Breast Pathology Course 2020 @21

Case 4

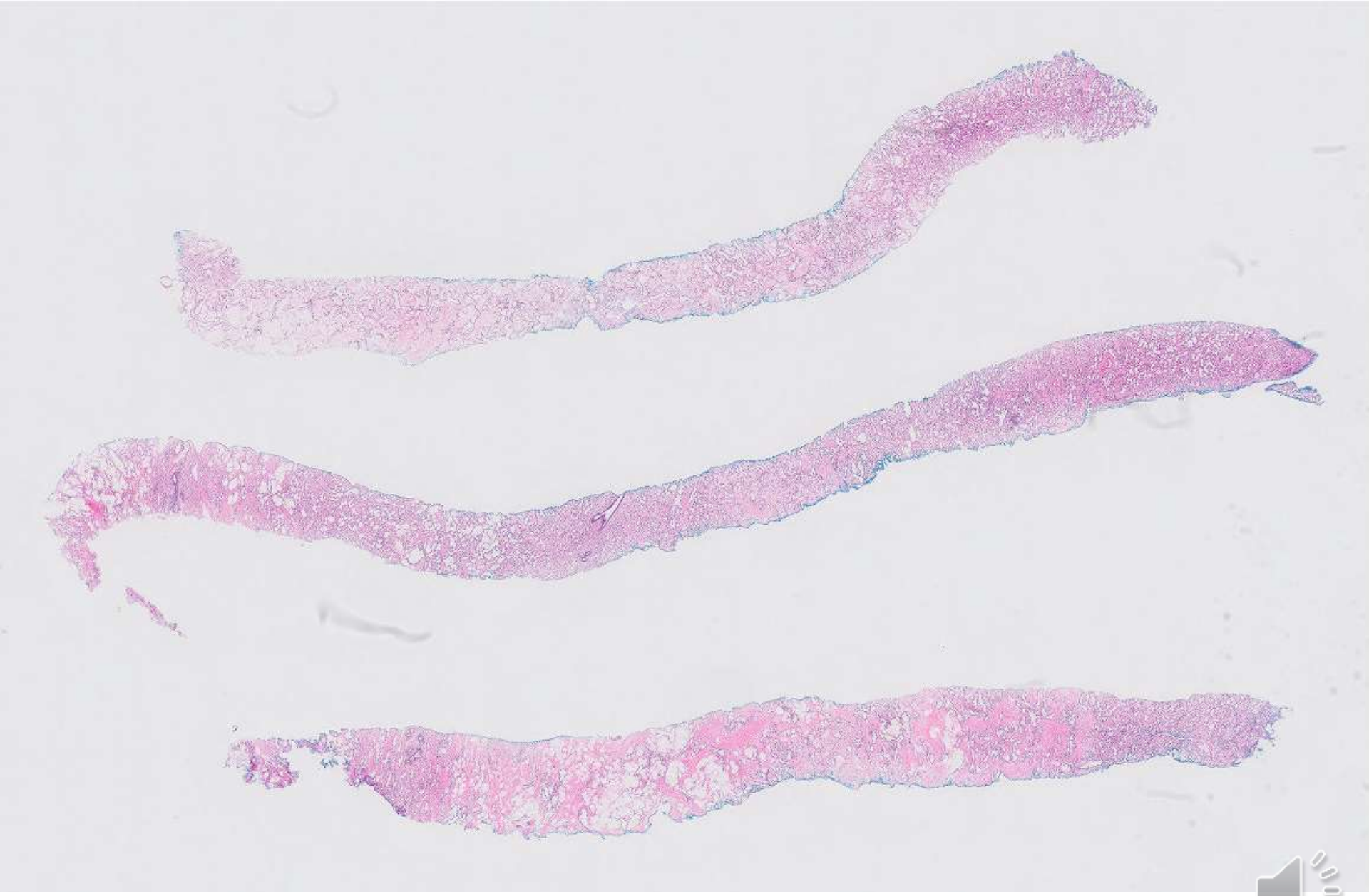
20 year old Indonesian woman.
Core biopsy of a large left breast tumour.

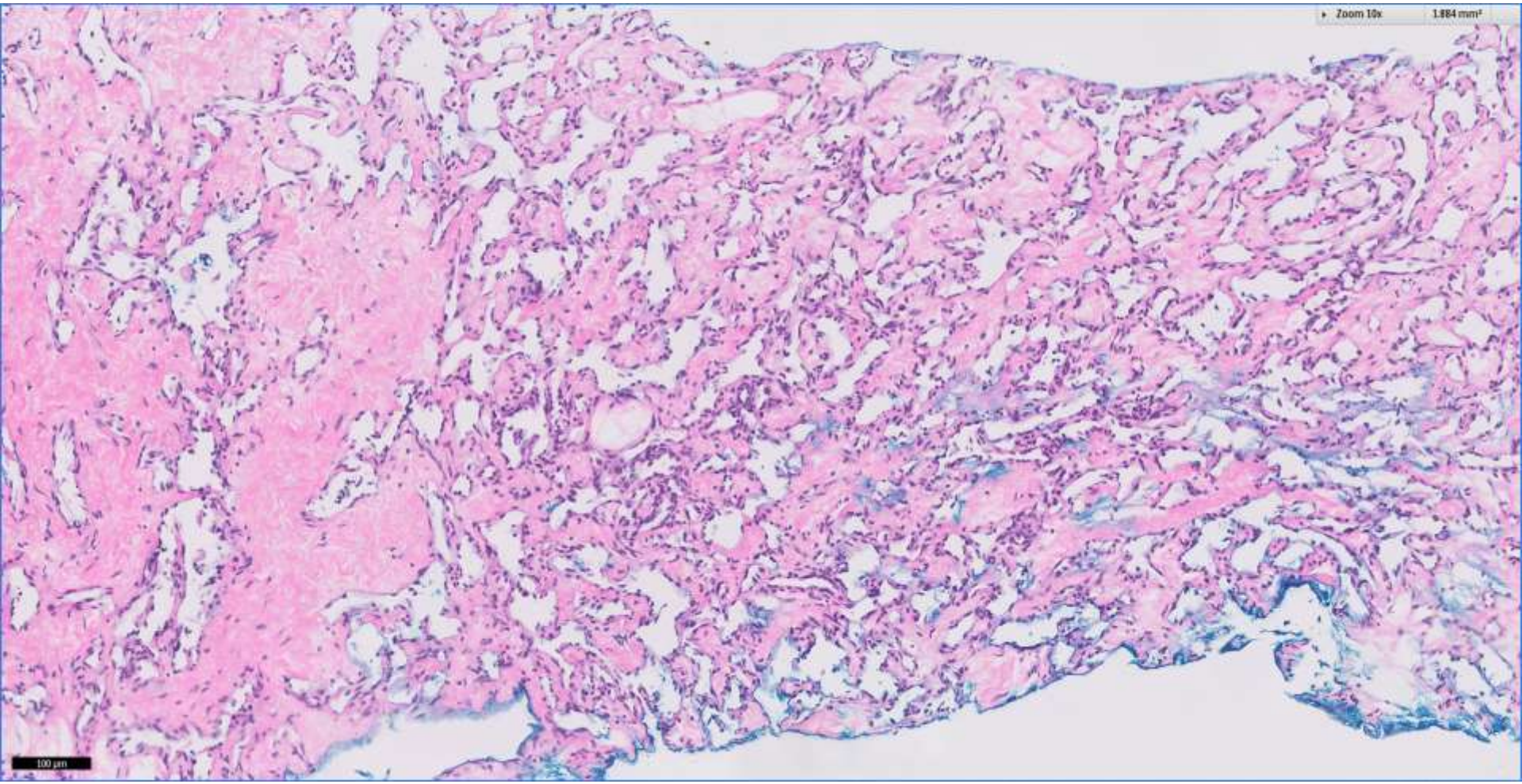
Presented by Timothy Tay

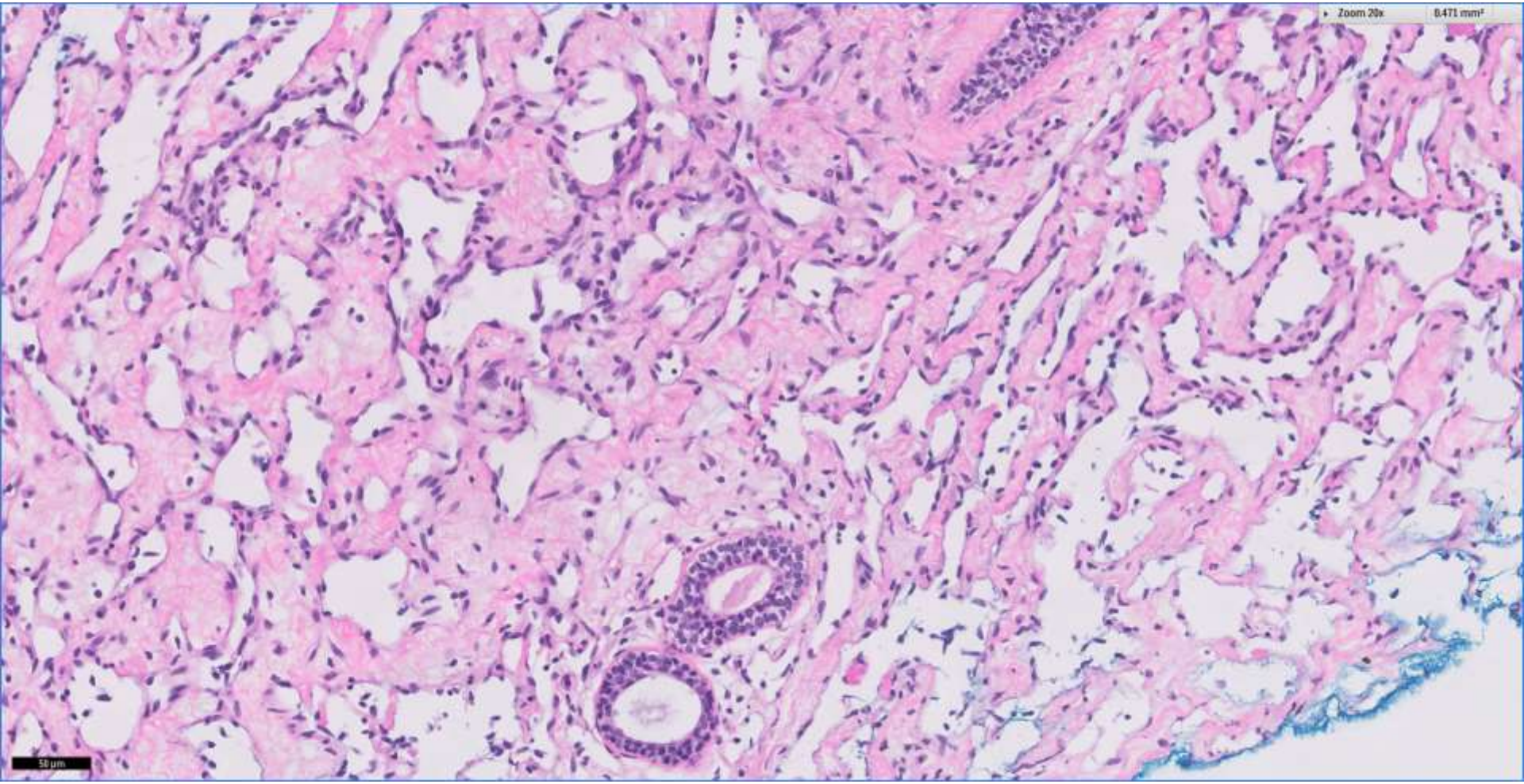
Division of Pathology
Singapore General Hospital

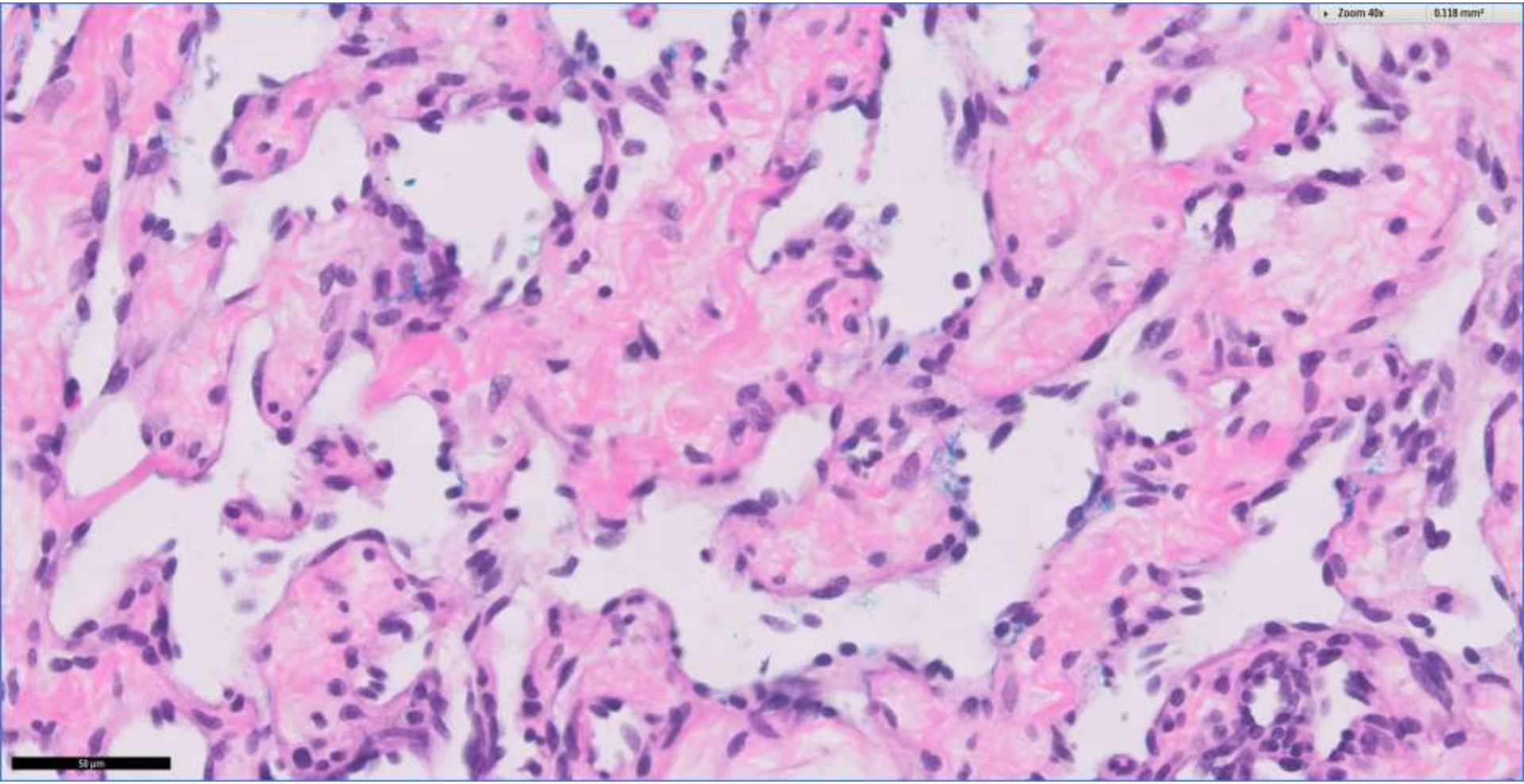
SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE
PATHOLOGY

IAP
International Academy of Pathology
Singapore Division




Zoom 10x
1.884 mm²
100 µm

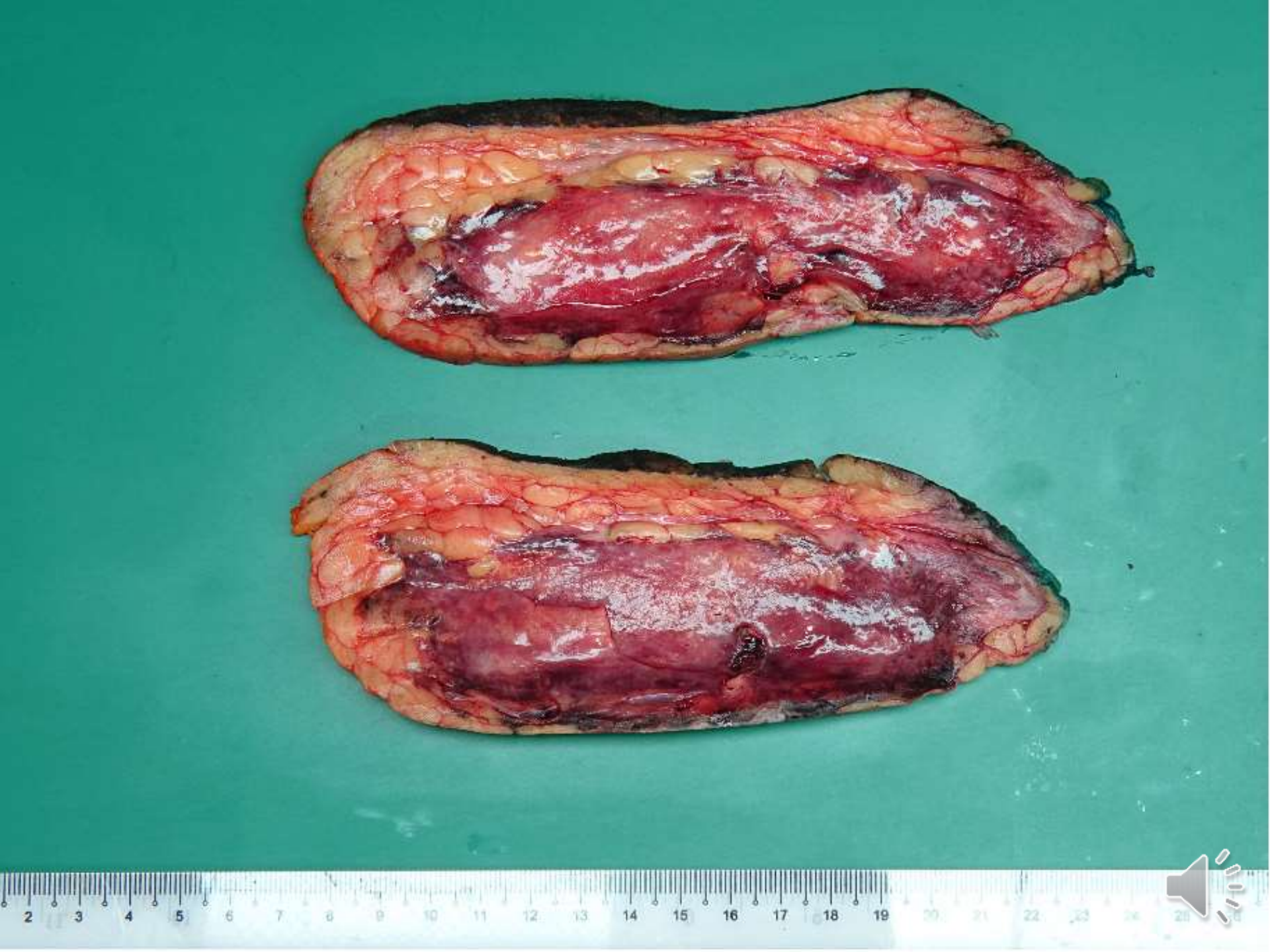

Zoom 20x
0.471 mm²
50 µm


Zoom 40x
0.118 mm²
50 µm

Diagnosis

- Atypical vasoformative lesion suspicious for angiosarcoma

MASTECTOMY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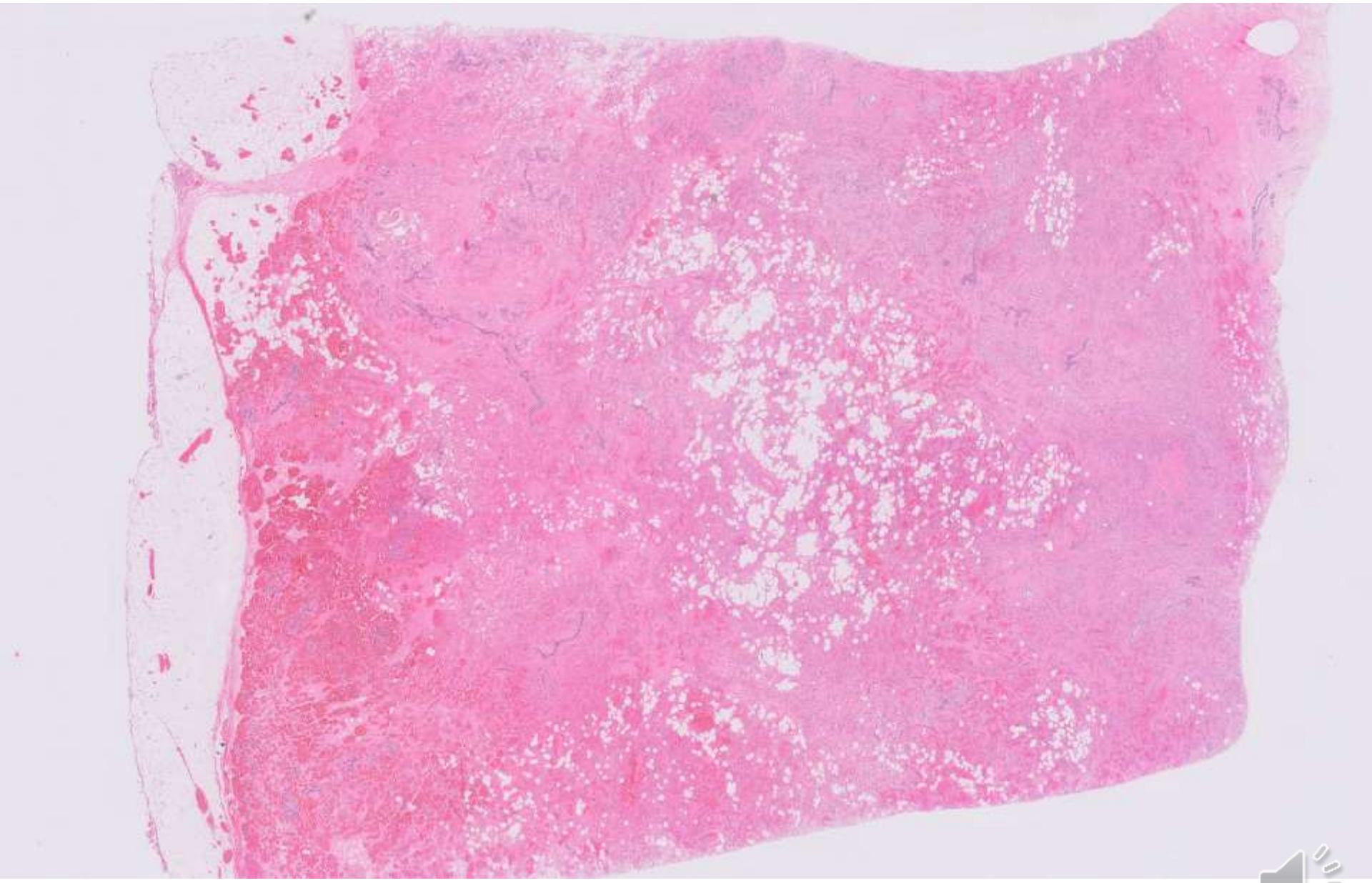
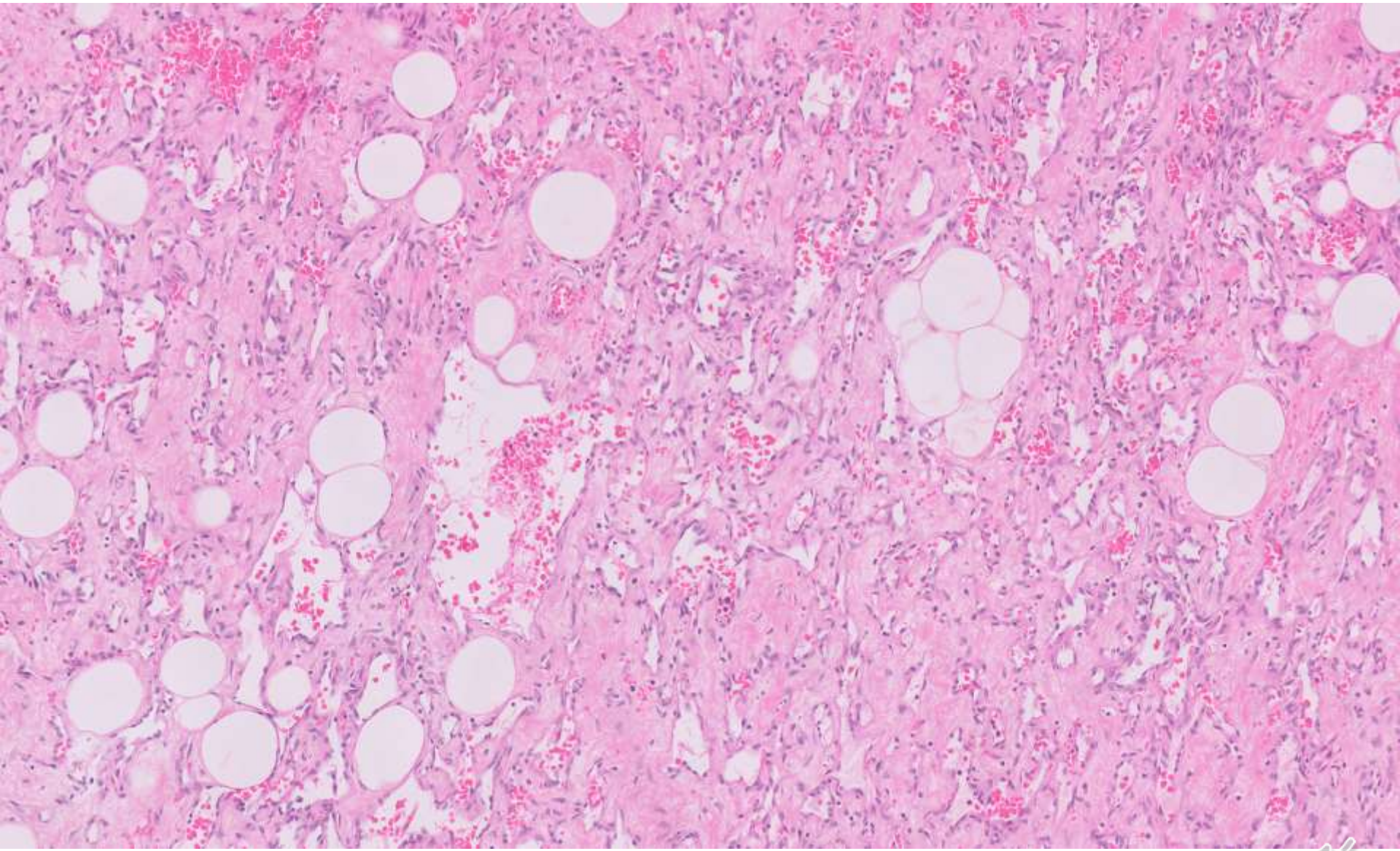
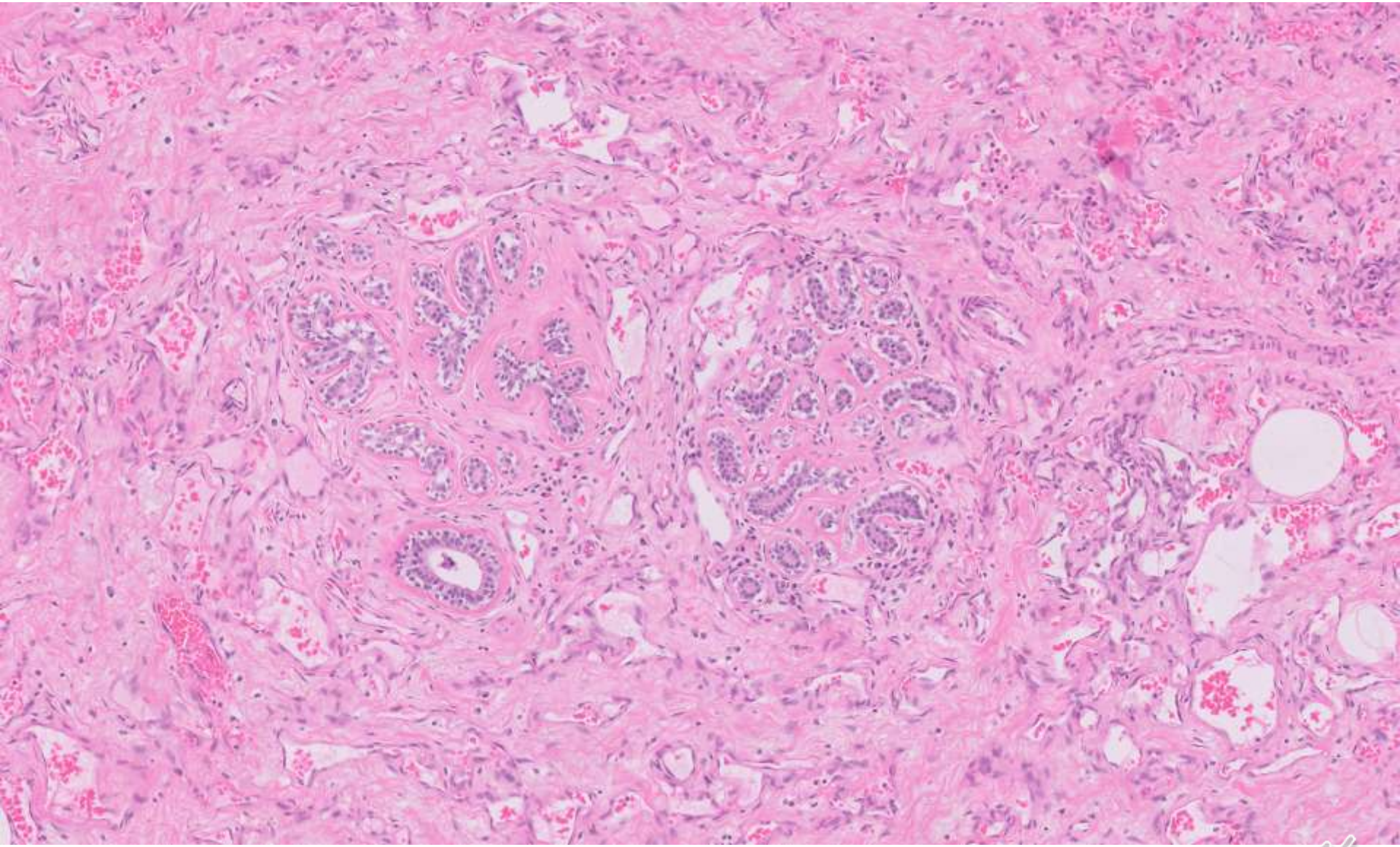
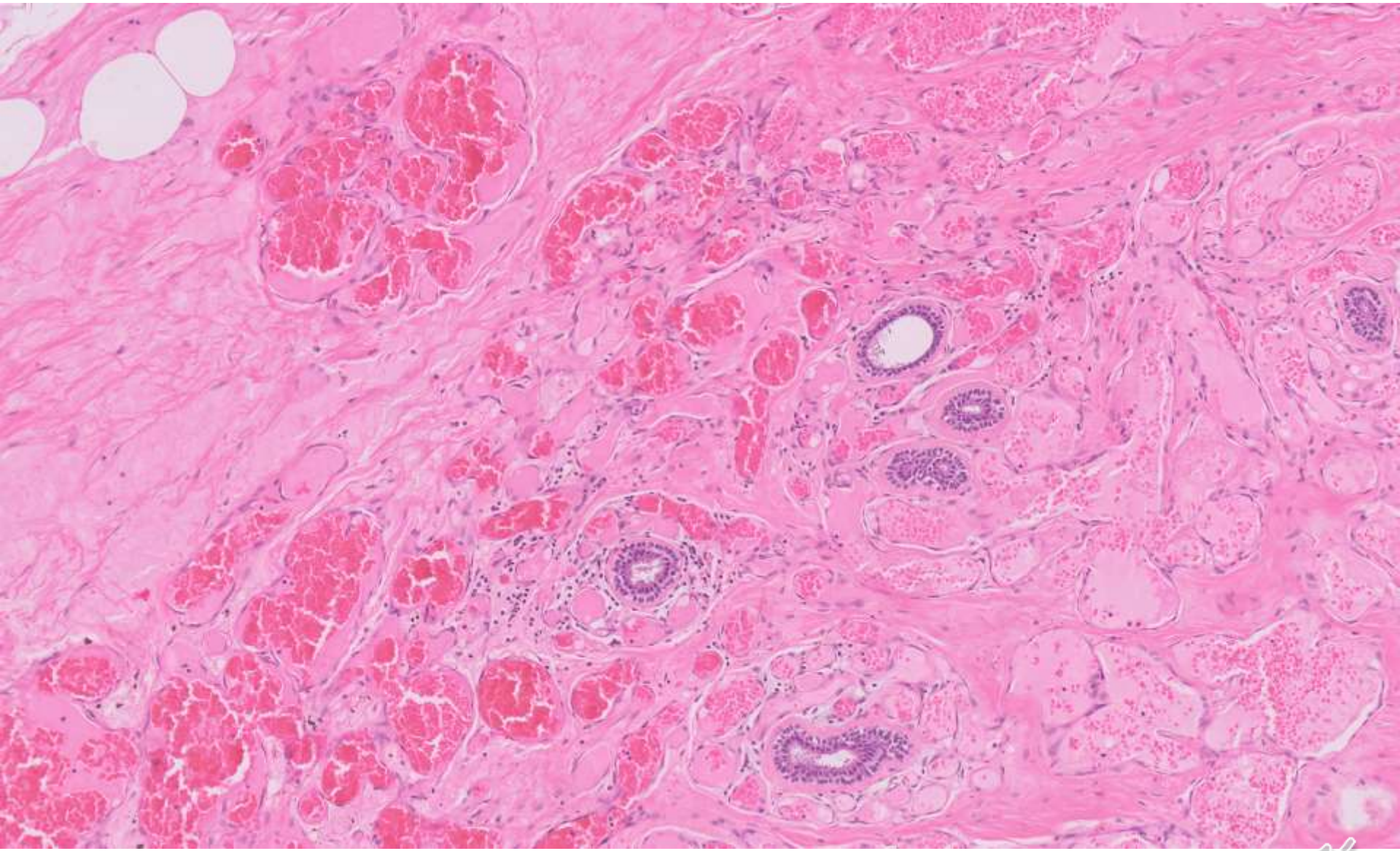








Diagnosis

- Well-differentiated angiosarcoma

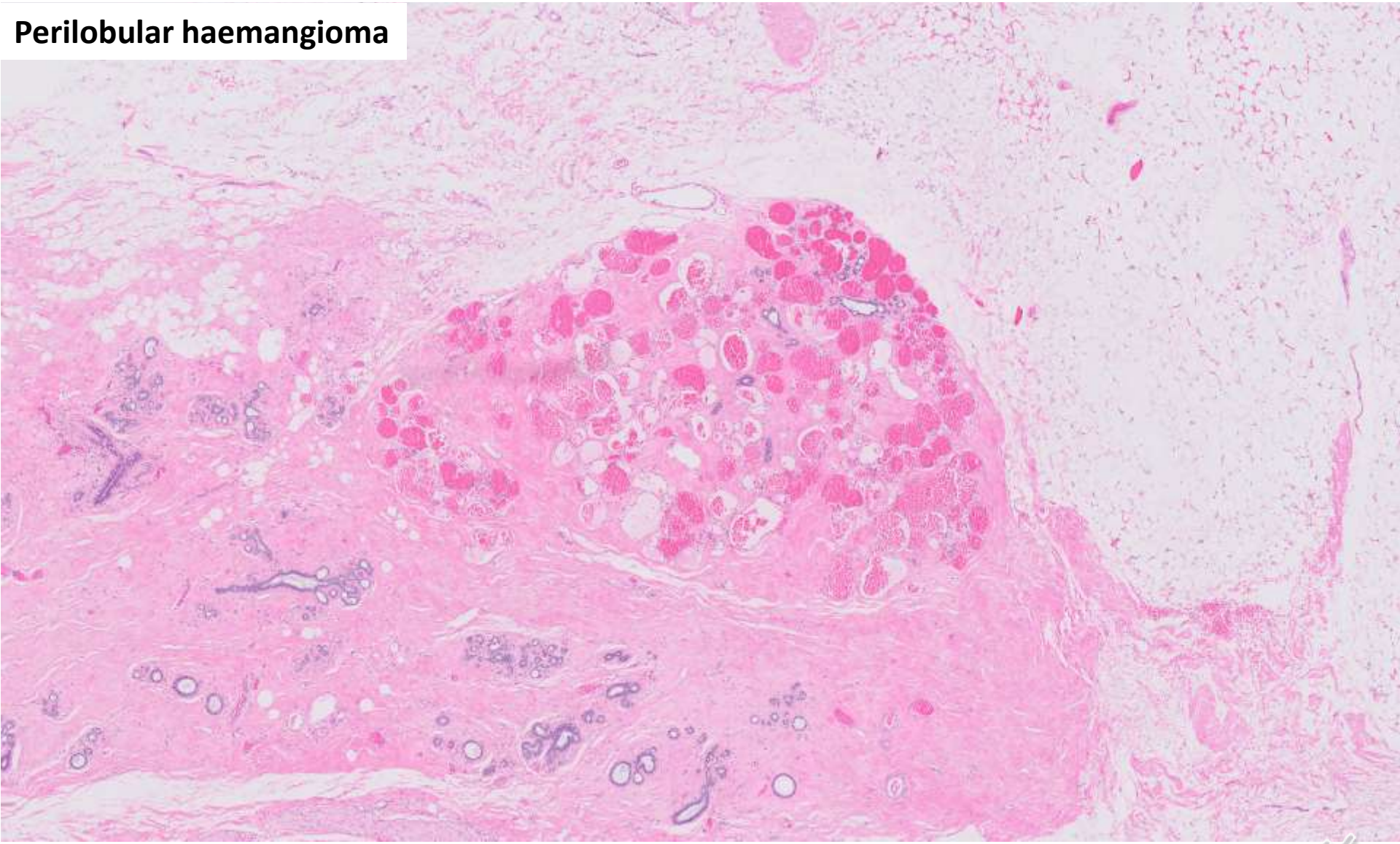
Differential diagnosis

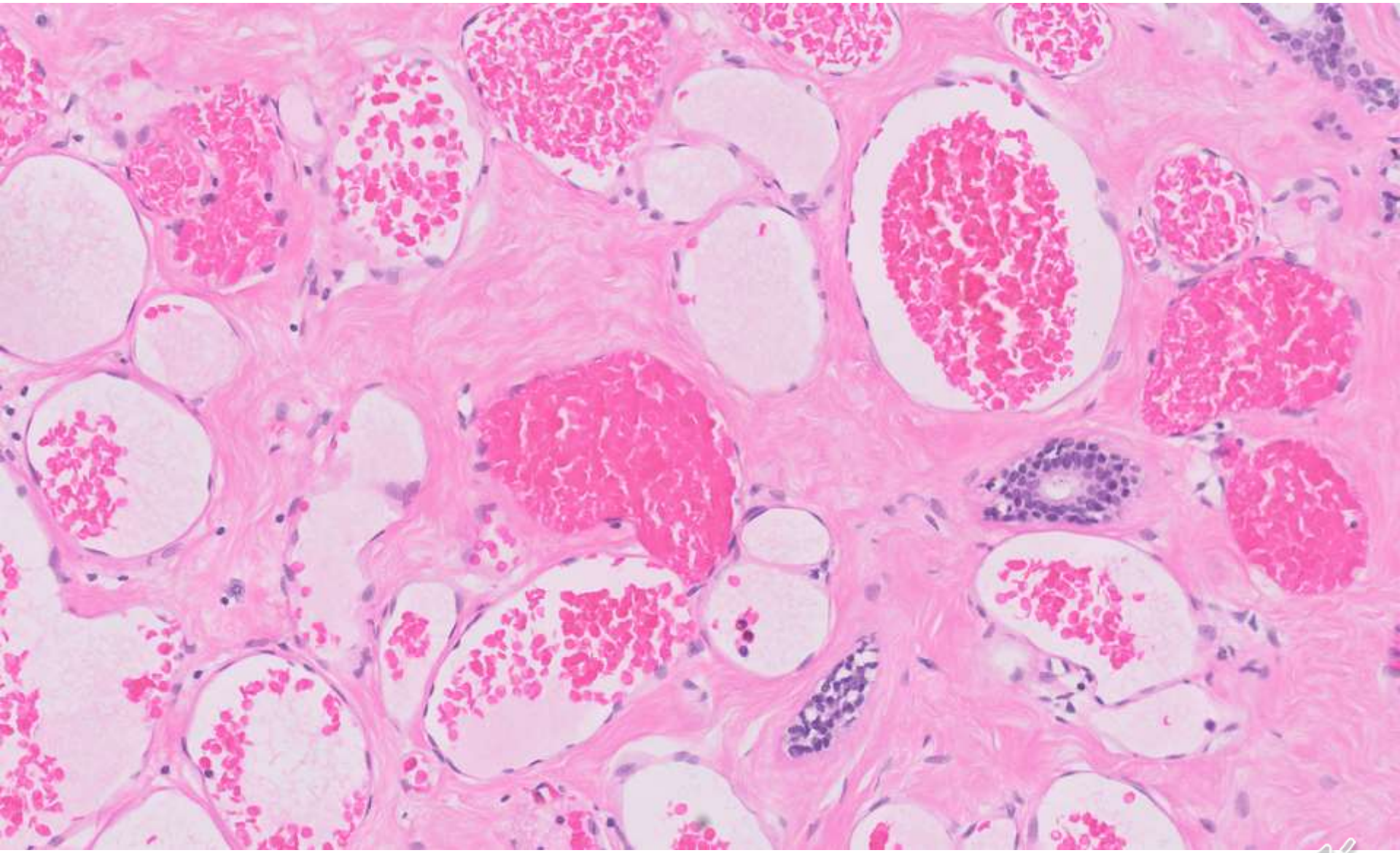
- Haemangioma
- Angiomatosis

Haemangioma

- Benign proliferation vascular channels – venous channels, capillaries
- Lack cytologic atypia, anastomosing architecture
- Usually in the interlobular stroma, not involving the lobule except for perilobular haemangioma which involves the intralobular stroma
- Usually small, <2cm unlike angiosarcomas.

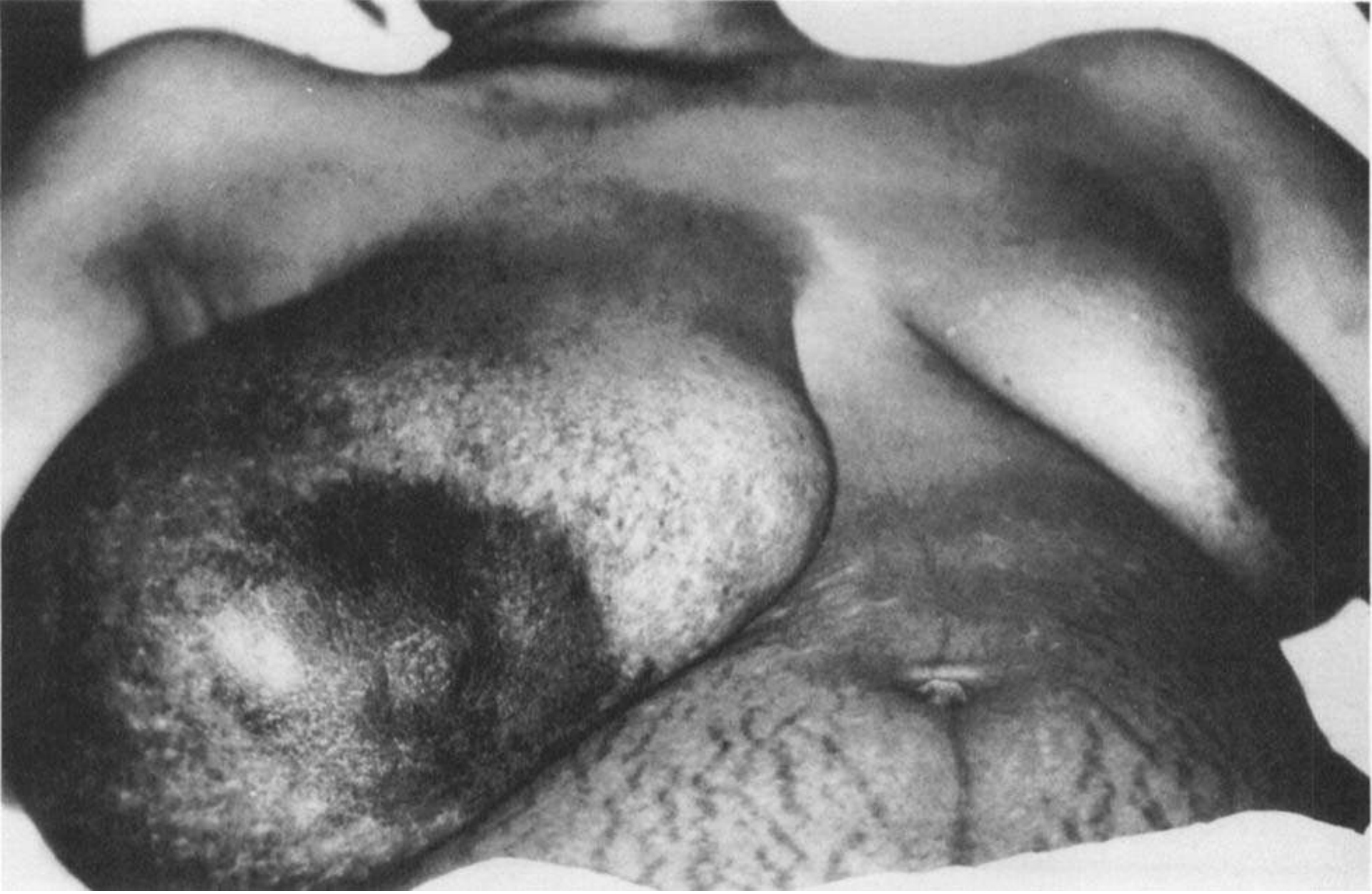
Perilobular haemangioma



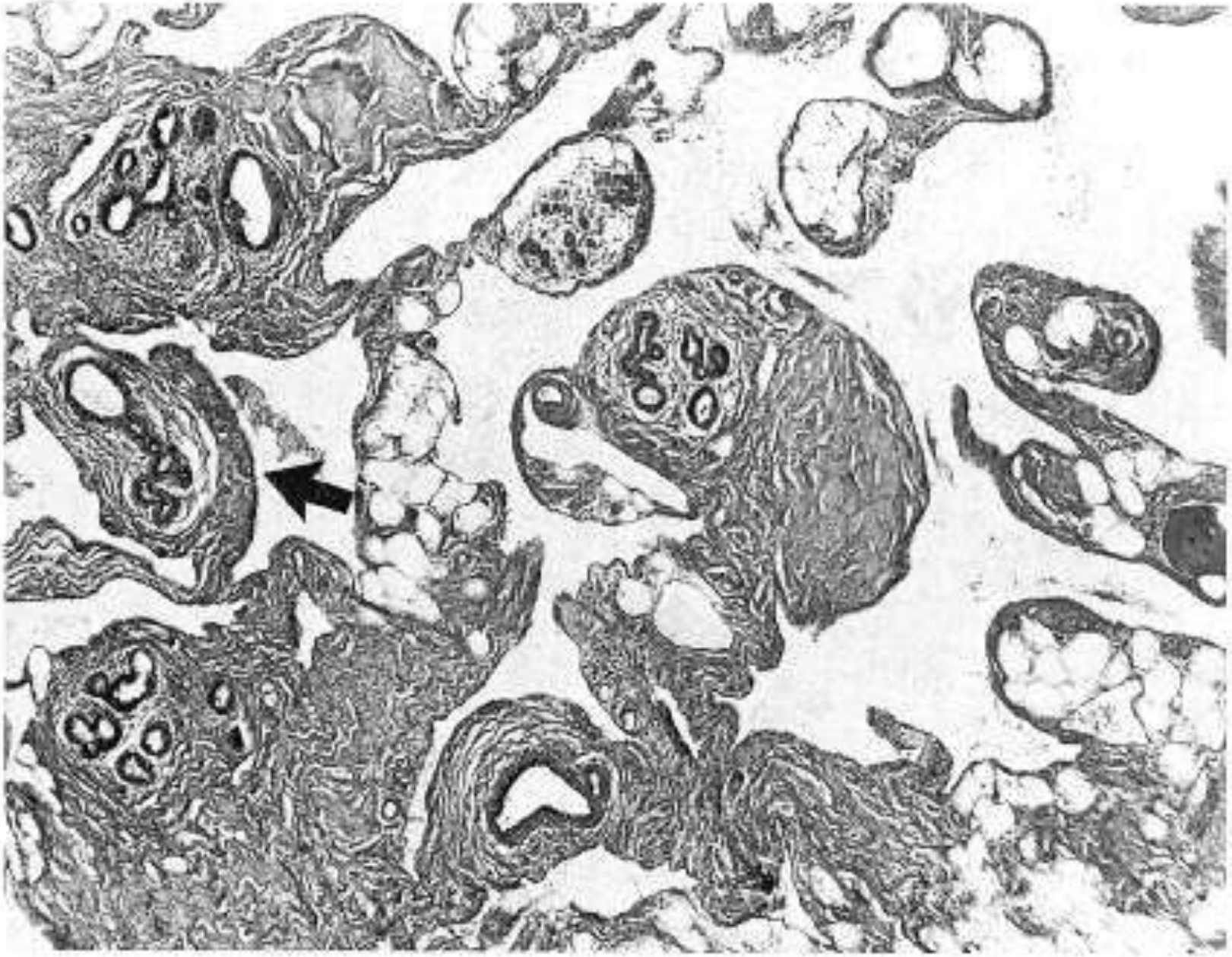


Angiomatosis

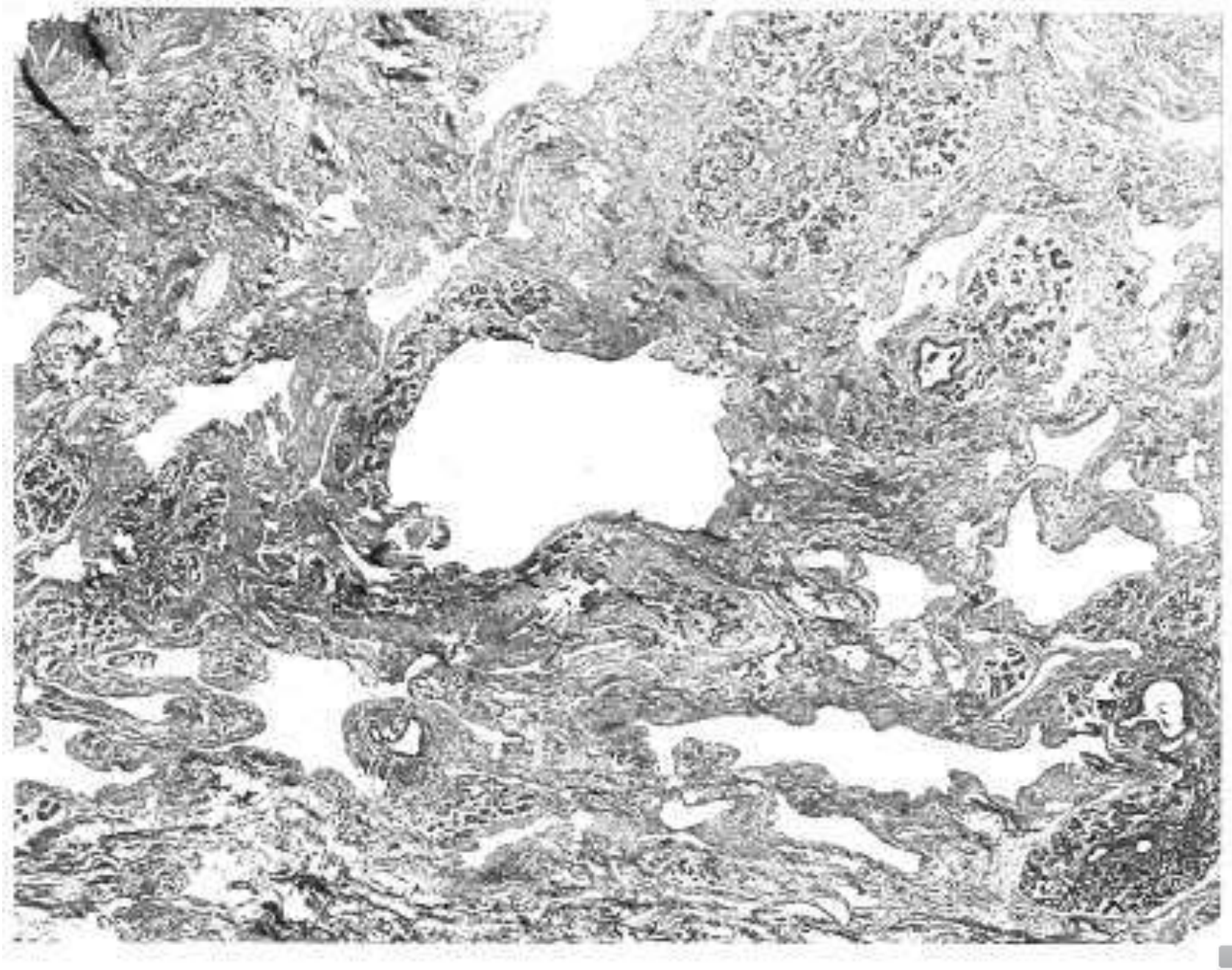
- Rare proliferation of vascular channels that grows diffusely throughout the breast, may have anastomosing architecture and infiltrative edges.
- Lack cytologic atypia, blood lakes, necrosis, low Ki67 index (<2%) and does not involve intralobular stroma.
- Large calibre (usual type) or small calibre vessels (capillary type)



Morrow M, et al. Diffuse cystic angiomatosis of the breast. Cancer. 1988;62:2392-6.



Rosen PP. Vascular tumors of the breast. III. Angiomatosis. Am J Surg Pathol. 1985;9:652-8.



Rosen PP. Vascular tumors of the breast. III. Angiomatosis. Am J Surg Pathol. 1985;9:652-8.

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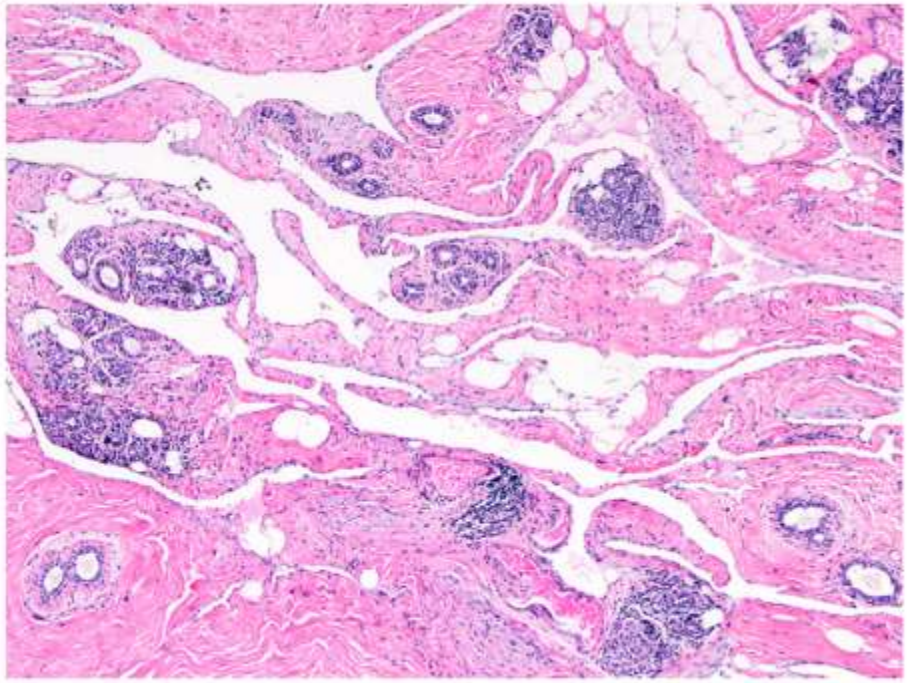

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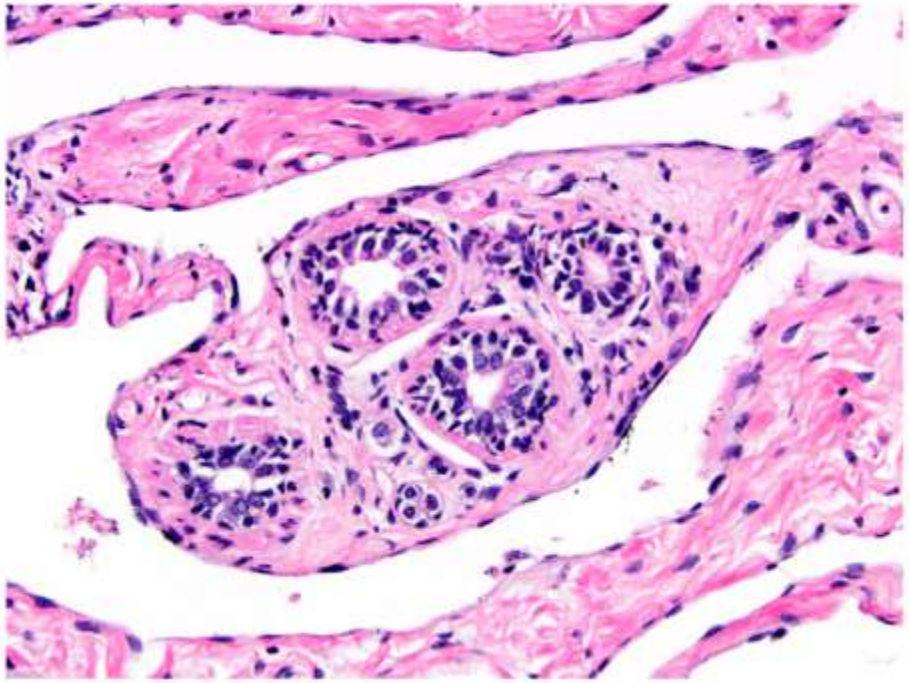


Baker GM, Schnitt SJ. Vascular lesions of the breast. Semin Diagn Pathol. 2017;34:410-419.

Primary angiosarcoma of the breast

- Not radiation associated
- Younger age group; median age 40
- Rapidly growing mass with variable discolouration of overlying skin
- Fine needle aspiration high false negative rate; core needle biopsy preferred

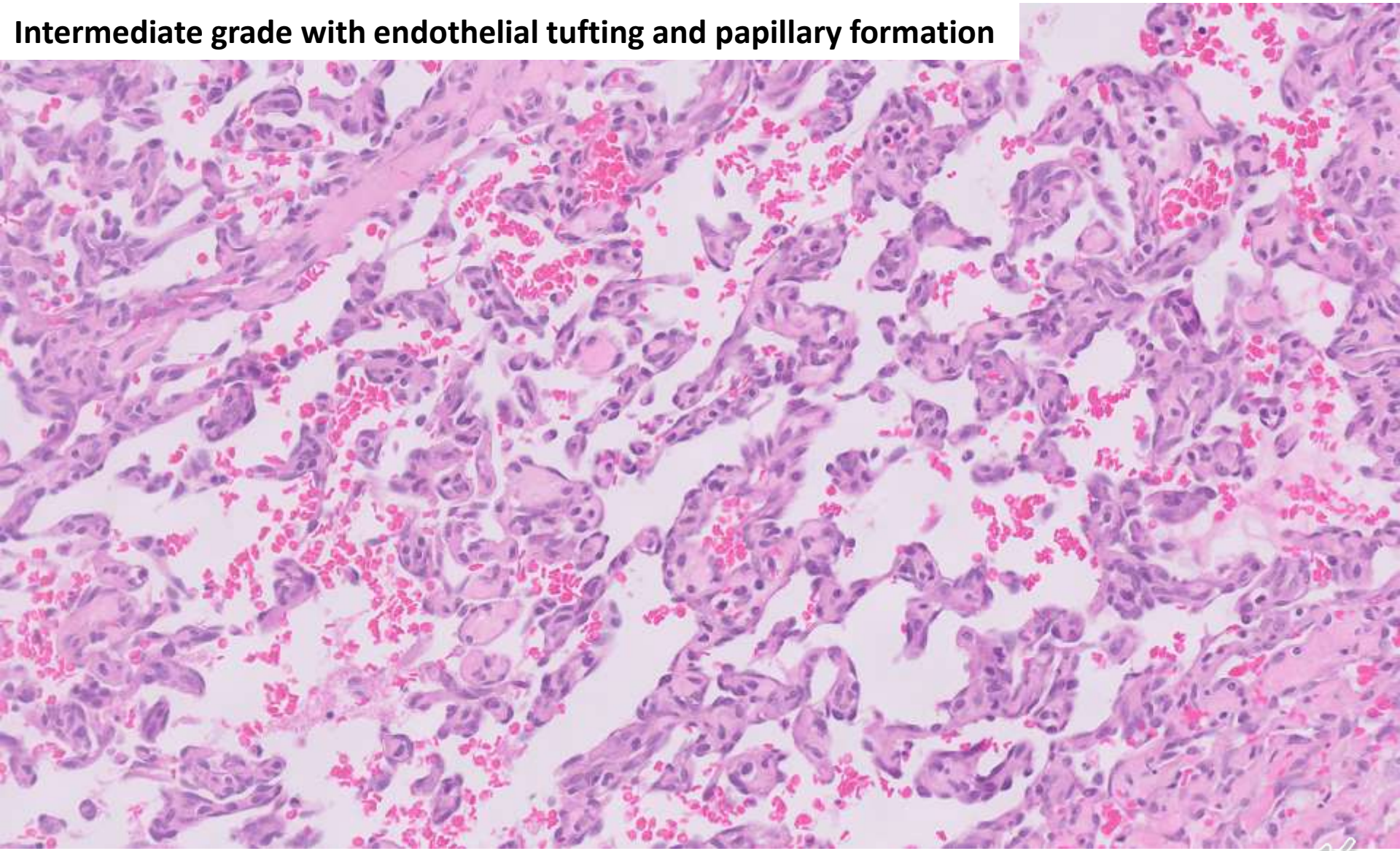
Microscopic findings

- Tumour is centred in the breast parenchyma rather than the overlying skin.
- Low grade/well differentiated tumours:
  - small to medium sized, irregular, anastomosing vascular channels that dissect through the fibroadipose tissue and mammary lobules of the breast.
- Lining endothelial cells:
  - enlarged, hyperchromatic nuclei; atypia may be mild in well differentiated tumours.
- Unlike postradiation angiosarcomas which often have more solid architecture and are less vasoformative.

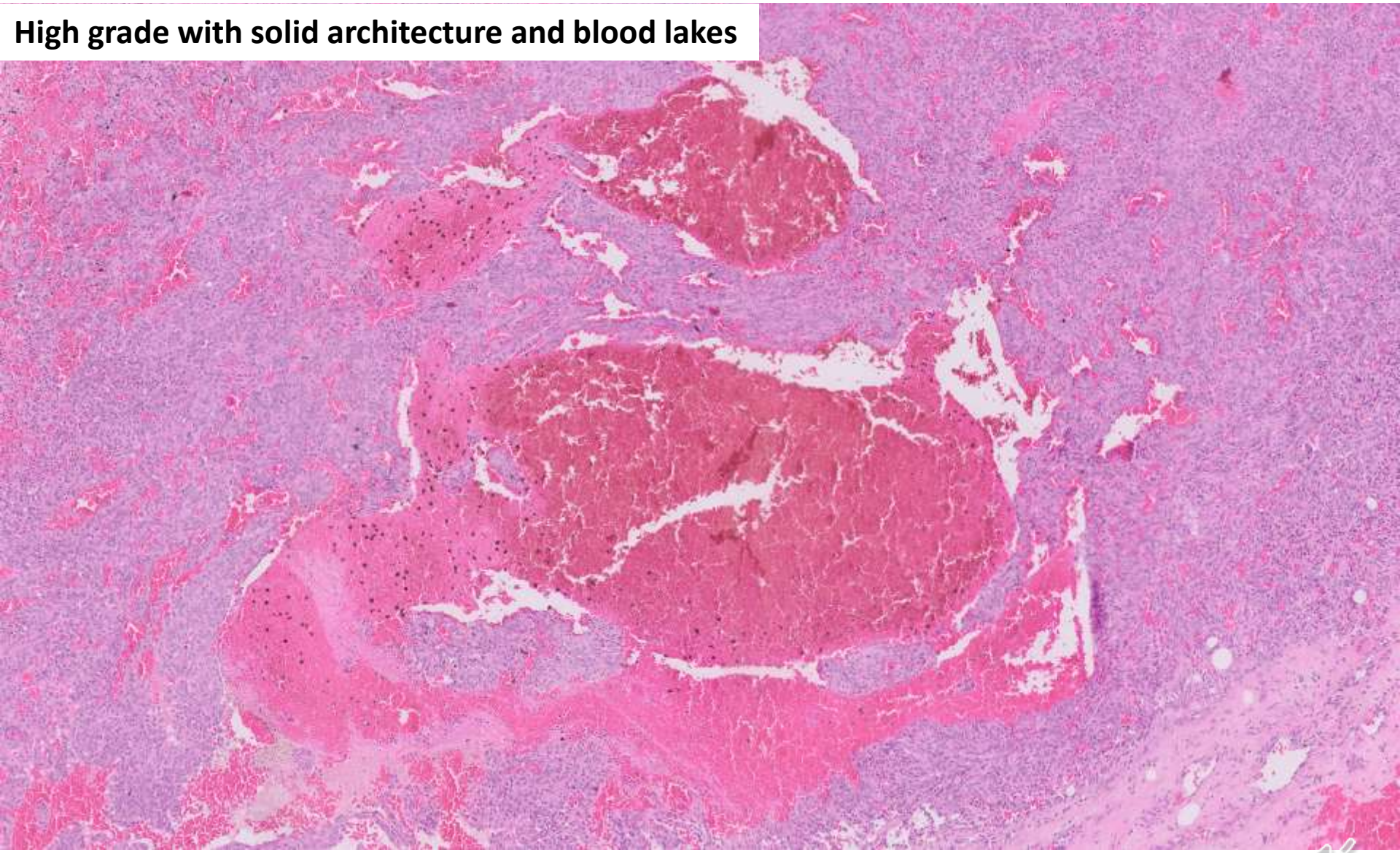
Microscopic findings

- Intermediate grade tumours:
  - endothelial tufting/multilayering, focal papillary-like projections and frequent mitotic figures.
- High grade:
  - predominance of solid and spindle cell morphology with frequent mitotic figures, blood lakes and necrosis.

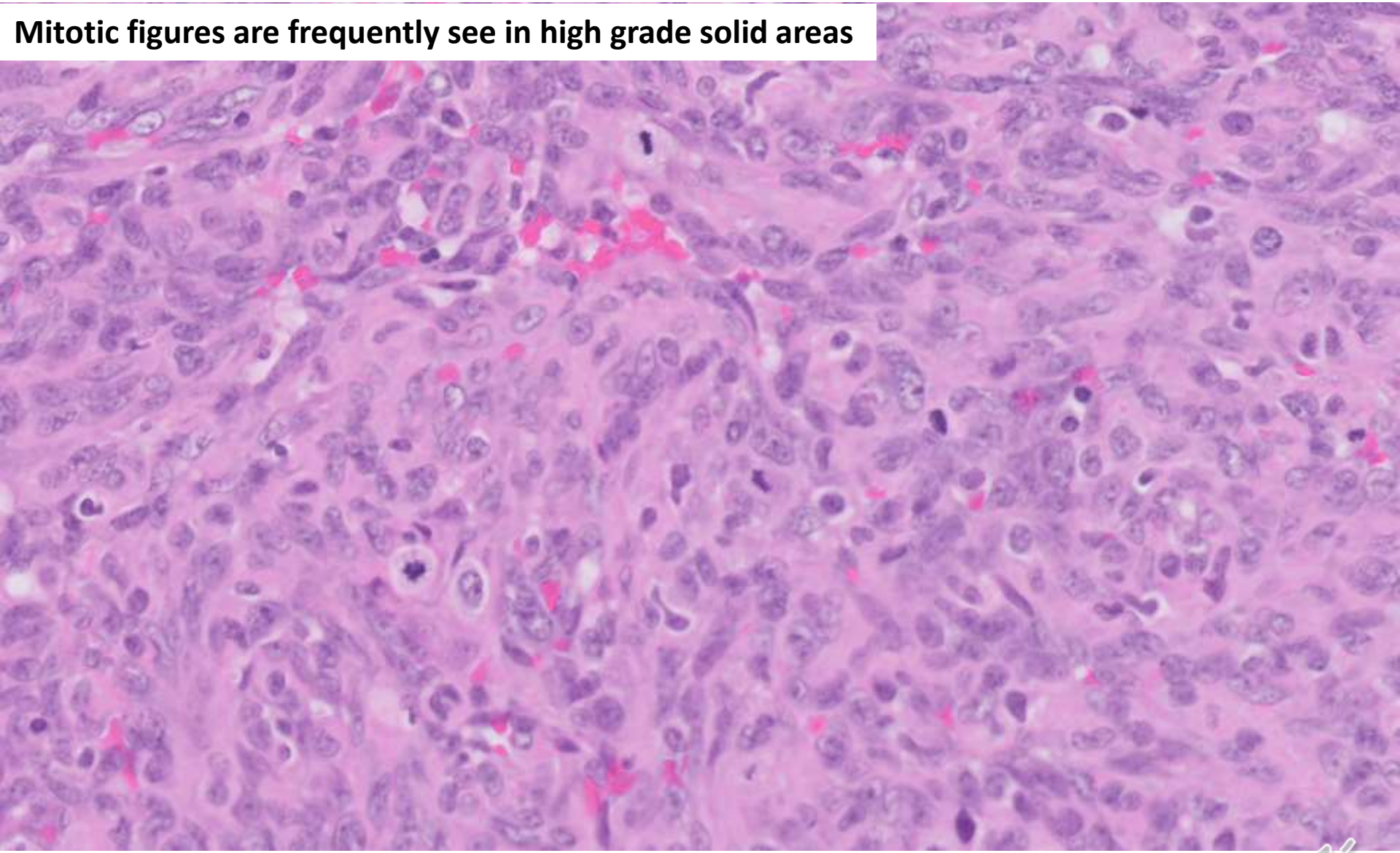
Intermediate grade with endothelial tufting and papillary formation



High grade with solid architecture and blood lakes



Mitotic figures are frequently see in high grade solid areas



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David W. Braun, Jr., Ph.D.
Philip H. Lieberman, M.D.
David W. Kinne, M.D.
Richard J. Kaufman, M.D.

Donnell RM et al. Am J Surg Pathol. 1981;5(7):629-42

Angiosarcoma and other vascular tumors of the breast

Histologic Characteristics of Mammary Angiosarcoma

Histologic Features	Group I (13 cases)	Group II (7 cases)	Group III (20 cases)
Lesion involves breast parenchyma	Present	Present	Present
Interanastomosing vascular channels	Present	Present	Present
Hyperchromatic endothelial cells	Present	Present	Present
Endothelial tufting	Minimal	Present	Prominent
Papillary formations	Absent	Focally present	Present
Solid and spindle cell foci	Absent	Absent or minimal	Present
Solid and spindle cell foci	Absent	Absent or minimal	Present
Mitoses	Rare or absent	Present in papillary areas	Numerous
"Blood lakes"	Absent	Absent	Present
Necrosis	Absent	Absent	Present

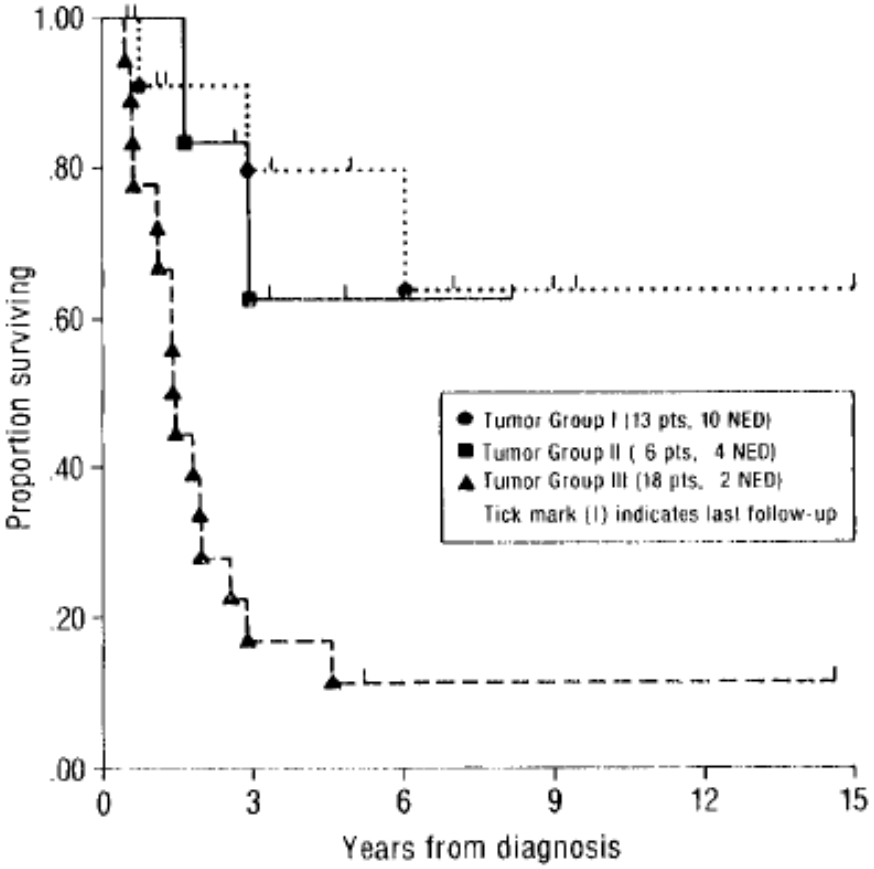

FIGURE 14
Disease-free survival in angiosarcoma of the breast. Solid symbols indicate patients who died of angiosarcoma. Comparison of Group I and Group II patients vs. Group III patients: $P <$ 0.001.

Primary Angiosarcoma of the Breast

Clinicopathologic Analysis of 49 Cases, Suggesting That Grade is not Prognostic

Alessandra F. Nascimento, MD,† Chandrajit P. Raut, MD, MSc,†‡ and Christopher D. M. Fletcher, MD, FRCPath*†*

Abstract: Mammary angiosarcoma is a rare neoplasm, accounting for about 0.05% of all primary malignancies of the breast. It is currently believed that histologic grading of mammary angiosarcomas plays an important role in prognostication. Forty-nine cases of primary angiosarcoma of the breast were retrieved from our files. Clinical details and follow-up information were obtained from referring pathologists and clinicians, and by chart review. All statistics were performed using Fisher exact test and only $P < 0.05$ was considered significant. Recurrence-free survival and overall survival curves were established using Statistica software version 5.5 (StatSoft Inc). All patients were female with ages ranging from 15 to 74 years are alive with no evidence of disease. Statistical analysis evaluating correlation between tumor grade and size, and rate of local recurrence, metastasis, and death owing to disease showed no significant difference among tumors of different grades. The median recurrence-free and overall survival rates for the entire cohort were 2.8 and 5.7 years, respectively. In conclusion, mammary angiosarcoma is a rare disease that affects relatively younger patients. This tumor seems to have an overall similar clinical course as other types of angiosarcoma arising in skin or soft tissue; it carries a moderate risk of local recurrence, and a high risk of metastasis and death. In this large series, there is no correlation between histologic grade and patient outcome, more in line with angiosarcomas at other sites.

Primary and secondary breast angiosarcoma: single center report and a meta-analysis

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Abstract

Background Primary and secondary breast angiosarcoma is a rare and aggressive malignancy with limited published literature. Optimal management is mostly based on expert opinion. Our study aims to describe a single institution experience with breast angiosarcoma and evaluate other publications on this topic to further clarify prognostic outcomes and treatment modalities in this disease.

Methods Twenty two cases of breast angiosarcoma from Roswell Park Comprehensive Cancer Center were retrospectively analyzed. Additionally, a systemic review and meta-analysis was conducted to study the association between survival outcomes, overall survival (OS), and recurrence-free survival (RFS) in both primary (PAS) and secondary breast angiosarcoma (SAS).

Results 9 PAS patients (41%) and 13 SAS patients (59%) were retrospectively analyzed. No significant differences were noted in tumor characteristics and survival outcomes between PAS and SAS. Treatment modality had no significant effects on survival outcomes although adjuvant chemotherapy demonstrated a trend towards improved RFS in high grade tumors. 380 PAS and 595 SAS patients were included in the outcome meta-analysis. Survival outcomes were significantly worse with high grade tumors and tumor size of > 5 cm. Adjuvant radiation therapy demonstrated significantly better RFS, while adjuvant chemotherapy had no effect on survival outcomes.

Conclusion Tumor size and grade seem to be reliable predictors of survival in both PAS and SAS. Mastectomy does not seem to be adding any additional benefit to BCS. Adjuvant radiation therapy showed statistically significant RFS benefit, while adjuvant chemotherapy can be beneficial in high grade tumors.

Prognosis

- Data on whether grade has an impact on prognosis is conflicting.
- Low grade angiosarcomas have the potential to metastasize.
- Axillary lymph nodes metastasis uncommon; axillary dissection recommended only if there is comfirmed lymph node metastasis.
- Distant sites of metastasis include lung, liver, bone, brain.

Molecular genetics

- Unlike postradiation angiosarcomas, MYC amplification is rare.

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Thank You

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