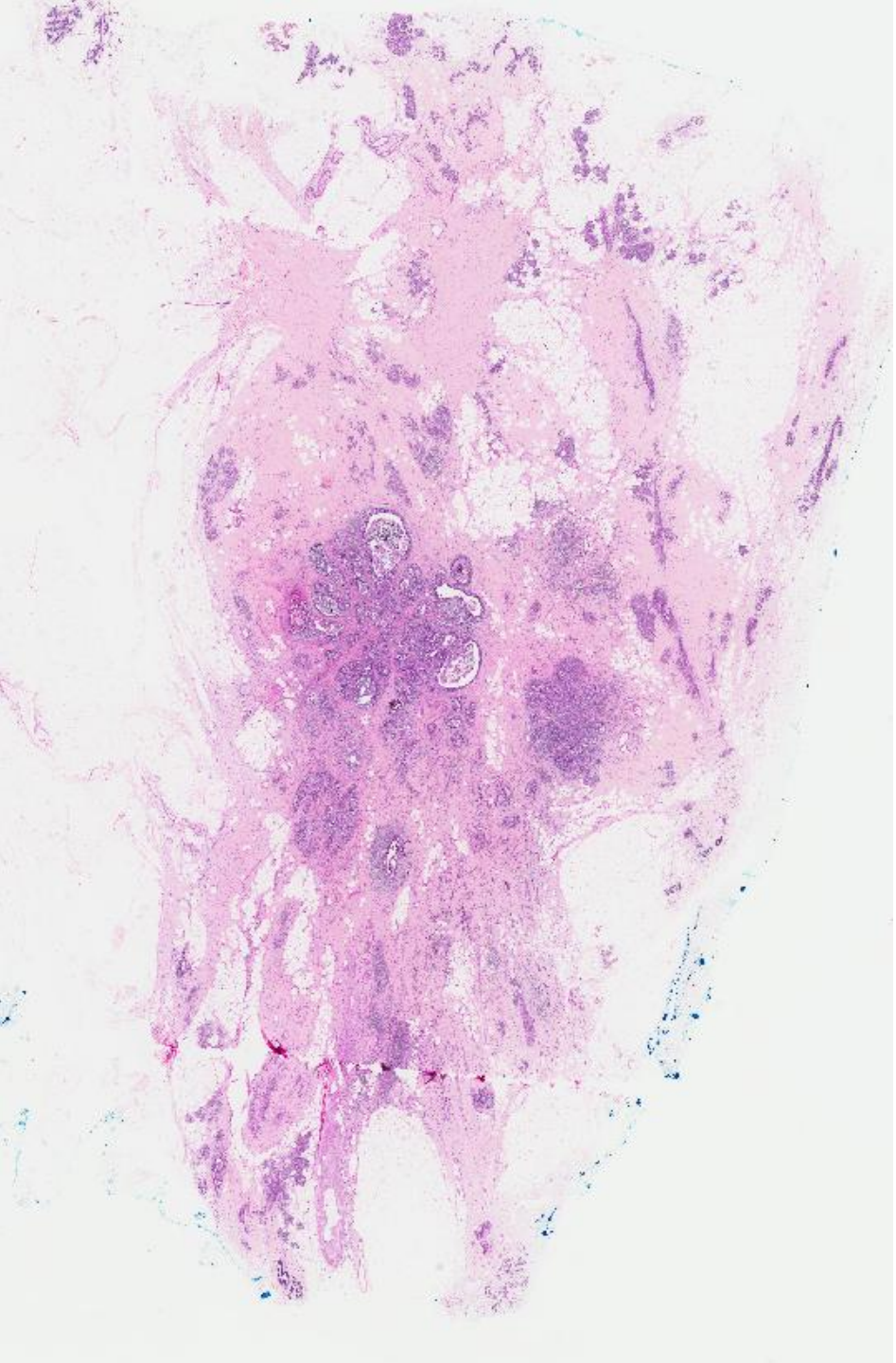
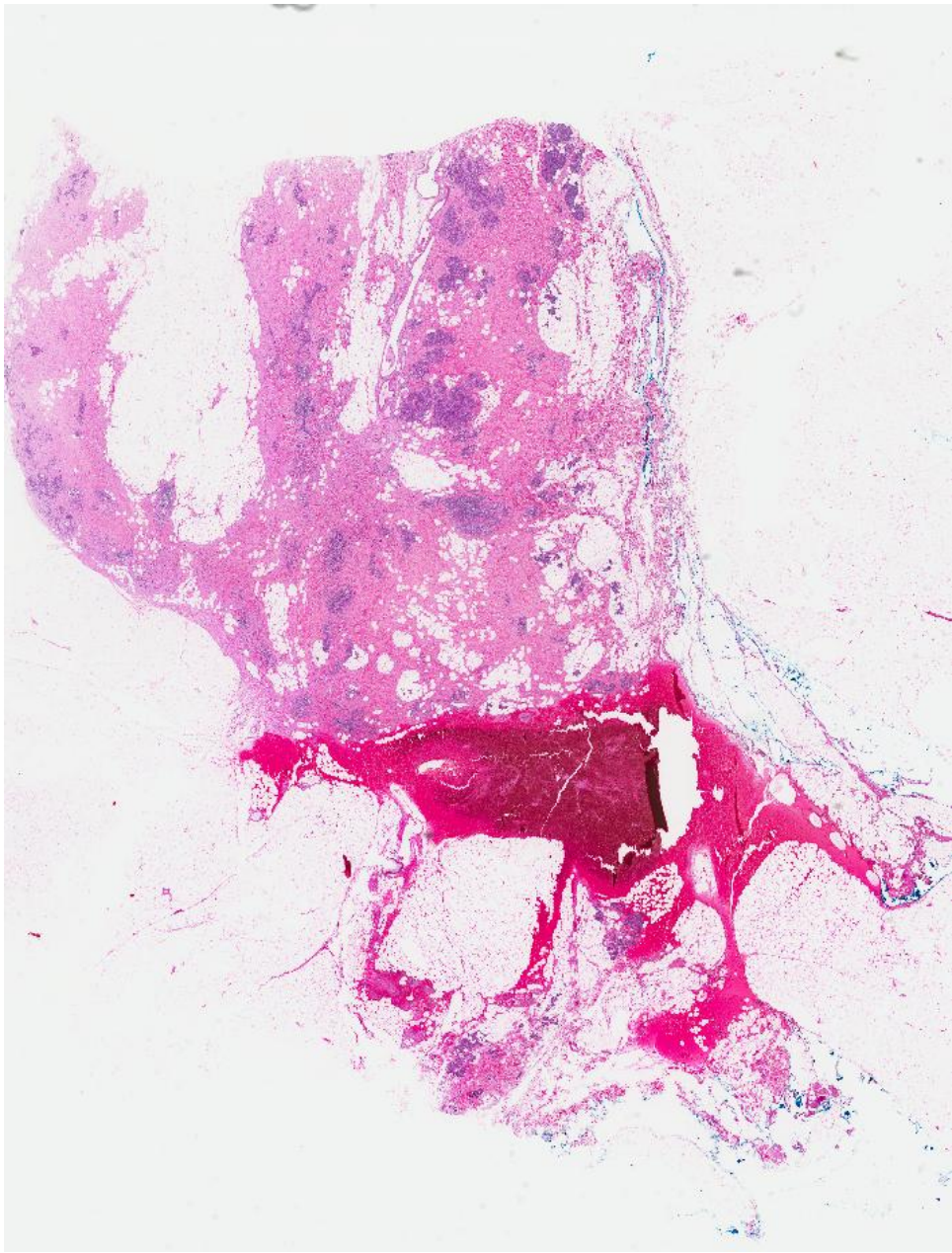
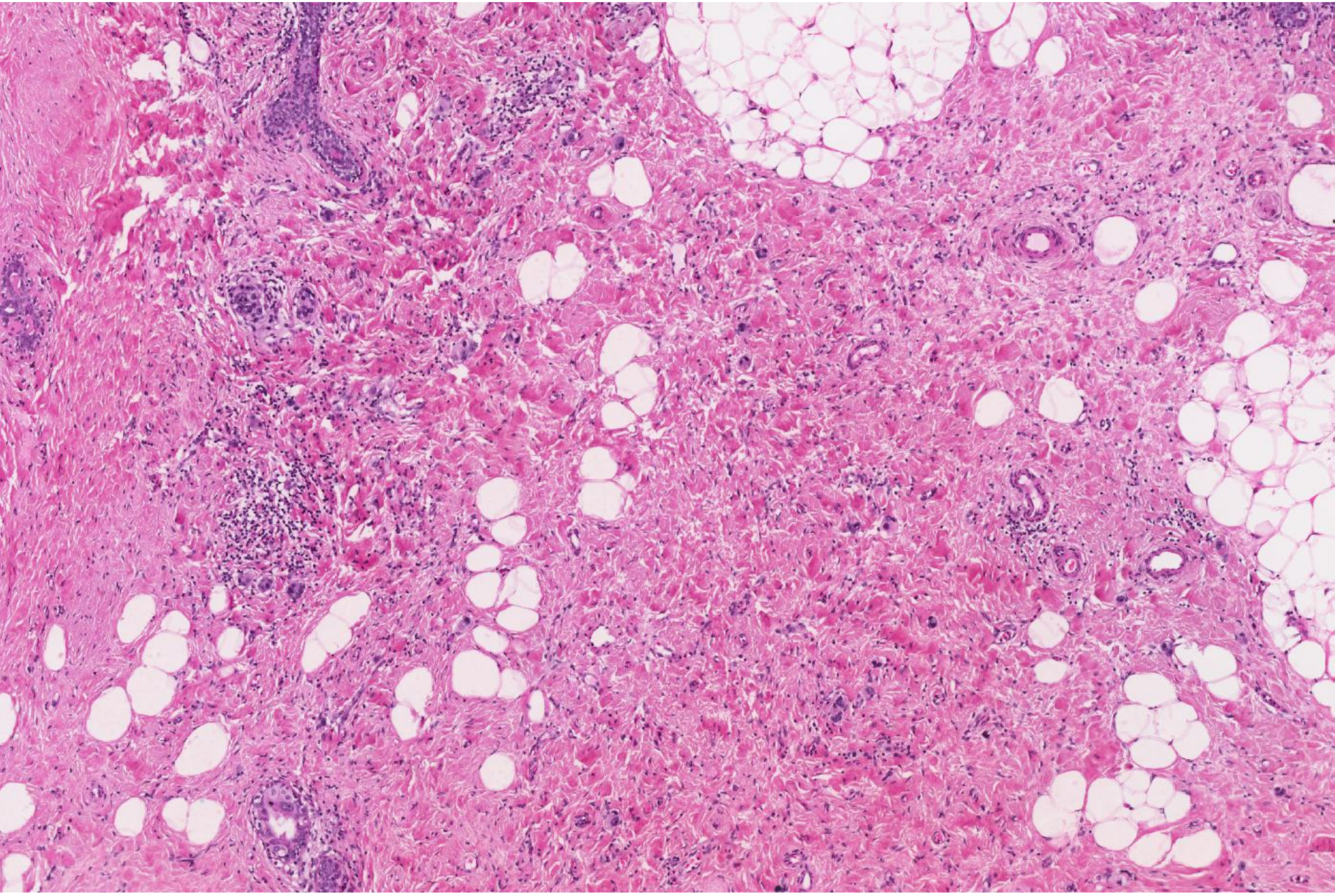
Case 6

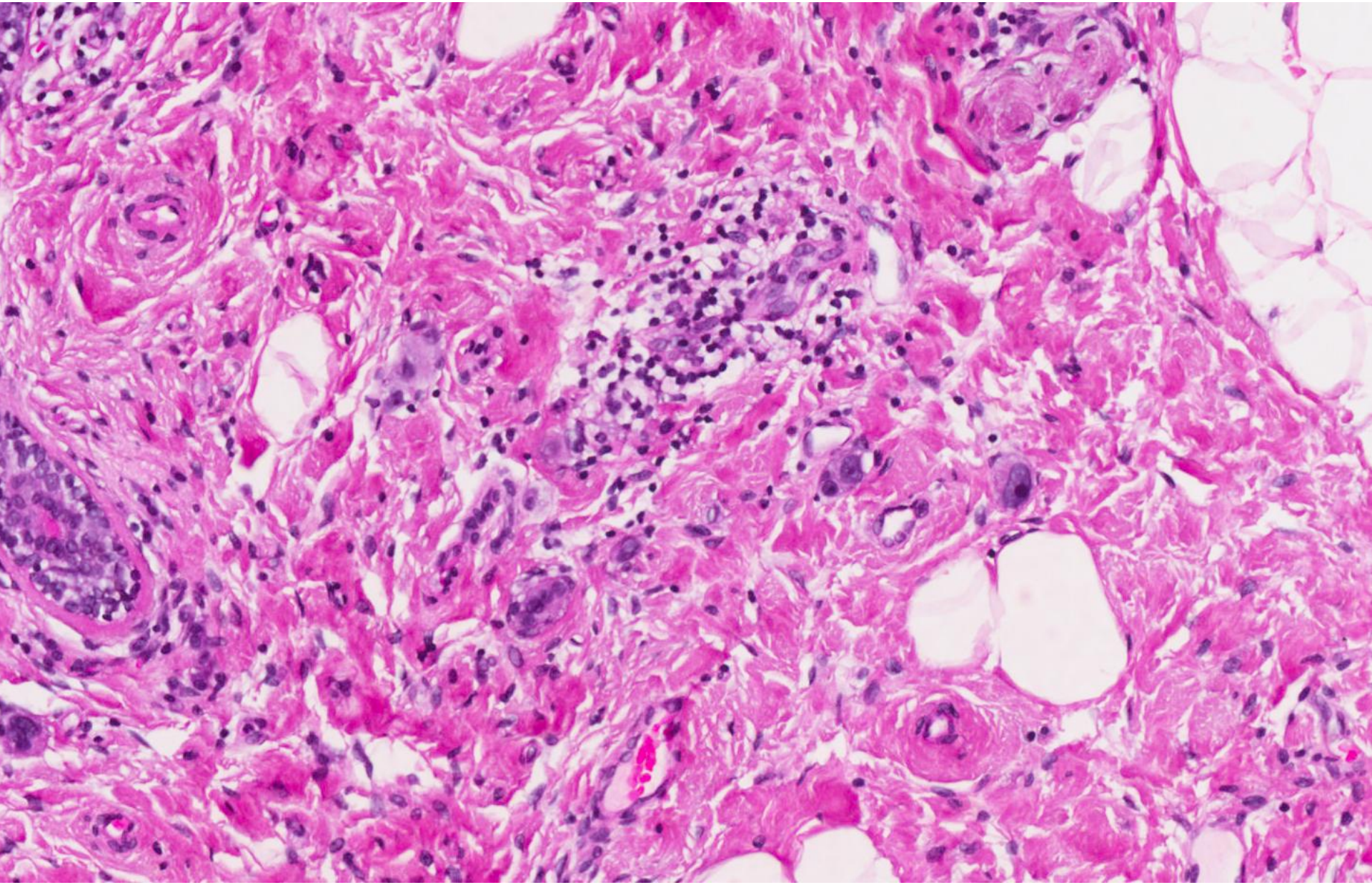
55 year old Chinese lady underwent neoadjuvant chemotherapy after a trucut core biopsy of a left breast mass yielded a diagnosis of invasive breast carcinoma.

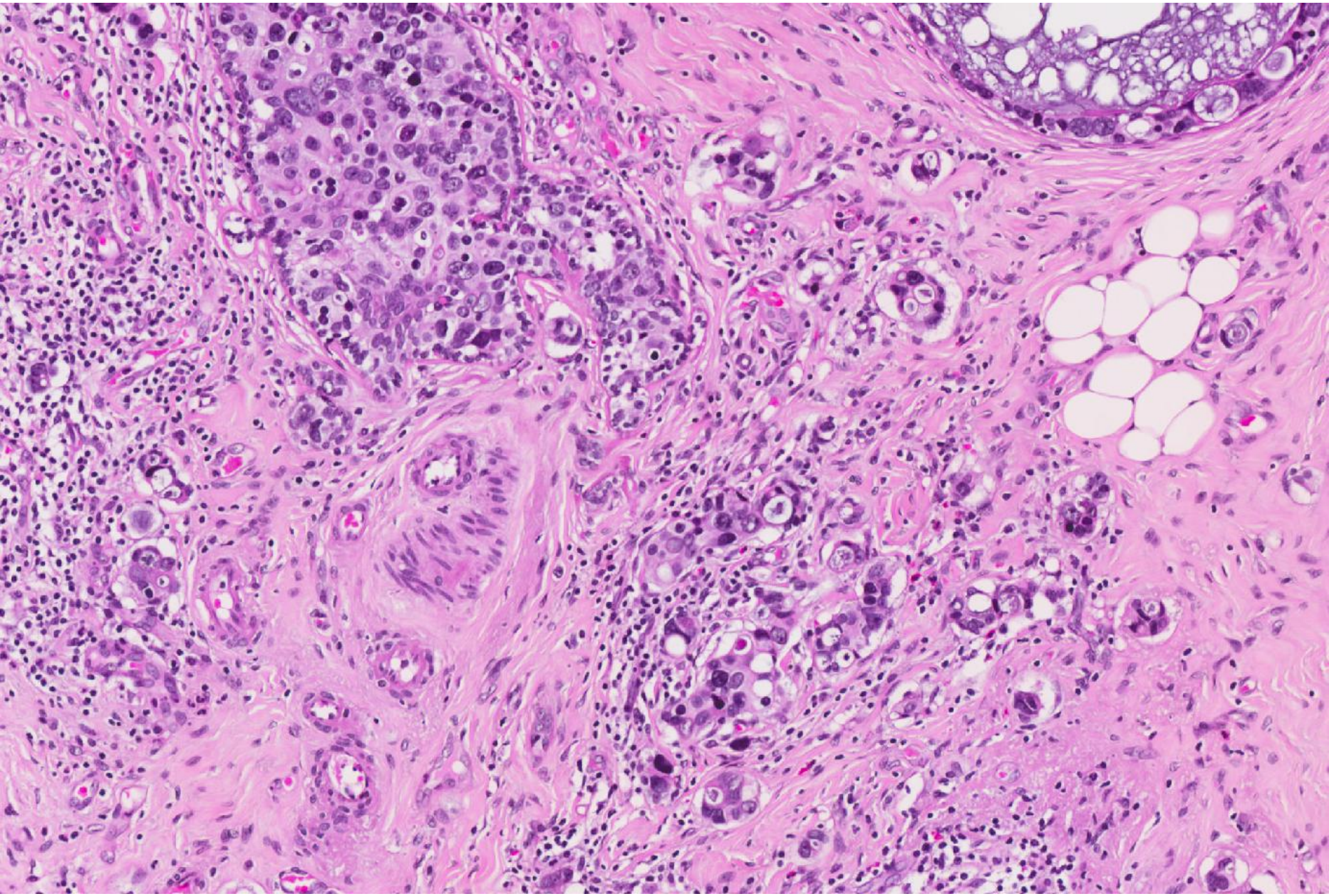
Wide excision and axillary clearance performed after completion of chemotherapy.

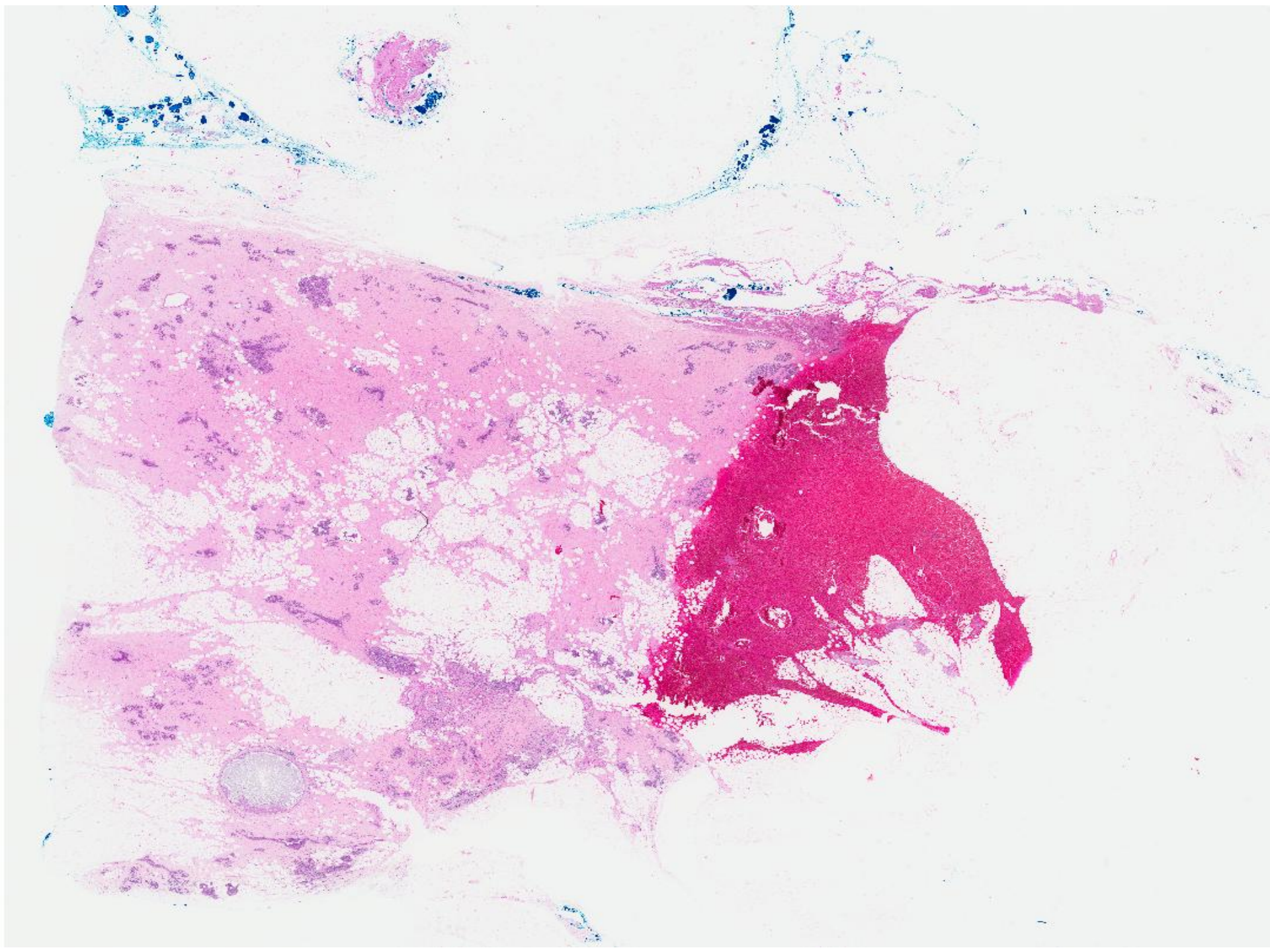


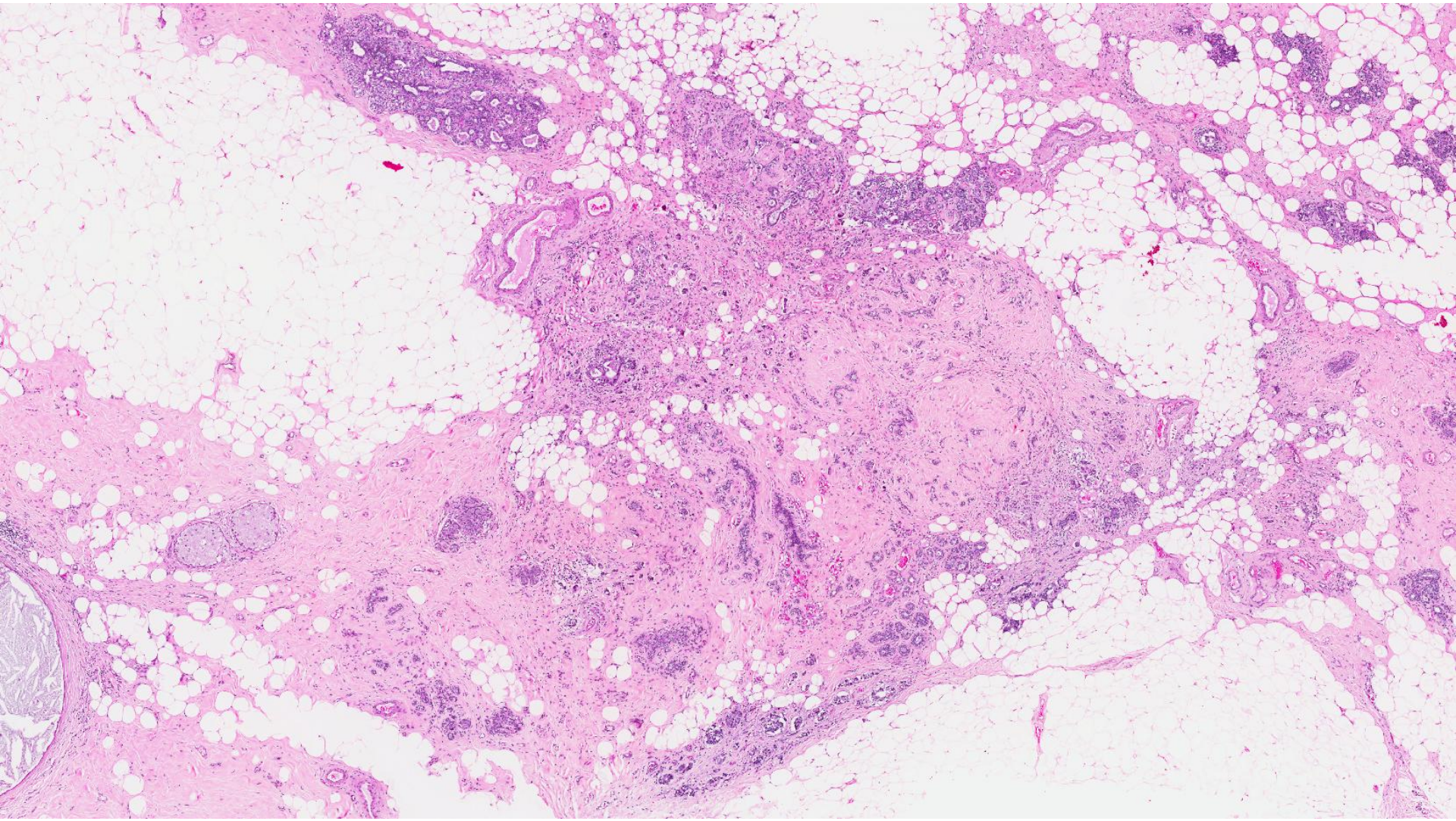


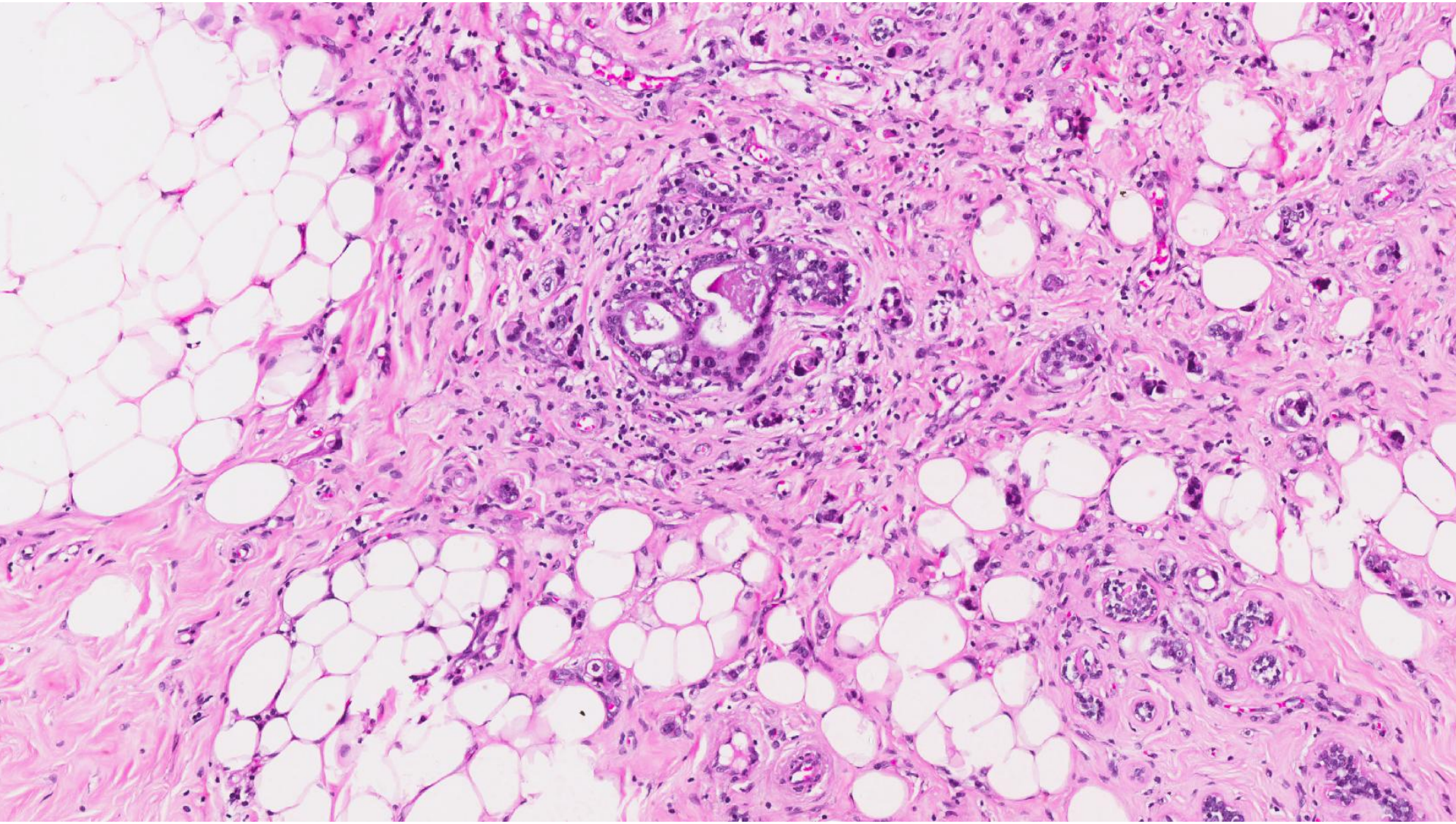


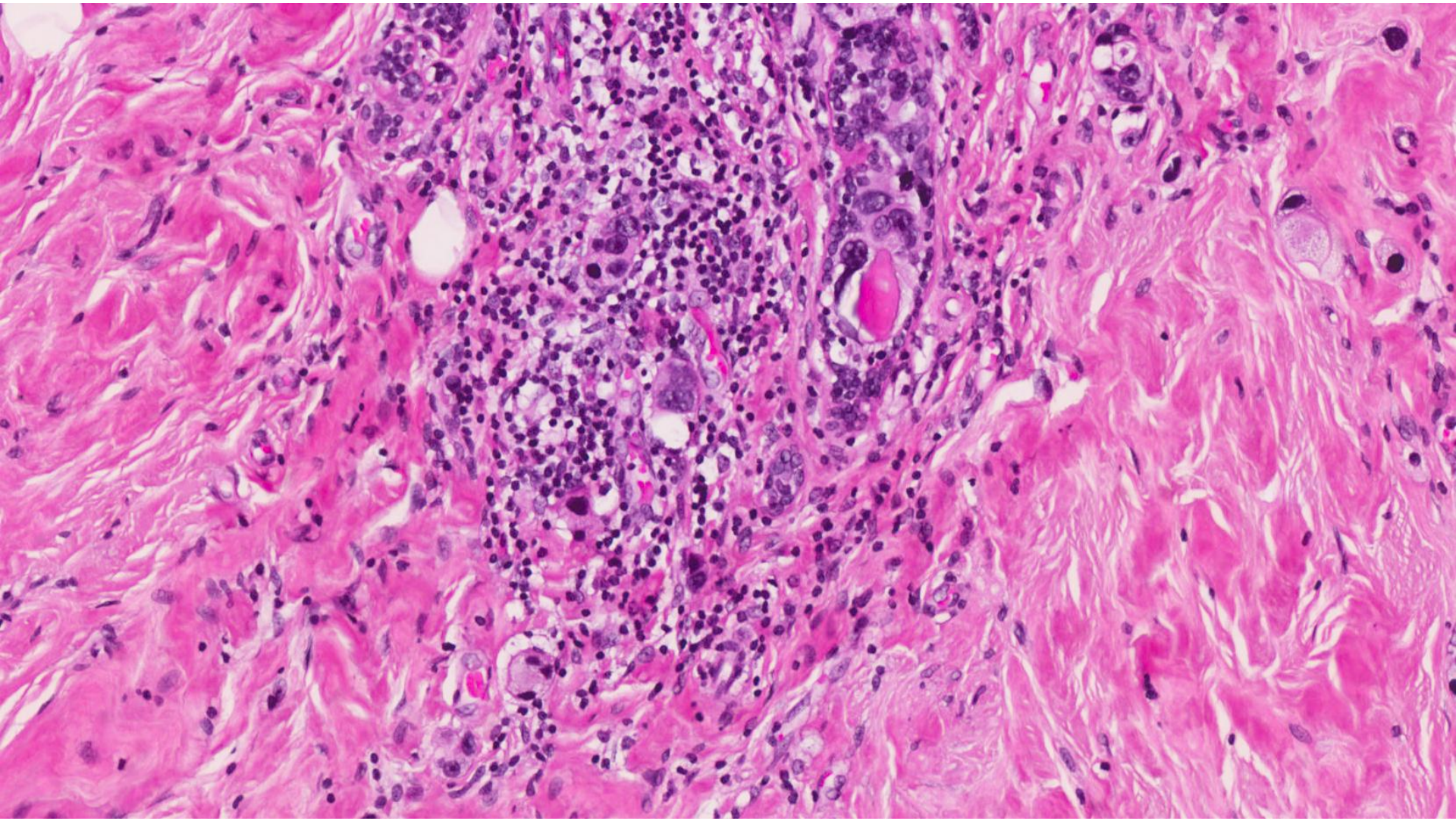


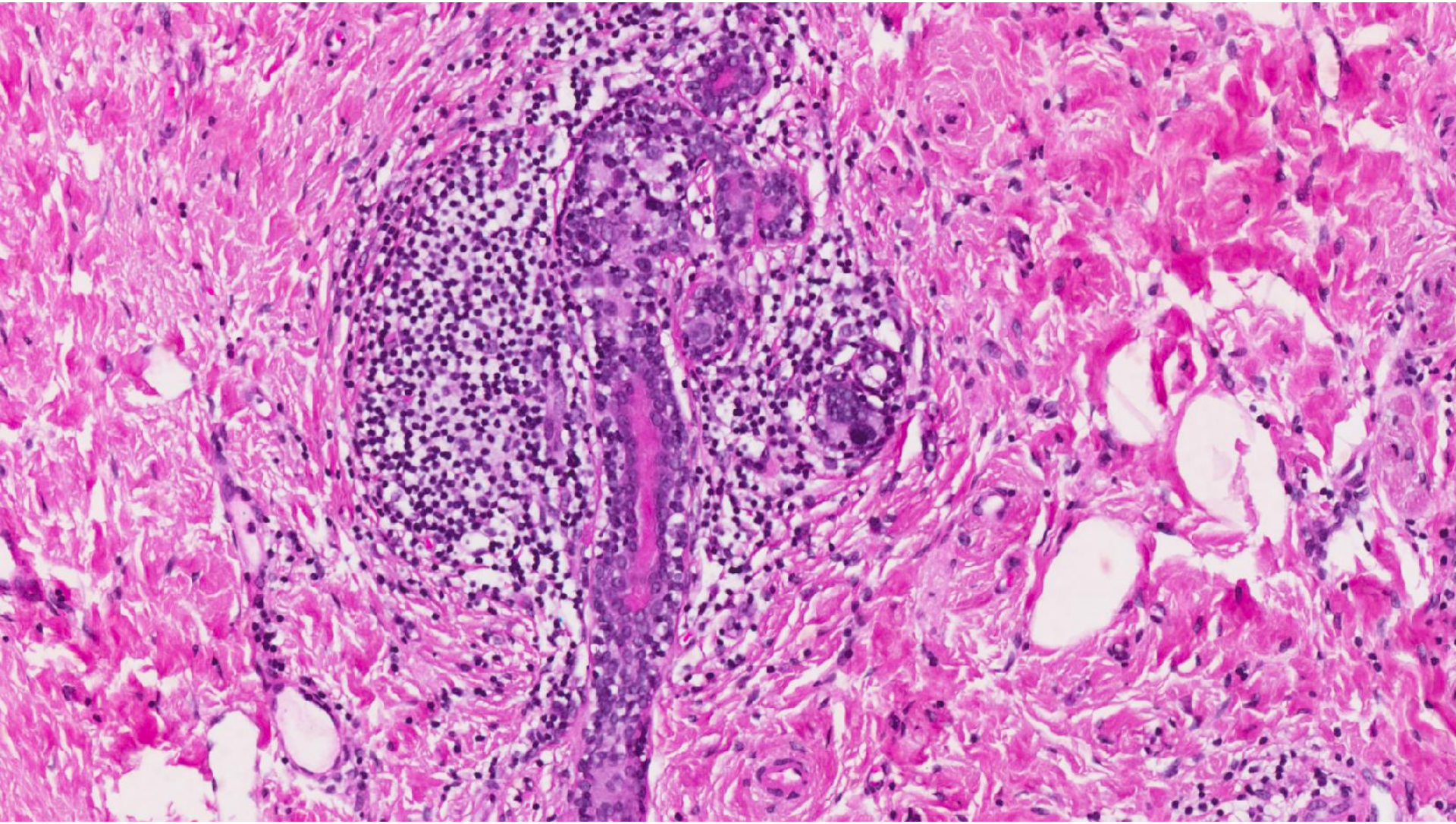


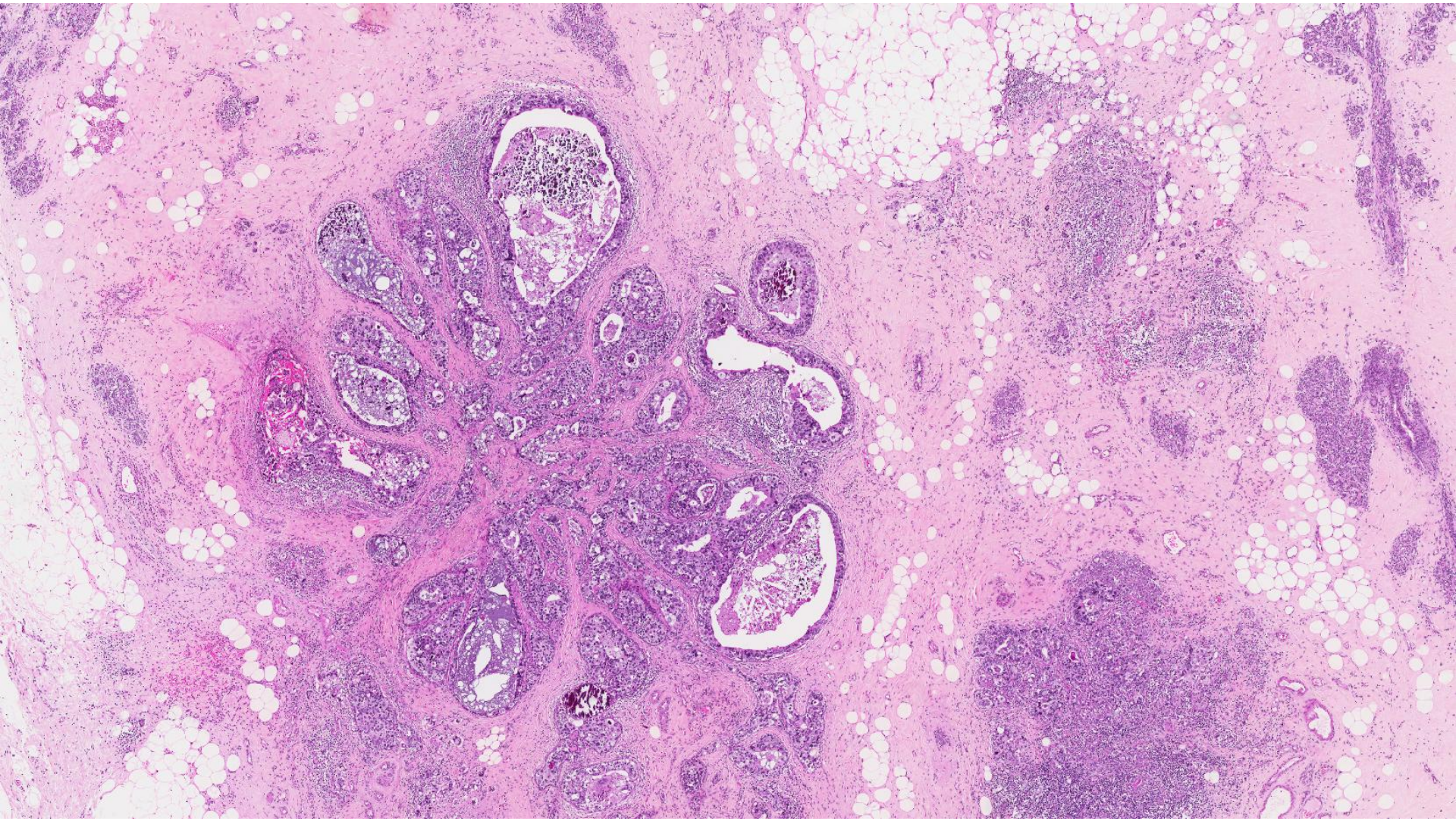


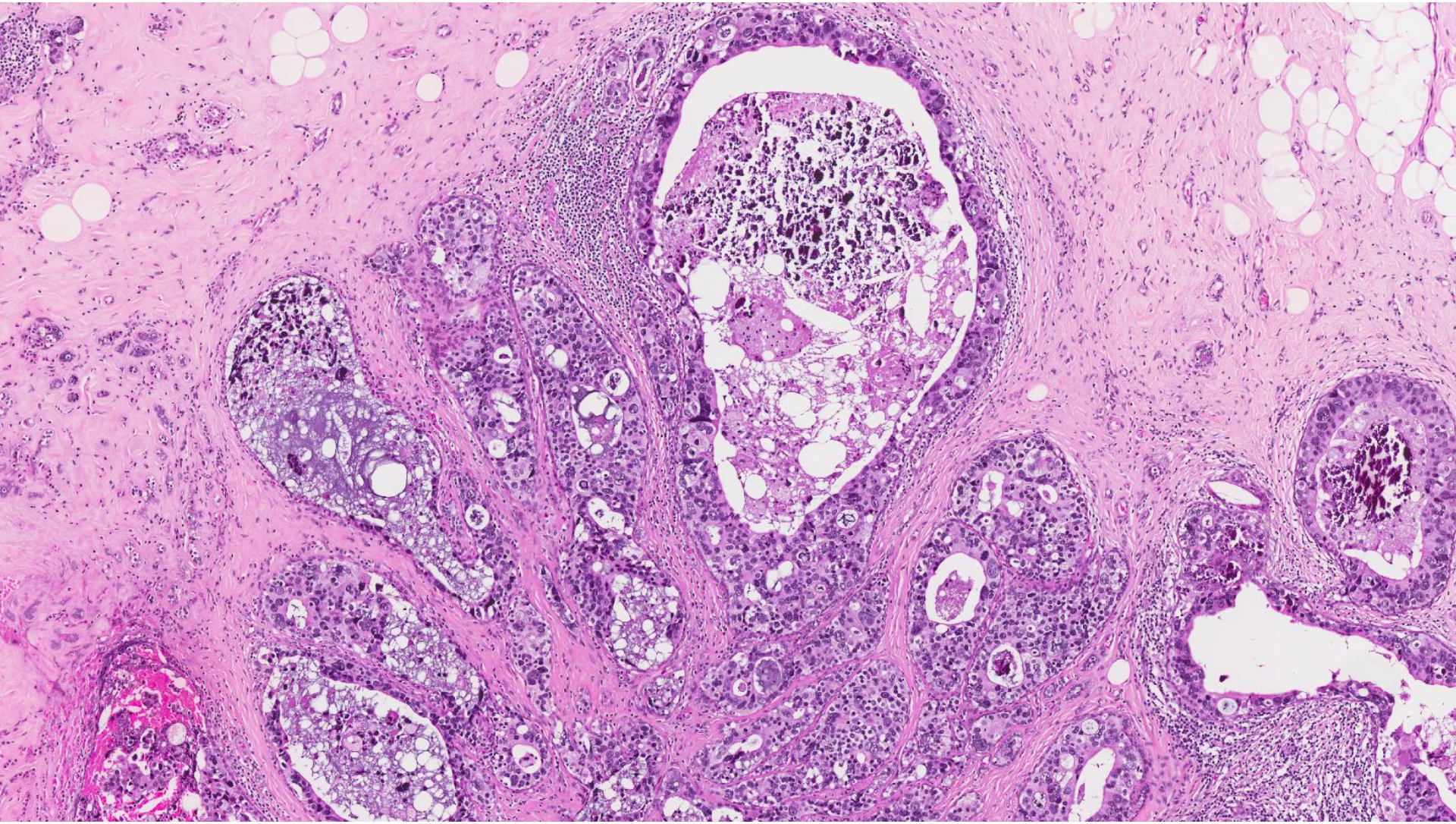


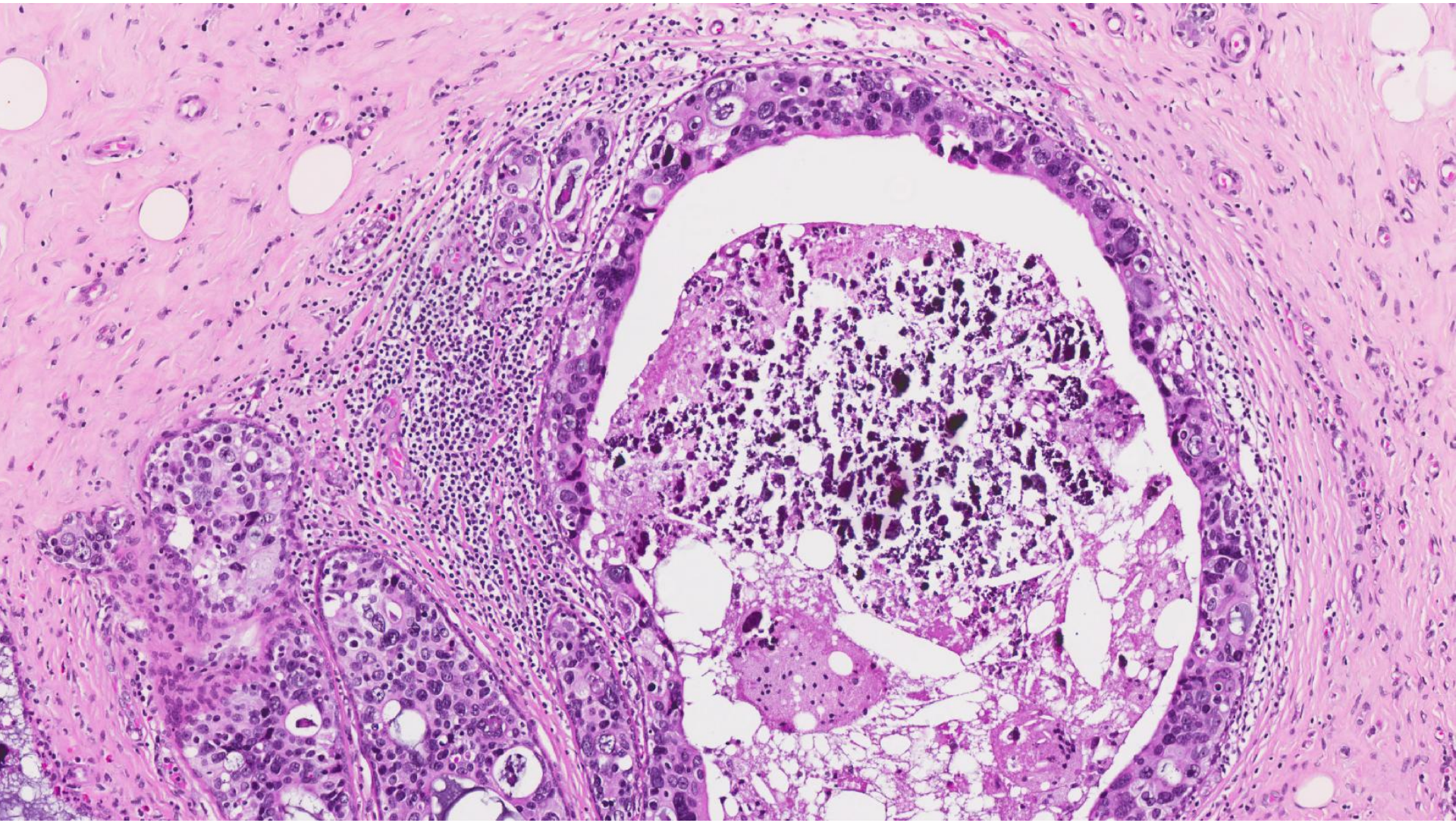


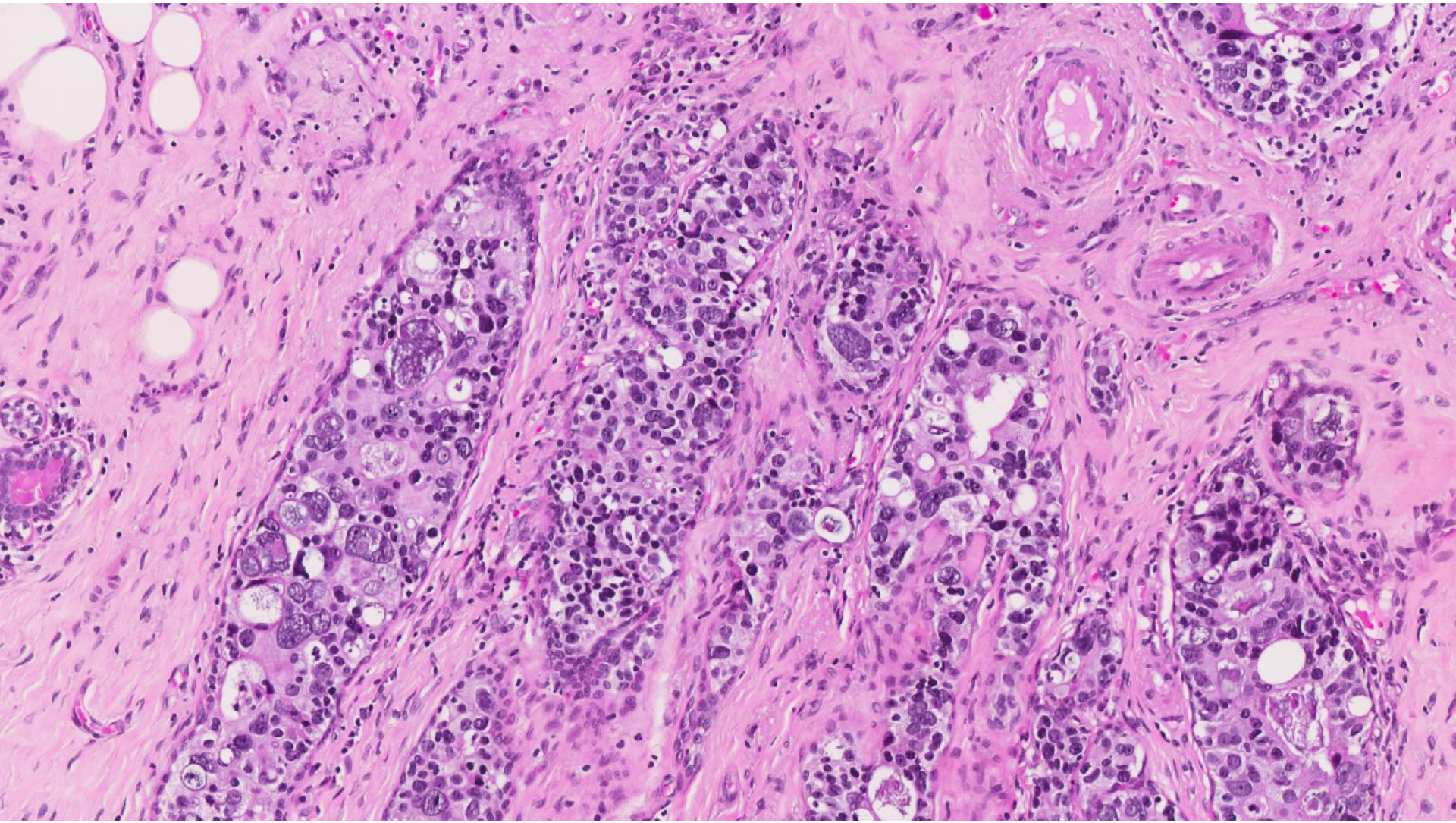












Diagnosis

Residual invasive and in situ ductal caricnoma, maximum extent of invasive carcinoma is 10 mm.

Two axillary lymph nodes contain metastatic carcinoma.

Chemotherapy changes.

Post-therapy effects

- Include morphological and biological alterations in cancers and normal tissue after any treatment.
- Most commonly used to describe changes seen after neoadjuvant therapy (primary systemic therapy or presurgical therapy).
- Extent of residual invasive carcinoma, together with lymph node status, is a powerful predictor of long-term survival.

Post-therapy specimens

- Residual carcinoma or tumour bed must be found and assessed.
- Prior placement of clips is helpful.
- In cases of pathological complete response (pCR), the tumour bed is identified macroscopically as a fibrous, rubbery area.
- Gross changes can be subtle.
- Residual cancers are soft and difficult to palpate.
- Macroscopic size of identifiable residual tumour or multiple tumour foci, plus distances from resection margins, should be recorded.

Post-therapy specimens

- Microscopy:
  - Therapy-resistant cancer – no morphological alteration.
  - Commonly, carcinoma is less cellular and dispersed as small nests across the tumour bed.
  - Size and cellularity of residual cancer foci should be recorded.
  - Cancer cells can appear bizarre with large irregular nuclei, vacuolated cytoplasm.
  - Residual cancer can be discovered only in lymphatic spaces, a finding associated with recurrence after neoadjuvant therapy.
  - Lower mitotic counts.
  - Histological grade should still be reported.

Post-therapy specimens

- Pathological complete response:
  - Loose oedematous, vascularised fibroelastotic area with chronic inflammatory cells and macrophages marking the tumour bed.
  - Immunohistochemisty may be needed to distinguish cancer cells from benign histiocytes.
- Ductal carcinoma in situ may be present without invasive cancer, and this does not preclude a diagnosis of pCR. Such patients have a good prognosis.

Table 1.05 Comparison of systems for evaluating response to neoadjuvant therapy for breast cancer: pathological evaluation

Name of system	Reference	Factors evaluated in the breast	pCR in the breast	Lymph nodes included	No. of categories of partial response
B-18	{449}	Any treatment effect on invasive carcinoma	No invasive carcinoma	Yes,[a] size of largest metastasis	1
Chevallier	{262}	Presence of invasive carcinoma with sclerosis or fibrosis	No invasive or in situ carcinoma	Yes	1
Sataloff	{1266}	Presence of invasive carcinoma Presence of treatment effect	Total or near total therapeutic effect	Yes, ± treatment effect	2
Miller-Payne	{1023}	Presence of invasive carcinoma Cellularity	No invasive carcinoma	No	3
RCB (residual cancer burden)	{1390}	Size of tumour bed in two dimensions Cellularity of residual invasive carcinoma	No invasive carcinoma	Yes, number and size of largest deposit	2 (with individual scores calculated for each case)
AJCC (y)	{221}	Size of invasive carcinoma	No invasive carcinoma	Yes, number	Up to 4 (dependent on the initial AJCC T and N categories)
MNPI (Modified Nottingham Prognostic Index)	{11}	Size of invasive carcinoma Tumour grade	No invasive carcinoma	Yes, number	3
Pinder	{1109}	% of tumour remaining in breast	No invasive carcinoma	Yes, presence of evidence of response	Breast: 3 Lymph nodes: 1

AJCC, American Joint Committee on Cancer; ER, estrogen receptor; N, node; pCR, pathological complete response; T, tumour.

[a] Survival according to lymph-node status was analysed separately from response in the breast.

WHO Classification of Breast Tumours 2012