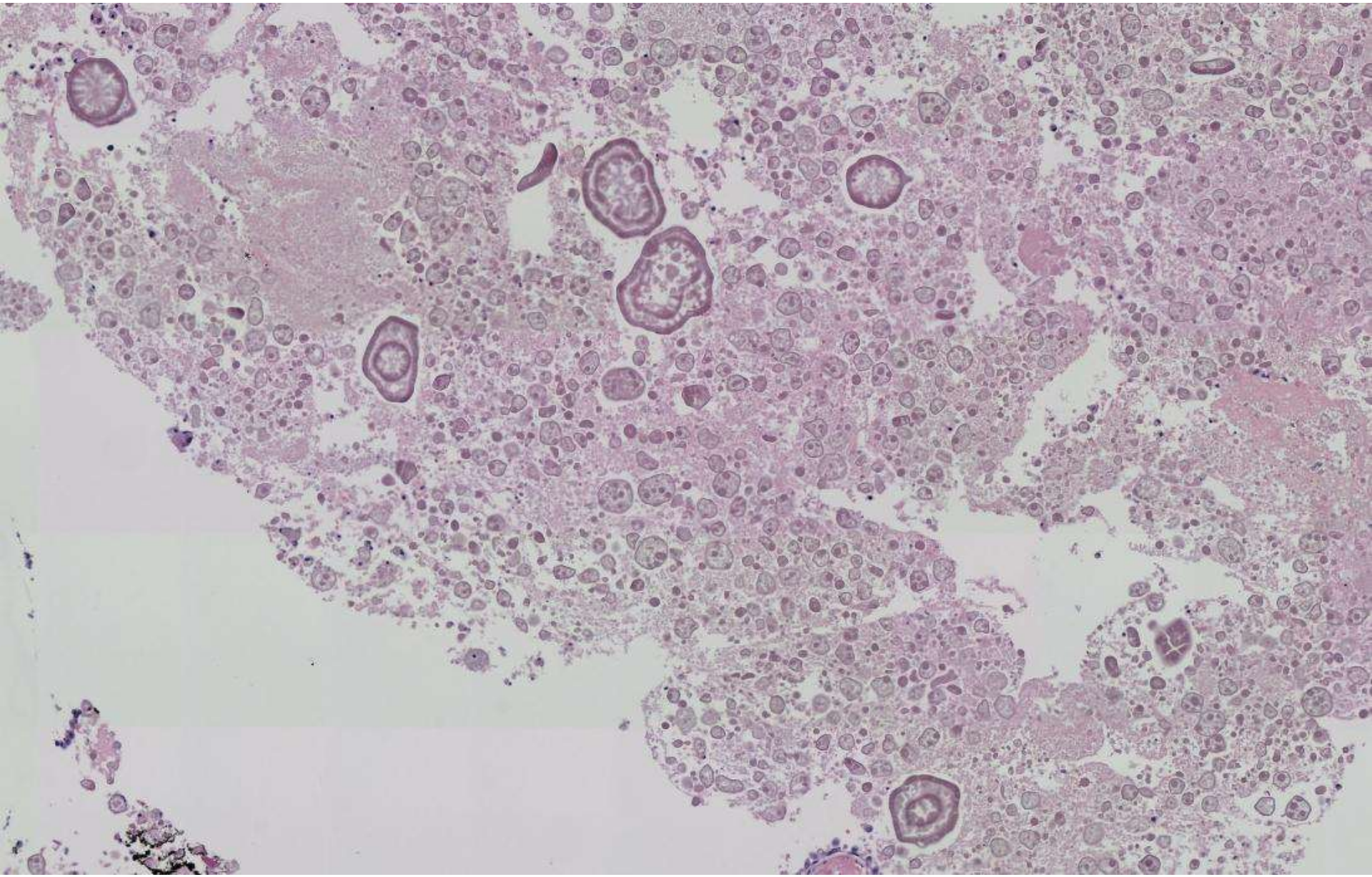


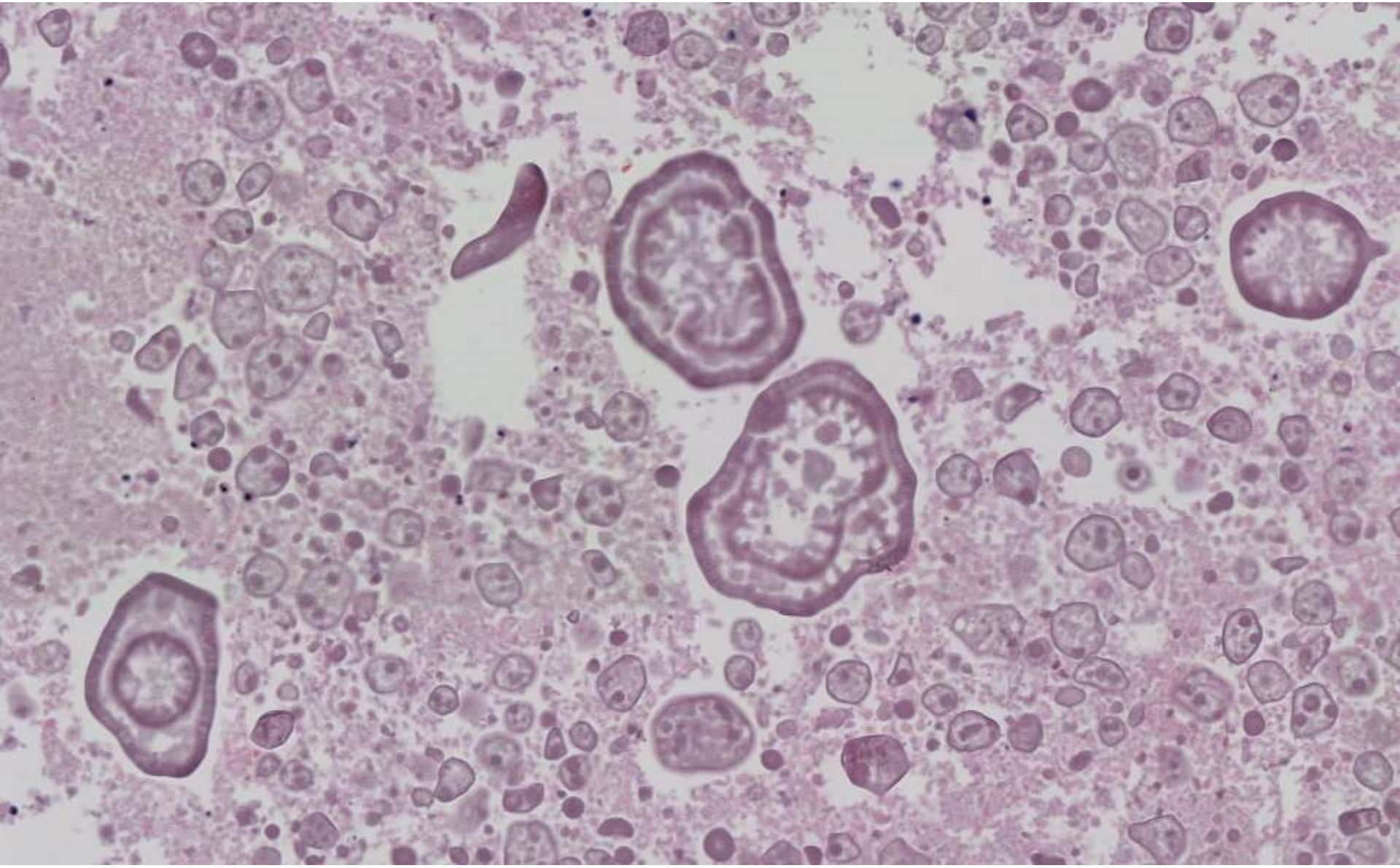


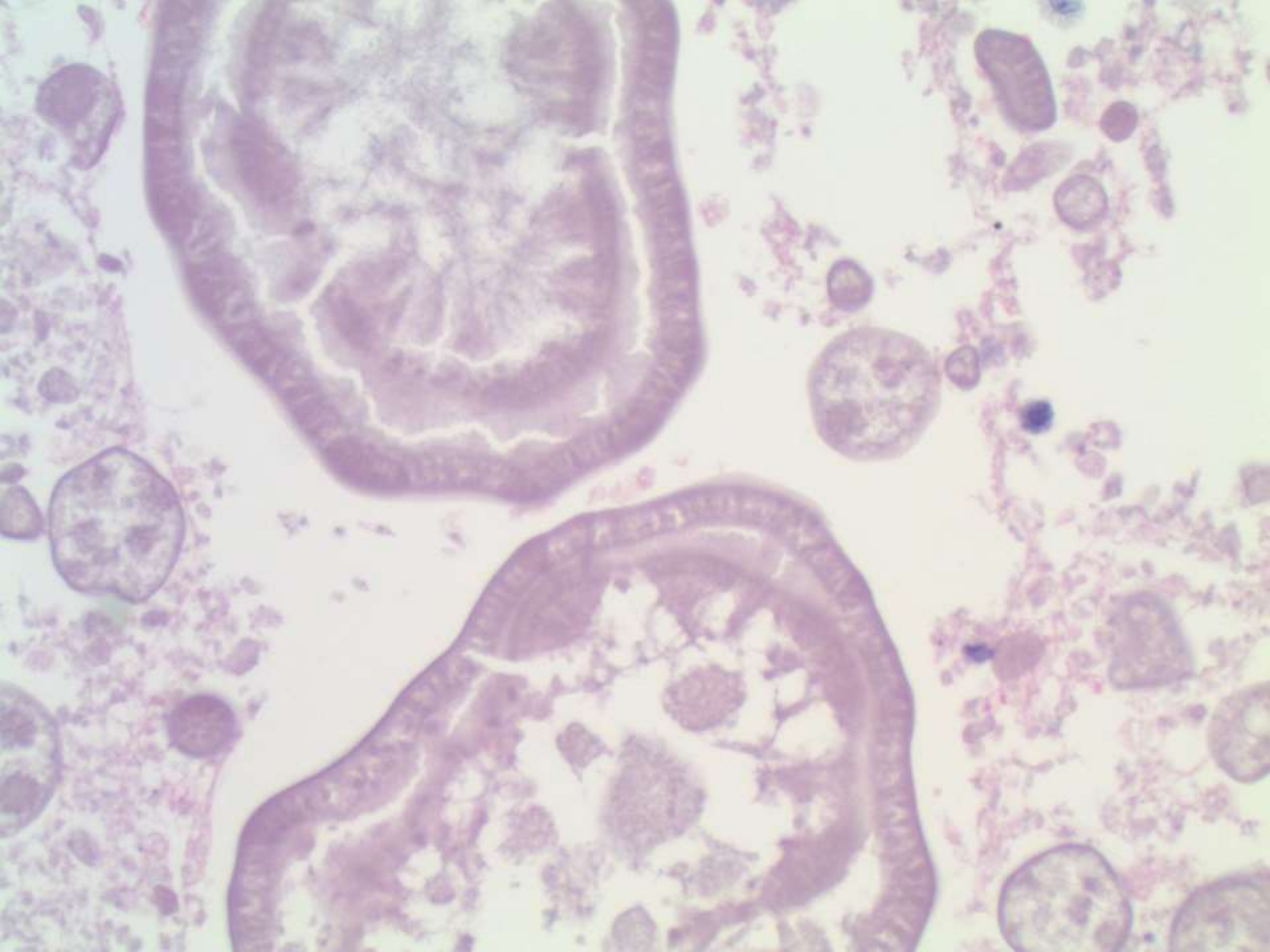






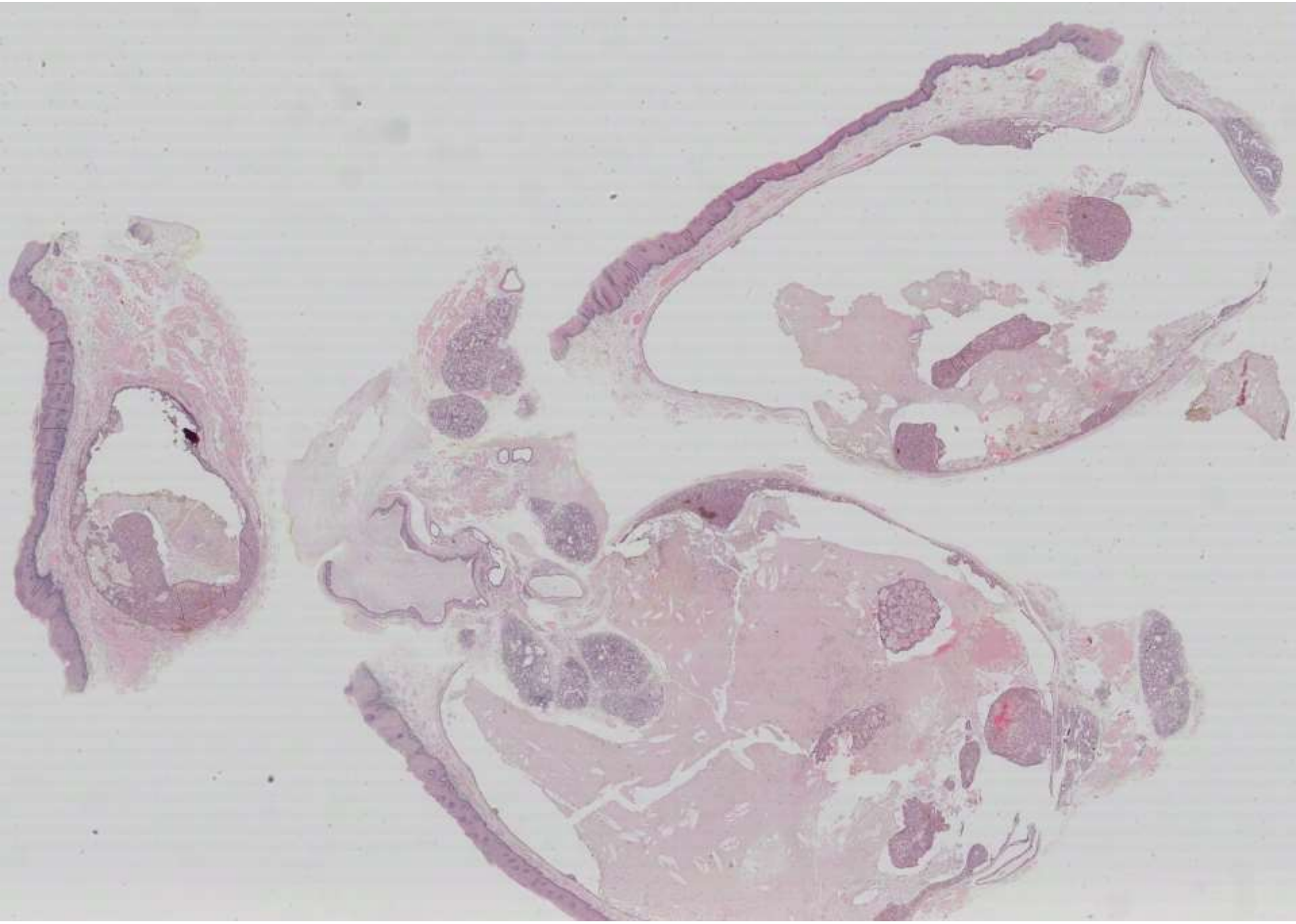


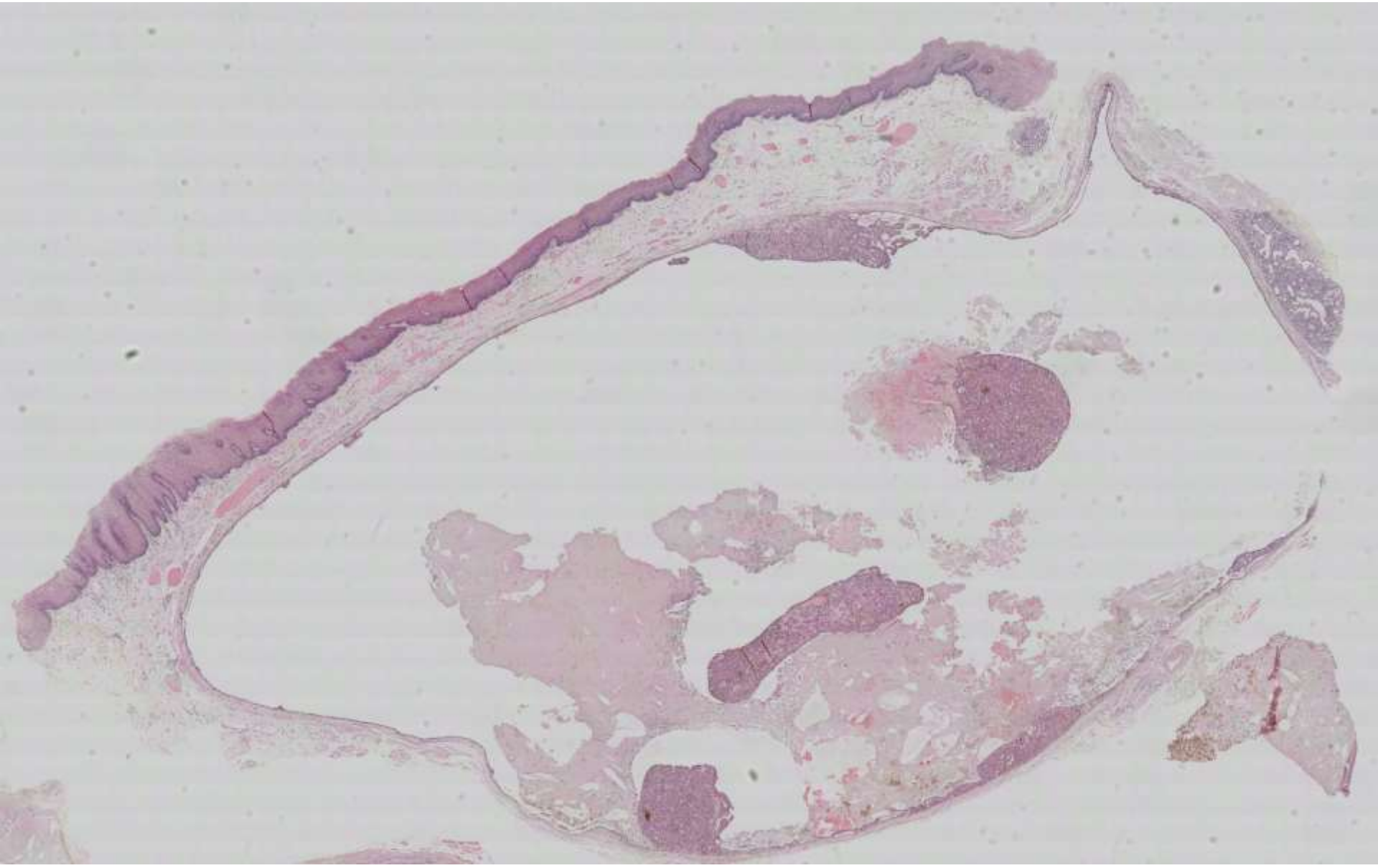


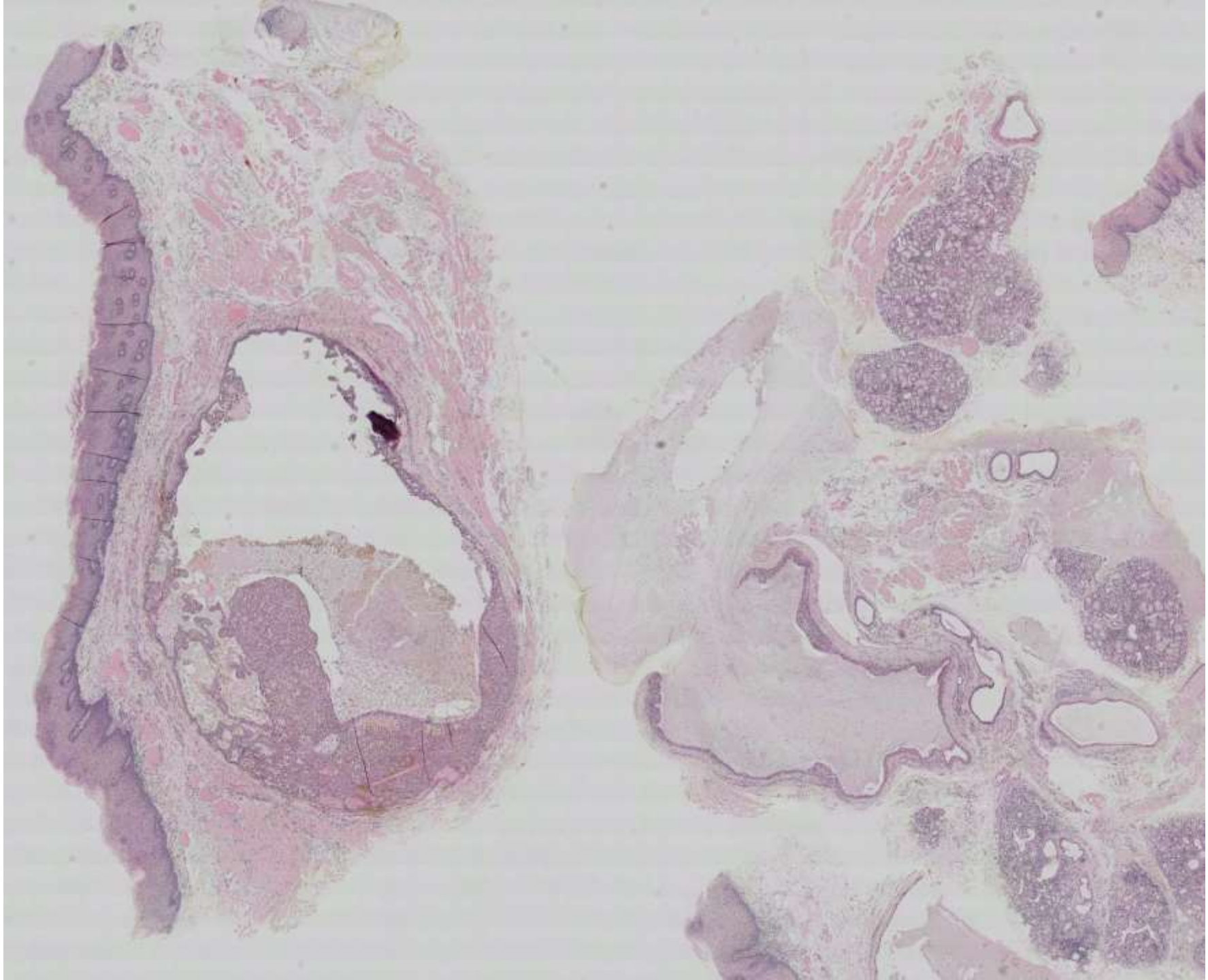


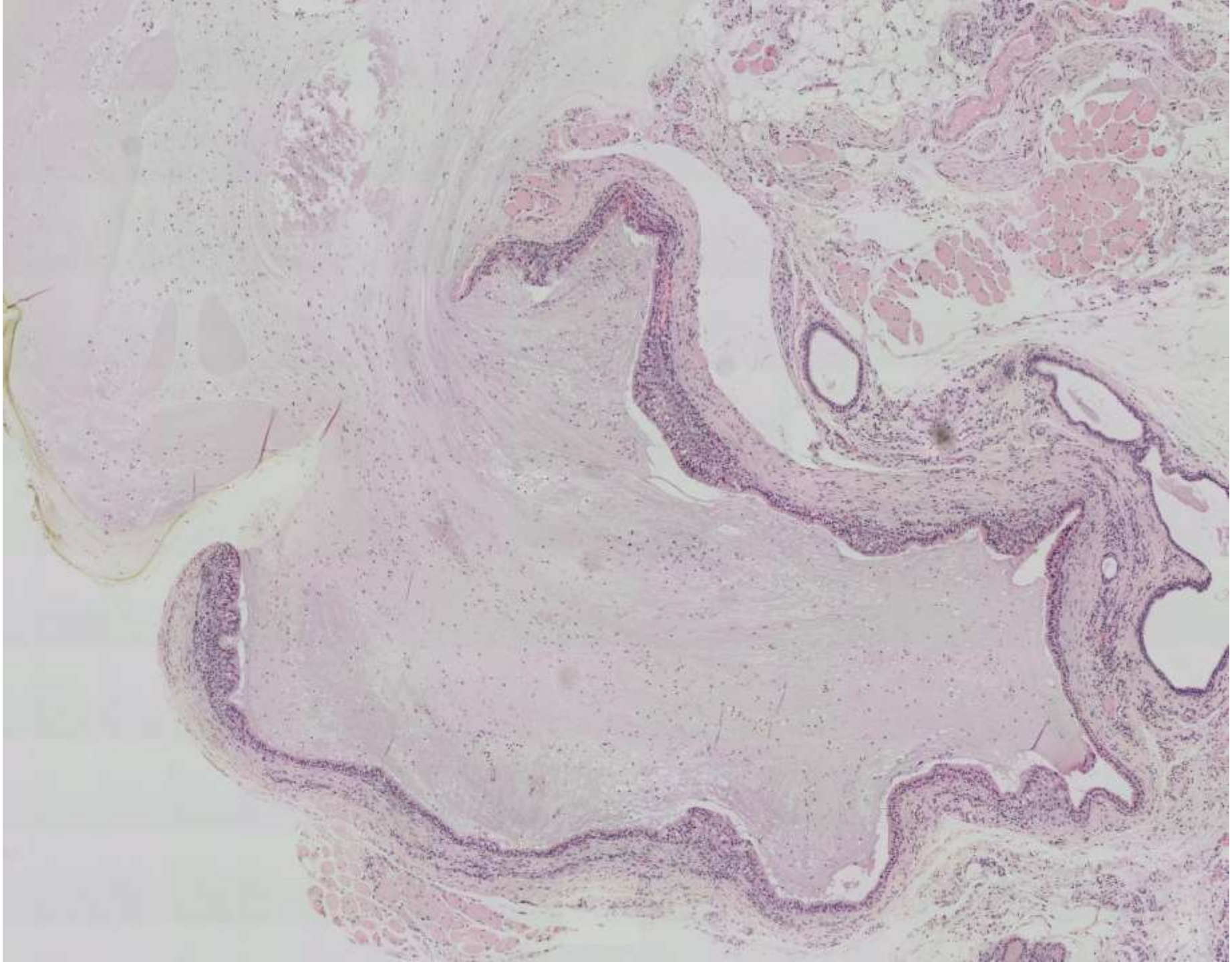
SB 6205
(scanned slide available)
Sudha Rao; Kaiser Redwood City

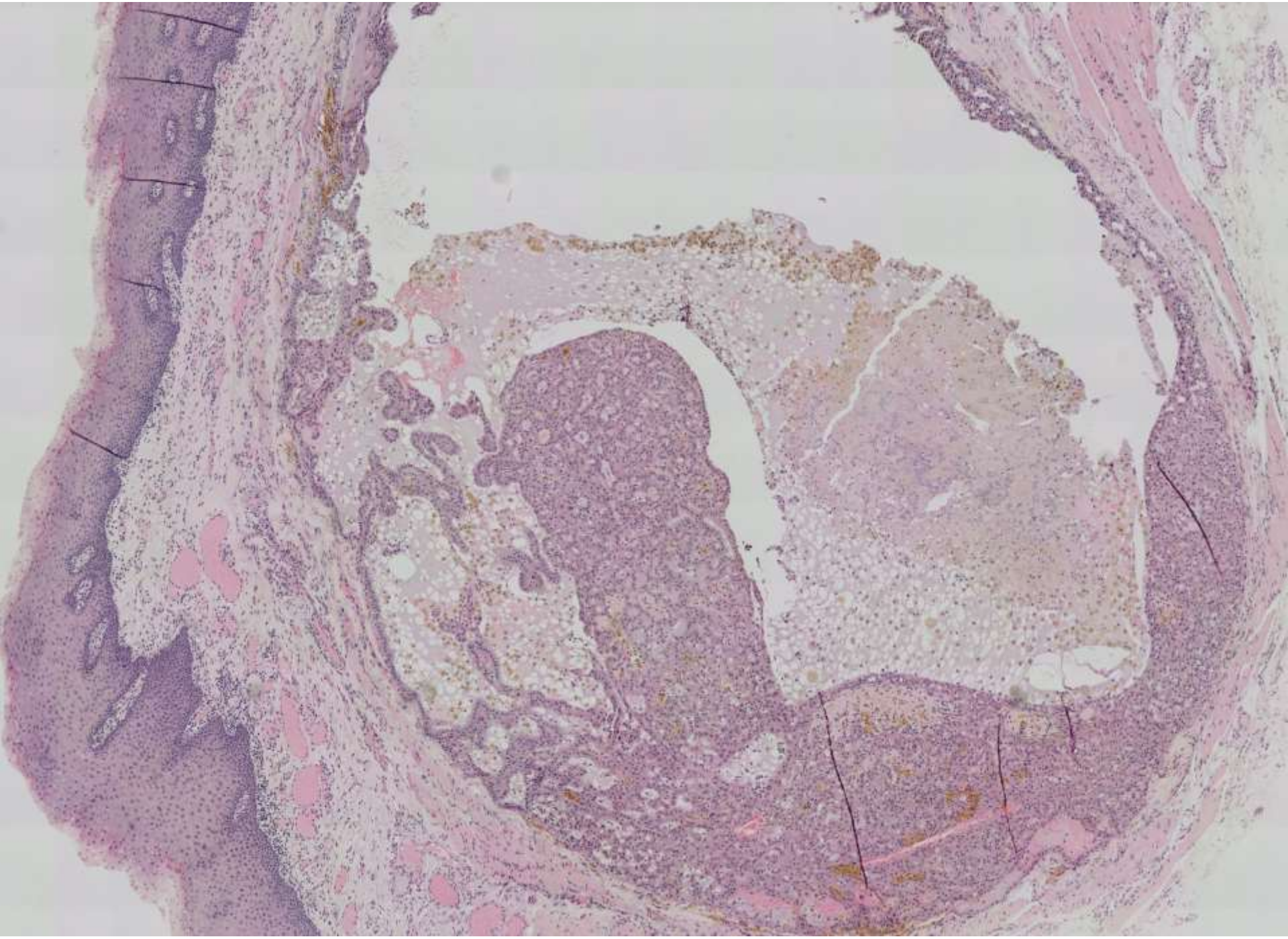
82-year-old female with right buccal mucosal cyst.

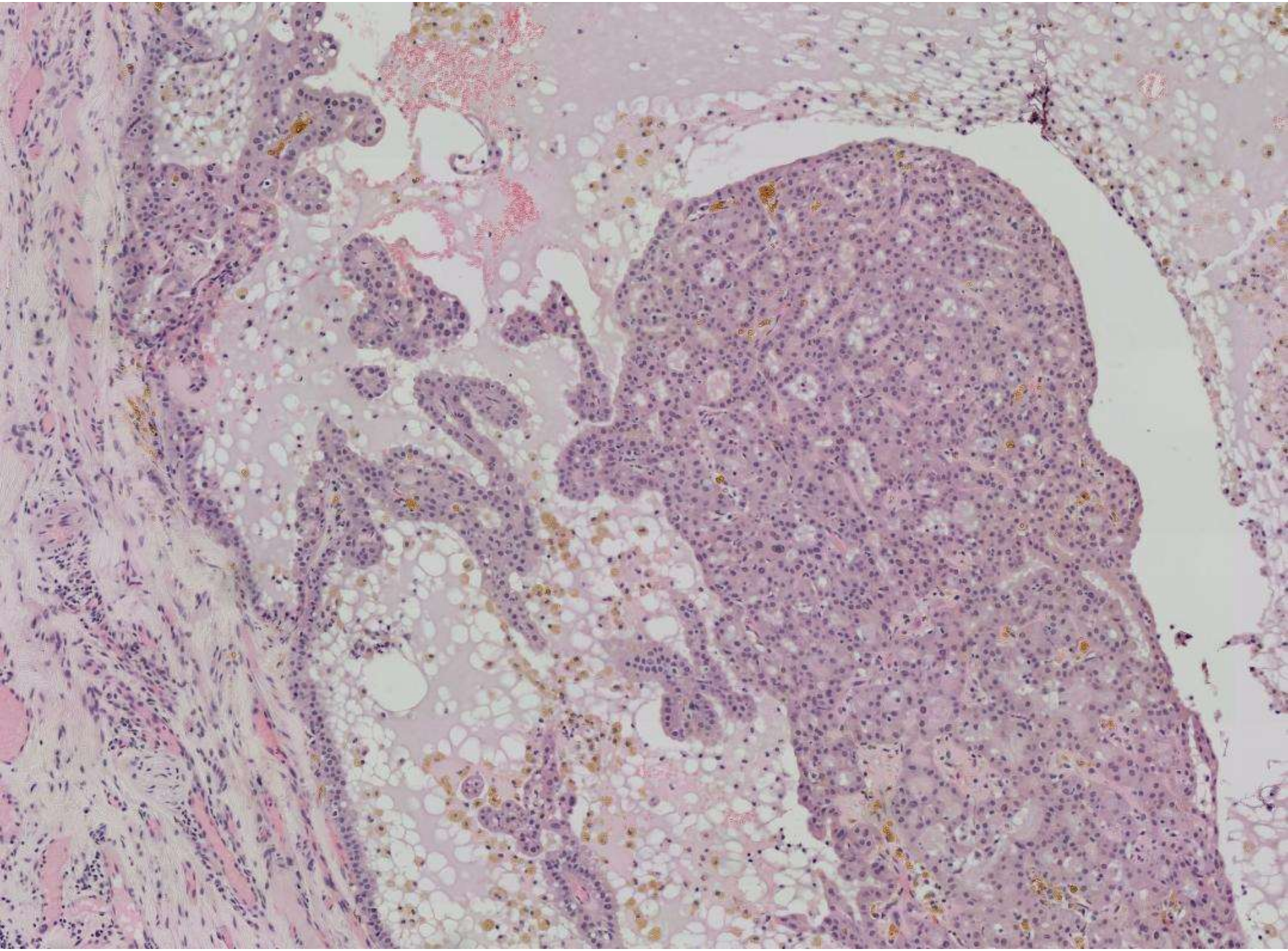


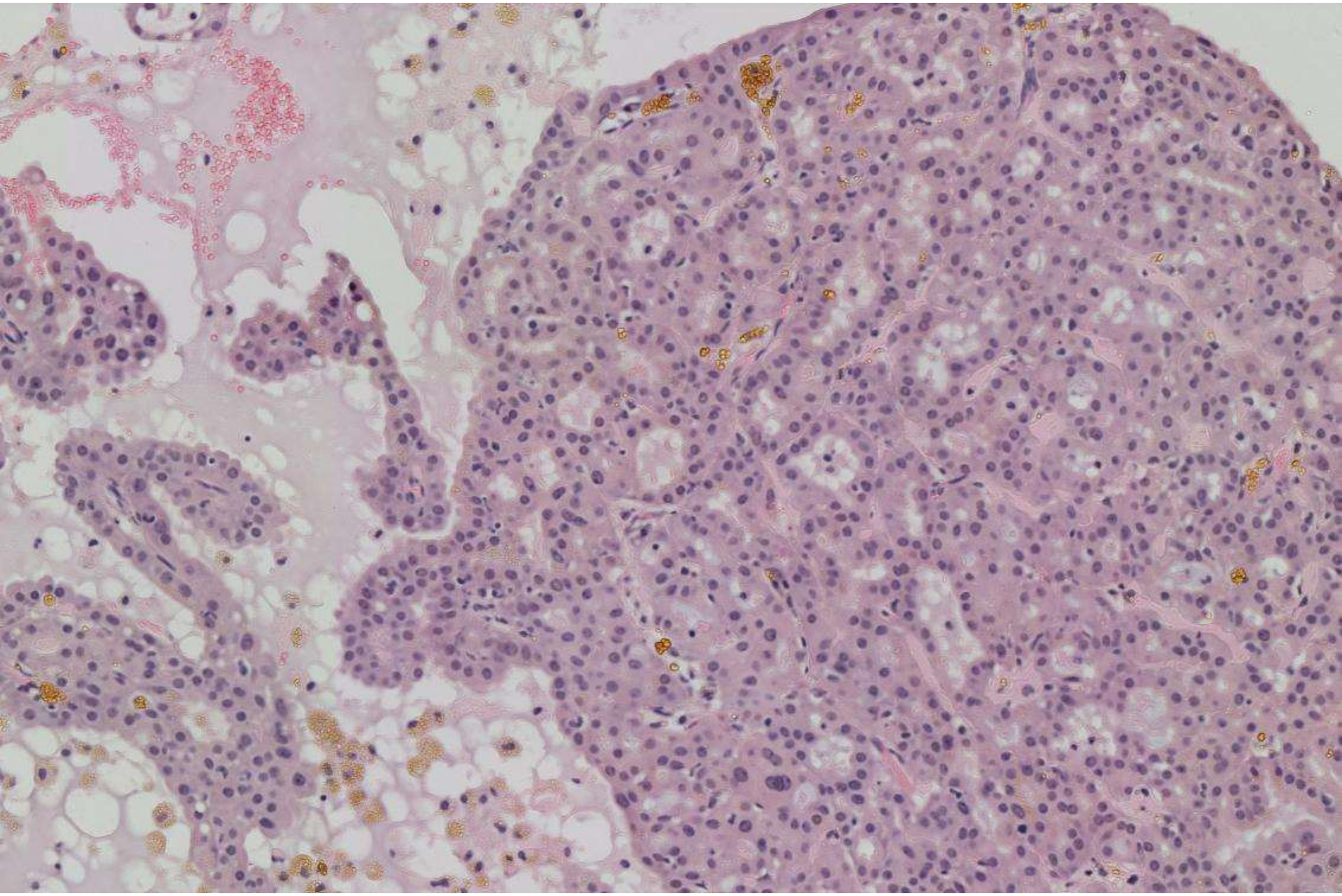


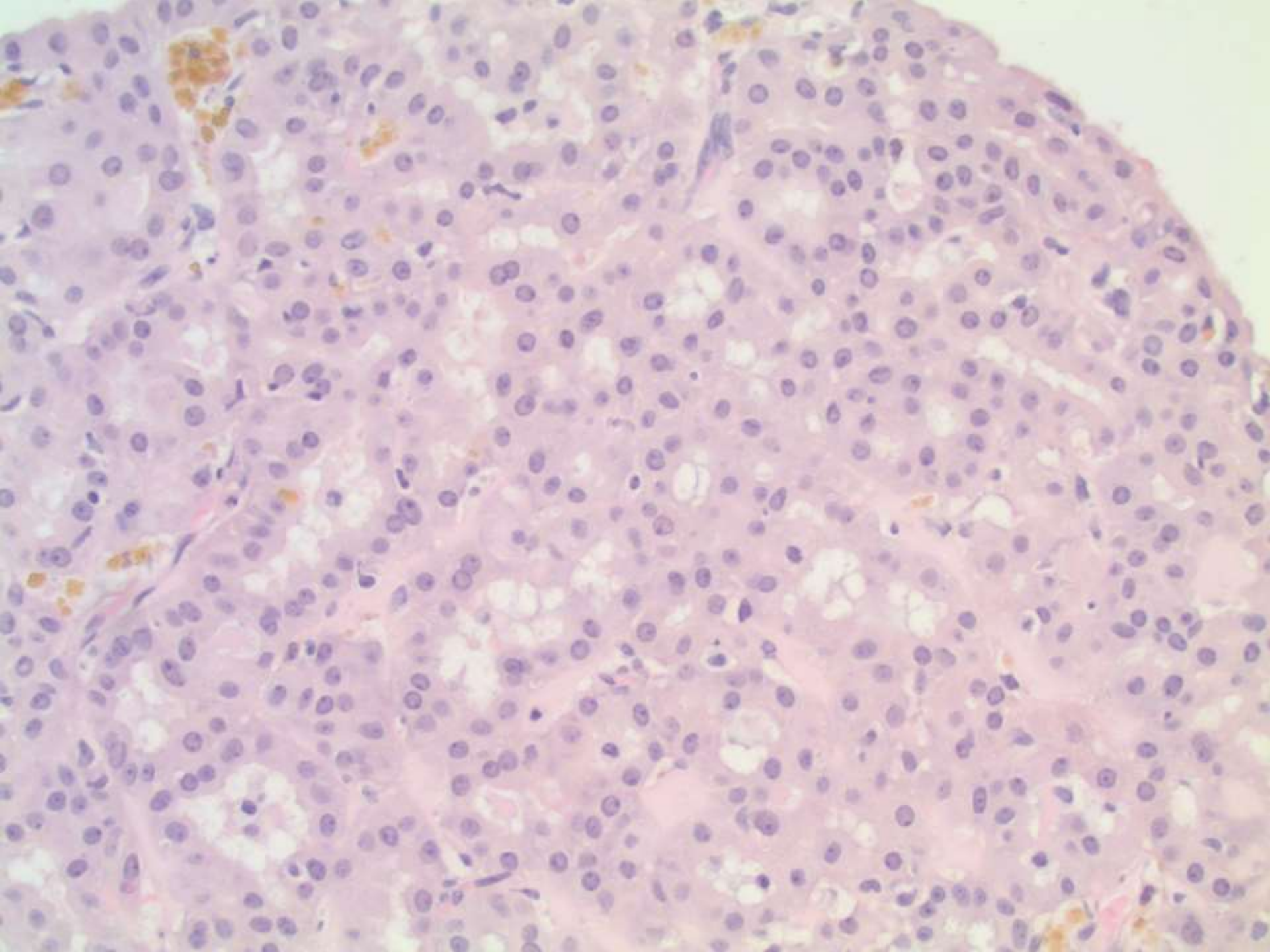


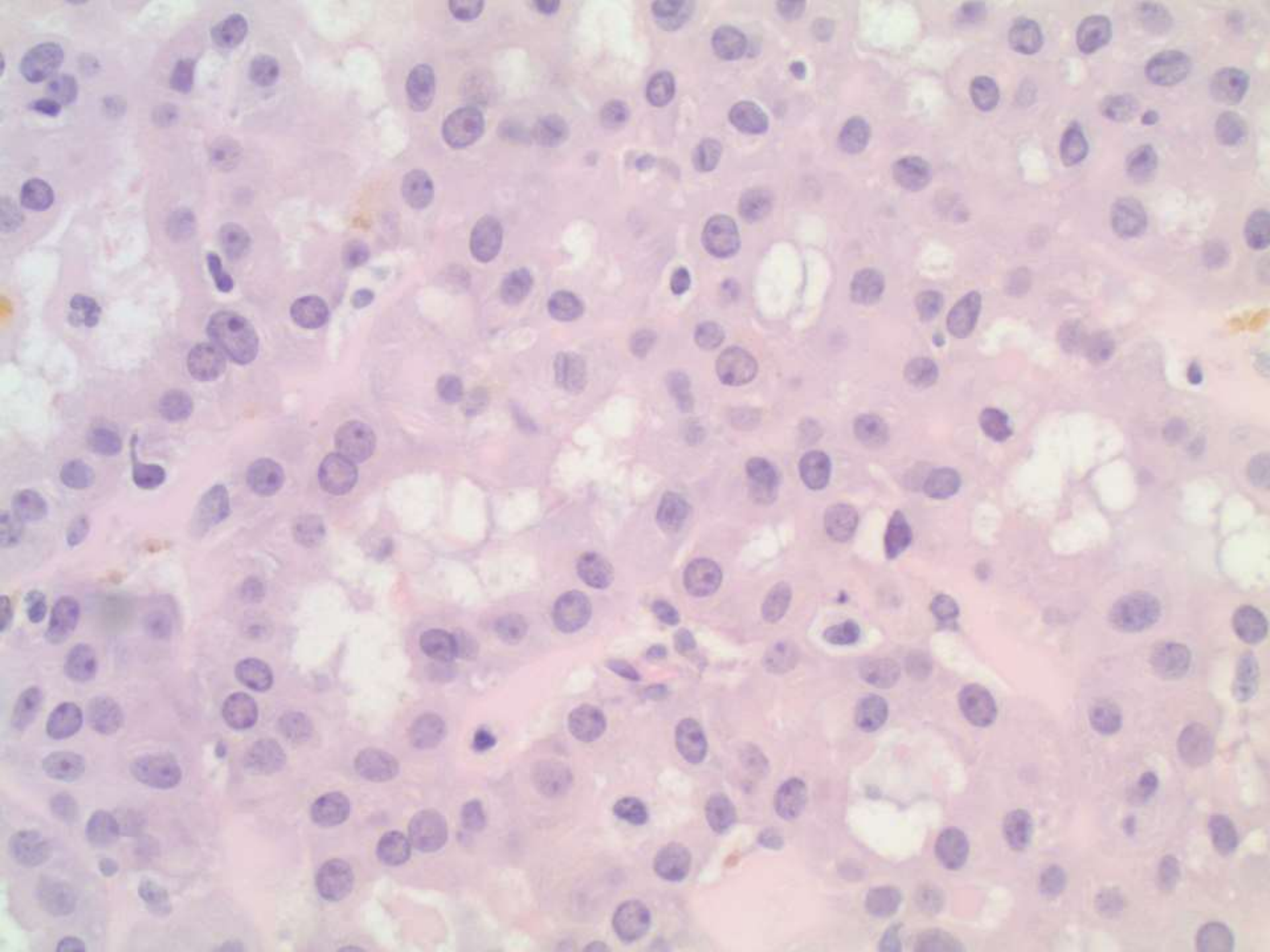






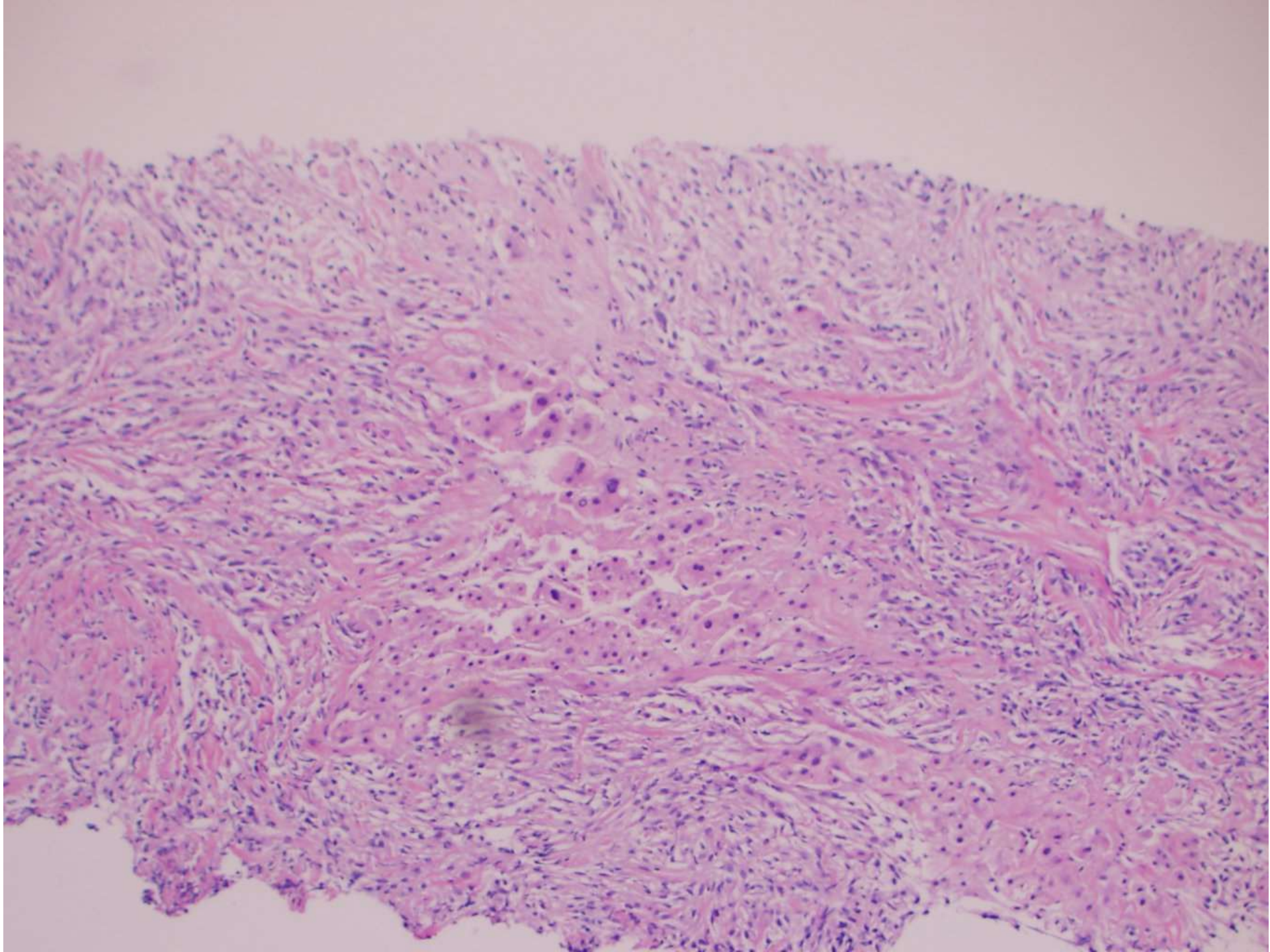


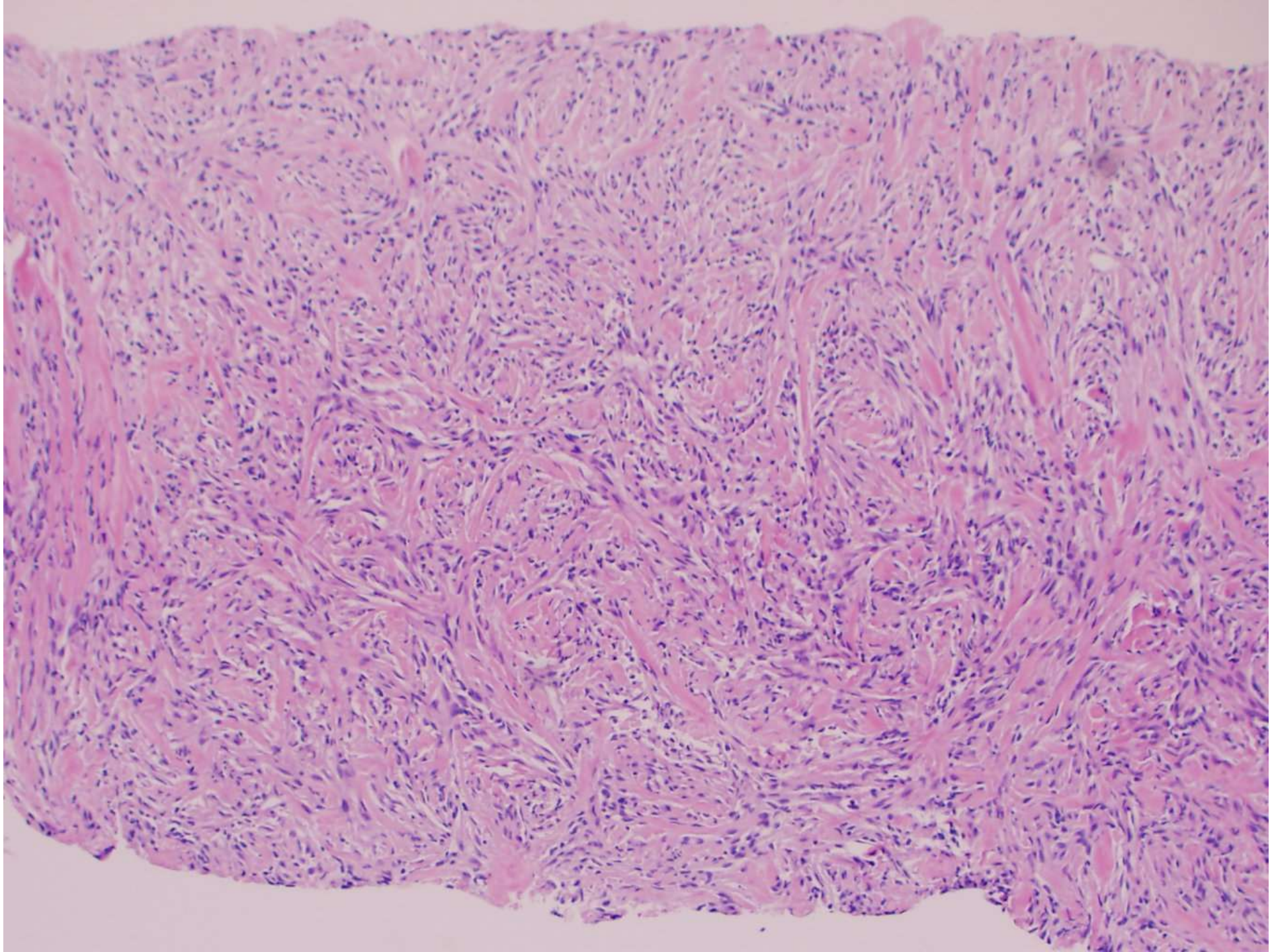


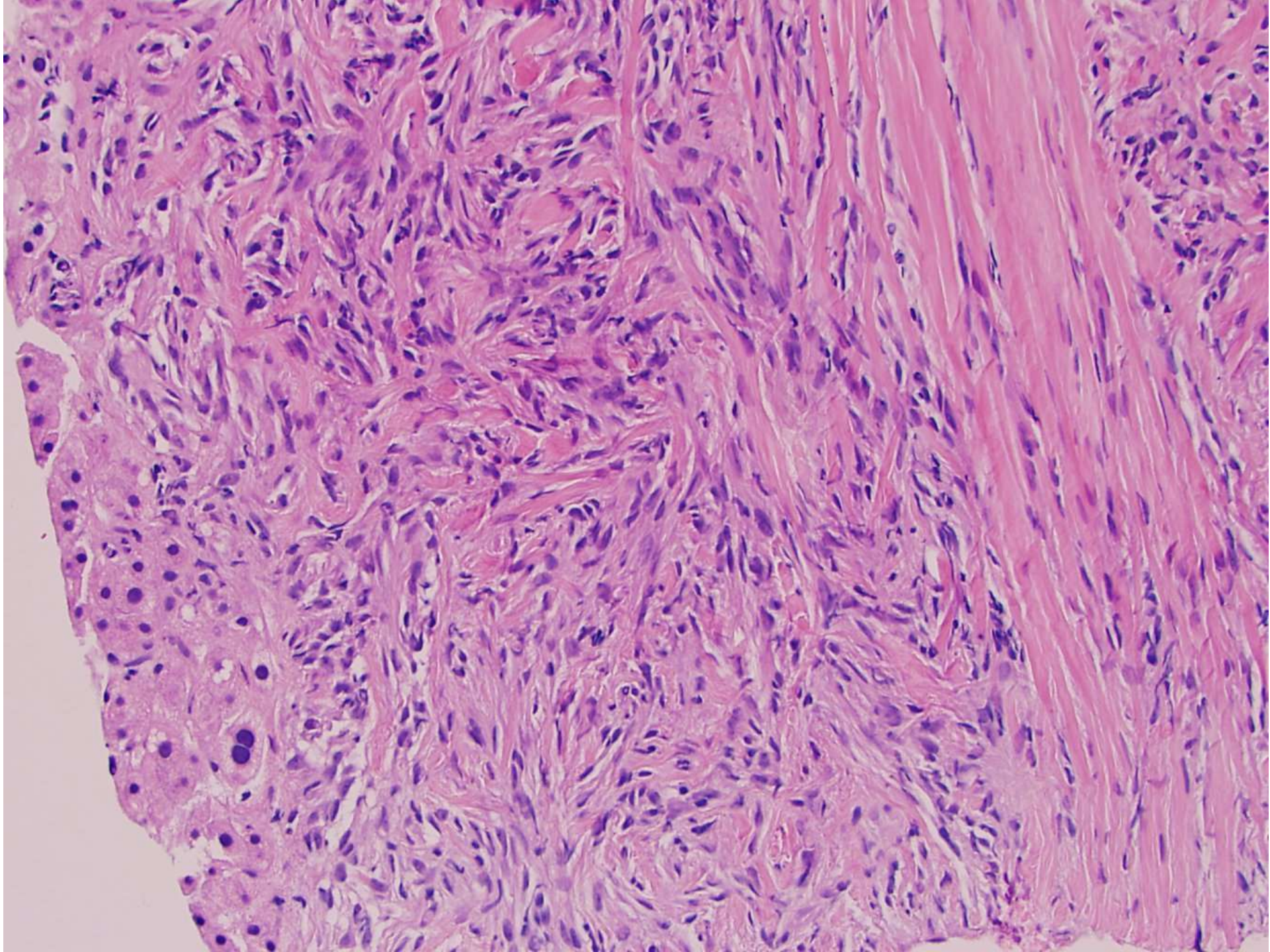


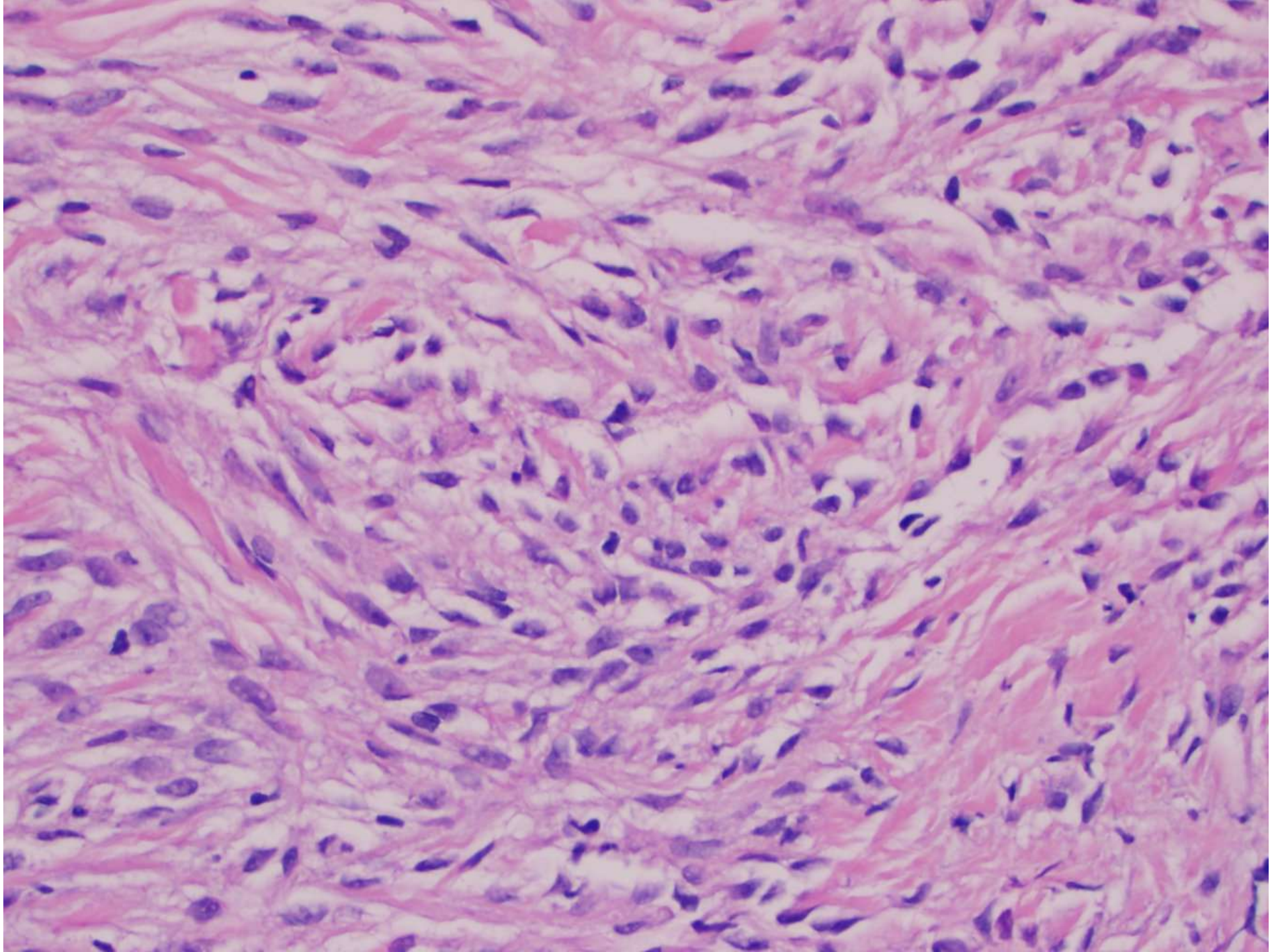
SB 6206
Greg Rumore; Kaiser Walnut Creek

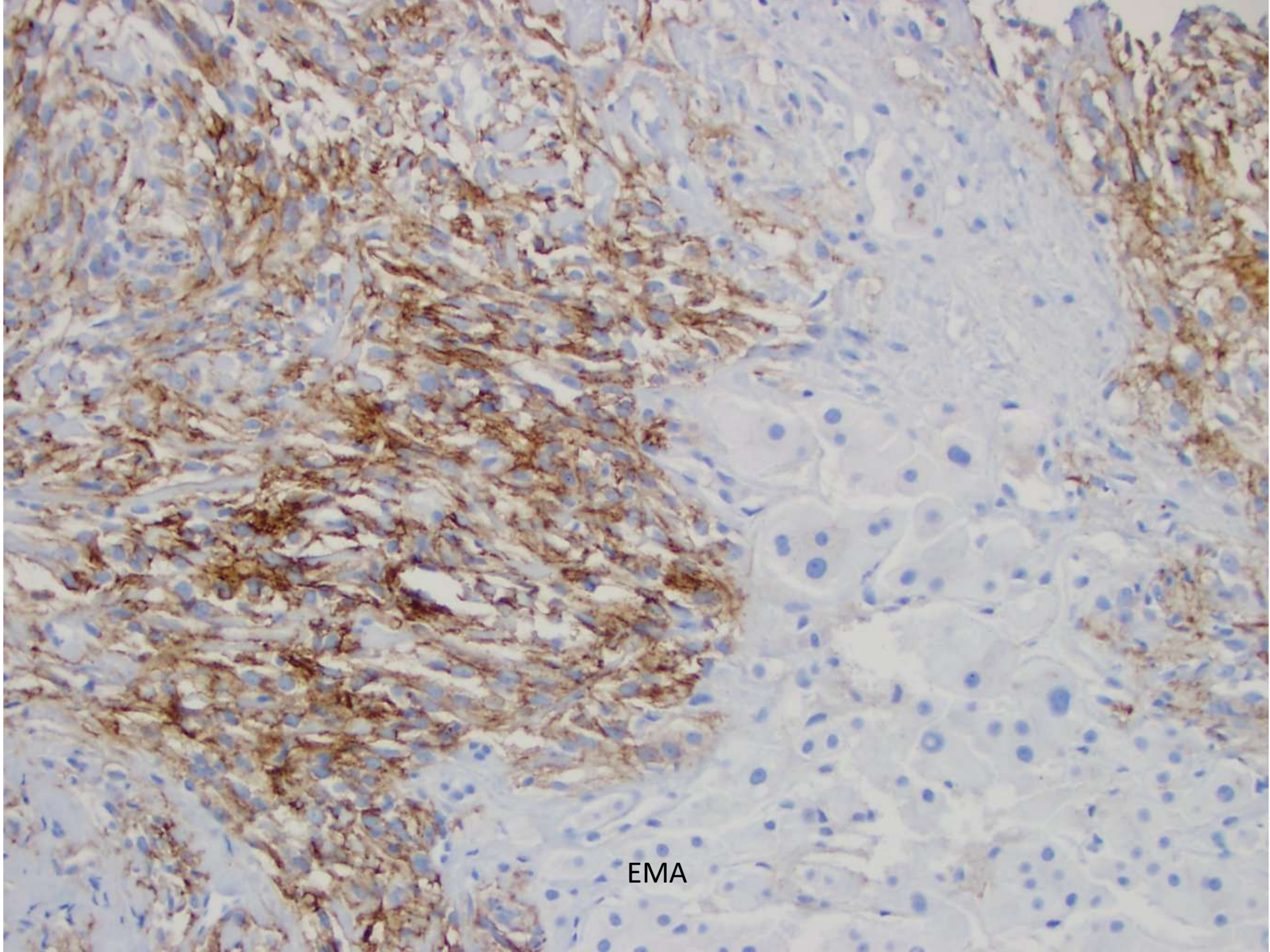
71-year-old woman with history of 1cm grade 2 invasive ductal carcinoma, now has liver and bilateral adrenal masses. Needle biopsy of liver mass submitted.

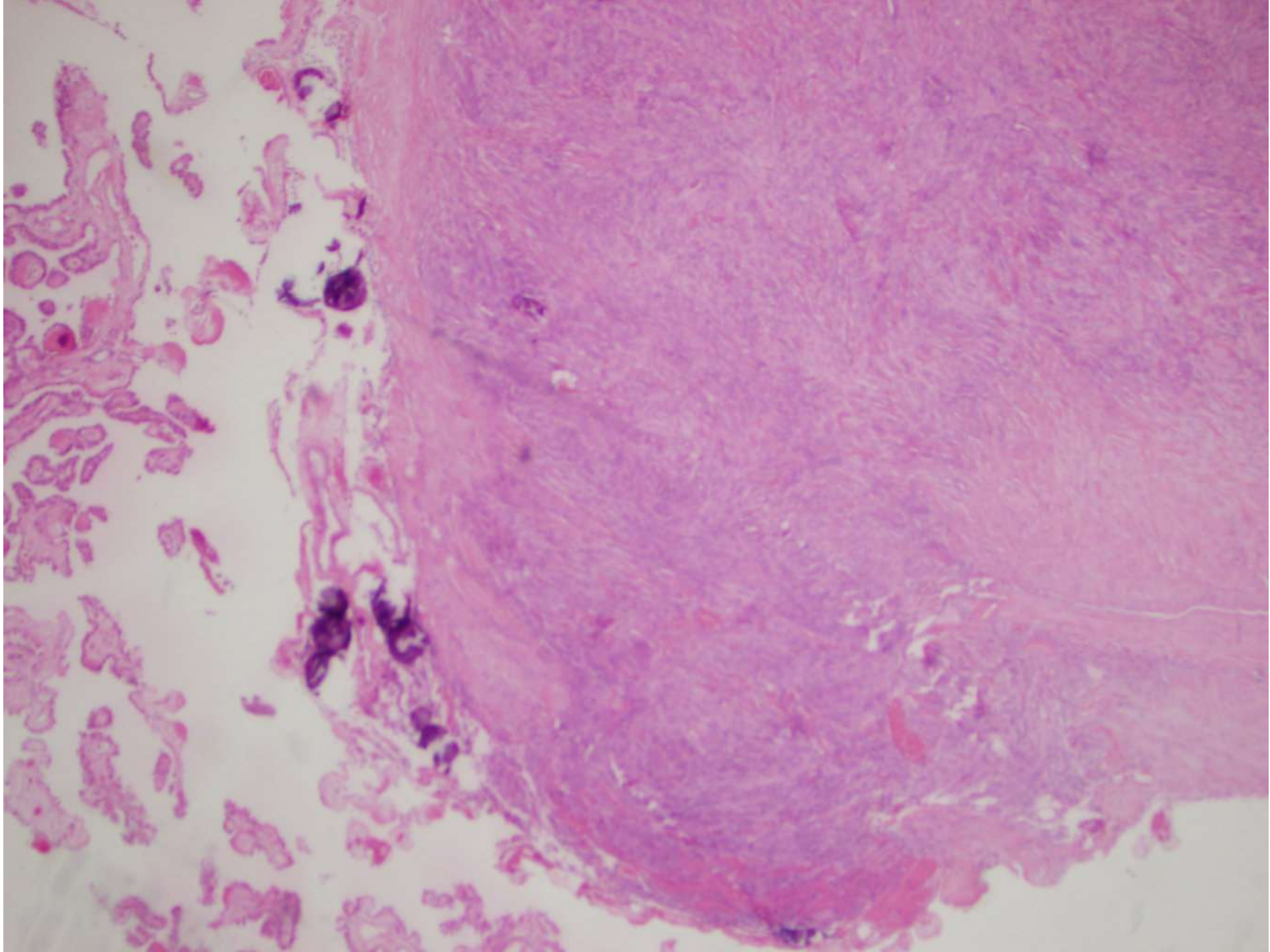


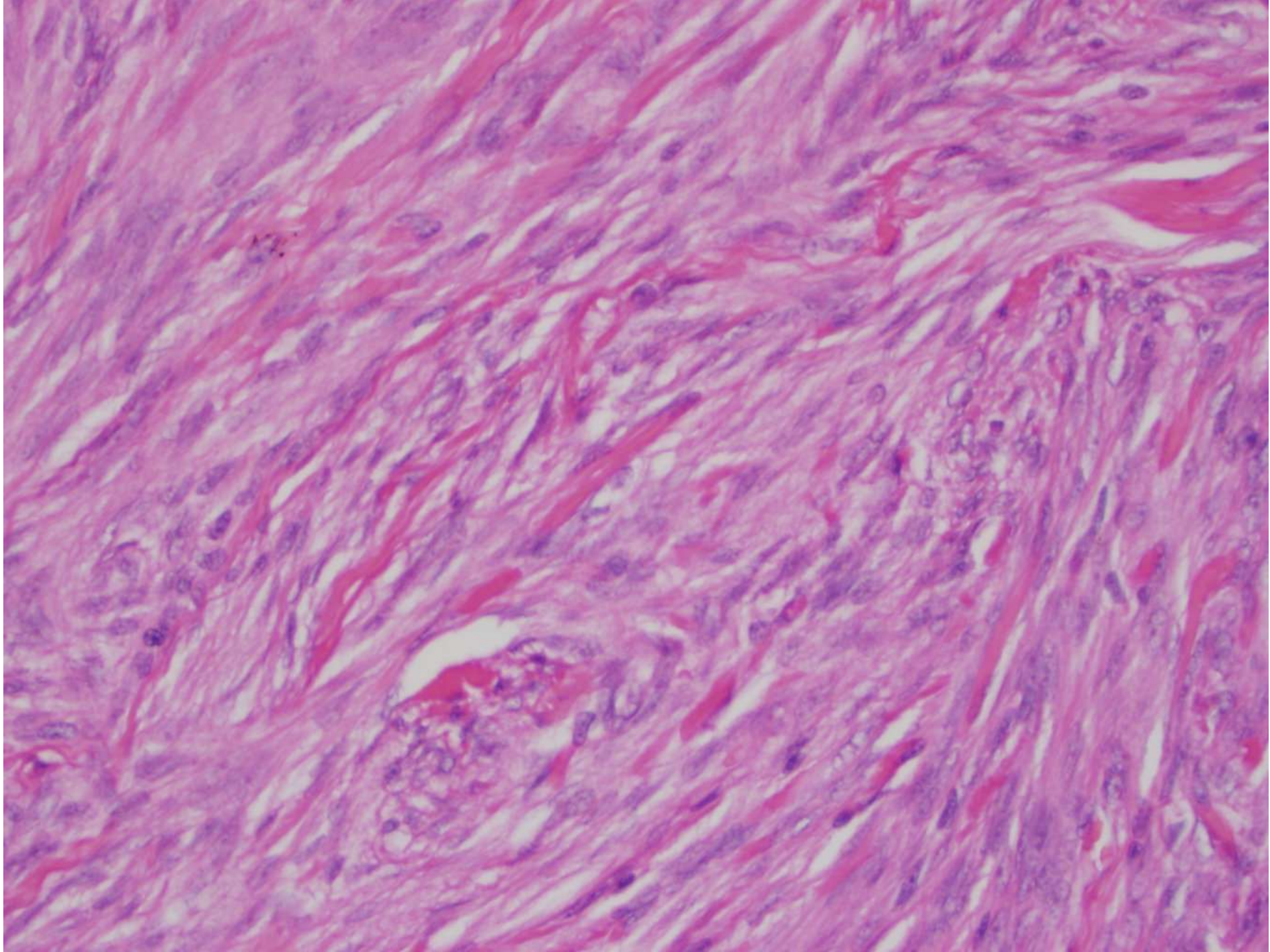


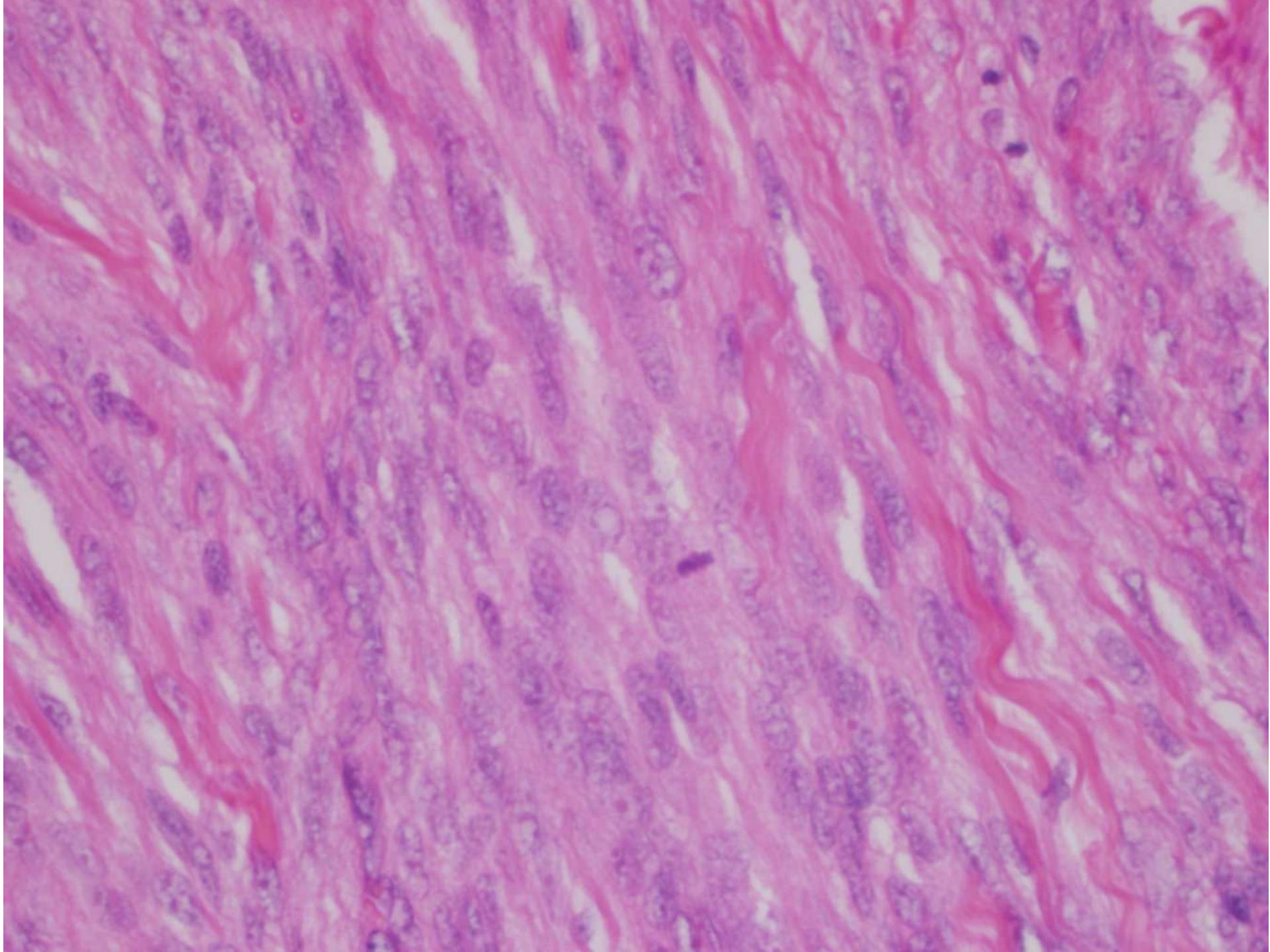


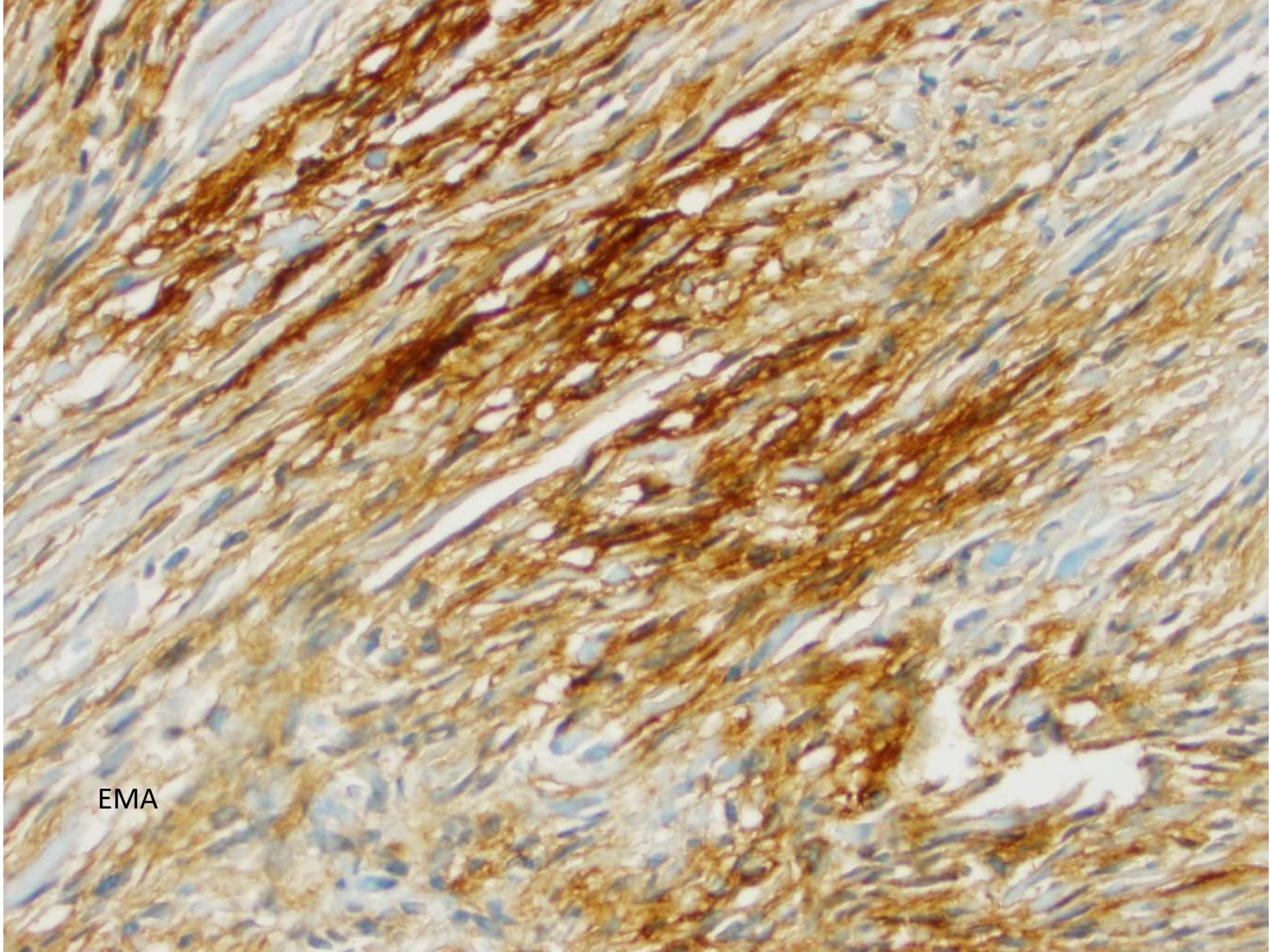


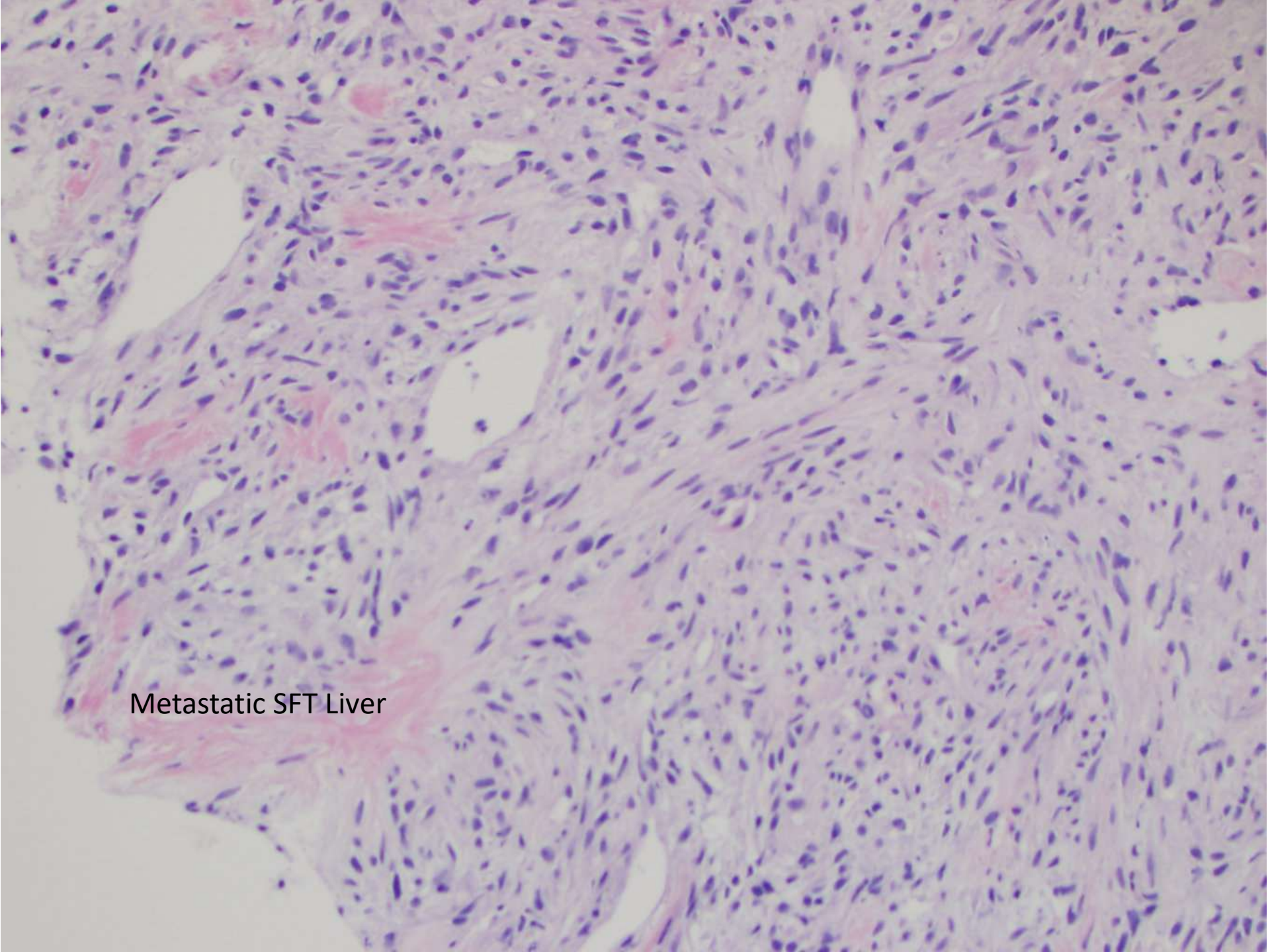

EMA





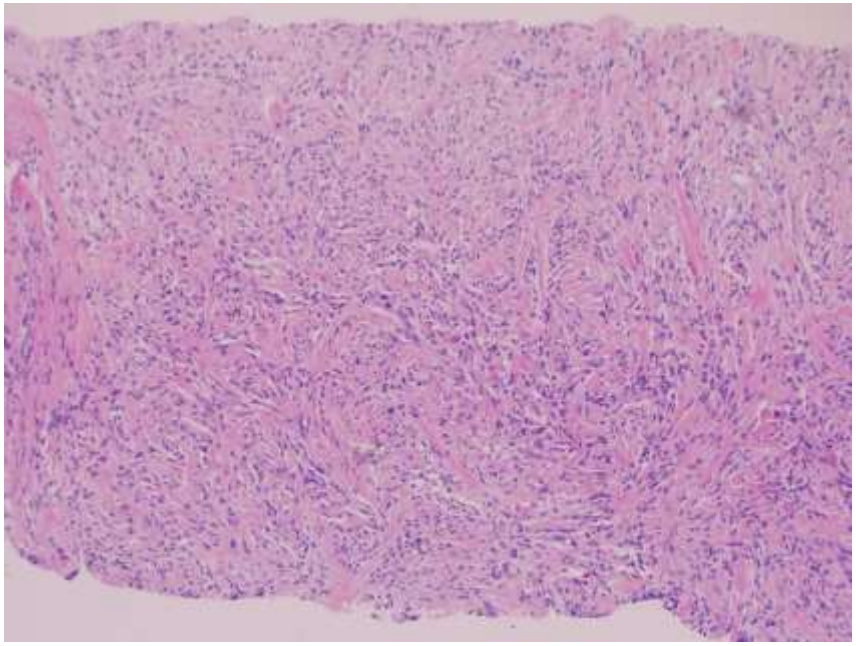



EMA

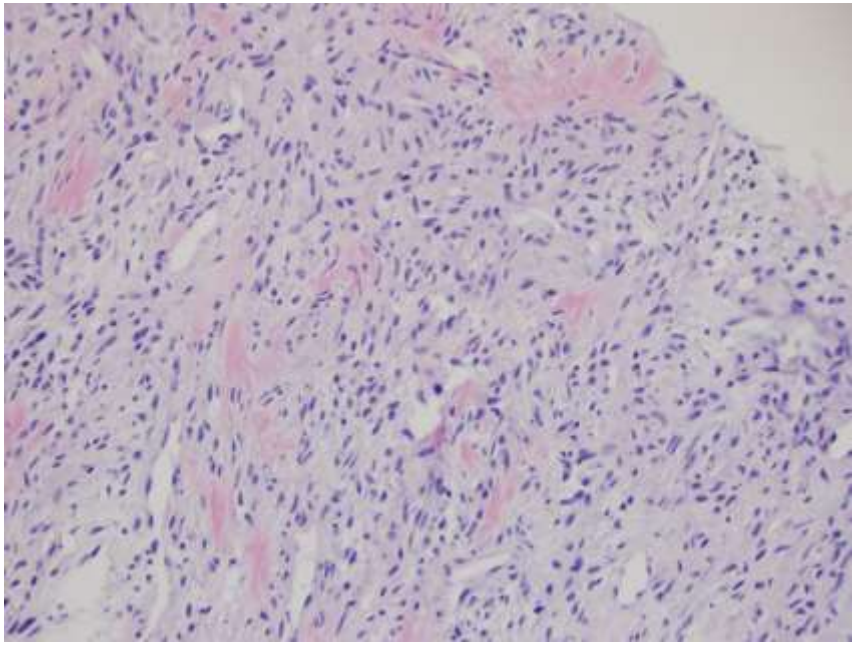

Metastatic SFT Liver

Comparison

- Meningioma



- SFT

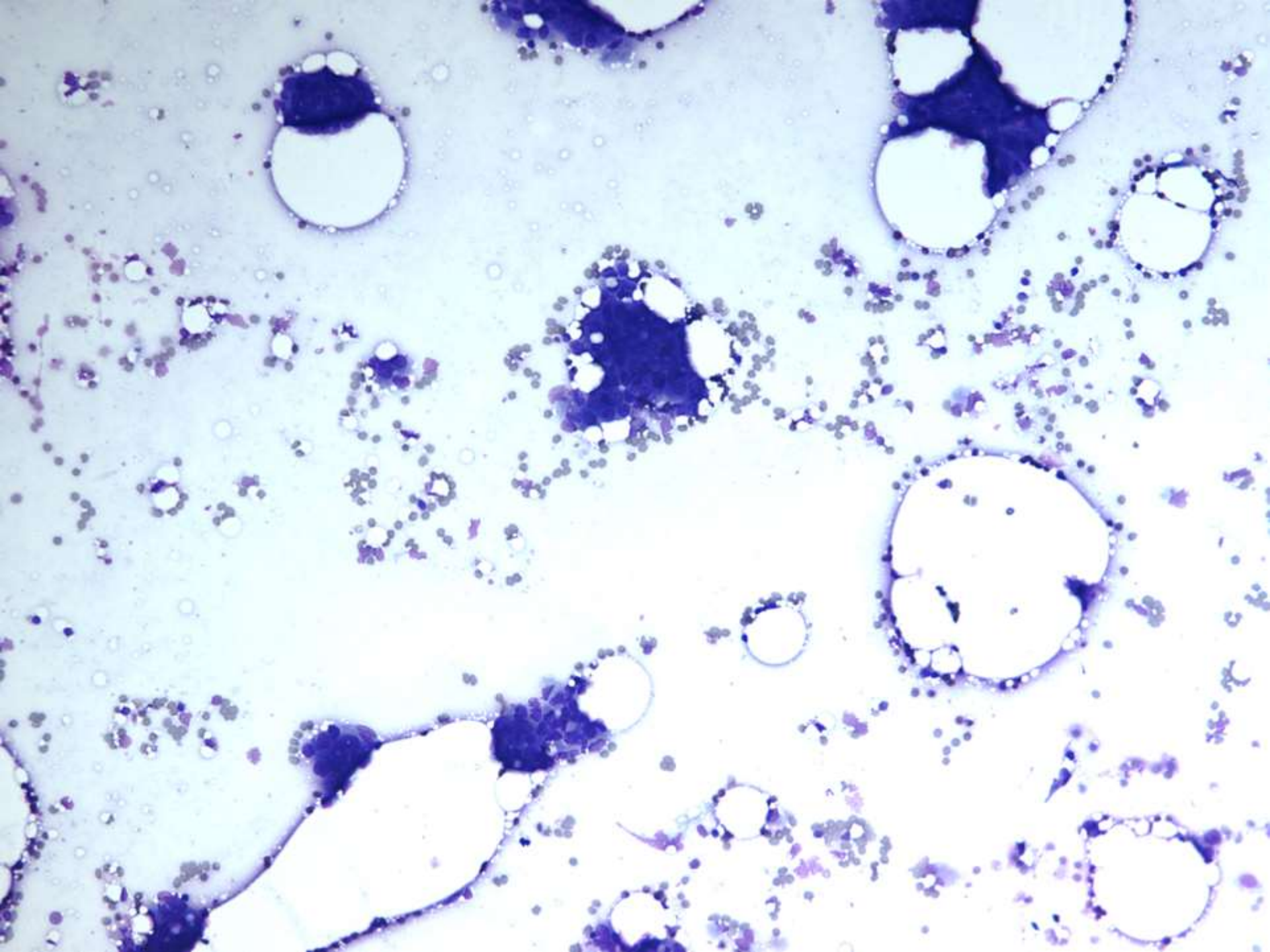


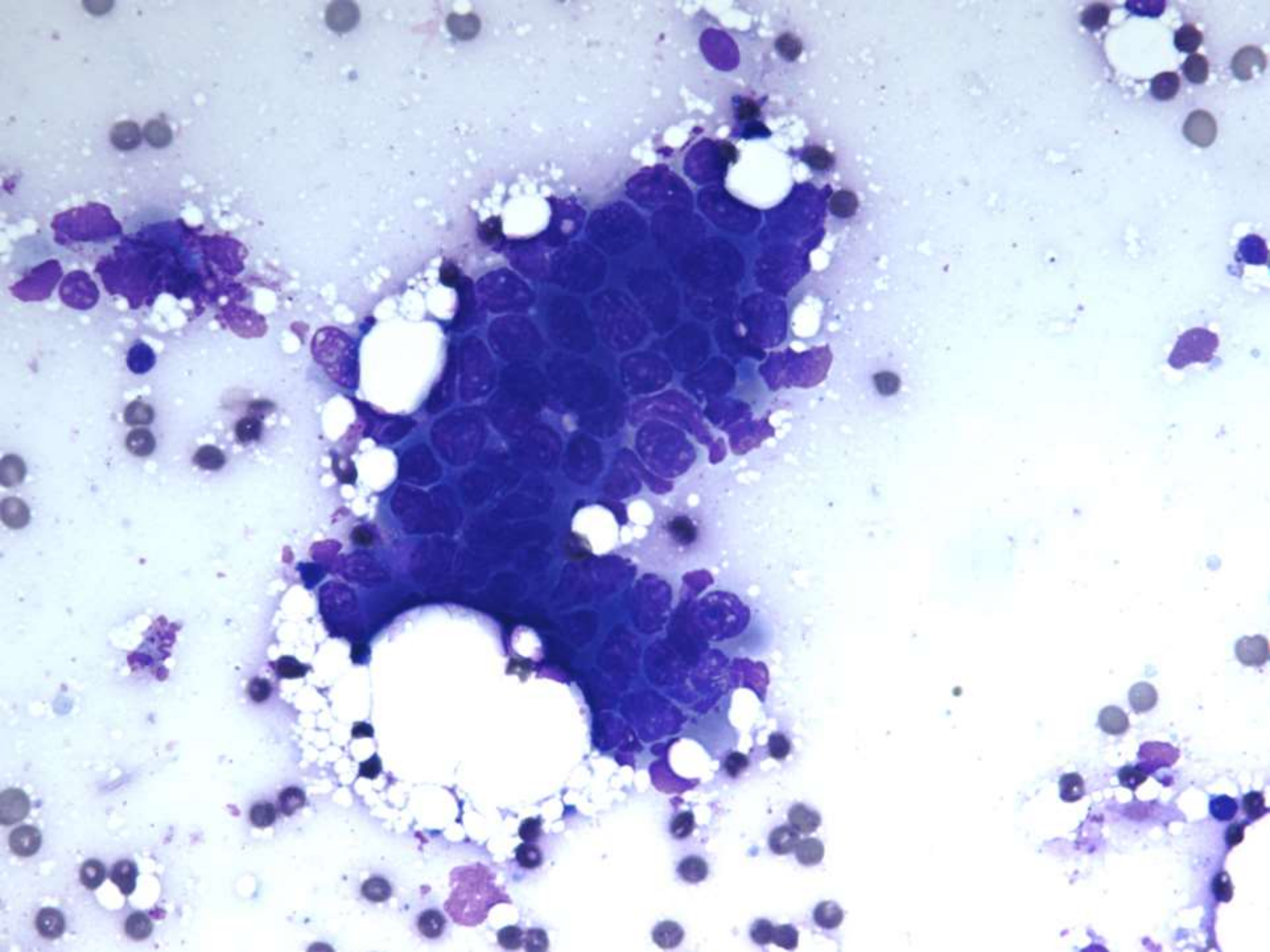
Distant Metastases of Meningioma

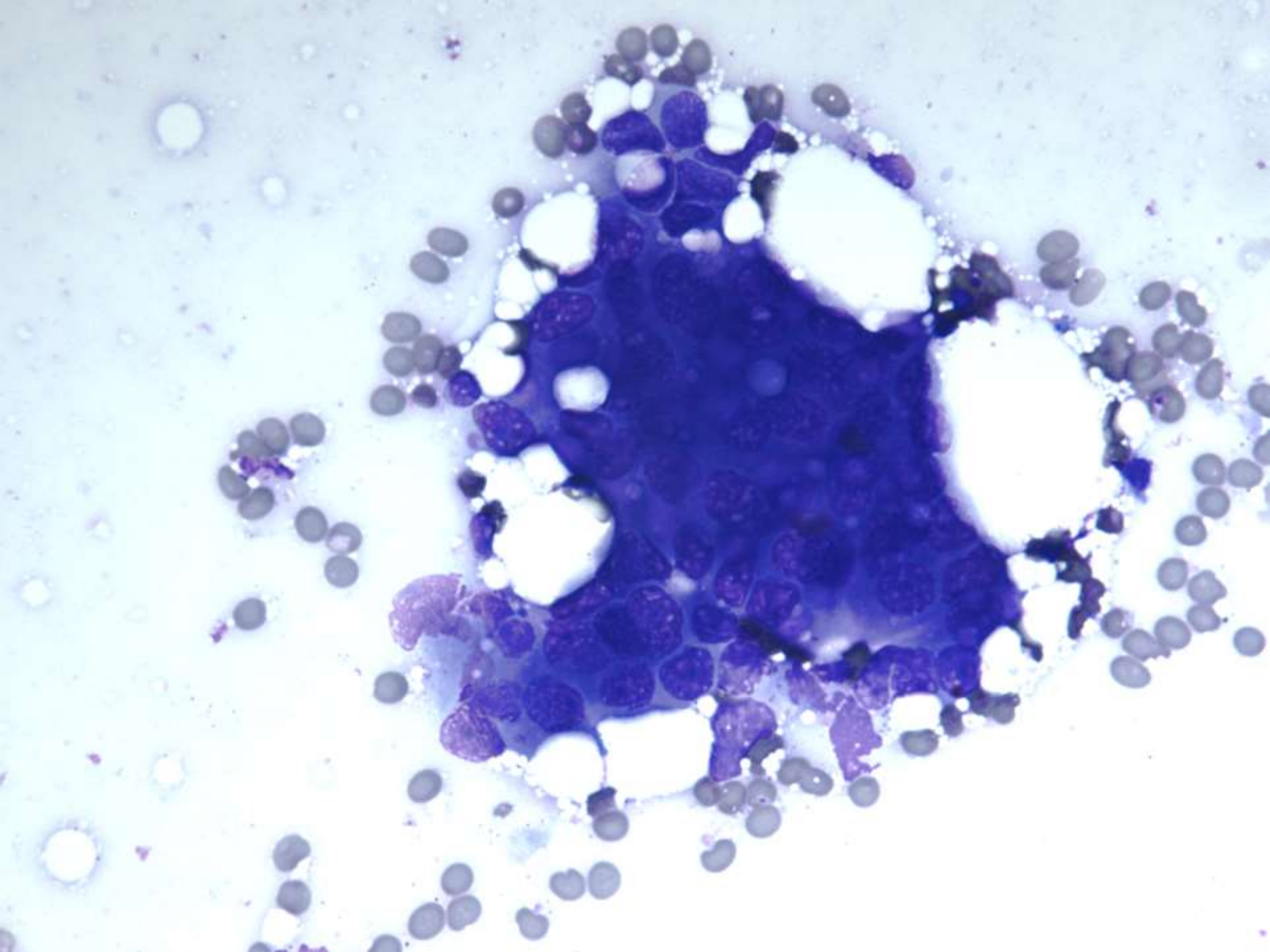
- Very rare < 0.1 %
- Usually associated with higher grade and repeated recurrences
- Rarely delayed metastases several decades after treatment with absence of local recurrence
- Lungs (60%), liver (34%), cervical LN’s, bone

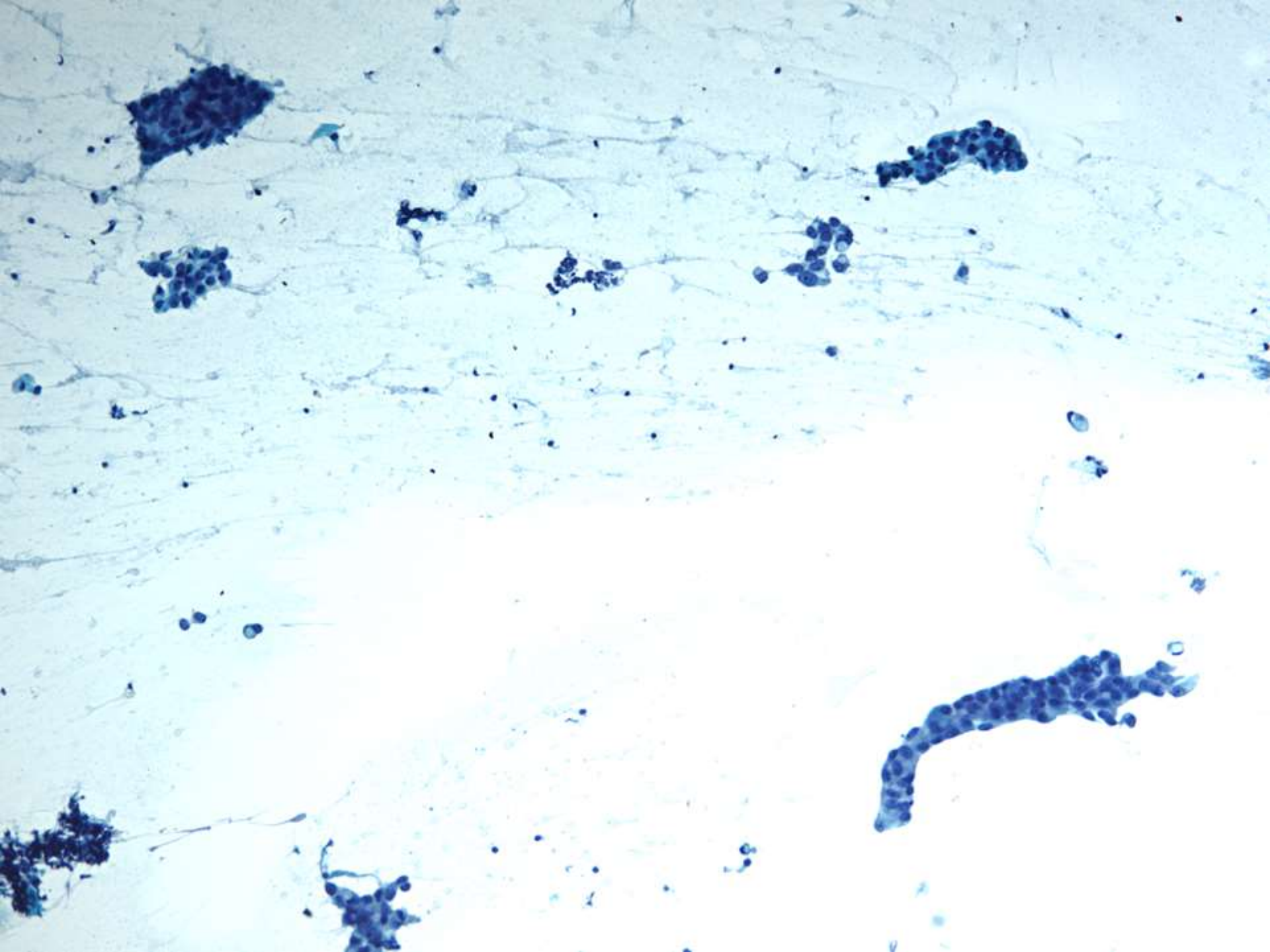
SB 6207
Jenny Hoffmann/Brittany Holmes; Stanford

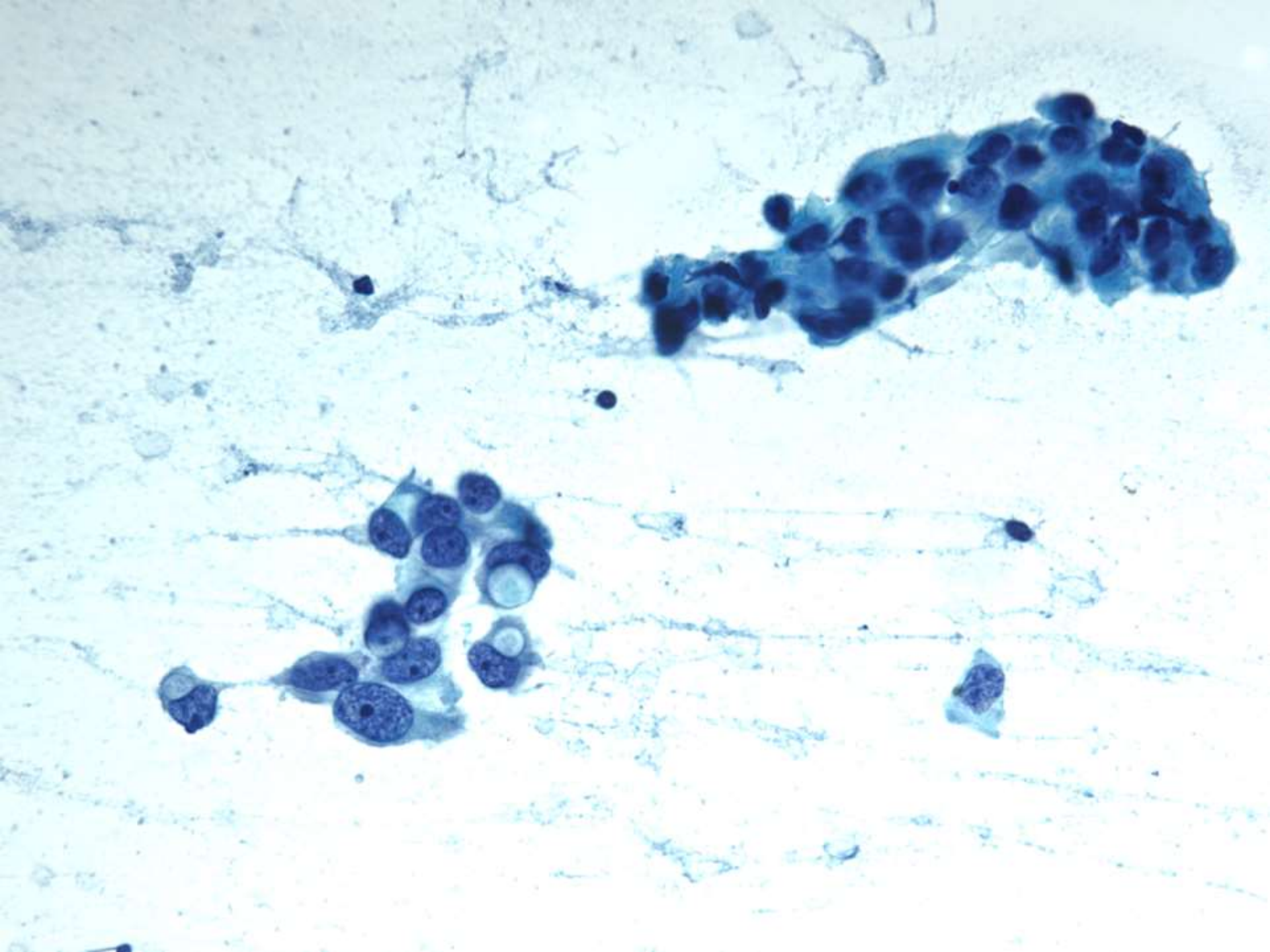
69-year-old woman with 3.7cm ill-defined right parotid mass.

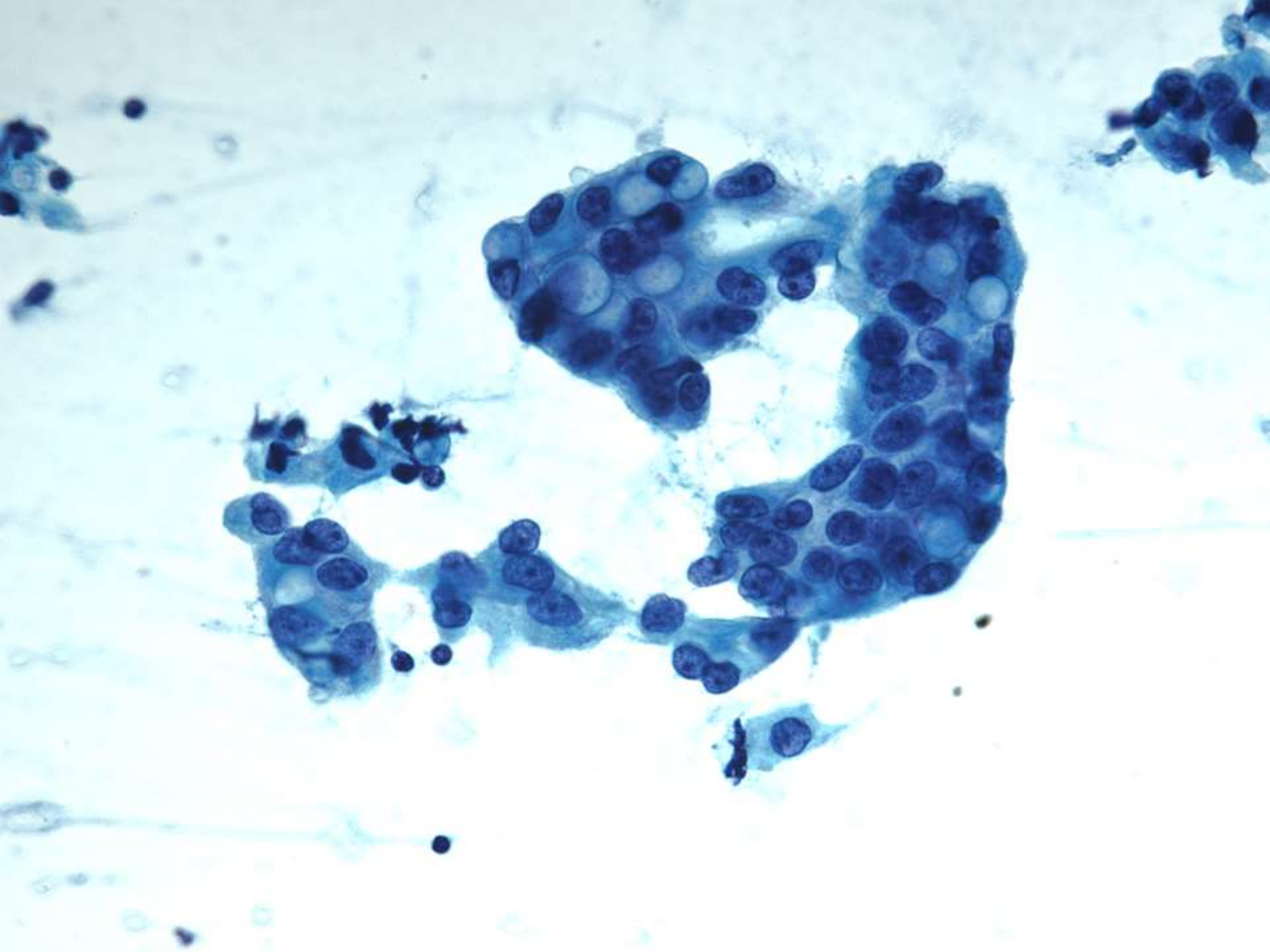








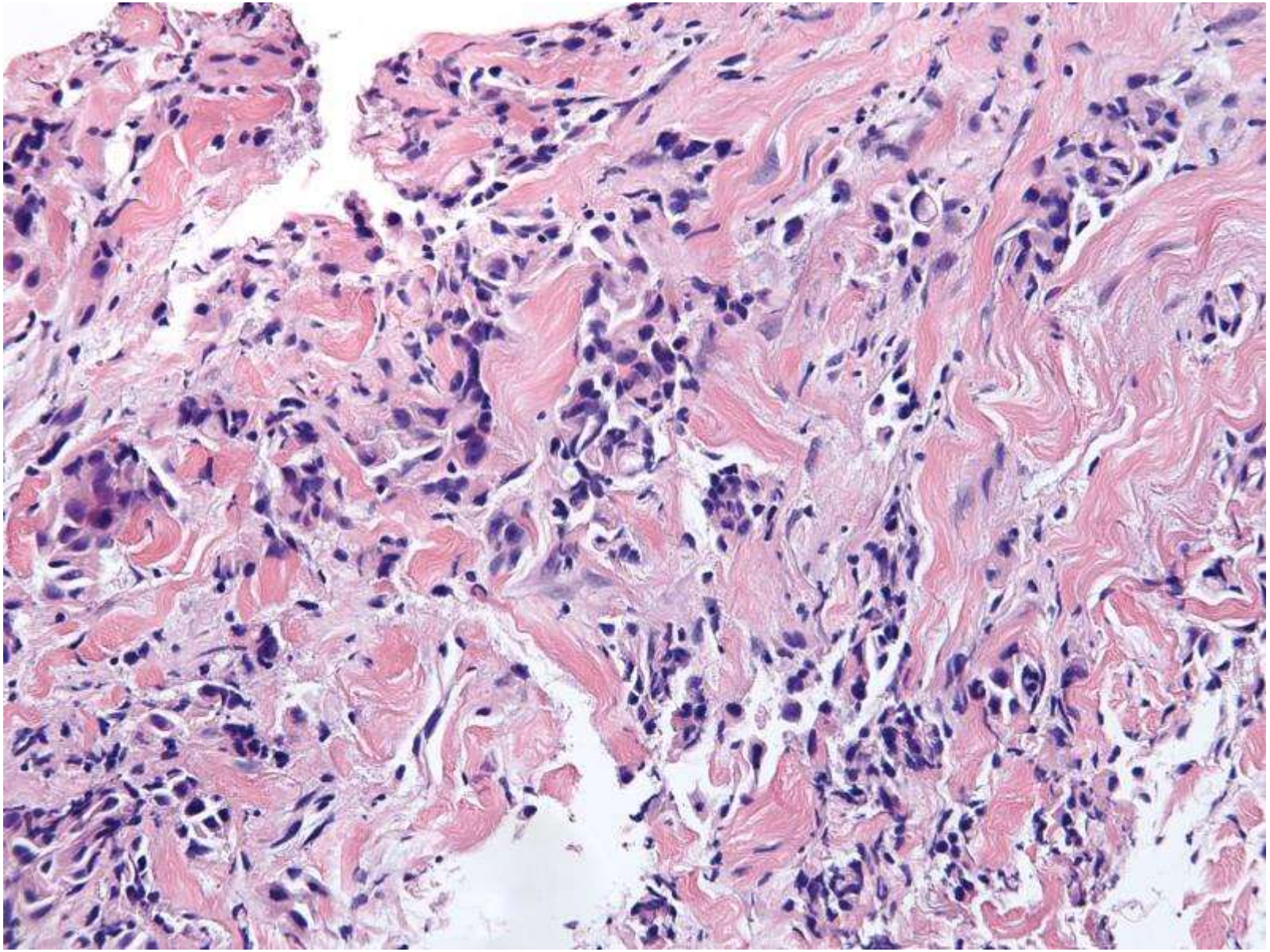




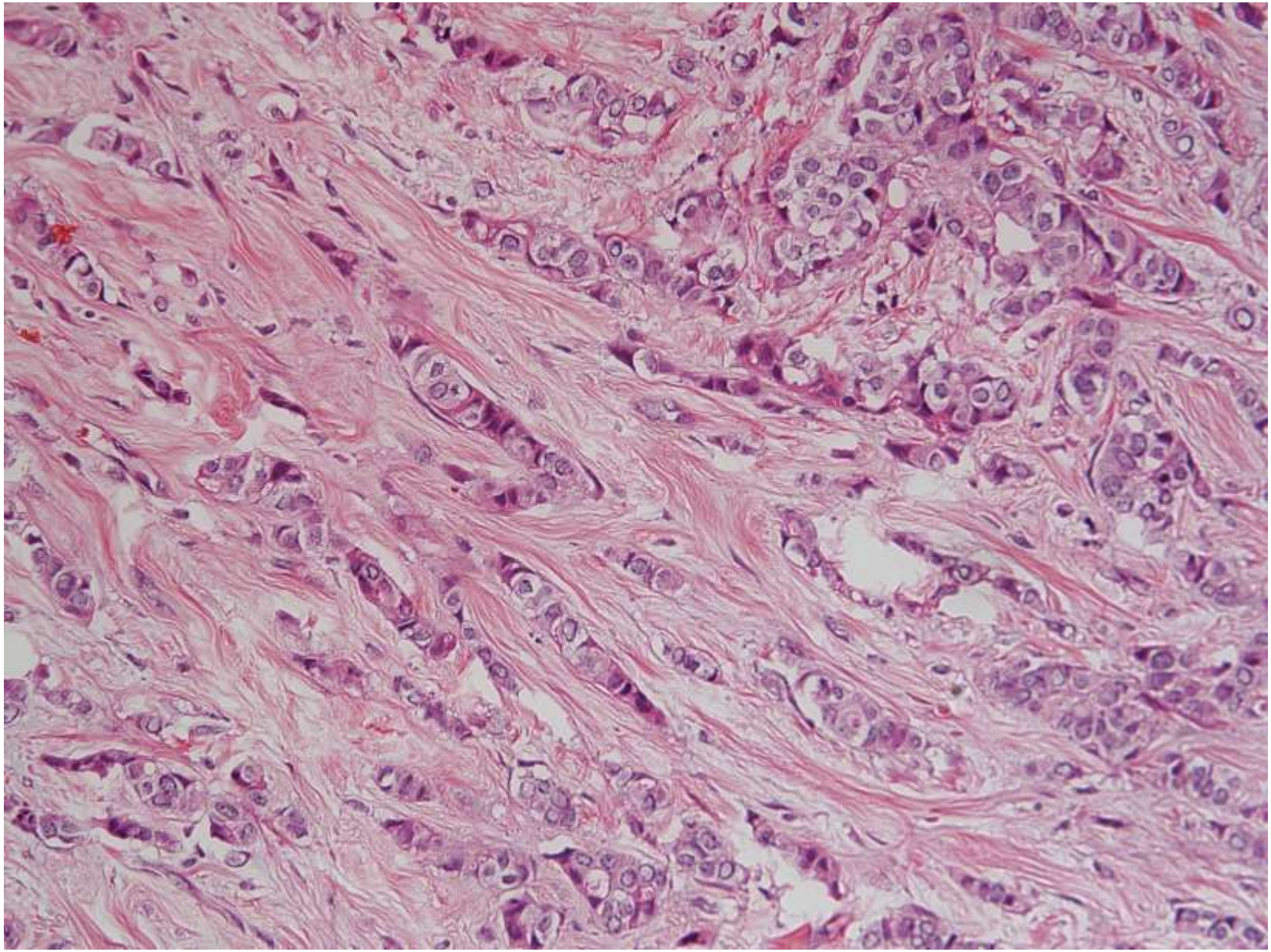
Differential diagnosis

- Mucoepidermoid carcinoma
- Salivary duct carcinoma
- Adenocarcinoma, NOS

A few days later, a repeat FNA and core biopsy is performed

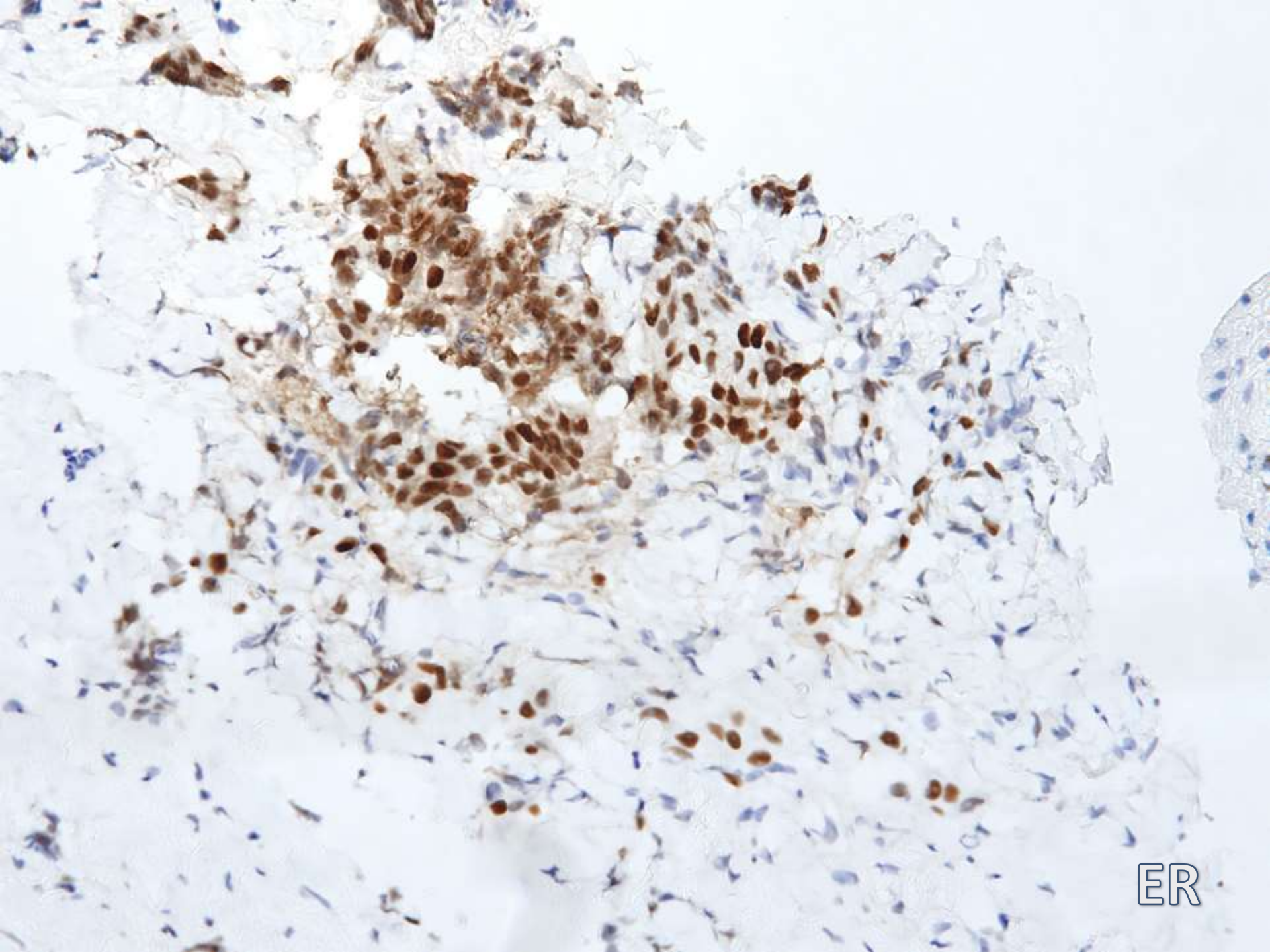


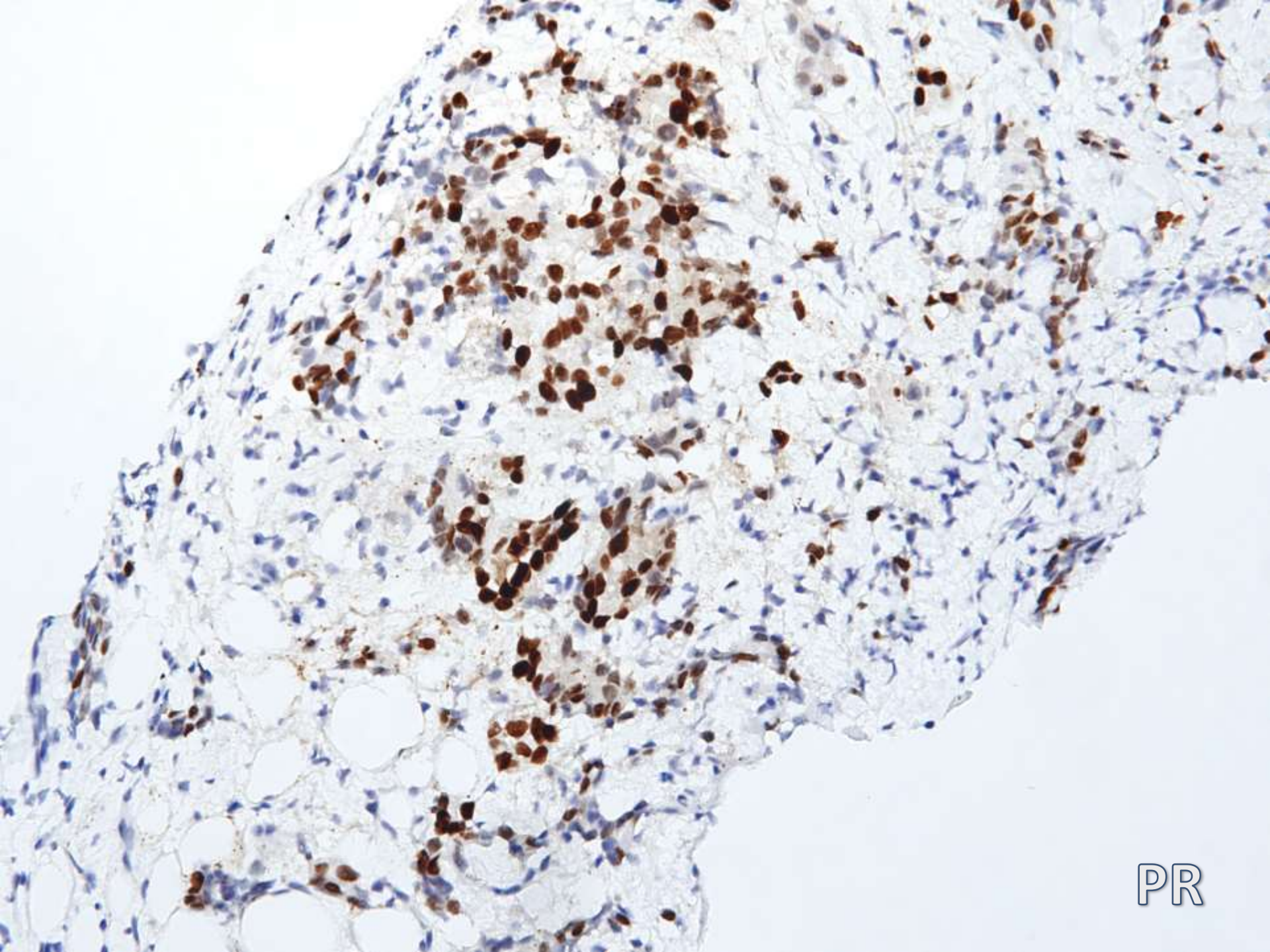
We also receive a breast I/O for review…

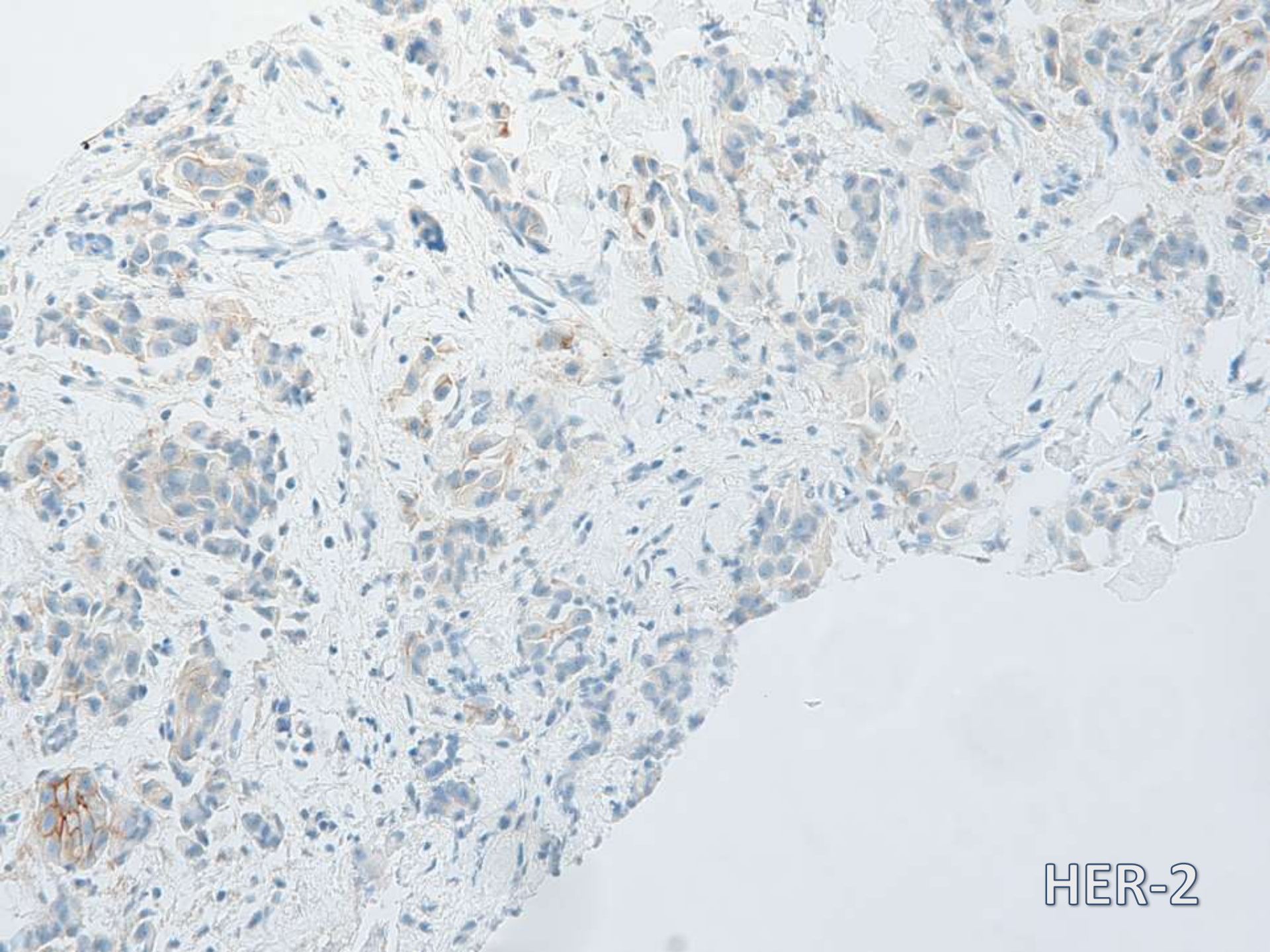


Immunohistochemistry in salivary gland tumors vs. breast

	Salivary duct carcinoma	Breast carcinoma
Androgen receptor	Positive in majority (>95%)	Positive in subset (more often in luminal type A-like tumors)
HER-2	Frequently positive	Negative (in our case)
Estrogen receptor	Weakly positive in subset	Positive (in our case)
Progesterone receptor	Weakly positive in subset	Positive (in our case)
SOX-10	Negative	Negative
S100	Negative	Negative
GATA-3	Positive	Positive
GDCFP-15	Frequently positive	Frequently positive


ER


PR


HER-2

Diagnosis

- PAROTID, RIGHT, FINE NEEDLE ASPIRATION AND CORE BIOPSY
  -- ADENOCARCINOMA, FAVOR METASTATIC

Parotid gland metastasis

- Most common arise from primary tumors of head & neck (SCCs, melanomas)
- Metastasis from below clavicle less common – but can happen (e.g. breast, lung, kidney)

References

1) Nasser SM, Faquin WC, Dayal Y. Expression of androgen, estrogen, and progesterone receptors in salivary gland tumors: frequent expression of androgen receptor in a subset of malignant salivary gland tumors. Am J Clin Pathol. 2003:119(6):802-806.

2) Can NT, Lingen MW, Mashek H, et al. Expression of hormone receptors and HER-2 in benign and malignant salivary gland tumors. Head Neck Pathol. 2017: 1-10.

3) Udager AM, Chiosea SI. Salivary duct carcinoma: an update on morphologic mimics and diagnostic use of androgen receptor immunohistochemistry. Head Neck Pathol. 2017;11(3):299-294.

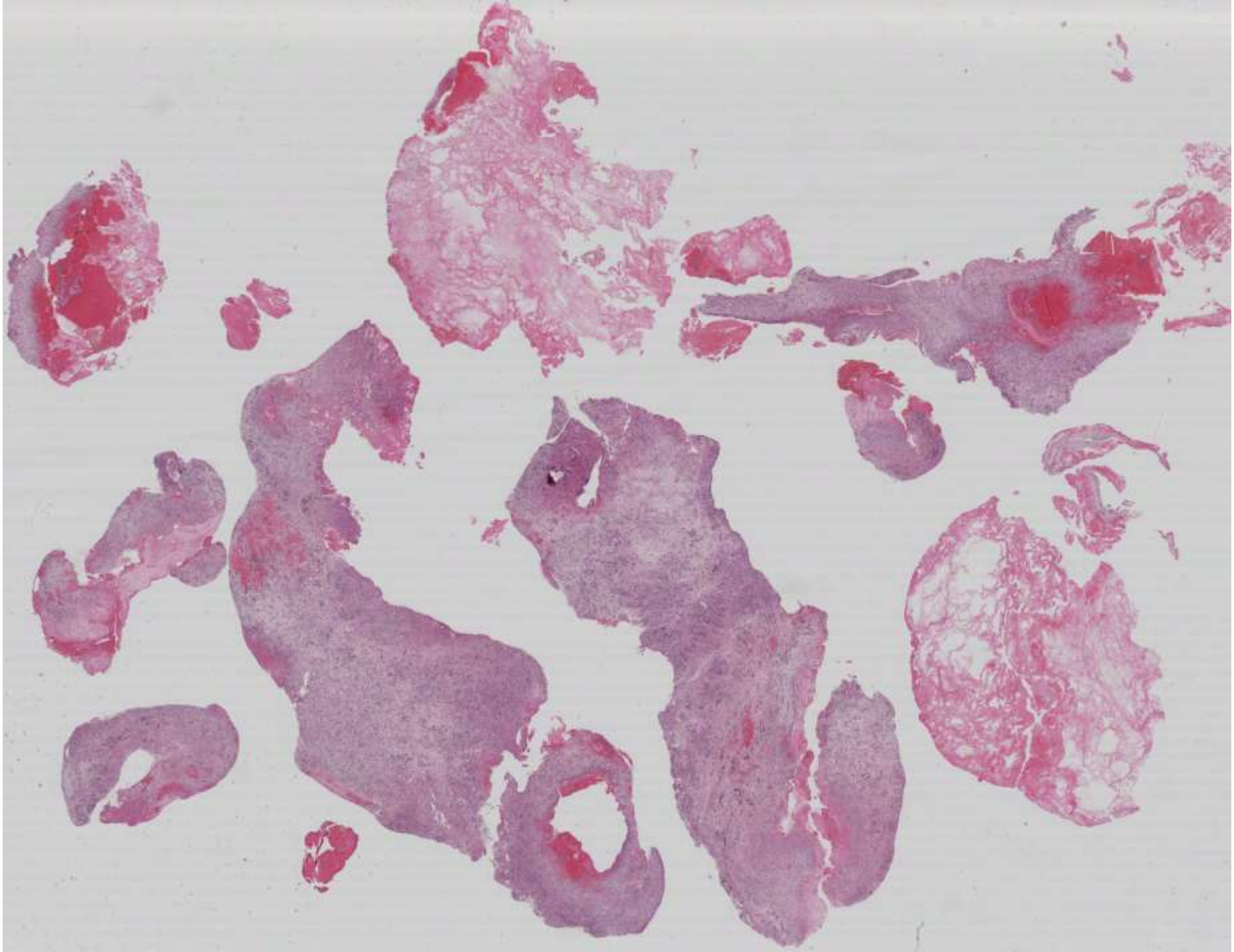
4) Franzen AM, Gunzel T, Lieder A. Parotid gland metastases of distant primary tumours: a diagnostic challenge. Auris Nasus Larynx. 2016;43(2):187-91.

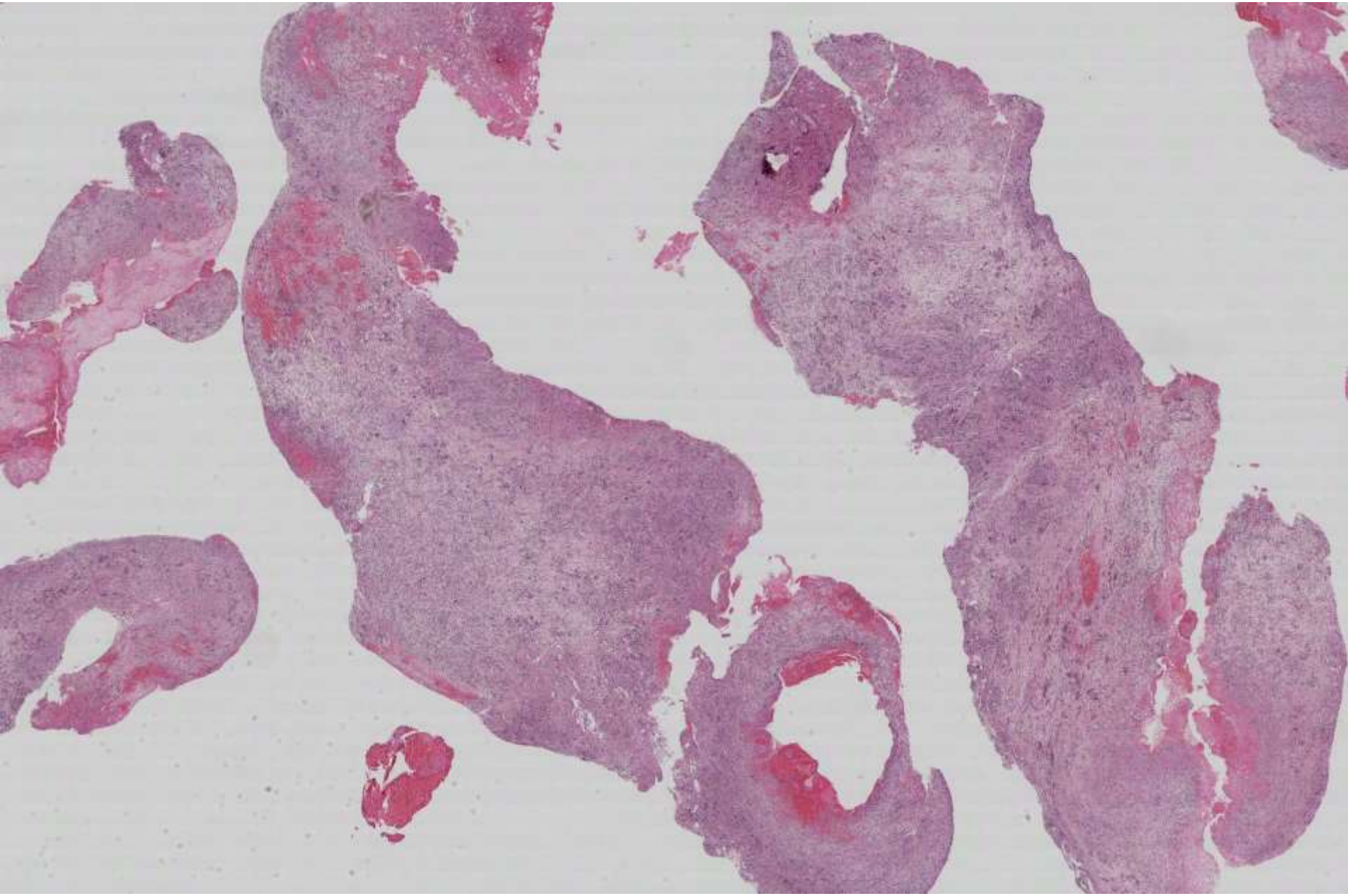
5) Pastore A, Ciorba A, Soliani M, et al. Secondary malignant tumors of the parotid gland: not a secondary problem. J BUON. 2017;22(2):513-518.

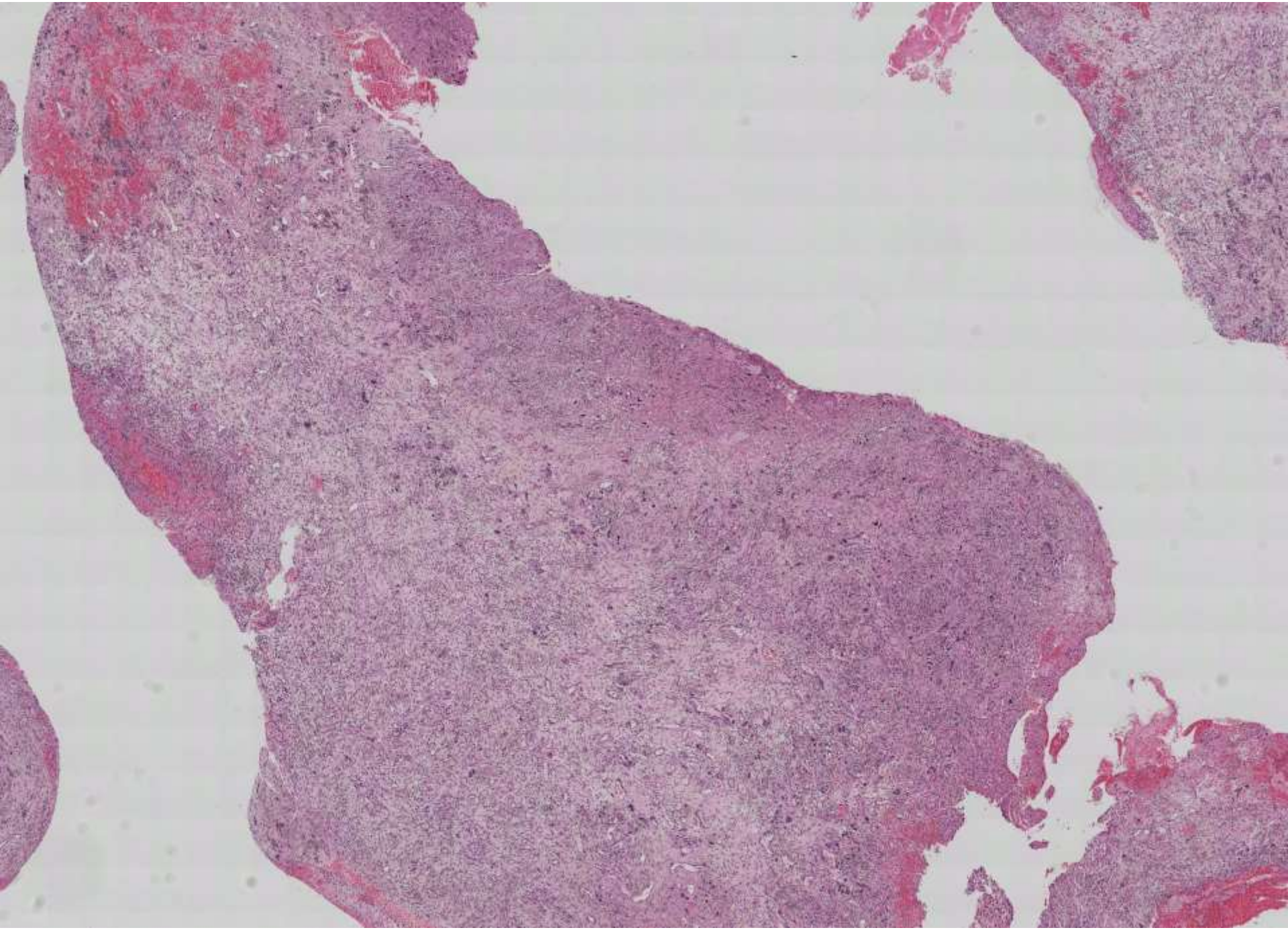
6) Malata CM, Camilleri IG, McLean NR, et al. Metastatic tumors of the parotid gland. British journal of oral and maxillofacial surgery. 1998;36(3):190-196.

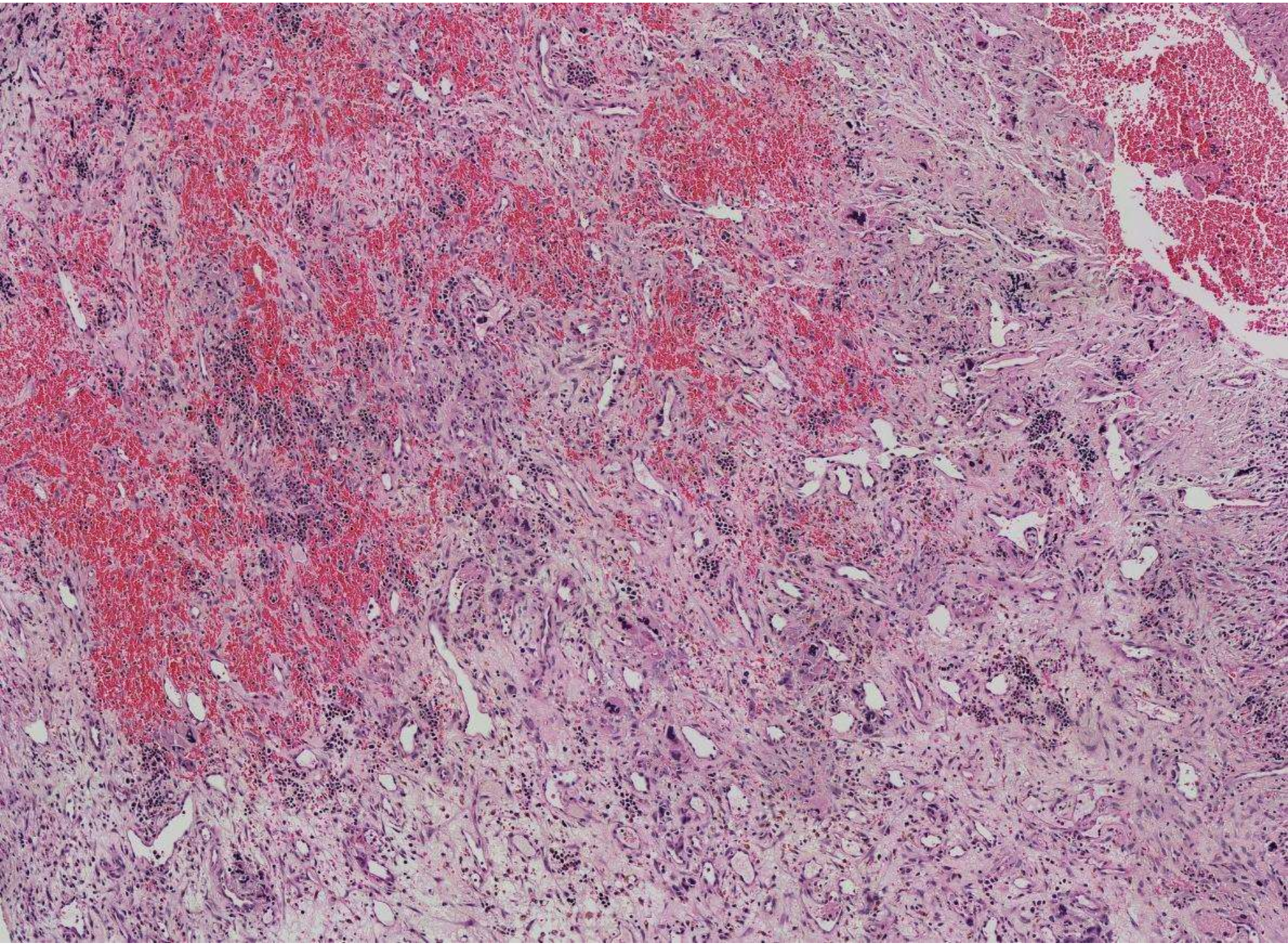
SB 6208
(scanned slide available)
Ankur Sangoi; El Camino Hospital

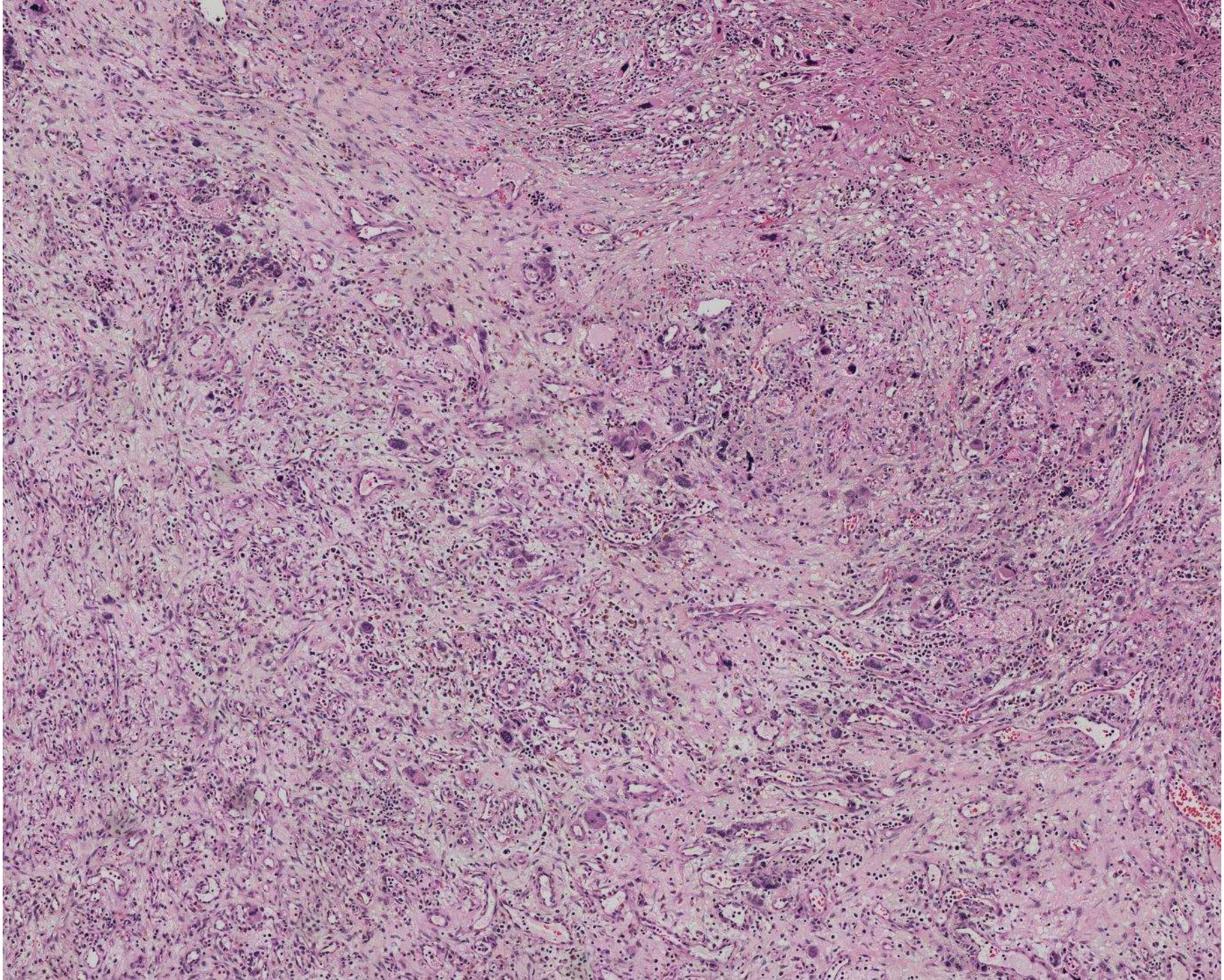
73-year-old woman with soft tissue mass near the back of her head/neck.

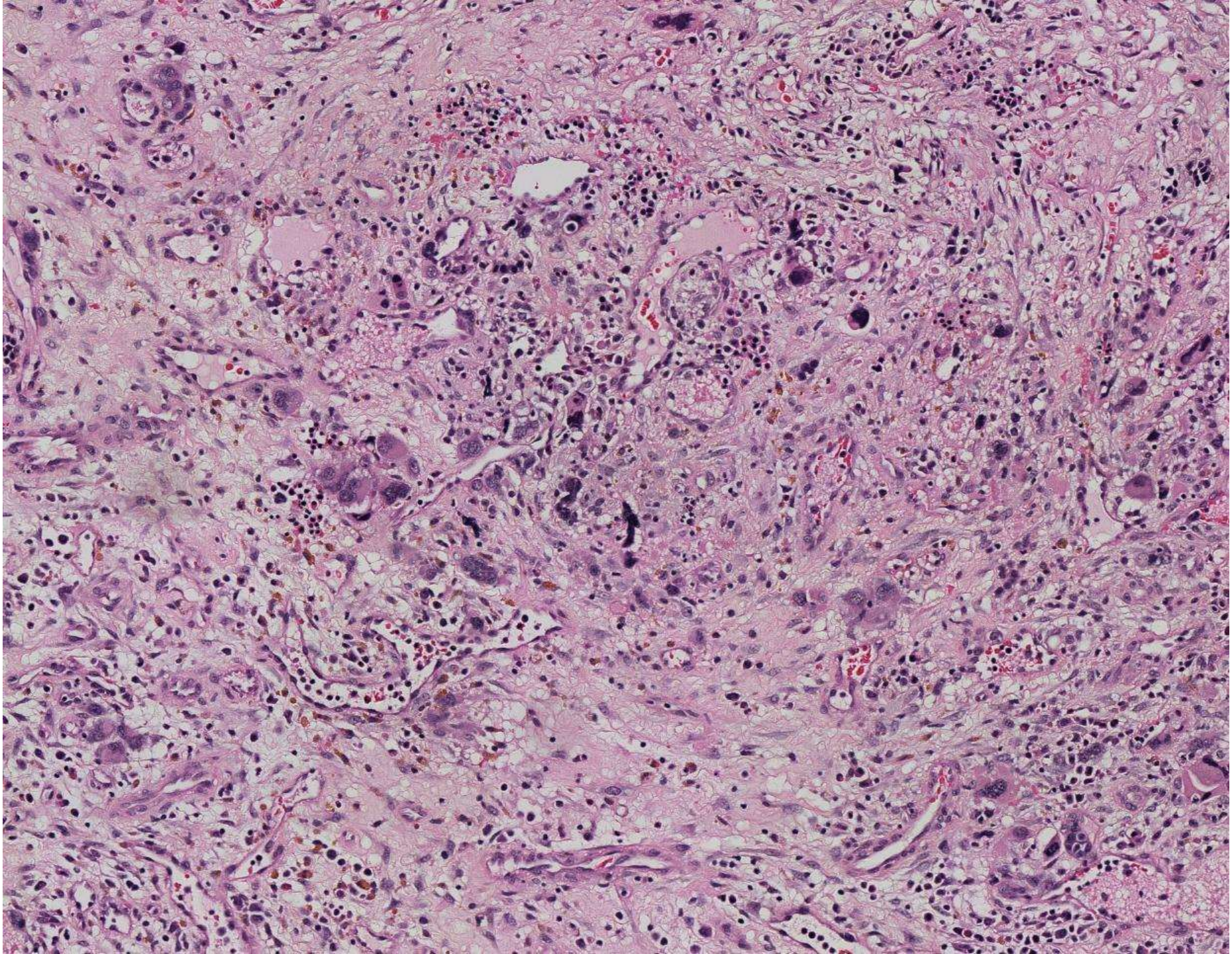


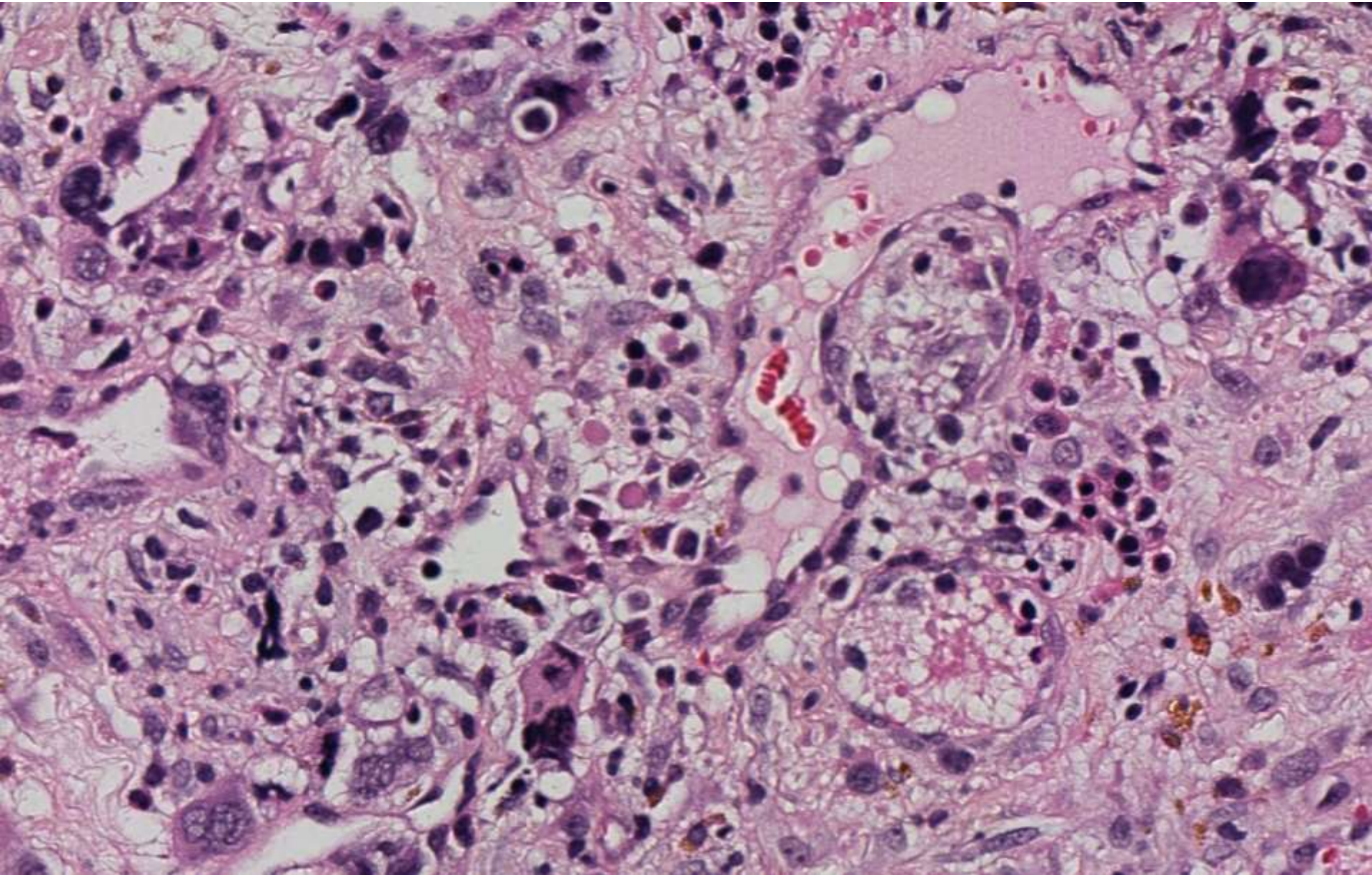


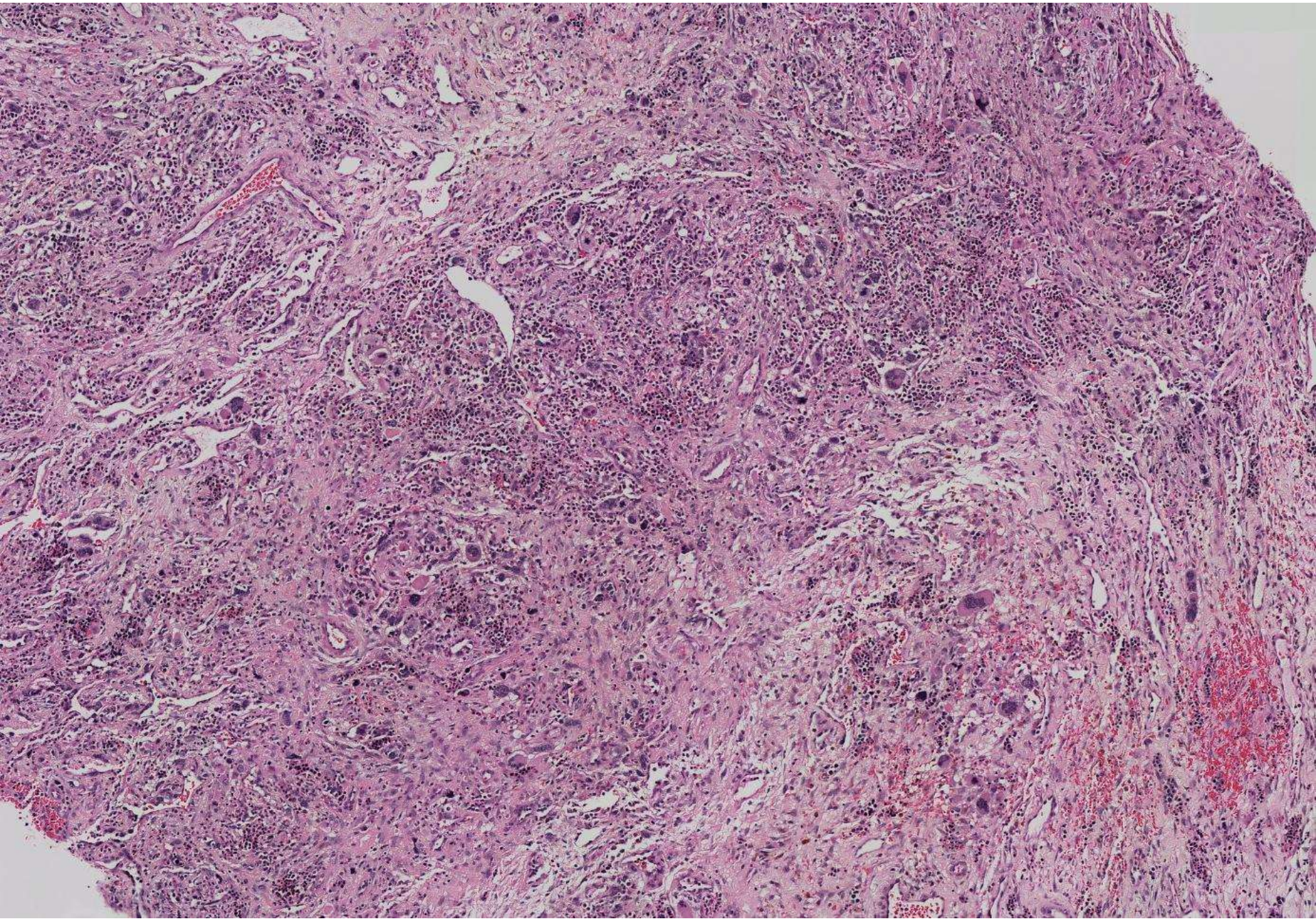


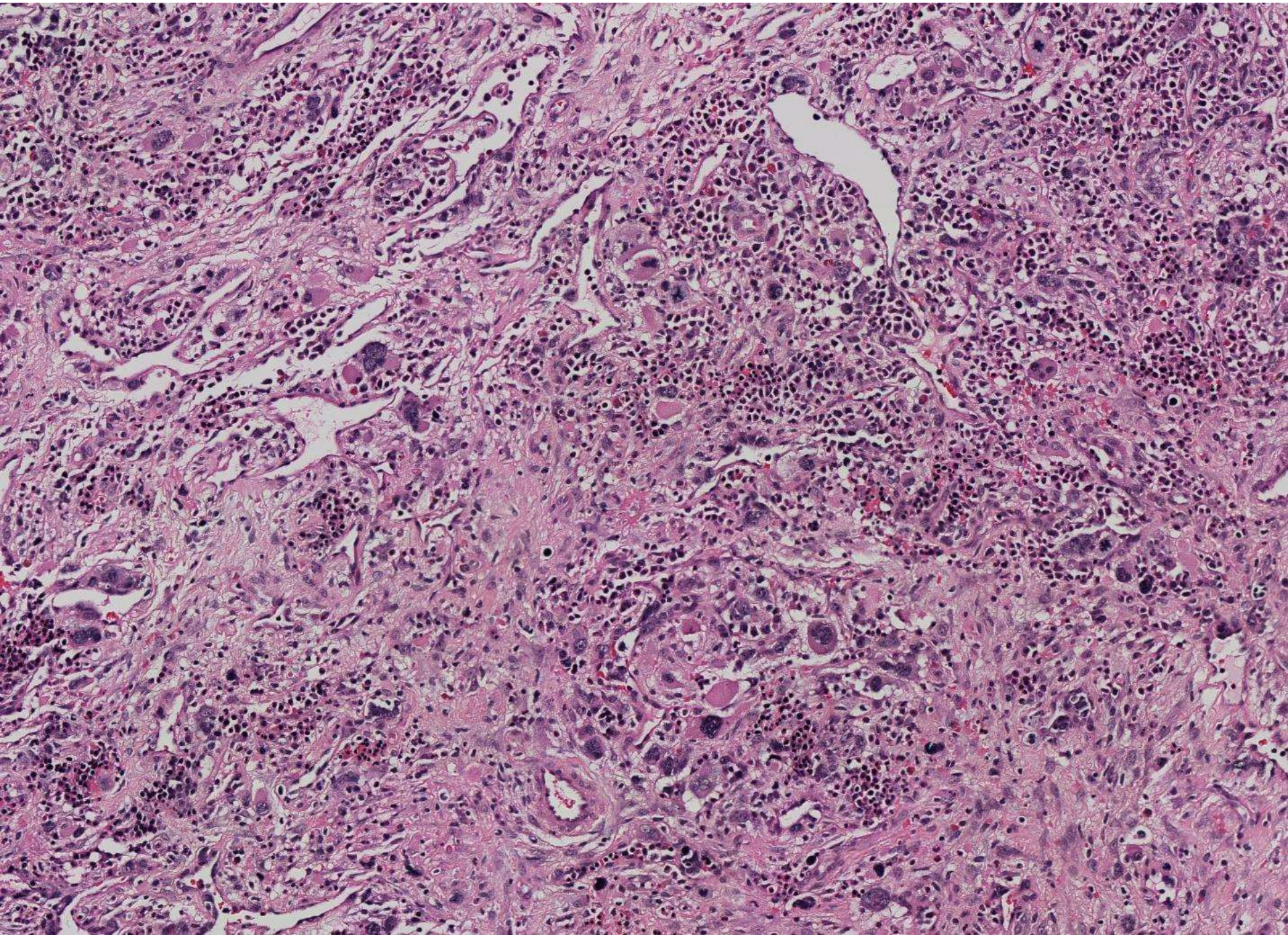


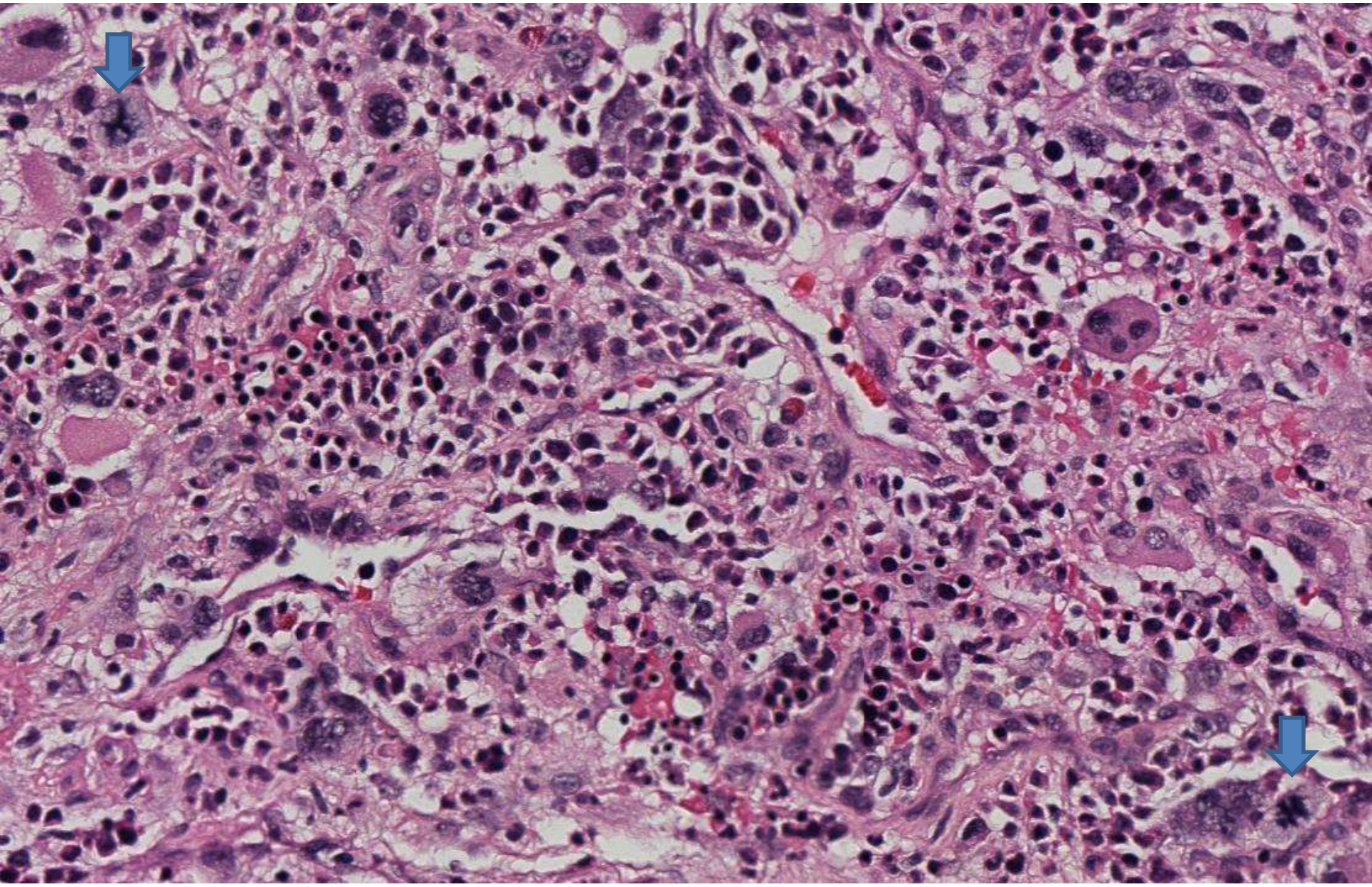






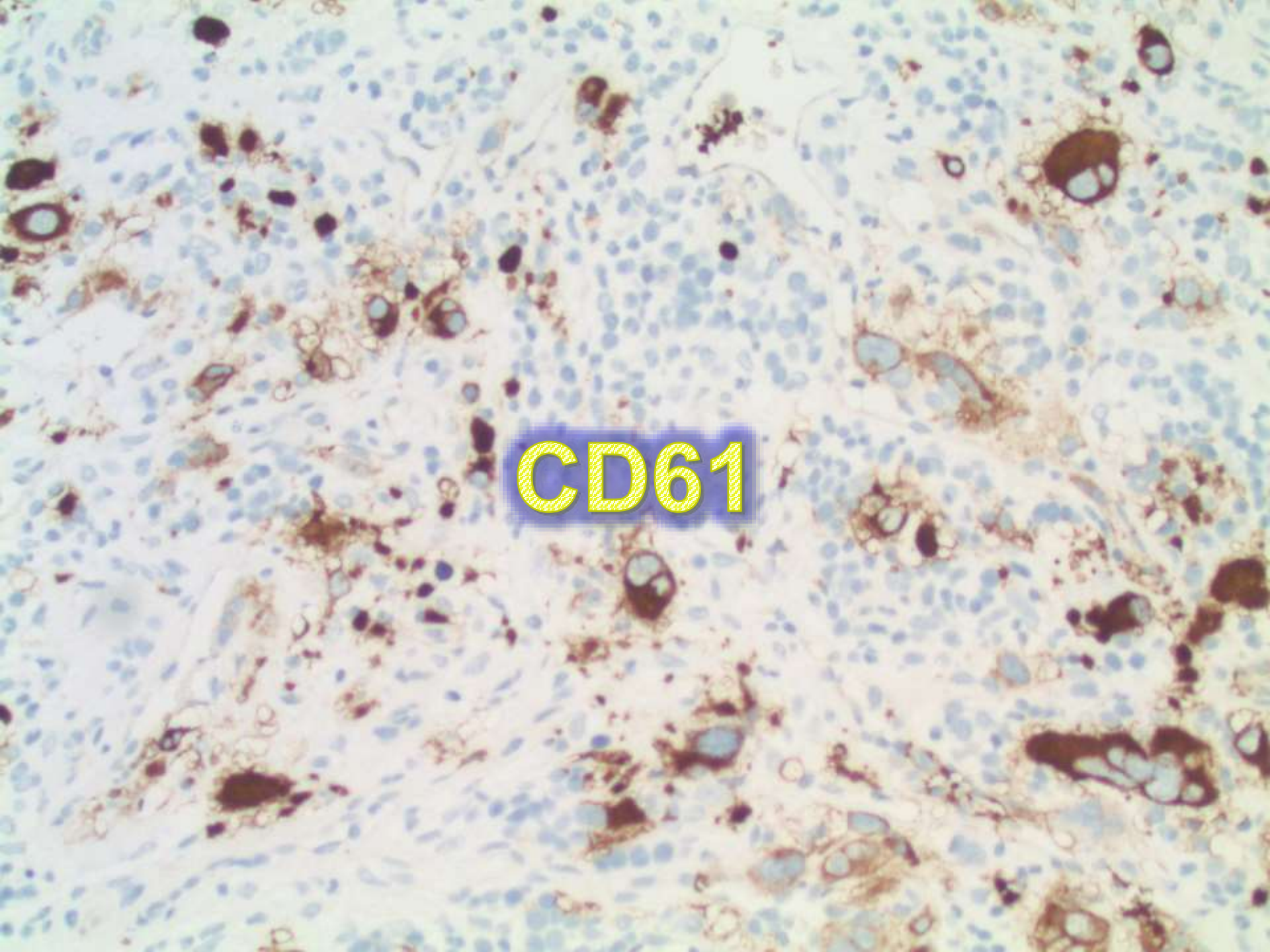


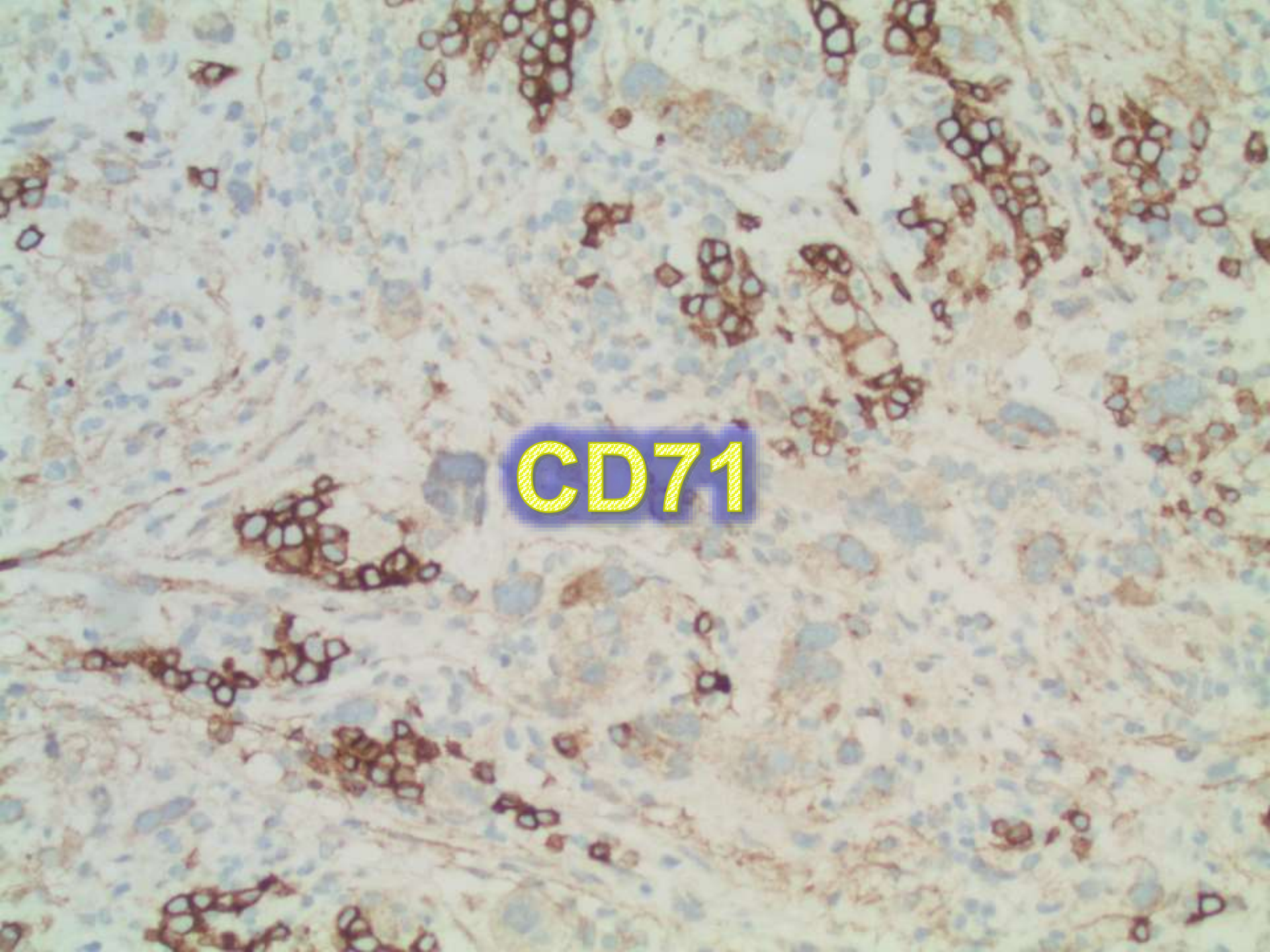




DDx

- **Something malignant**
  - Undifferentiated pleomorphic sarcoma
  - Giant cell/pleomorphic carcinoma
  - Melanoma
- **Something benign/reactive**


CD61


CD71

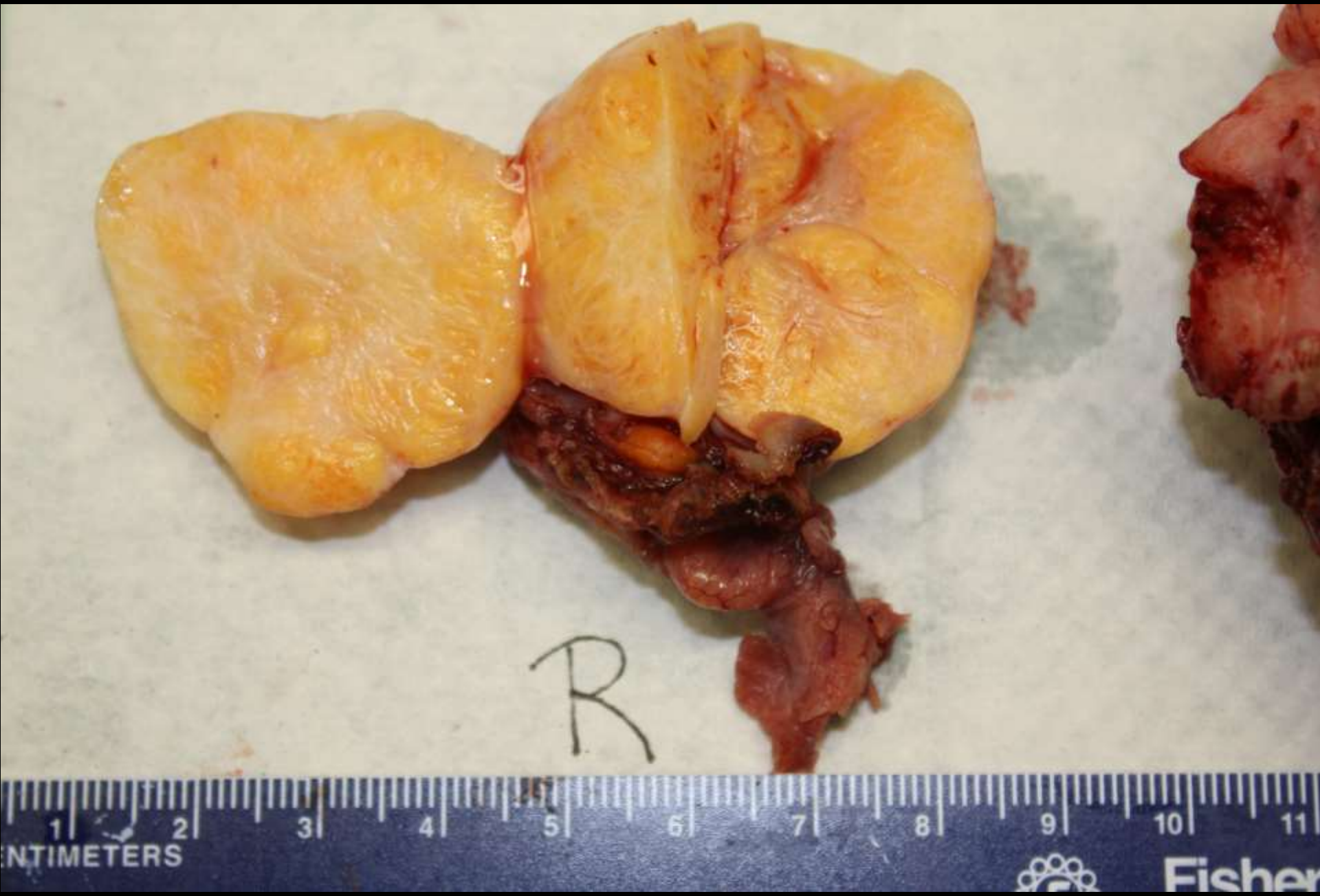
Dx: Extramedullary hematopoiesis (with background hematoma)

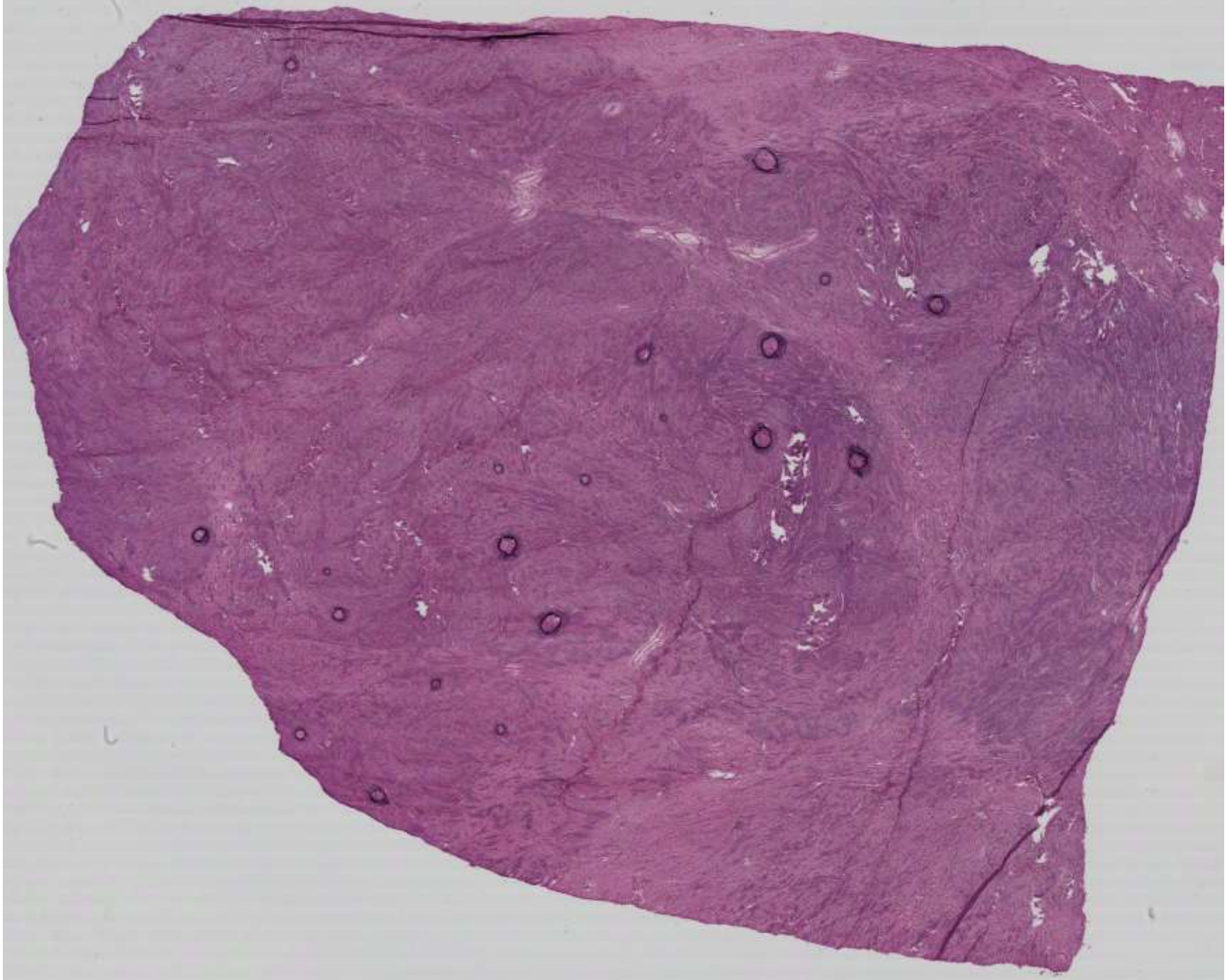
TAKE HOME POINTS

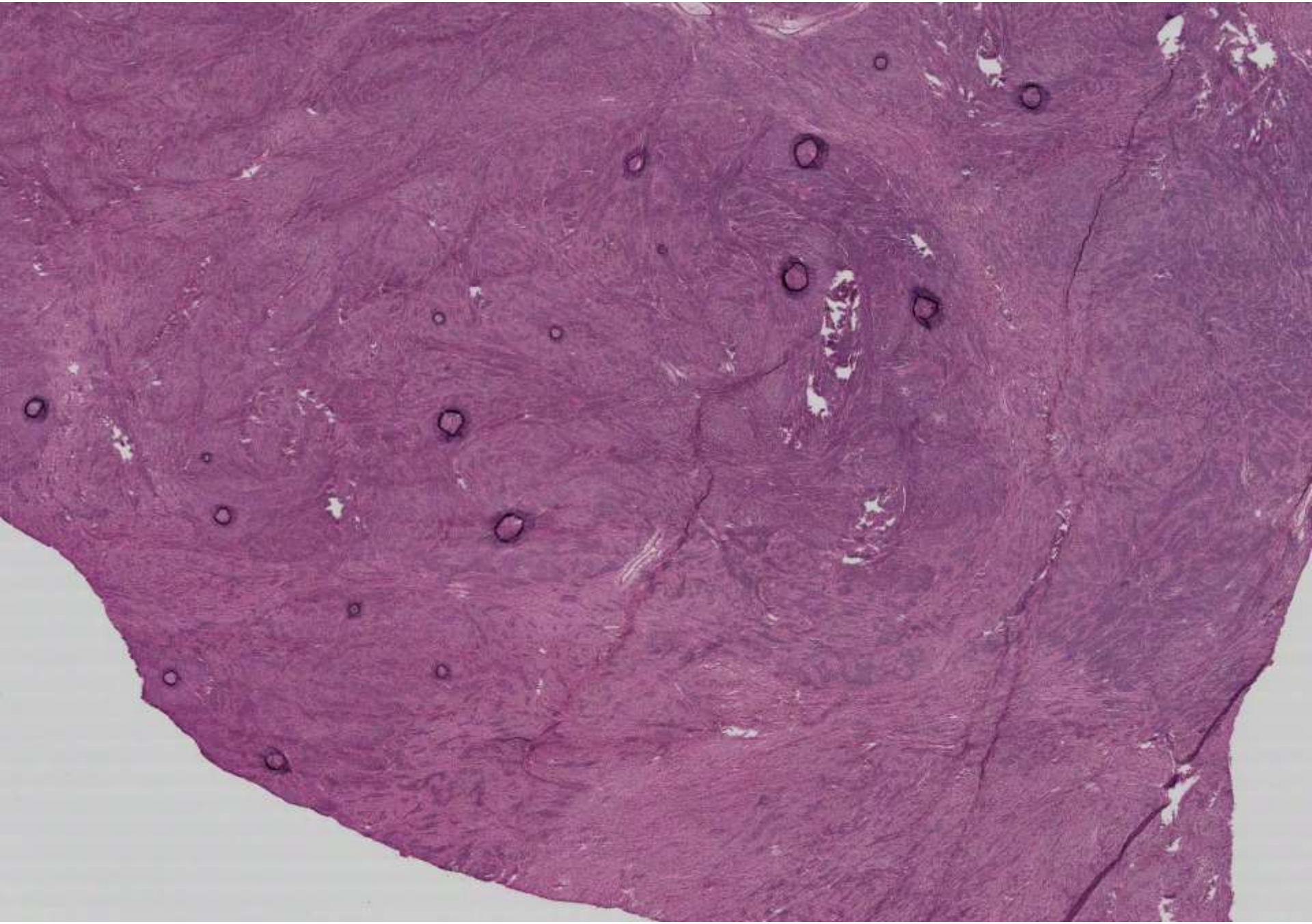
- **When large pleomorphic cells present**
  - Consider megakaryocytes! → CD61 is your friend
- **Also look for nucleated RBCs**
- **Usually paucity of mitotic figures**

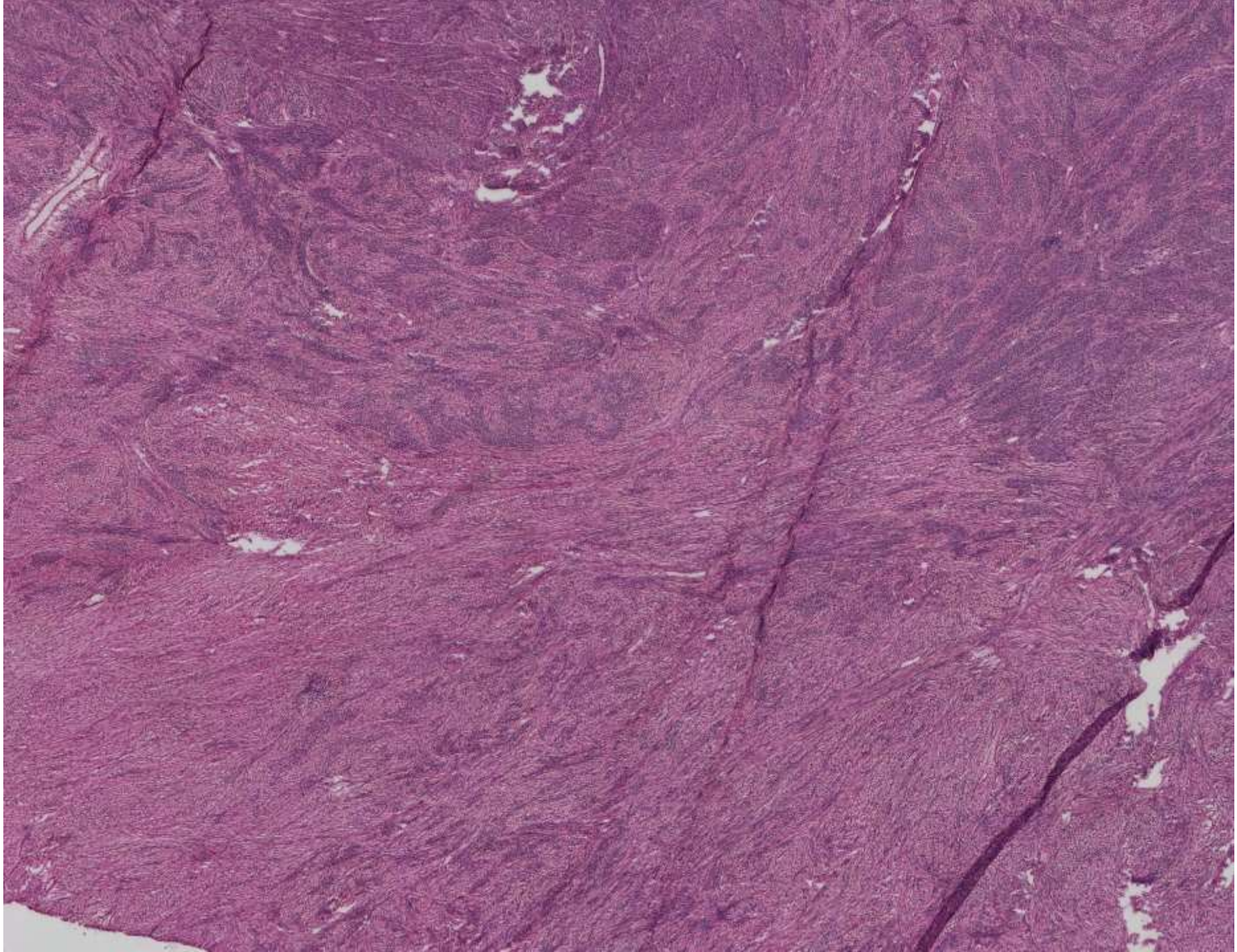
SB 6209
(scanned slide available)
Ankur Sangoi; El Camino Hospital

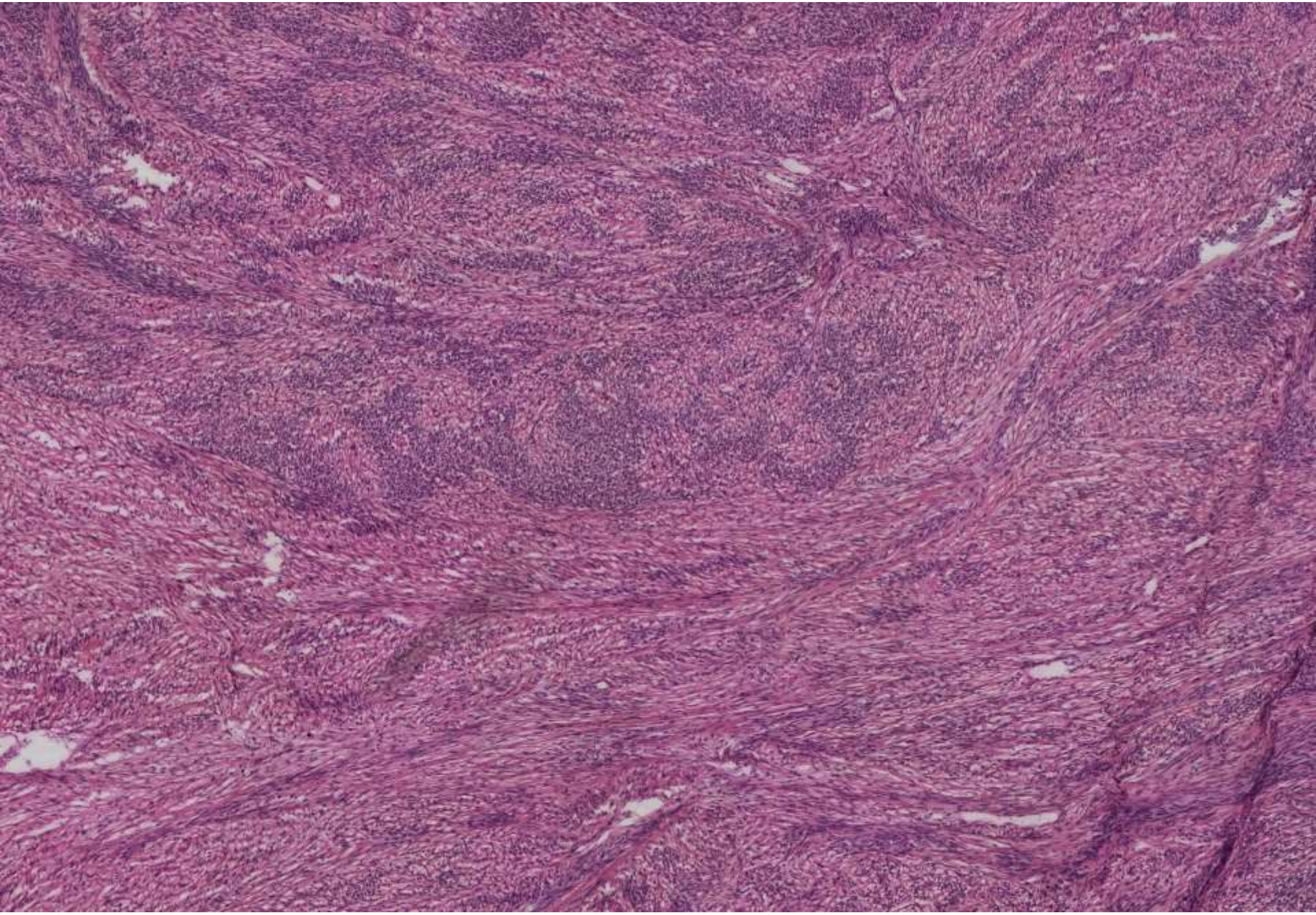
70-year-old woman with 4.1cm right ovarian mass. Intraoperative frozen section slide submitted.

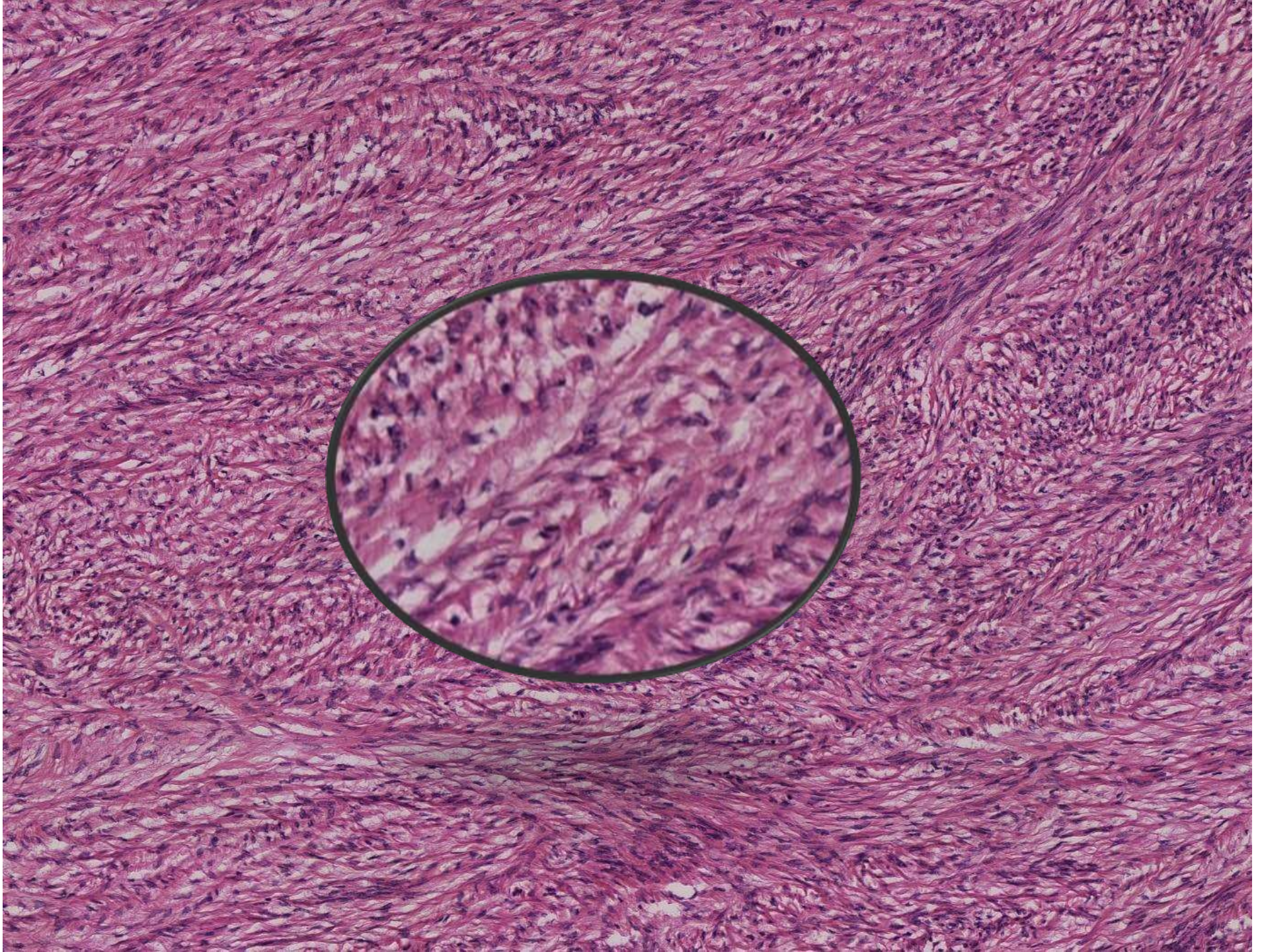

R
1
2
3
4
5
6
7
8
9
10
11
NTIMETERS
Fisher

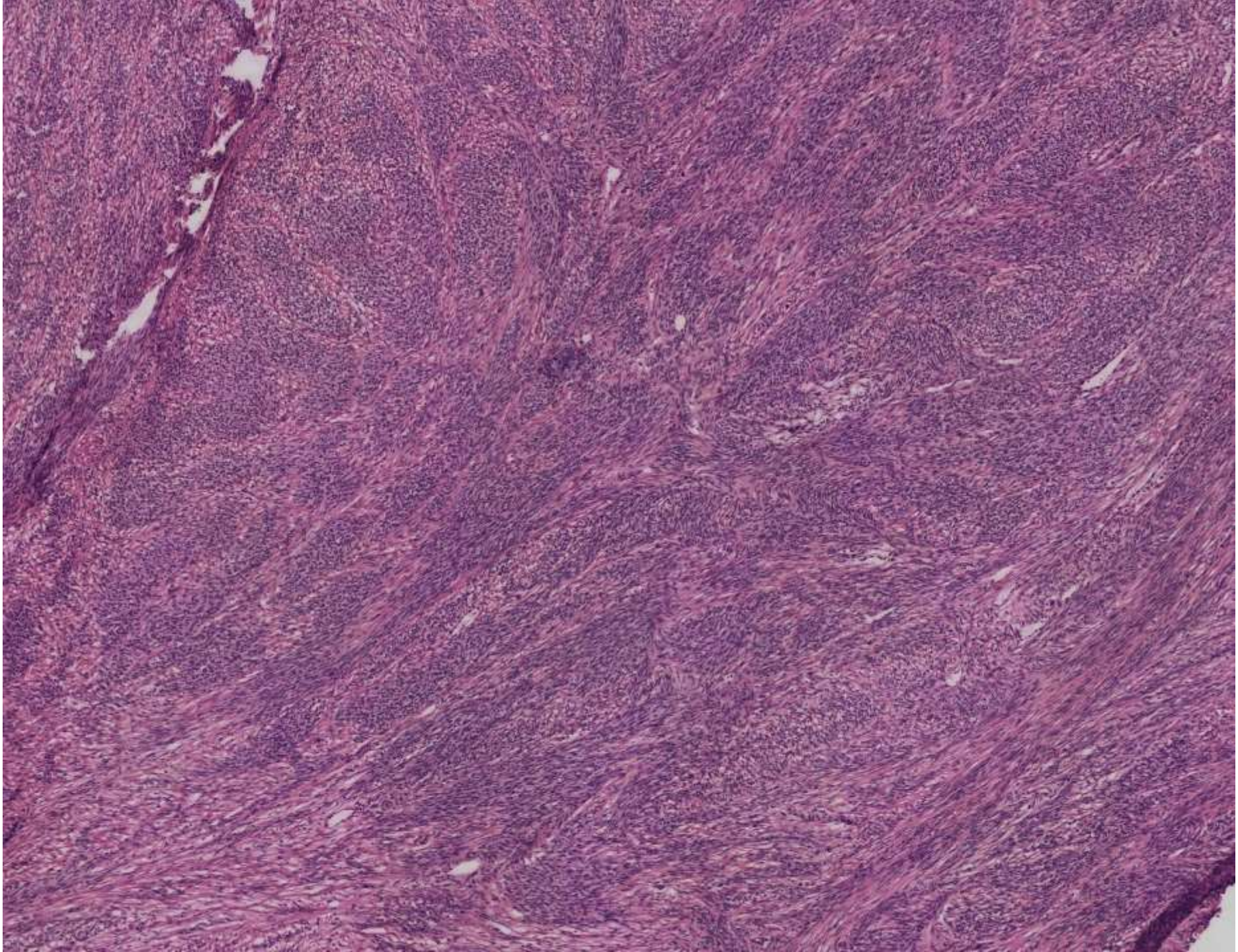


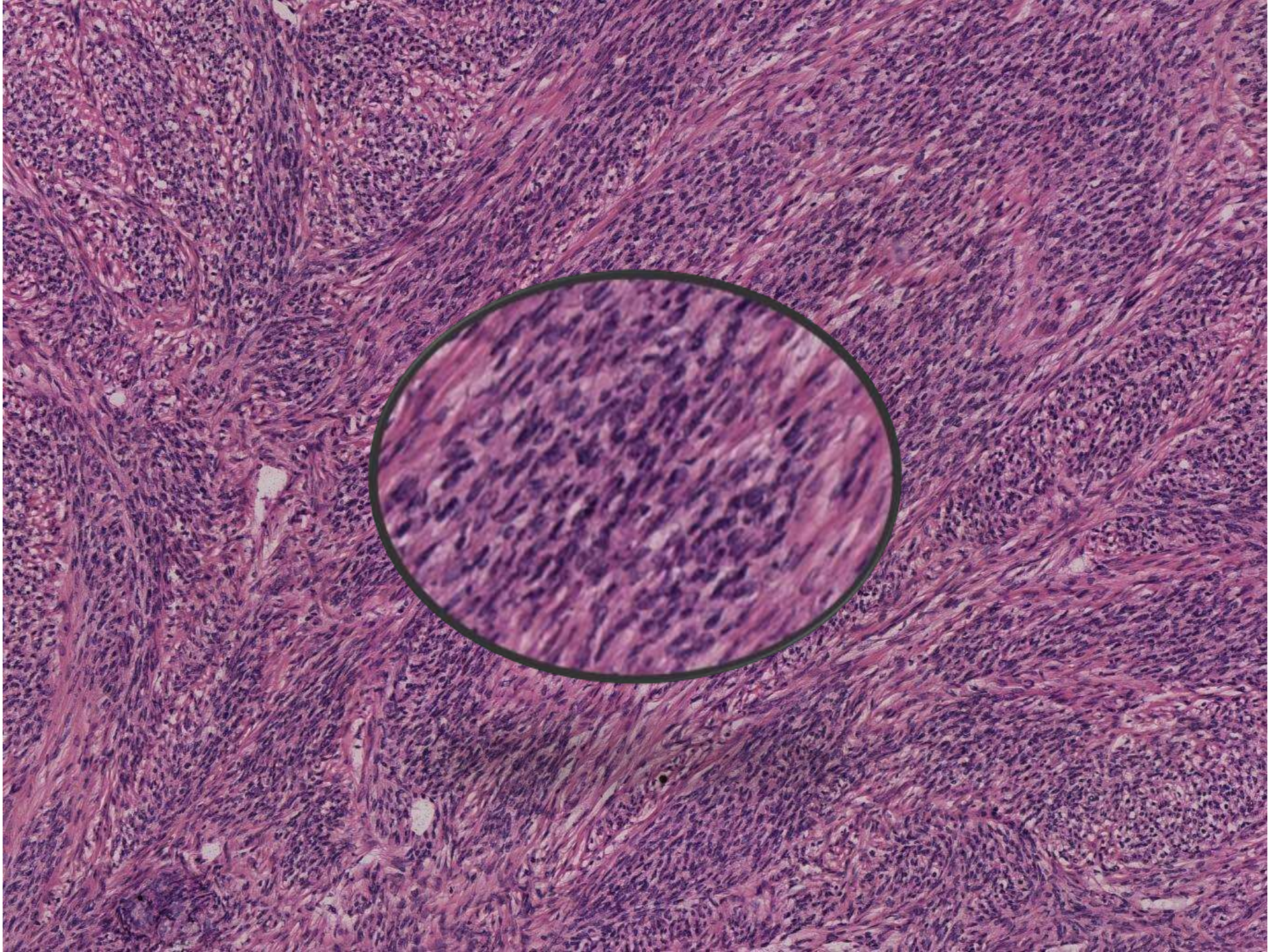






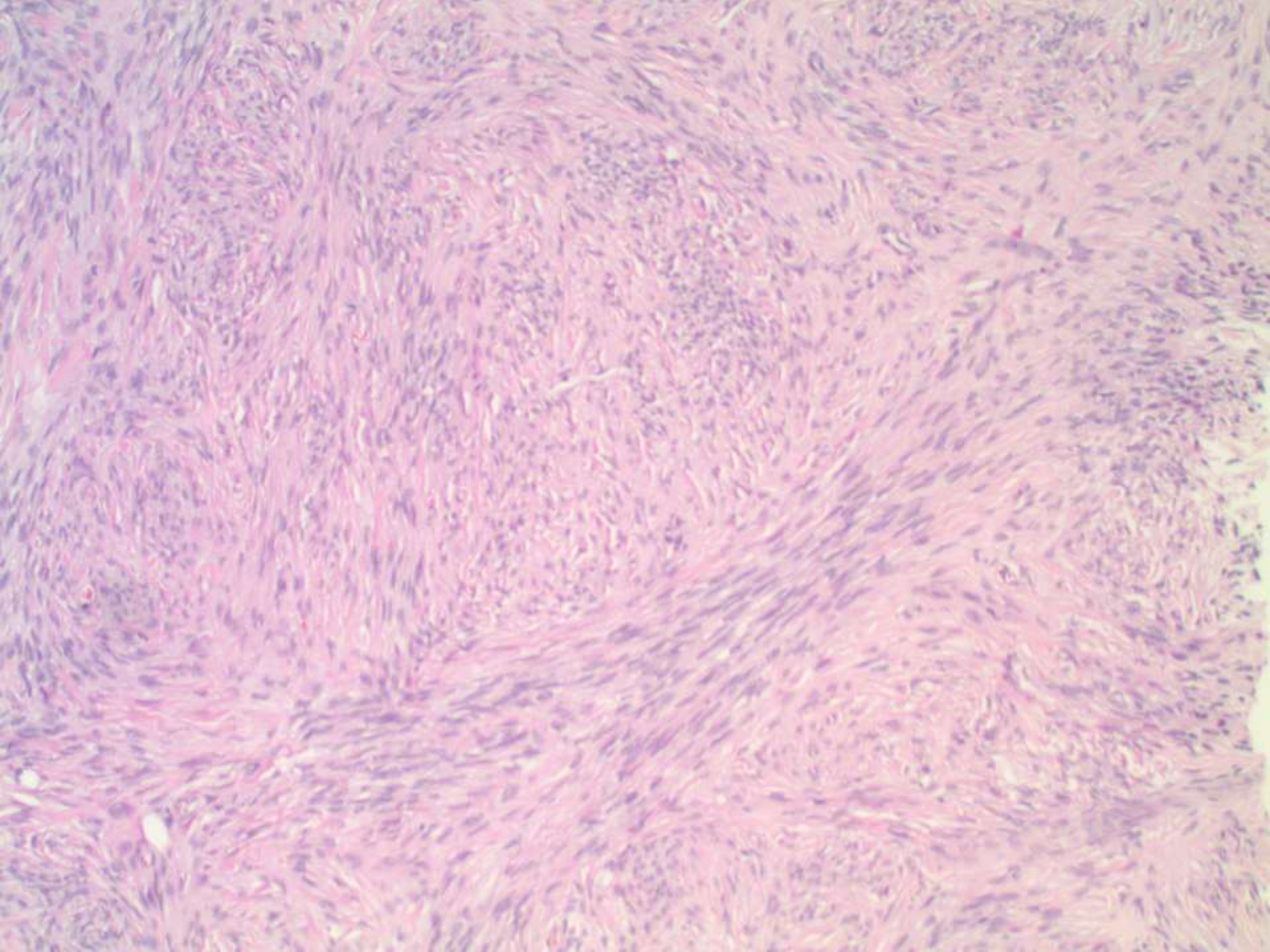


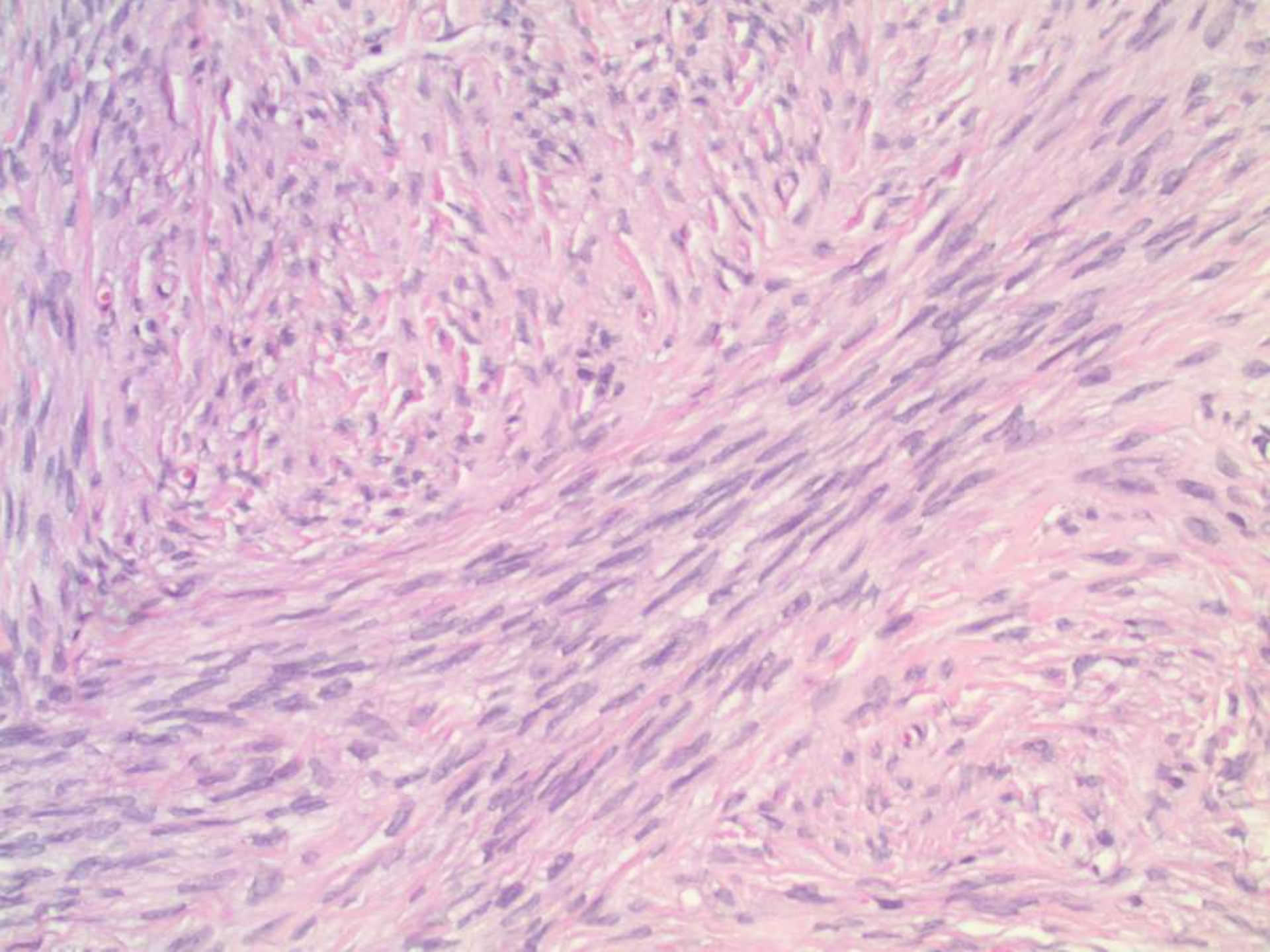


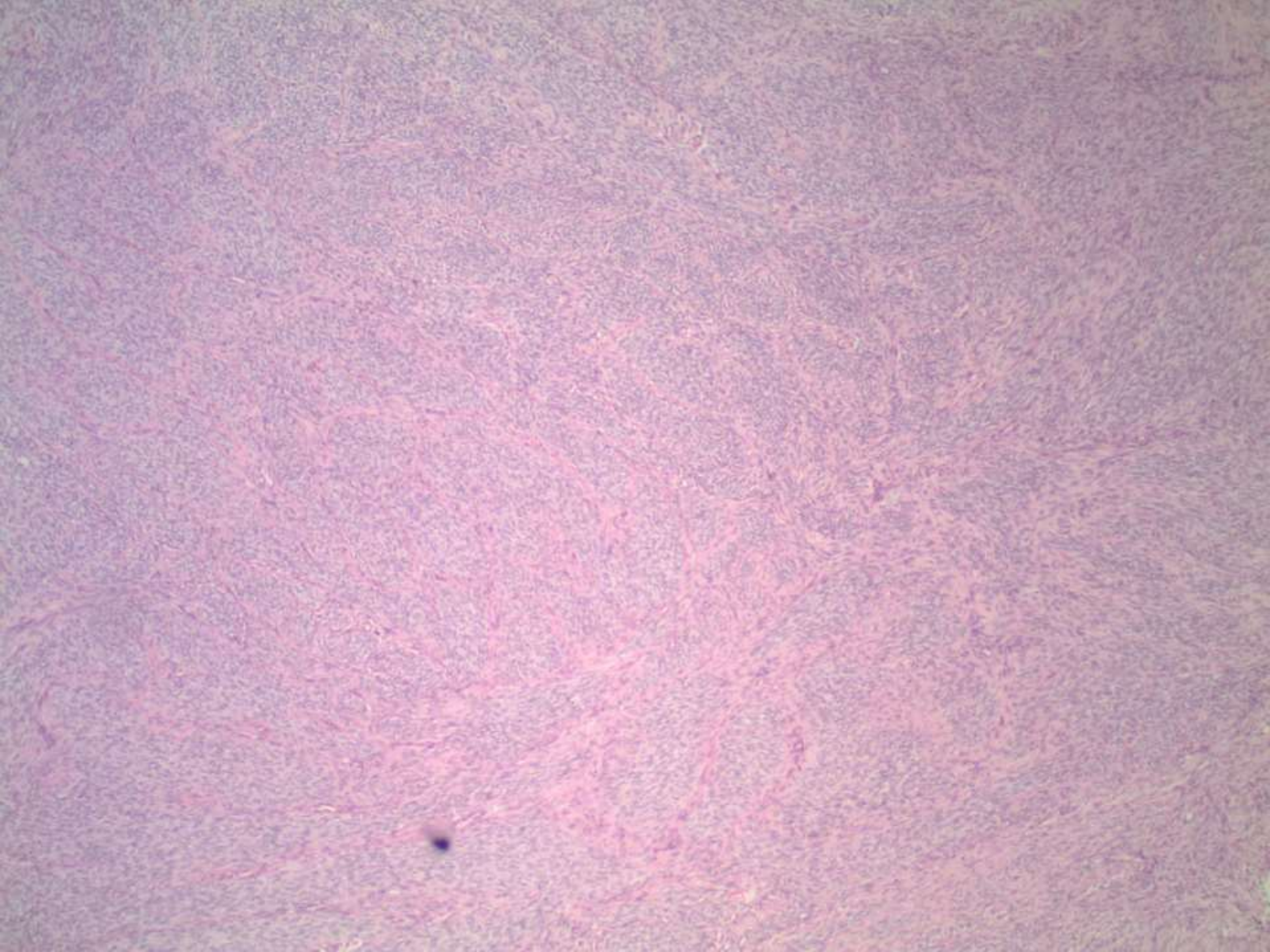


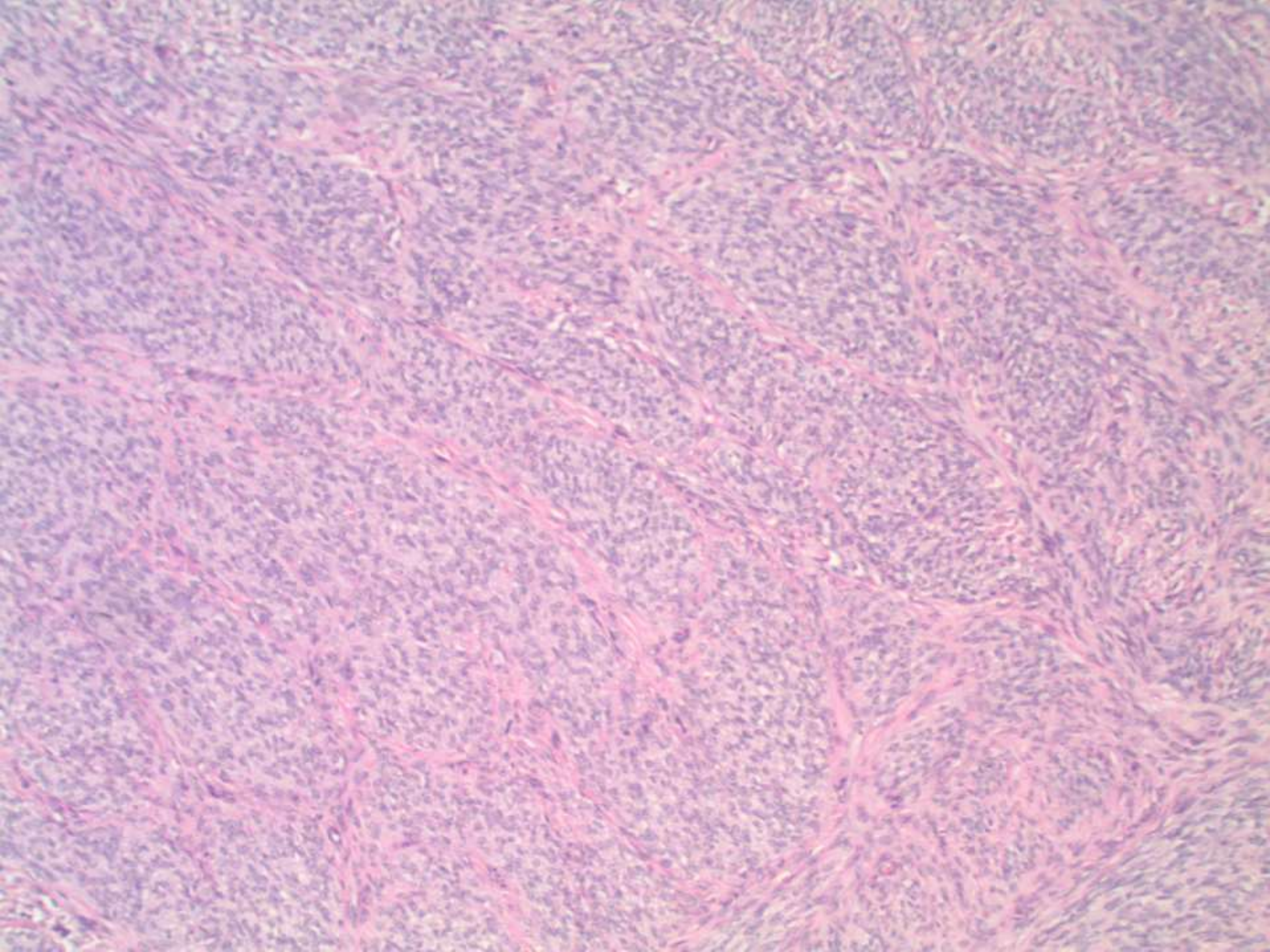
DDx

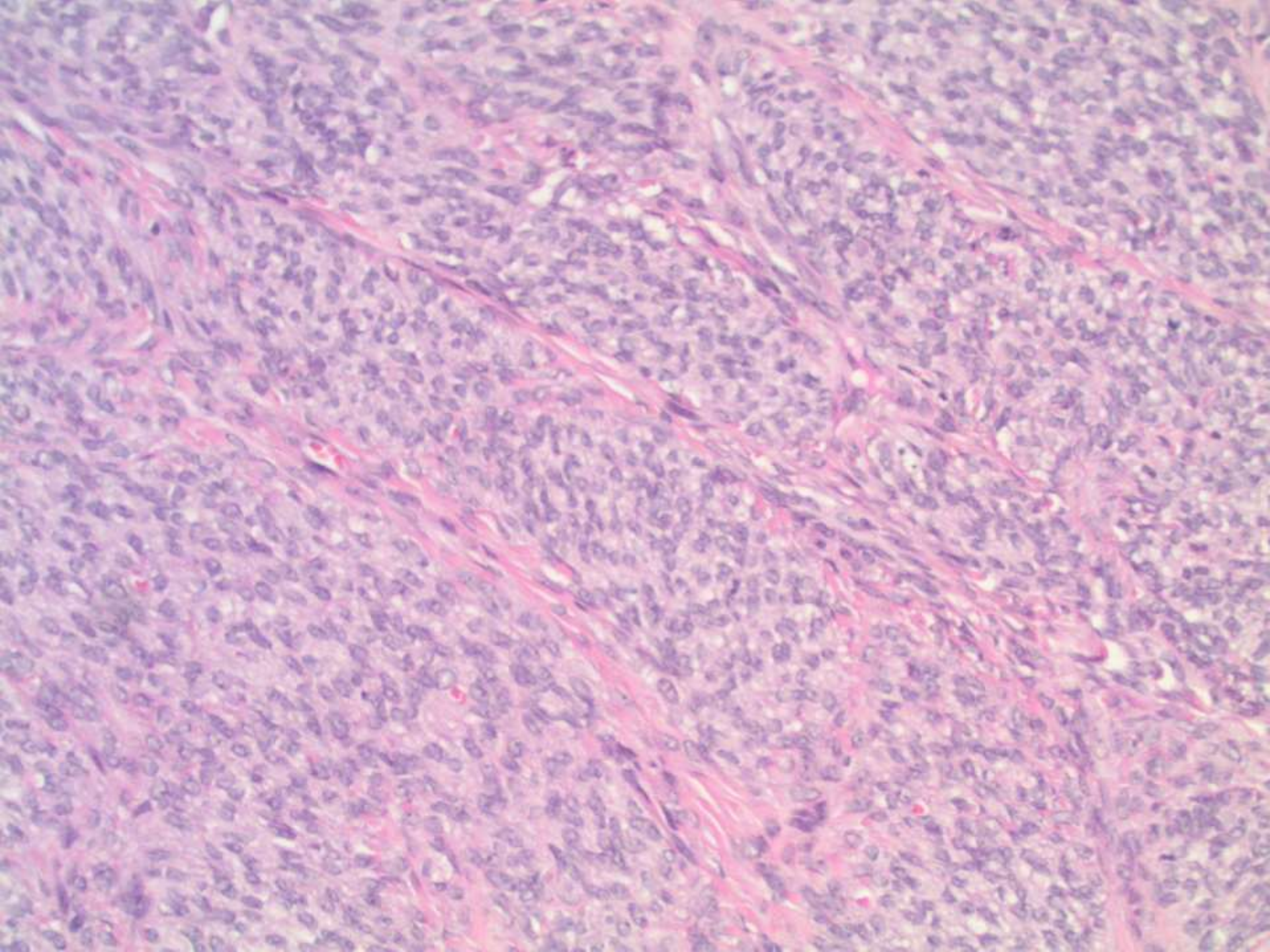
- Fibroma/fibrothecoma
- Granulosa cell tumor
- Sertoli-Leydig cell tumor
- Endometrioid carcinoma (spindle cell)
- Endometrial stromal sarcoma
- Metastasis

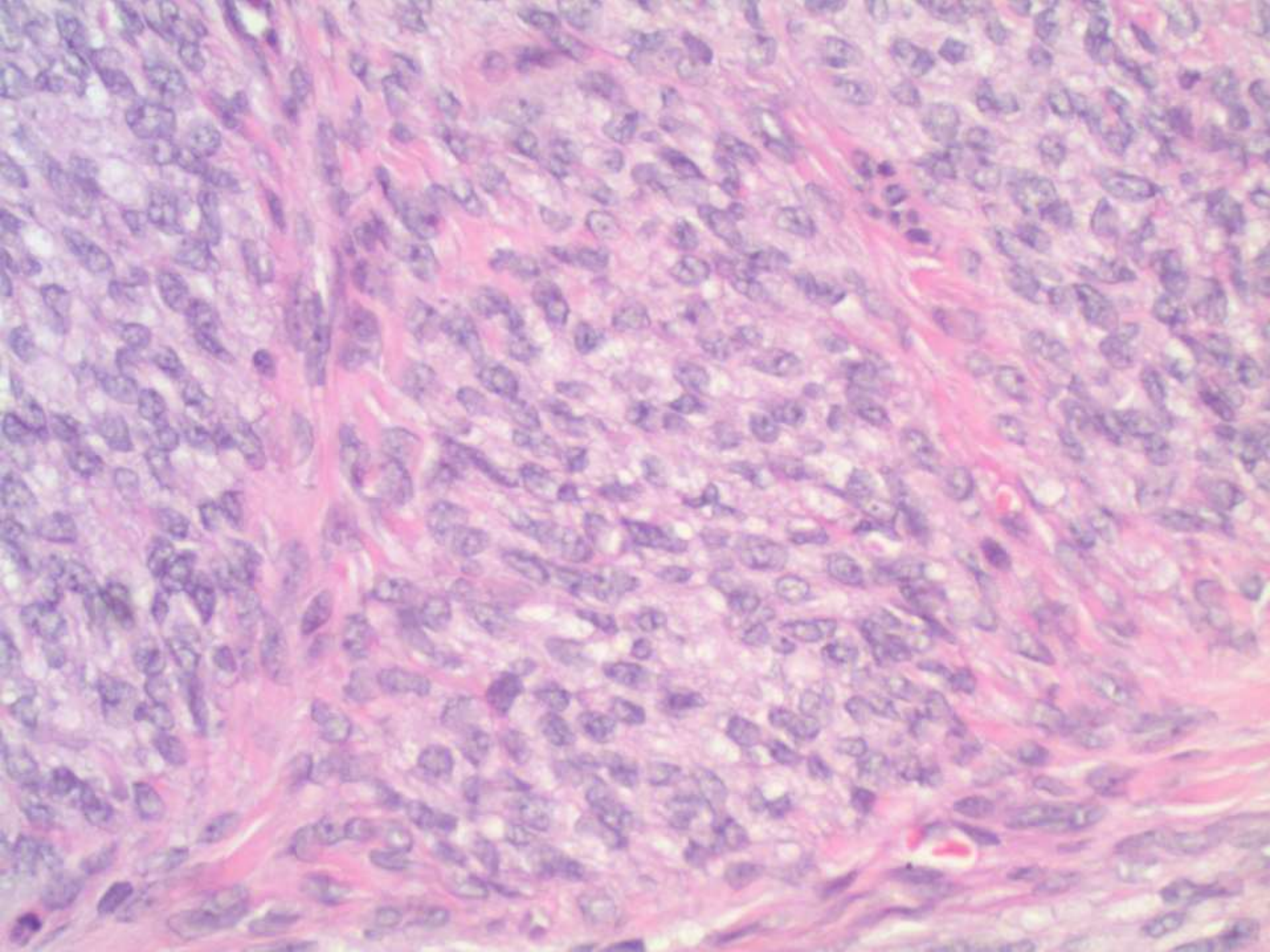




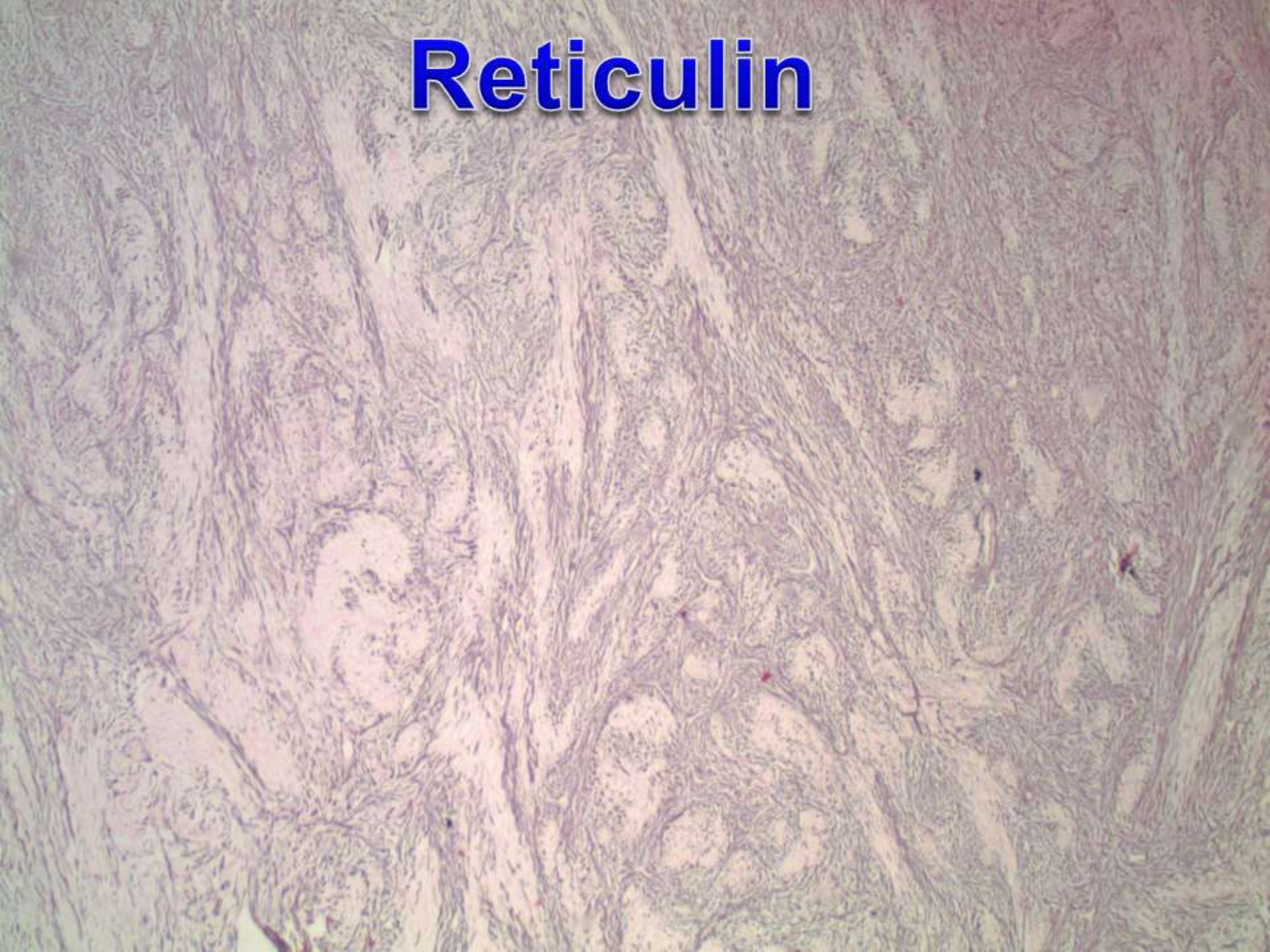




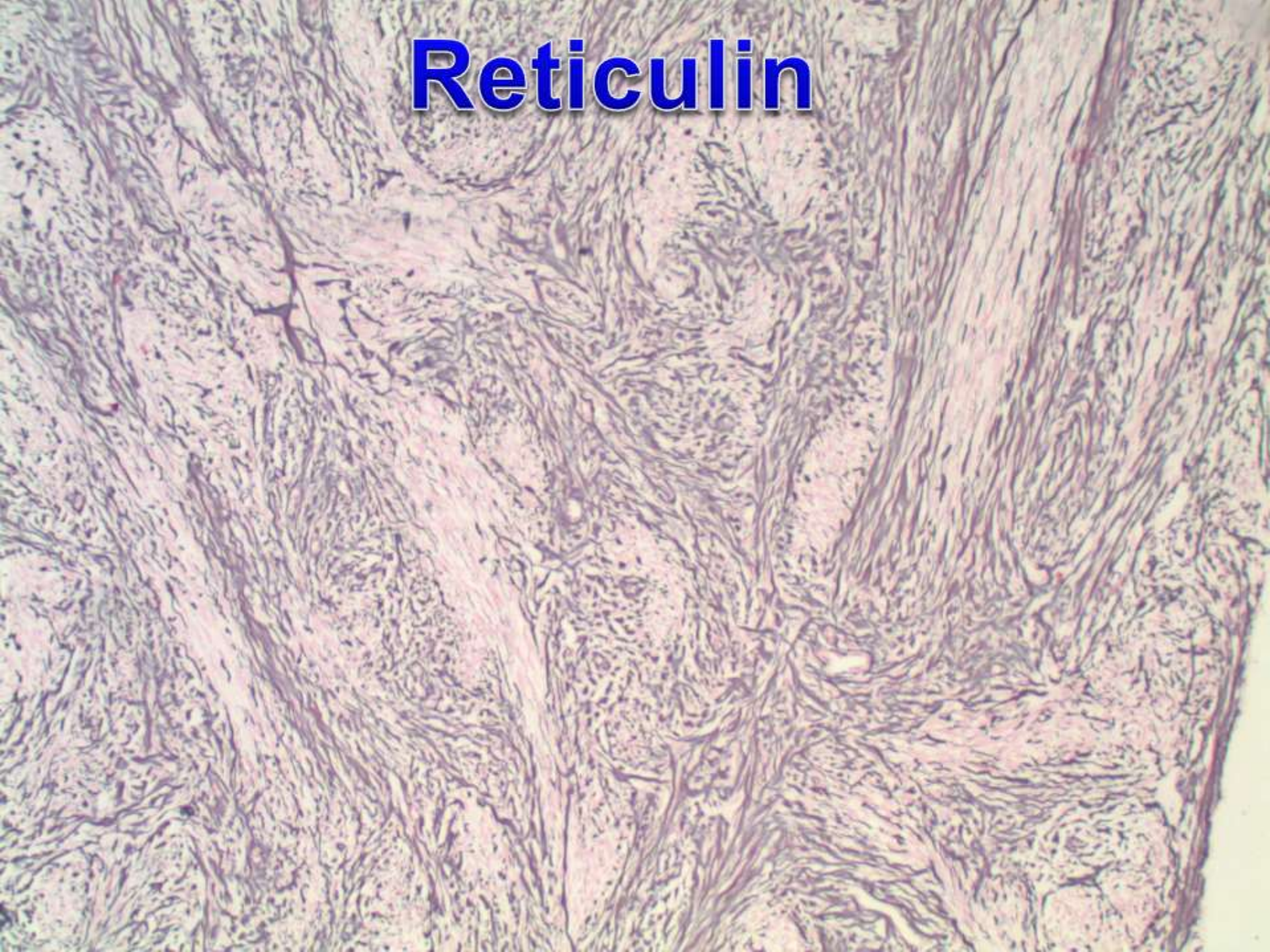




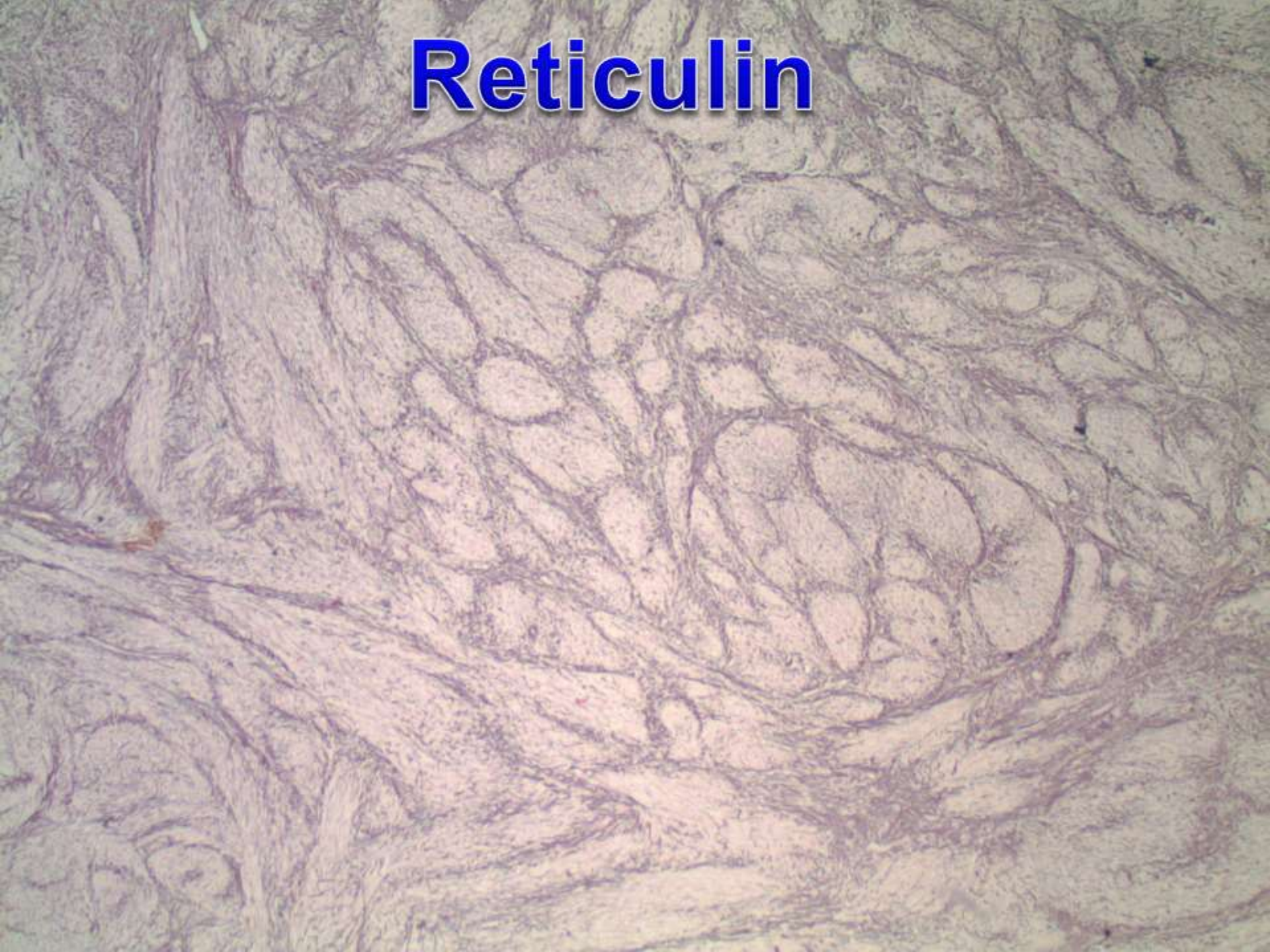
Reticulin



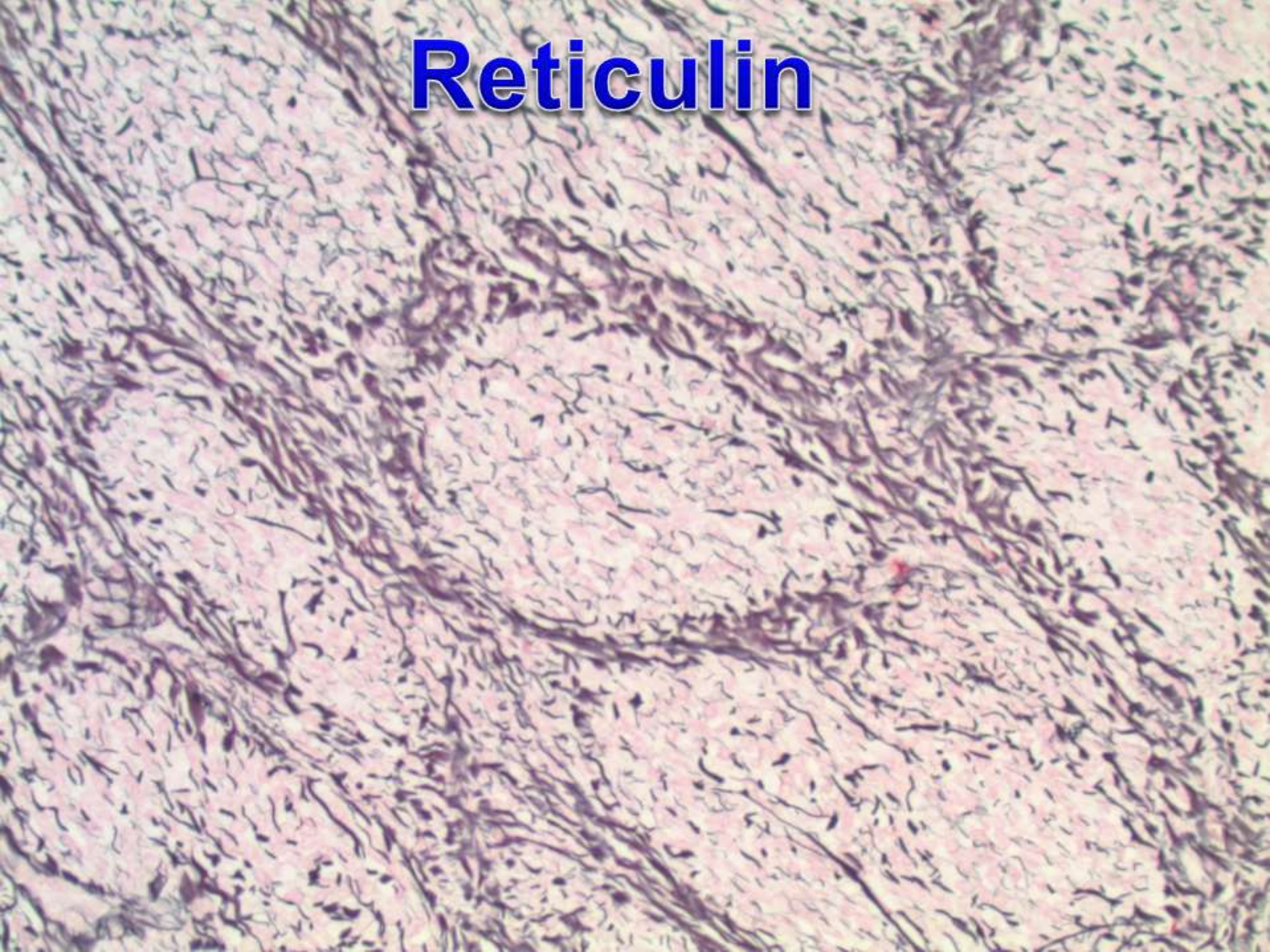
Reticulin



Reticulin



Reticulin



Dx:
Granulosa cell tumor, granulosa theca cell variant

Sex-cord stromal tumors with granulosa cells+fibroma/thecoma cells

- **<10% granulosa cells**
  - Fibrothecoma with minor sex-cord elements
- **>50% granulosa cells**
  - Adult GCT
- **10-50% granulosa cells**
  - “Granulosa theca cell tumors” (granulosa theca cell variant of adult GCT)
    - Not formally listed in current WHO

FOXL2 Mutation Status in Granulosa Theca Cell Tumors of the Ovary

Amber Nolan, M.D., Ph.D., Nancy M. Joseph, M.D., Ph.D., Ankur R. Sangoi, M.D., Joseph Rabban, M.D., Charles Zaloudek, M.D., and Karuna Garg, M.D.

International Journal of Gynecological Pathology
00:1–7, Lippincott Williams & Wilkins, Baltimore

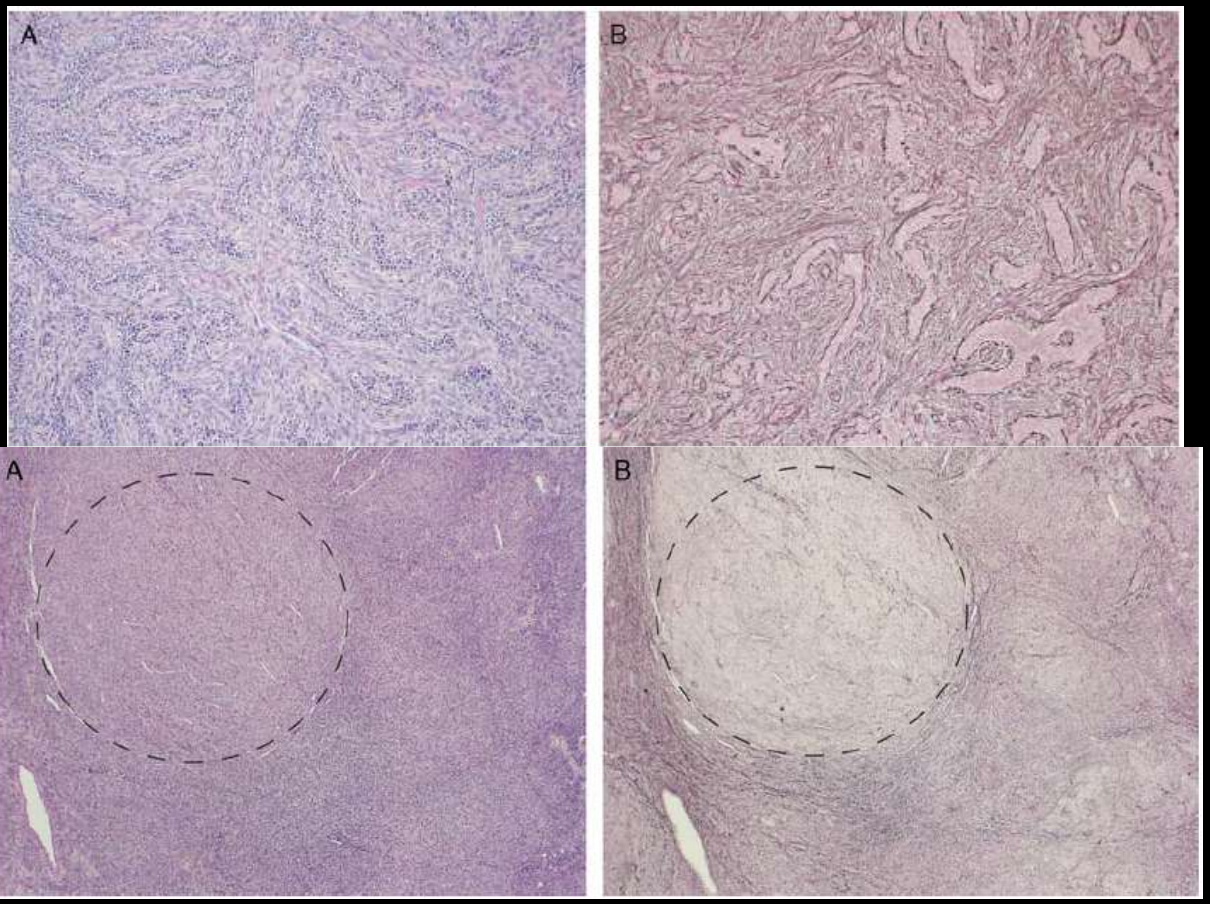


TABLE 4. *Correlation between % cellularity of granulosa cells and FOXL2 mutation status*

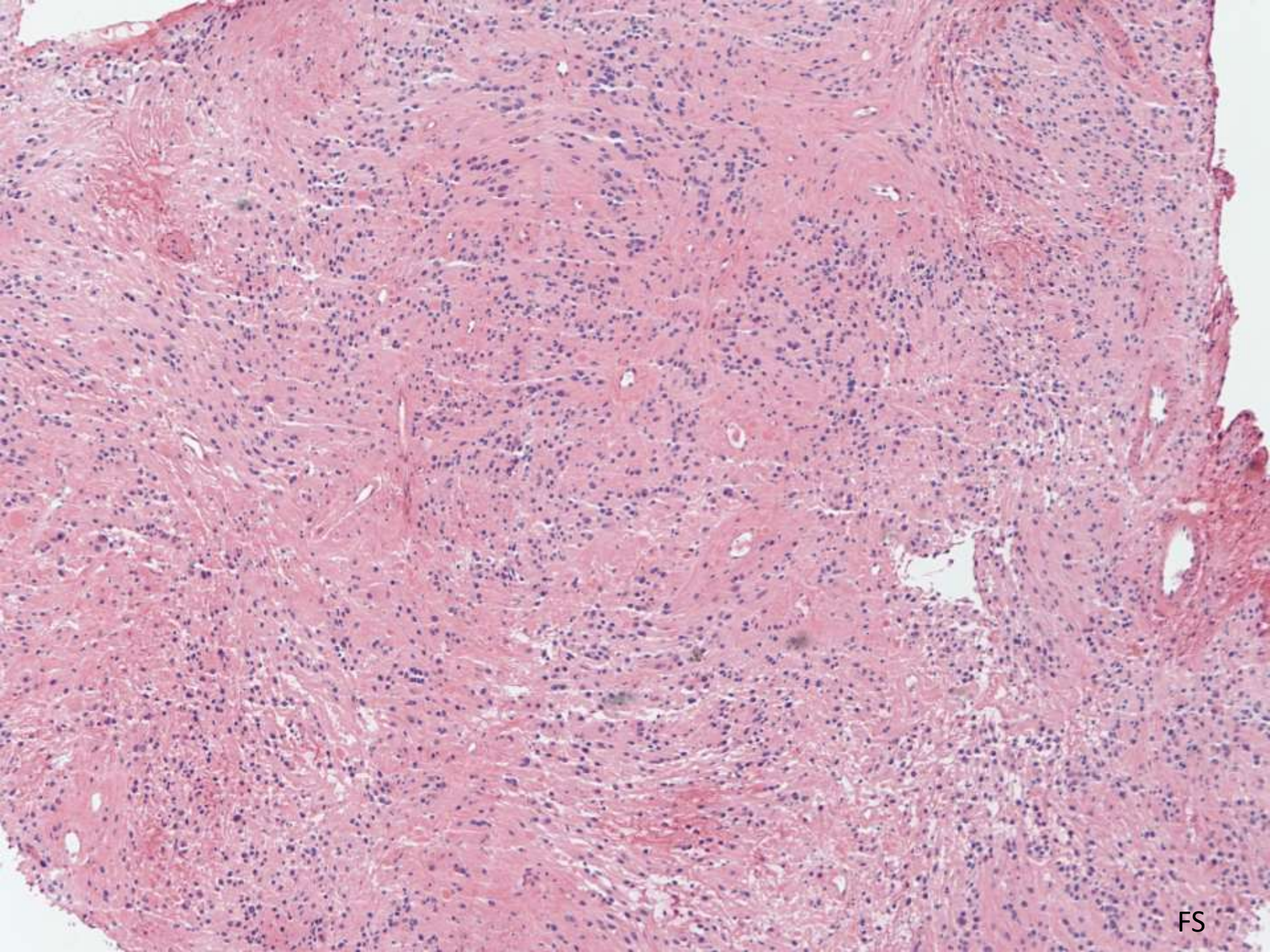
% cellularity of granulosa cells	*FOXL2* mutation status	n/N (%)
20	Absent	0/3 (0)
20	Absent	
20	Absent	
30	Absent	1/2 (50)
30	Present	
40	Absent	5/6 (83)
40	Present	
40	Present	
40	Present	
40	Present	
40	Present	
50	Absent	0/1 (0)

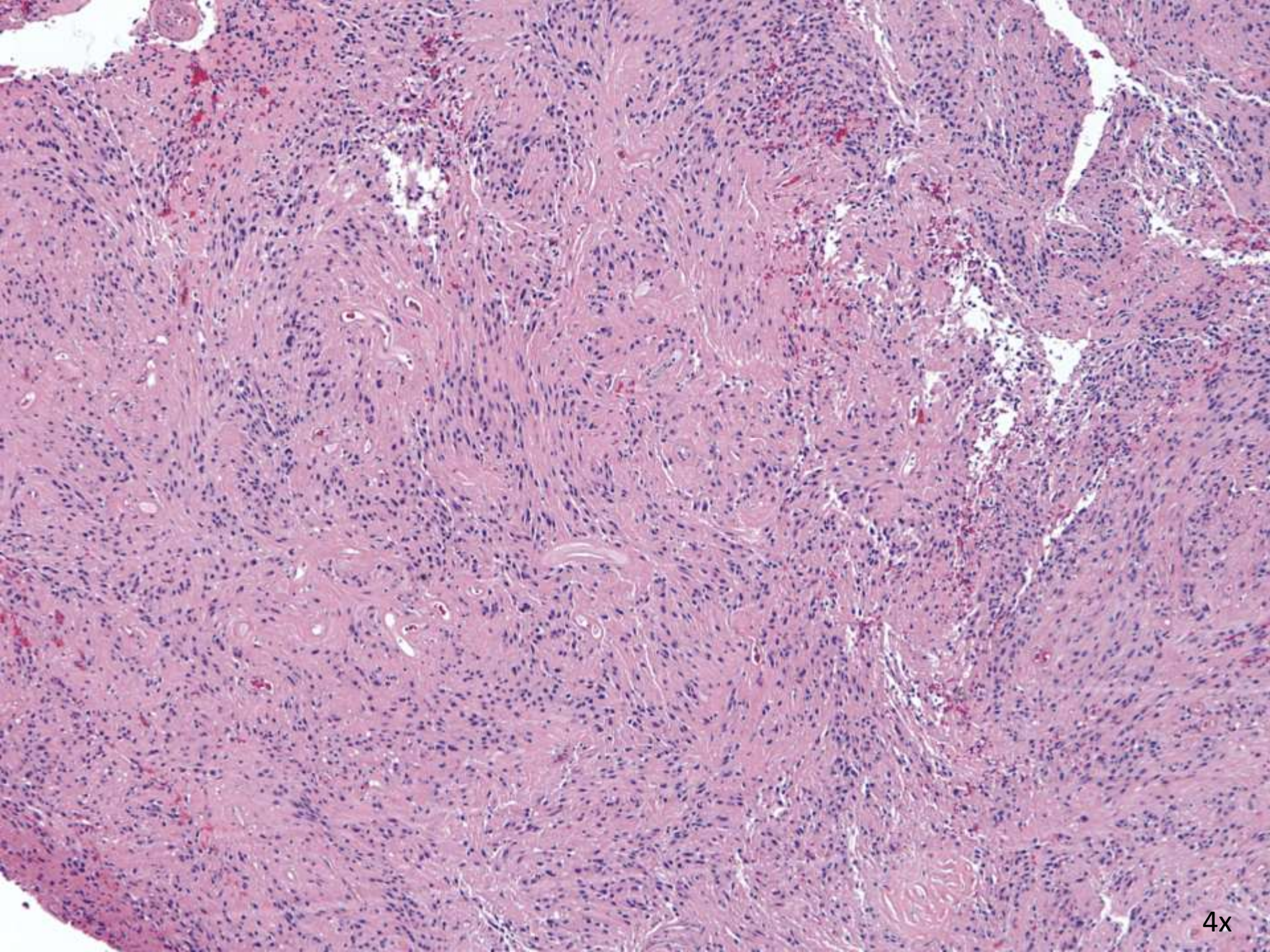
TAKE HOME POINTS

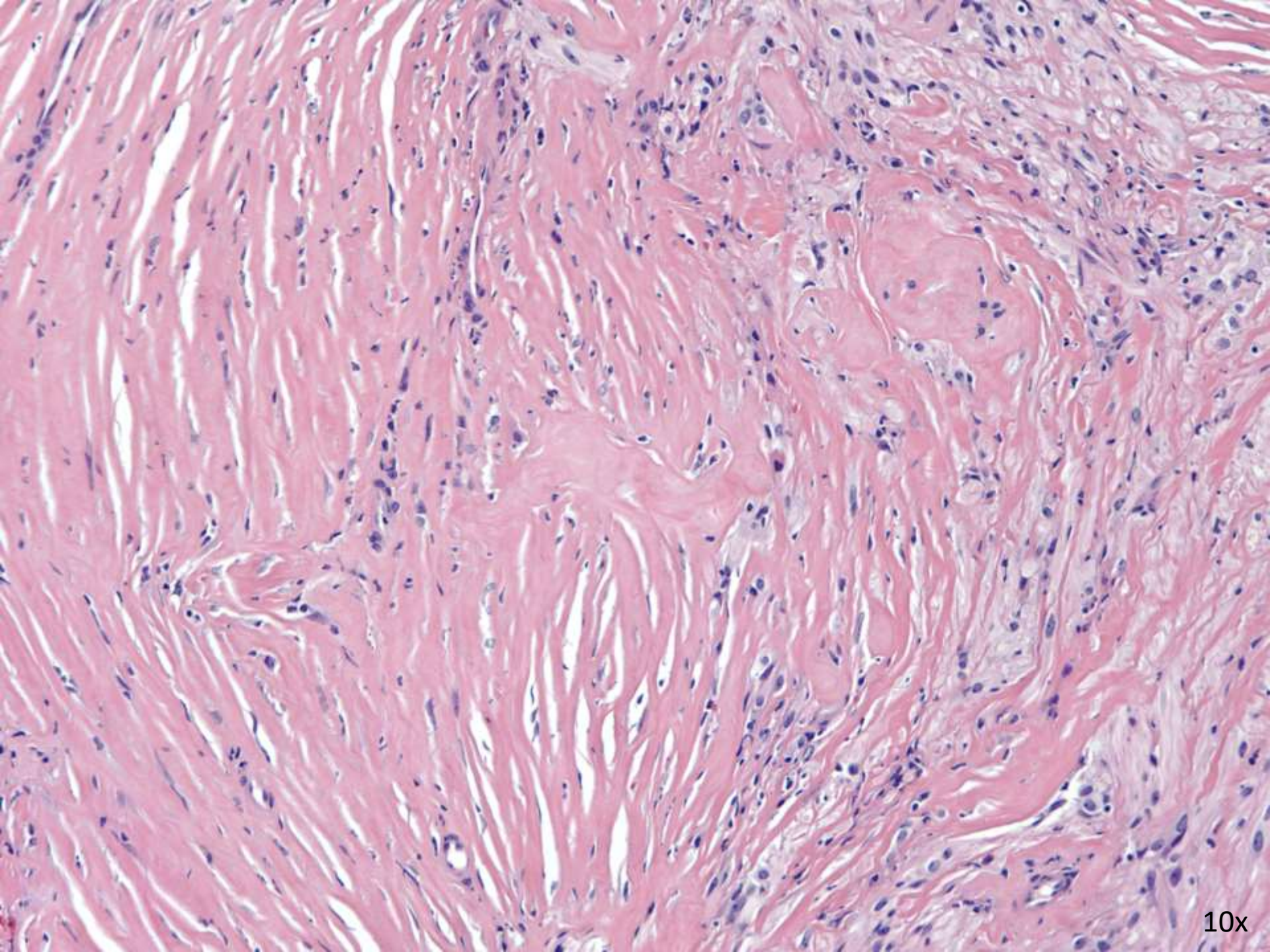
- **Fibrothecomatous tumor with epithelioid areas**
  - Consider adult GCT
  - Especially important during frozen section
- **Don’t hesitate to throw on reticulin stain**
  - Can also do IHC for FOXL2, inhibin, calretinin
  - Can send for FOXL2 mutation in certain cases

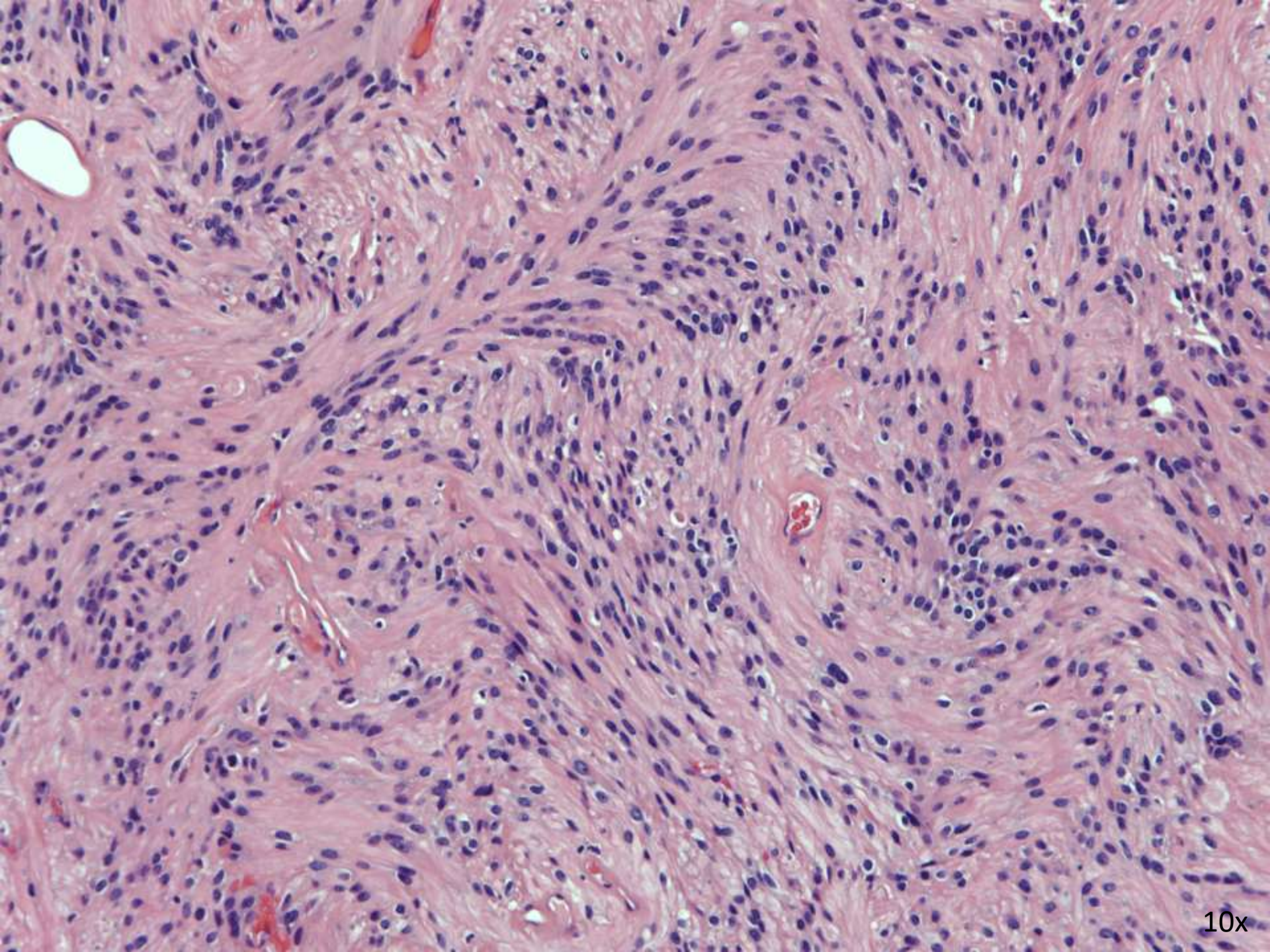
SB 6210
Seth Lummus/Don Born; Stanford

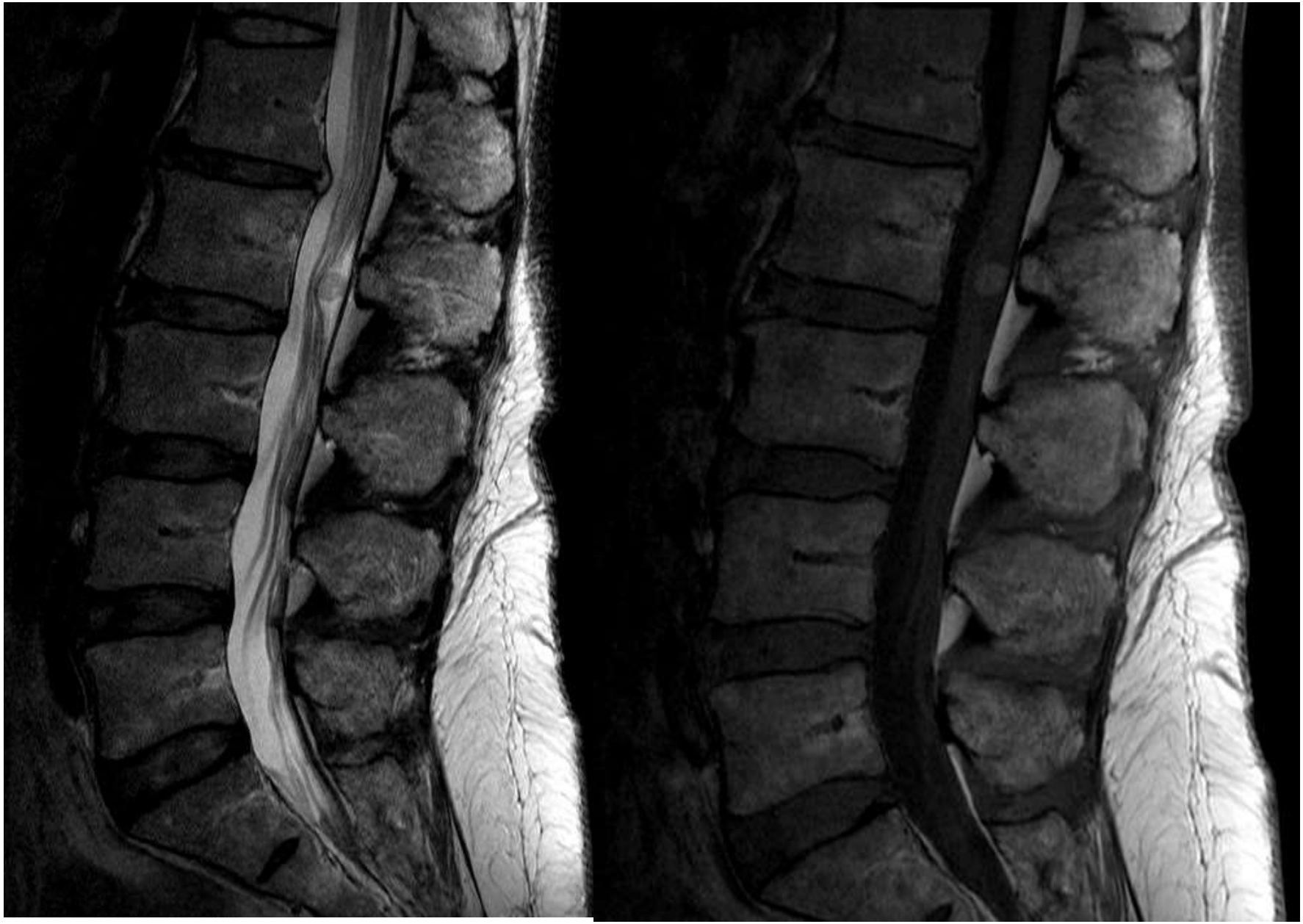
42-year-old woman who was involved in motorcycle accident 20yrs ago and subsequently developed symptoms of right leg numbness and focal right-sided back pain. More recently her symptoms have increased in severity and an MRI showed an intramedullary mass at T9-11.


FS


4x

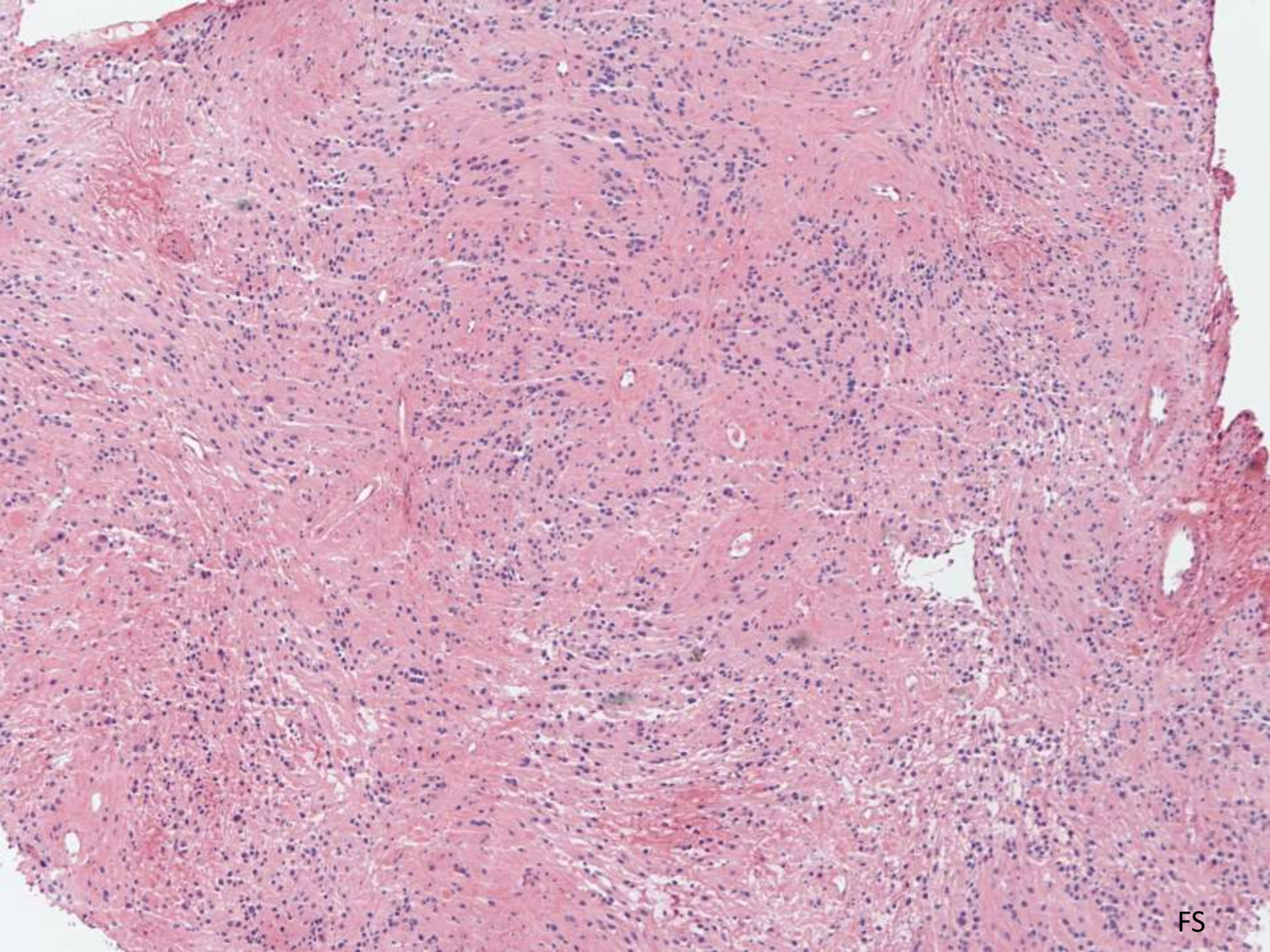

10x

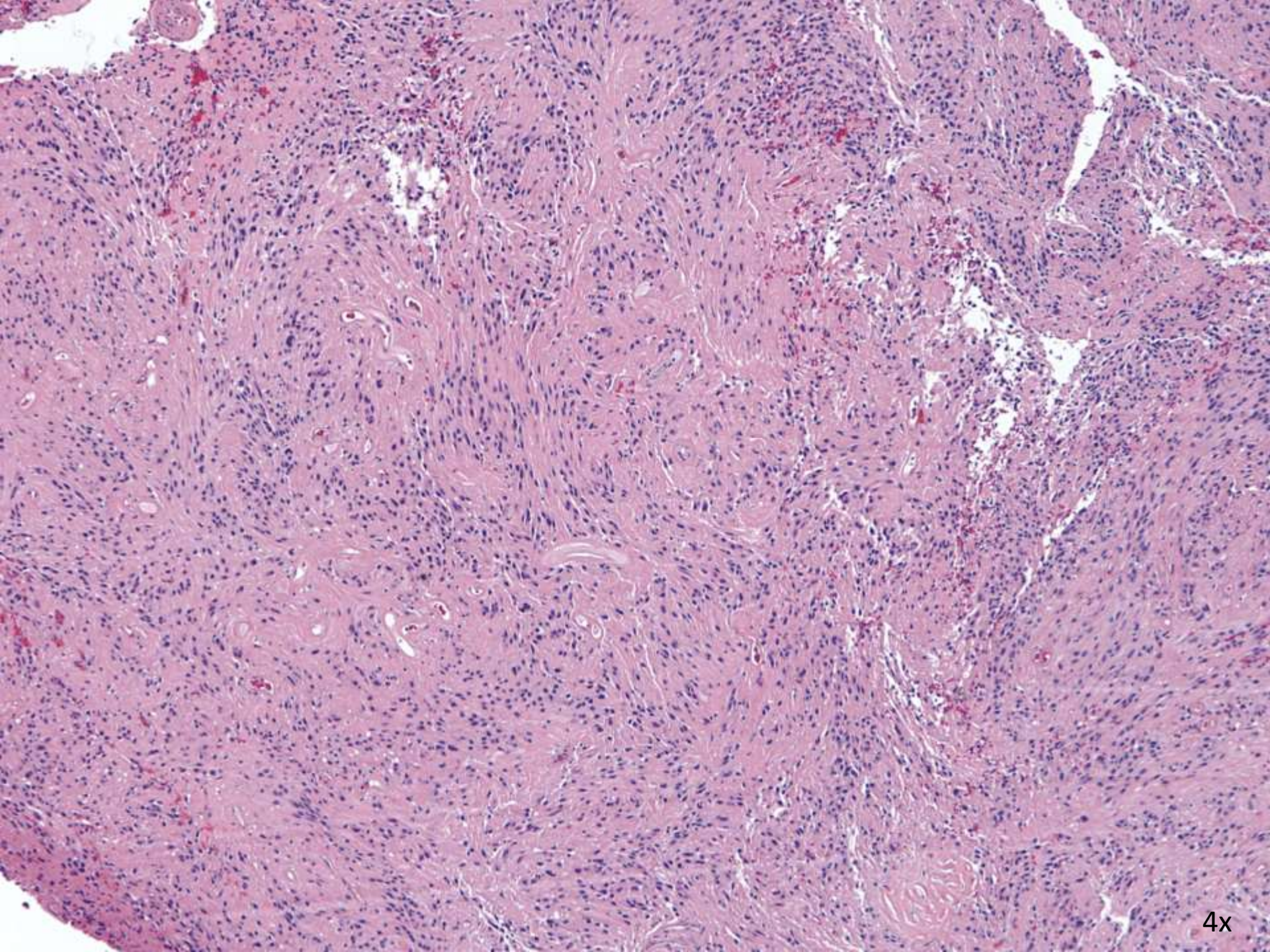

10x

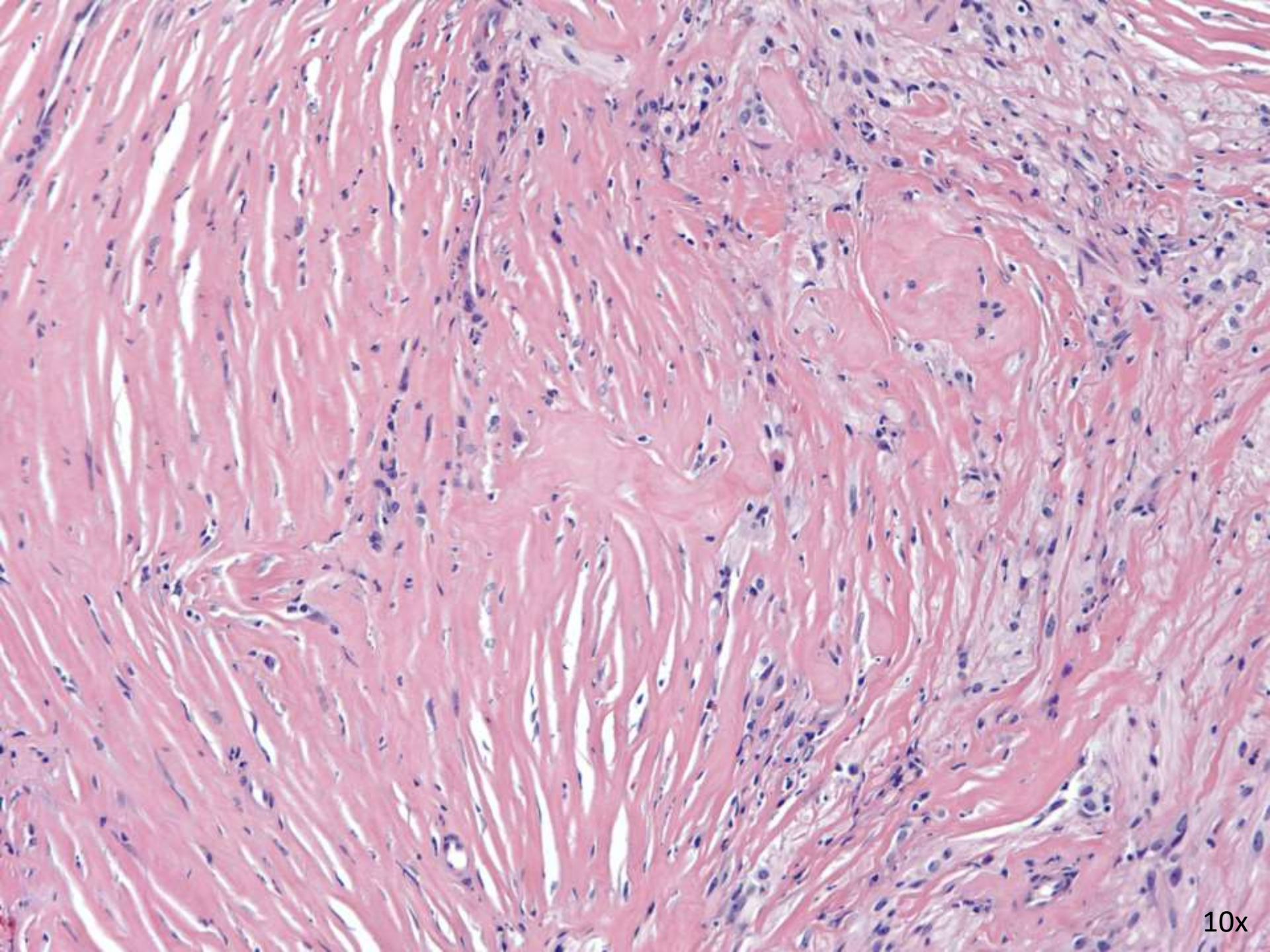


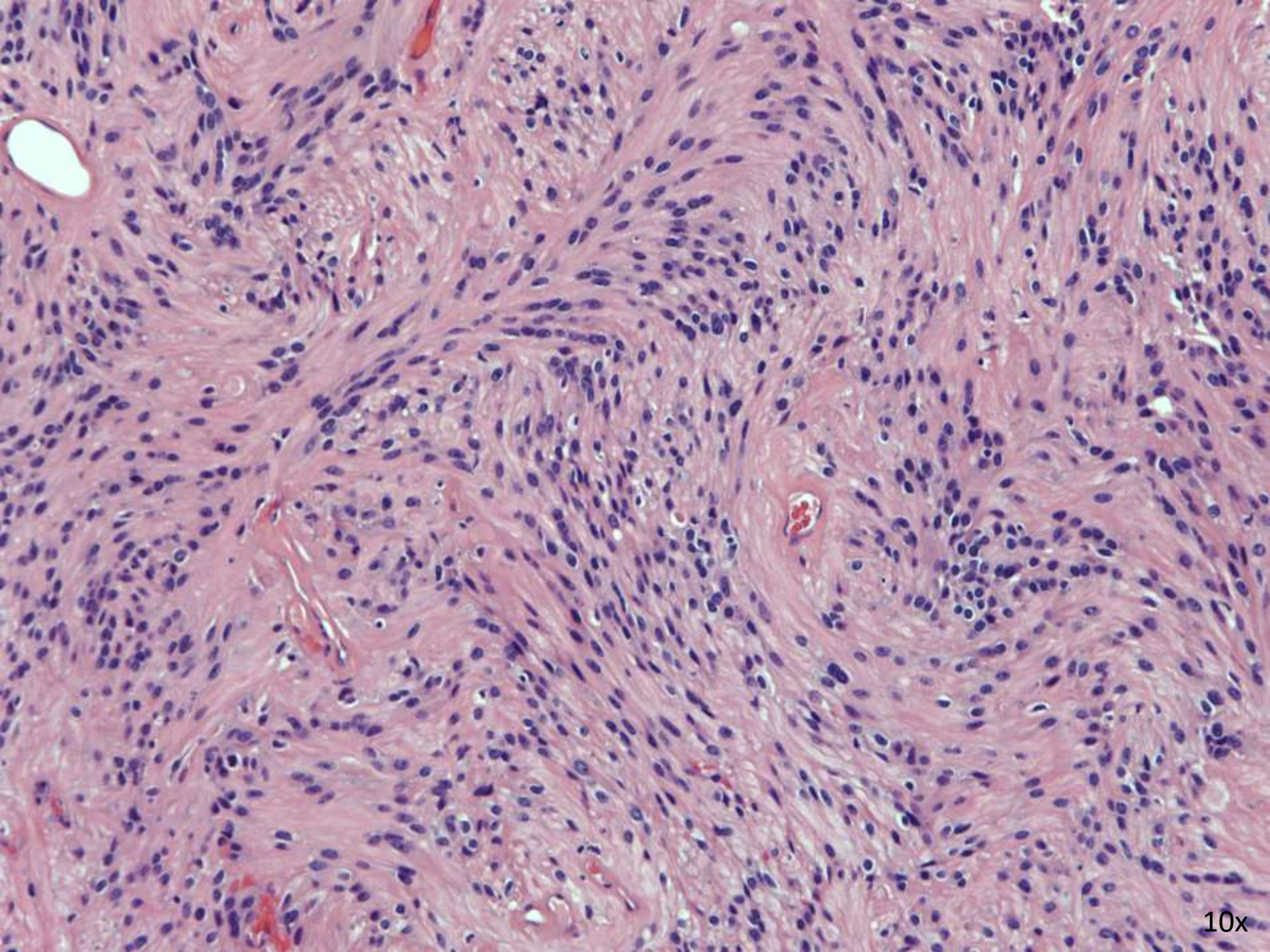
Clinical Diagnosis

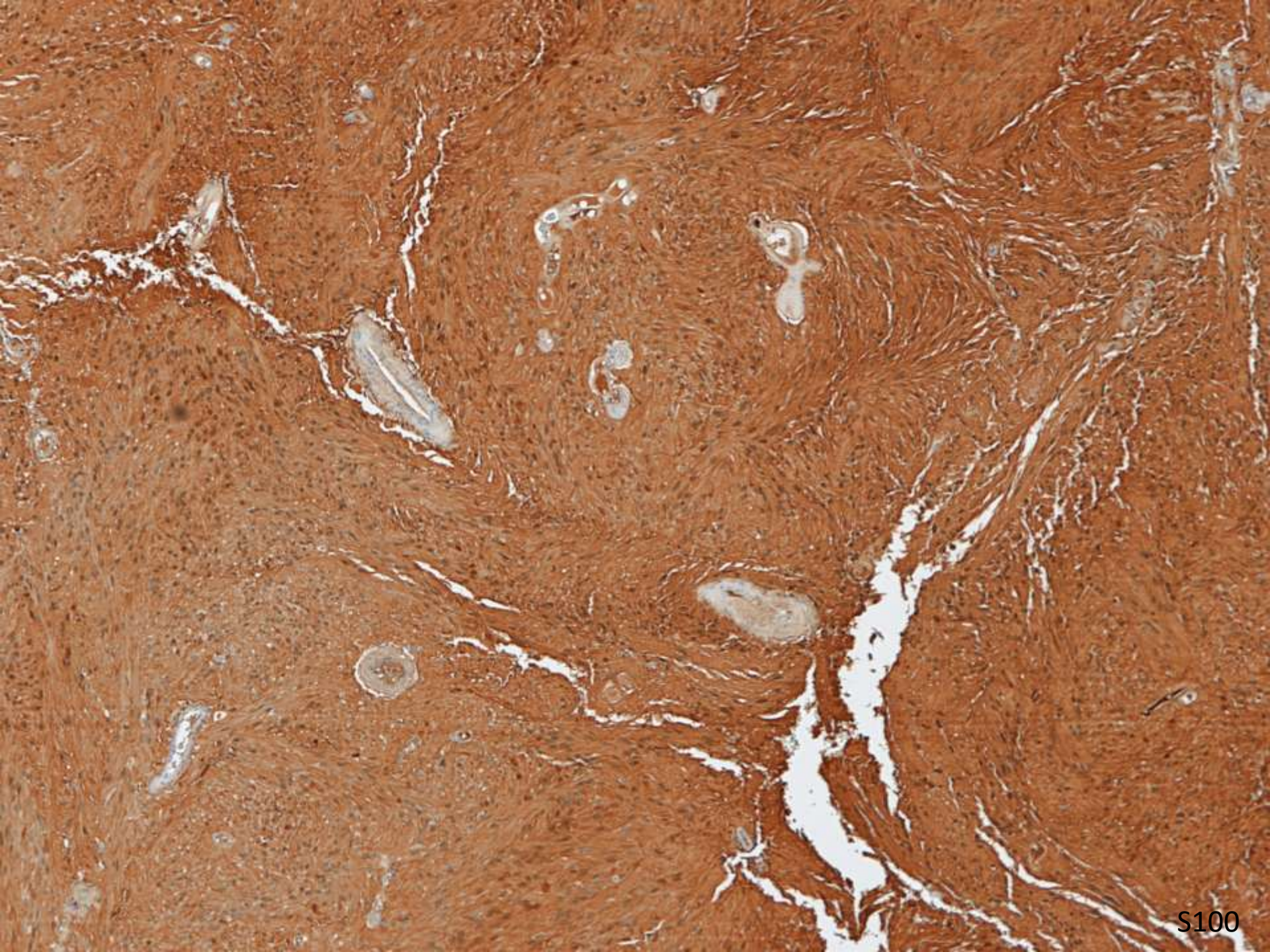
1. Schwannoma
2. Schwannoma
3. Schwannoma

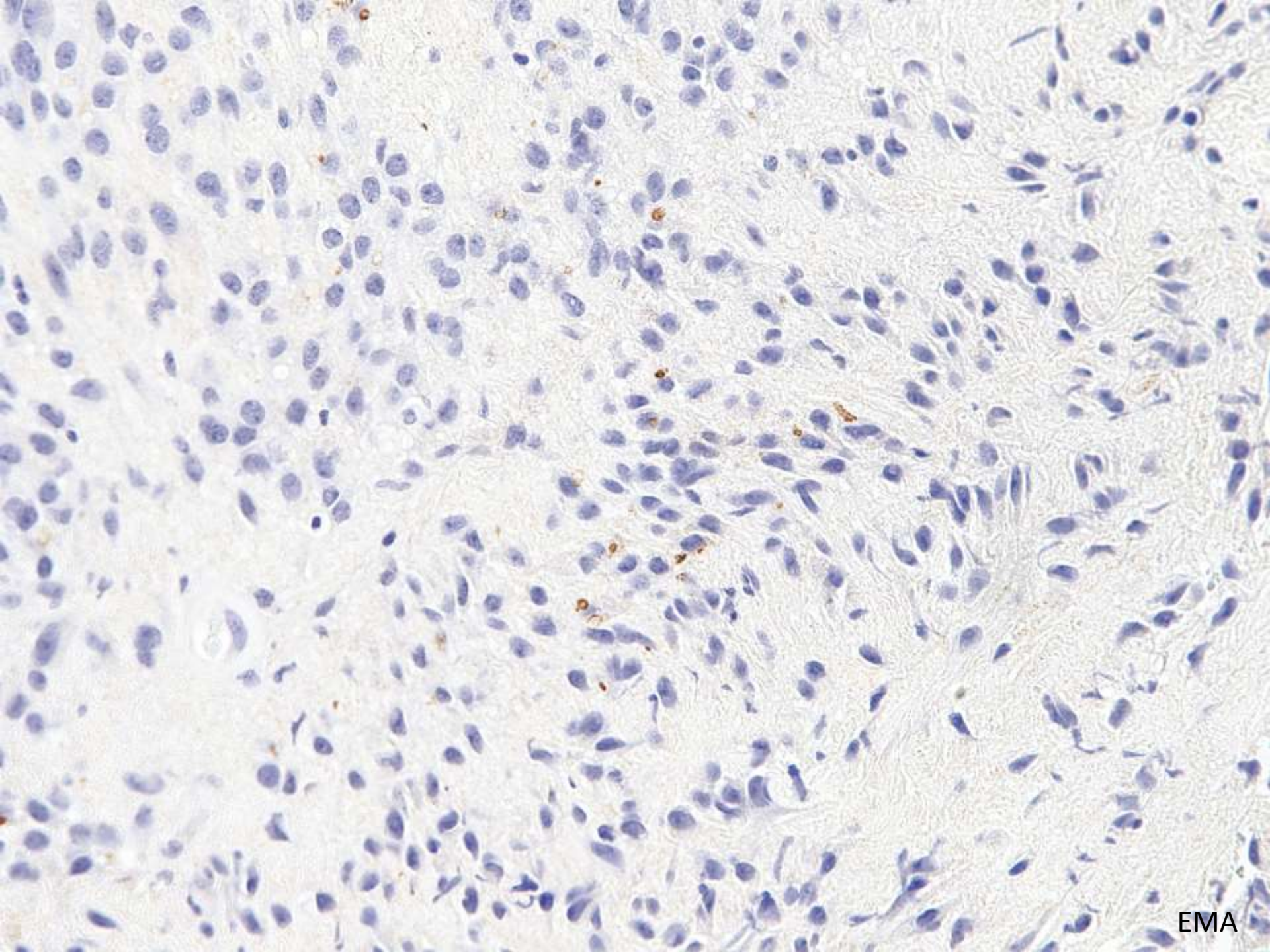

FS


4x


10x


10x


S100


EMA

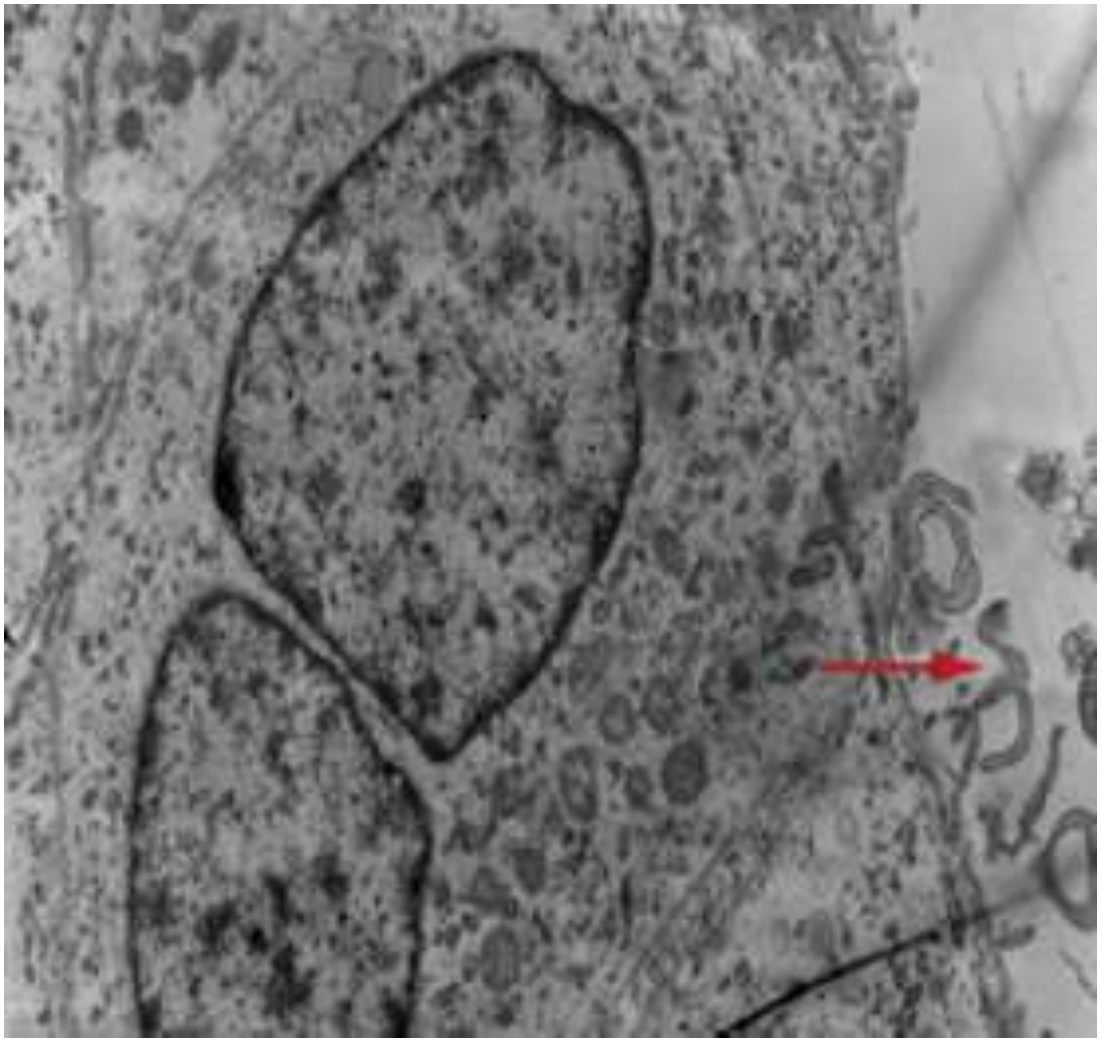
Tanycytic Ependymoma

WHO Definition:

A histological variant of EPN characterized by arrangement of tumour cells in fascicles of variable width and cell density and by elongated cells with spindle shaped nuclei

Tanycytic Ependymoma

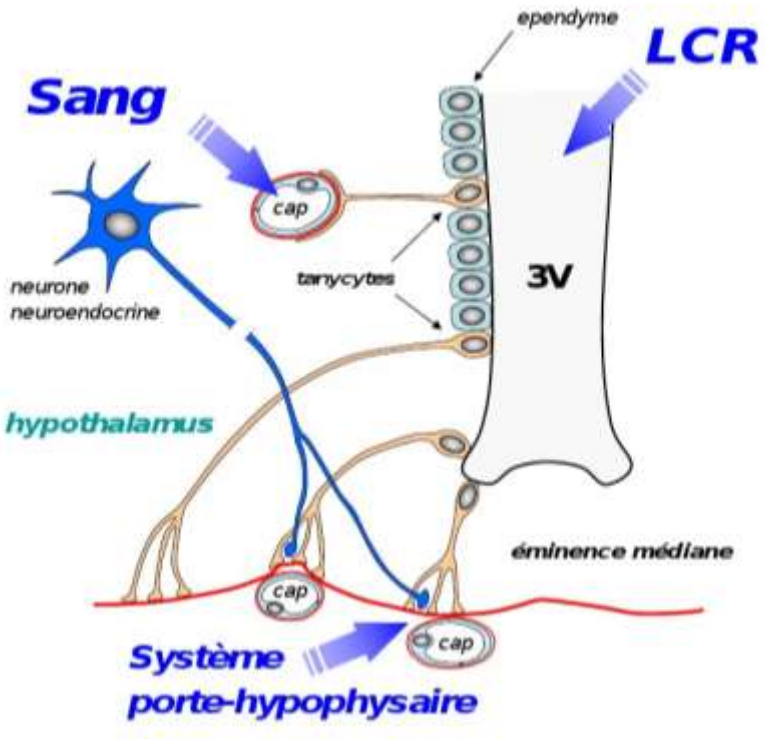
- Common found in the spine
- WHO grade II
- Might not see pseudorosettes
- IHC profile and EM features are the same any ordinary EPN
- EM – cilia, microvilli, junctional complexes, and lack of basement membrane.
- Associated with NF2

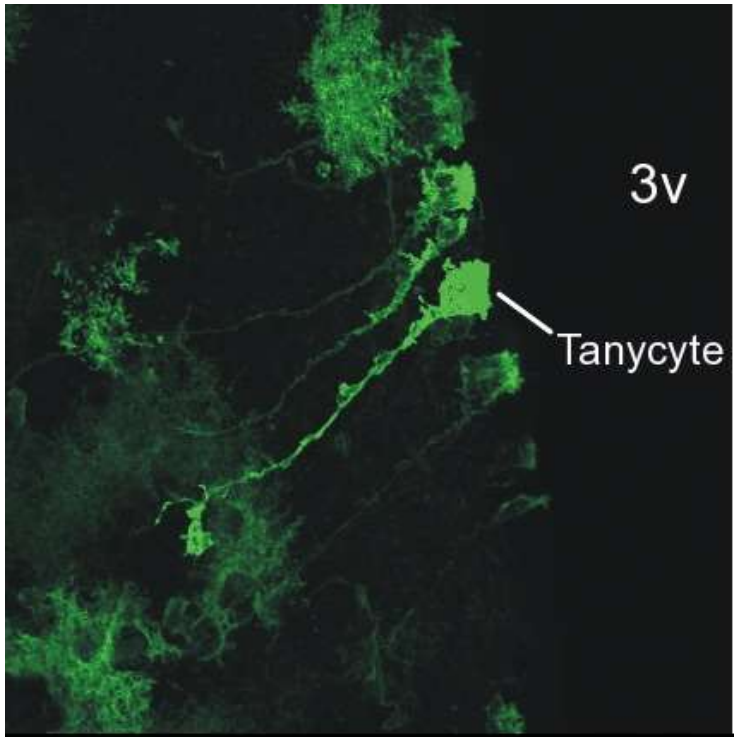


Tanycytic Ependymoma

The “Tanycyte”

A periventricular cell with elongated cytoplasmic processes that extend to the ependymal surface.





ORIGINAL ARTICLE

The Clinical Features and Surgical Outcomes of Spinal Cord Tanycytic Ependymomas: A Report of 40 Cases

Xiaogang Tao[1], Zonggang Hou[1], Shuyu Hao[1], Qi Zhang[2], Zhen Wu[1], Junting Zhang[1], Baiyun Liu[1,3-6]

- 40 patients with spinal cord tanycytic EPN among 4000 spinal cord tumors
- Compressive symptoms
- 36/40 were intramedullary, and only 10% cases showed extramedullary extension
- Follow-up data: one patient had experienced tumor recurrence. The 1- and 5-year progression-free survival rates were 100% and 97.5%, respectively. No deaths.

World Neurosurgery Volume 106, October 2017, Pages 60-73