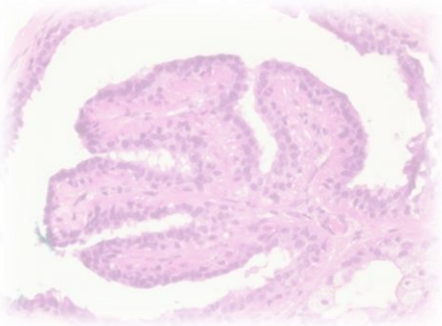
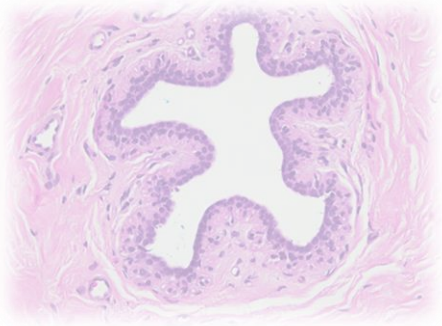
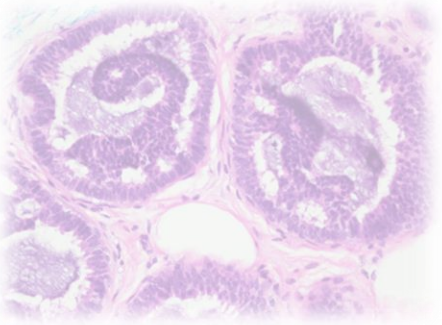
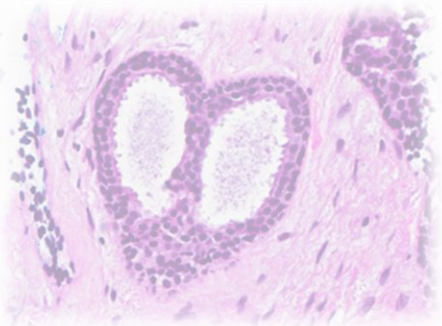
Breast Pathology Course 2019

Case 9

67 year old Thai female.
Right breast palpable mass.
Radiology showed an 8.7 x 6.7cm well-defined macrolobulated mass with calcifications at the right breast UOQ, classified as BIRADS 4.
Section provided of the mass.

Contributed by Dr Kittisak Wongchansom, Bangkok Thailand

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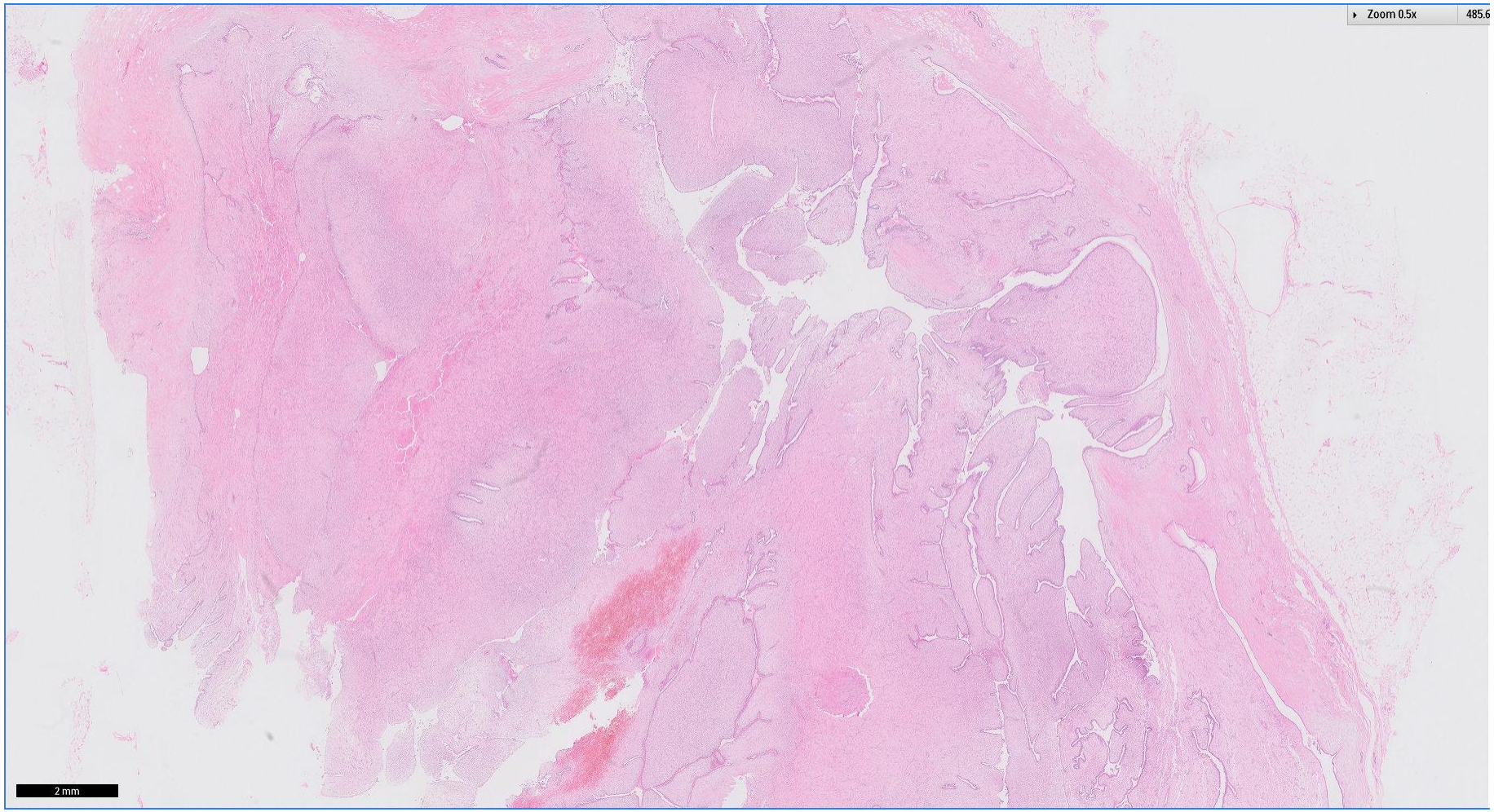

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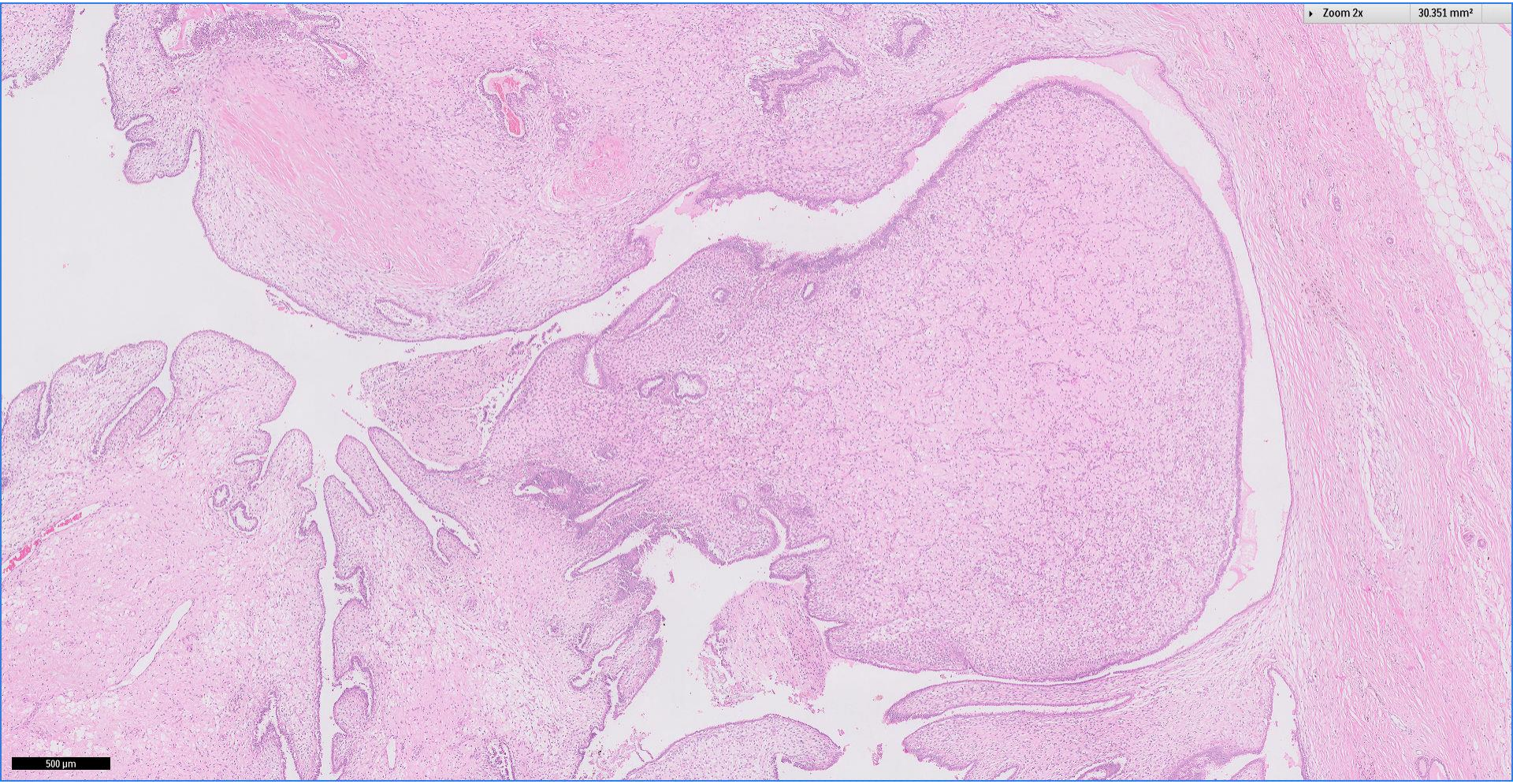

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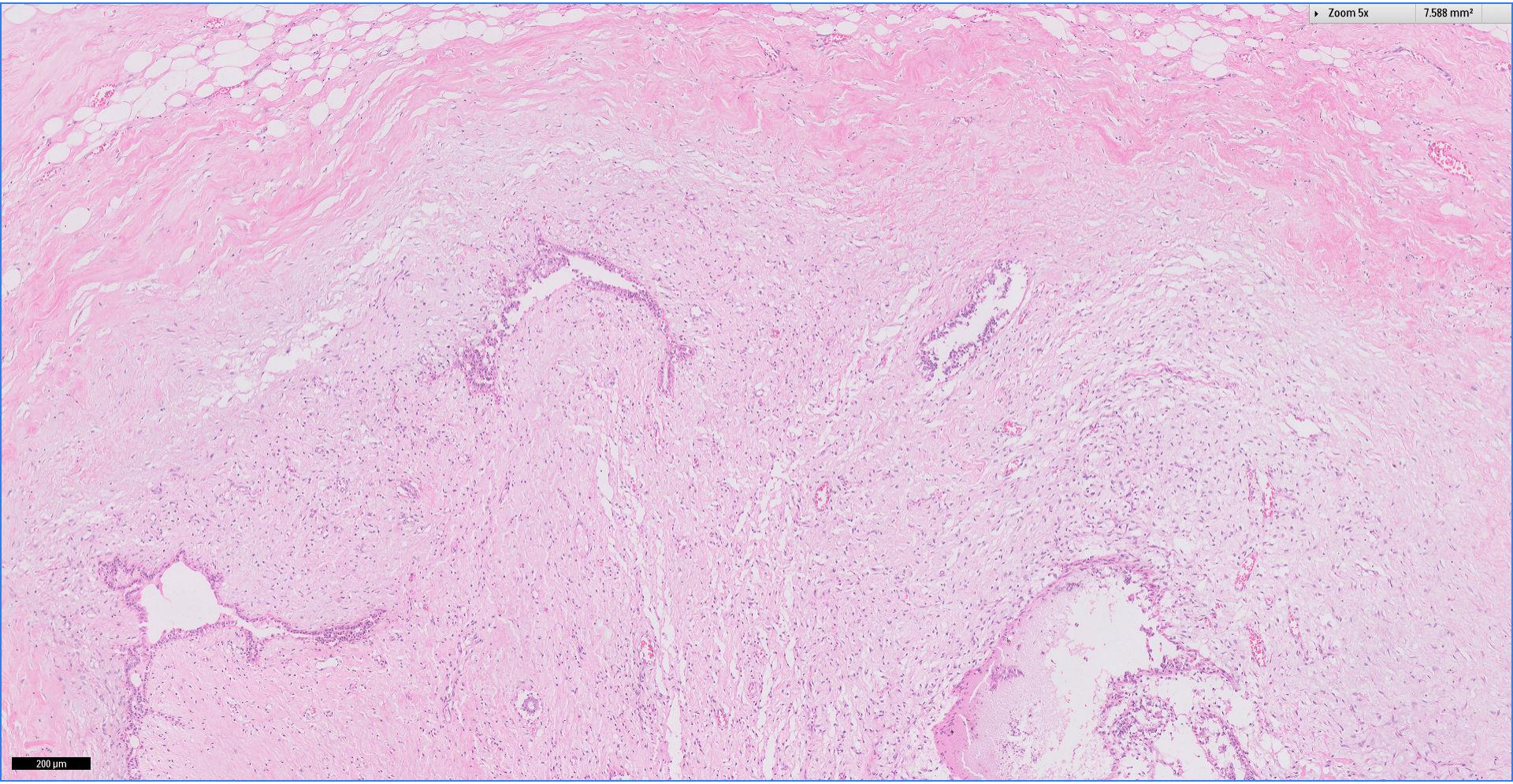

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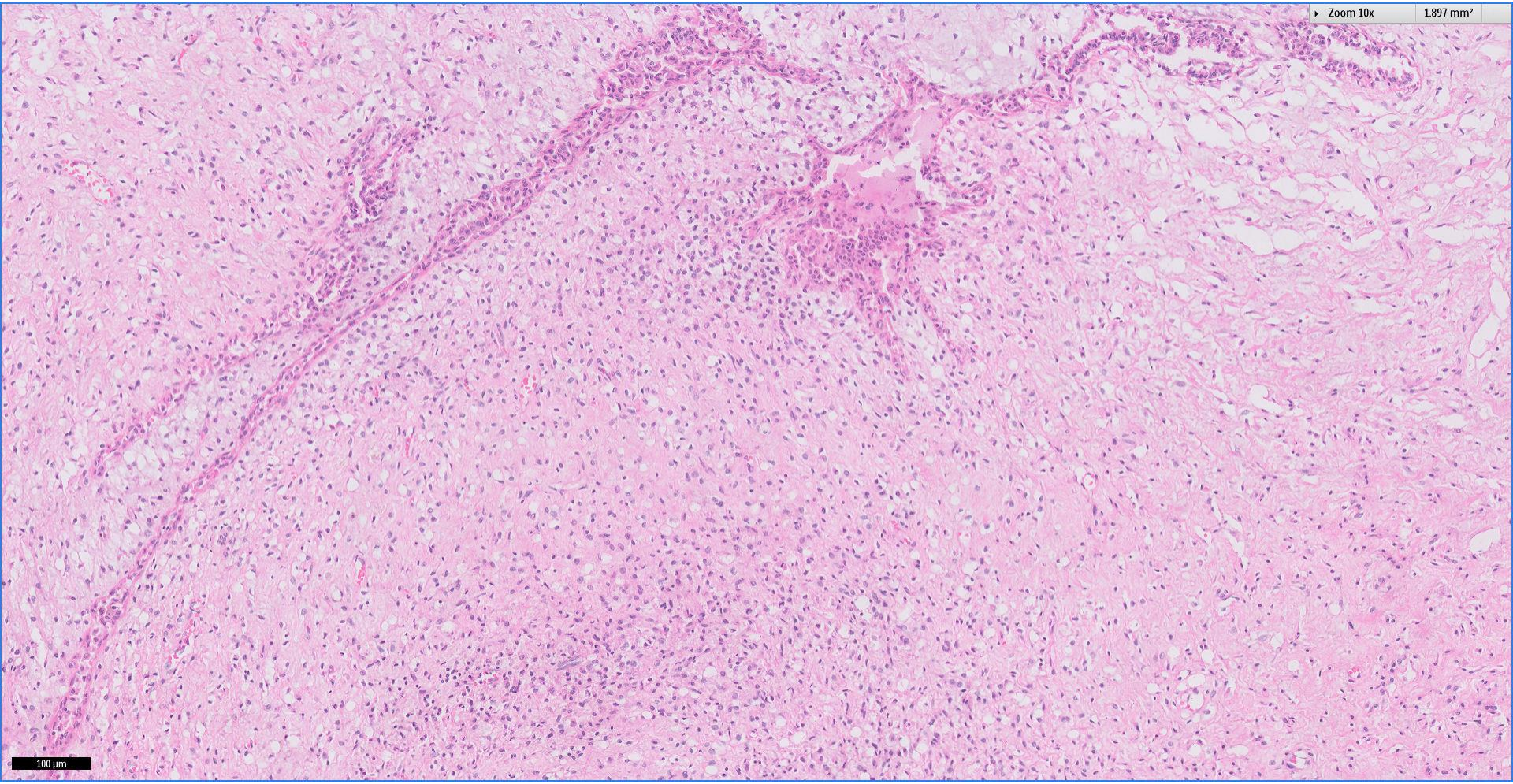

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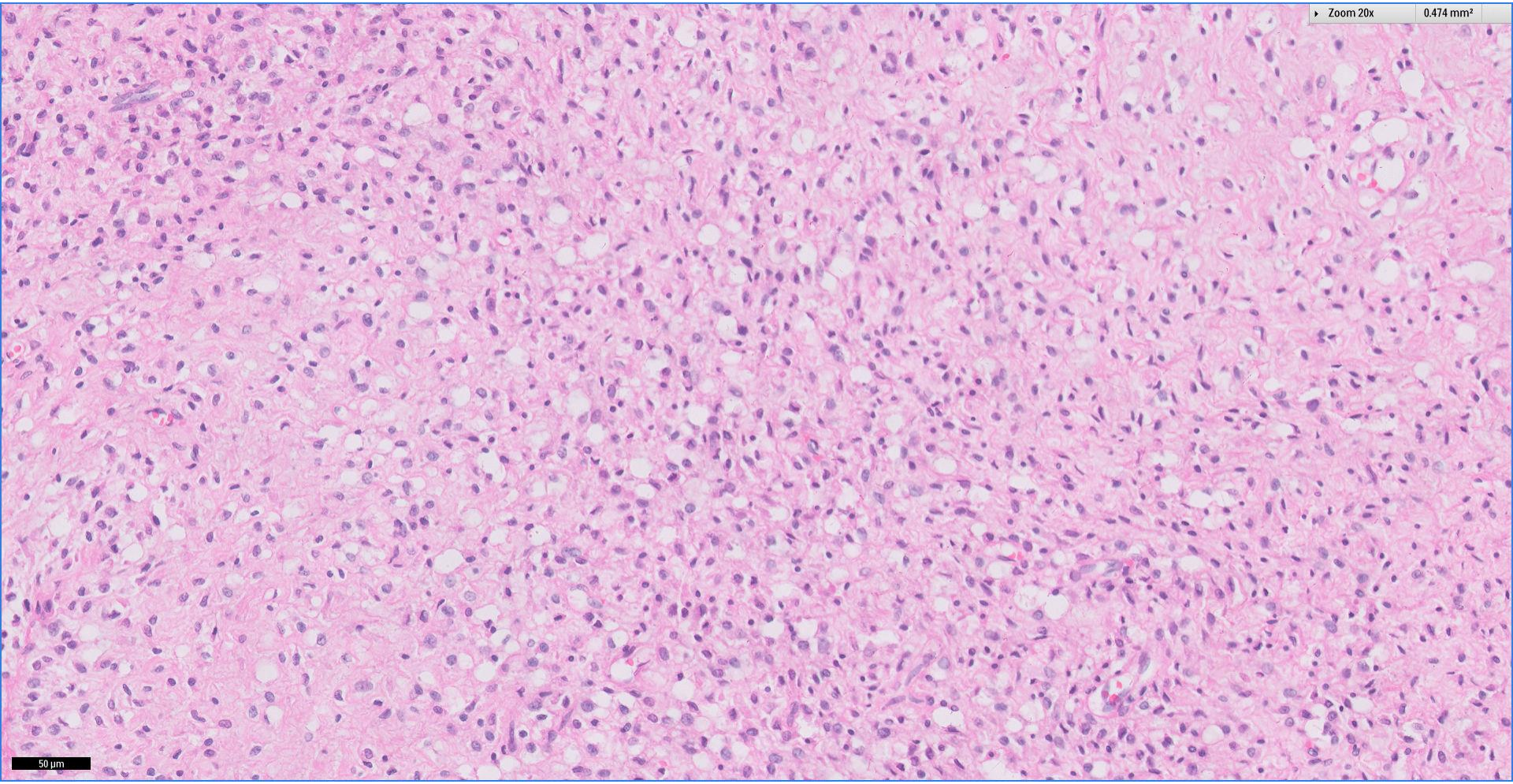

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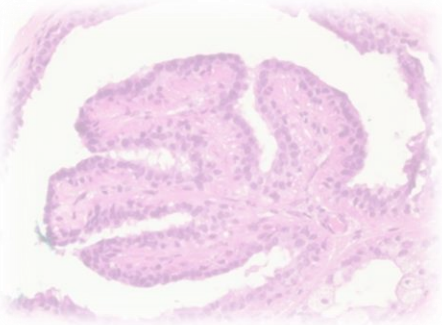

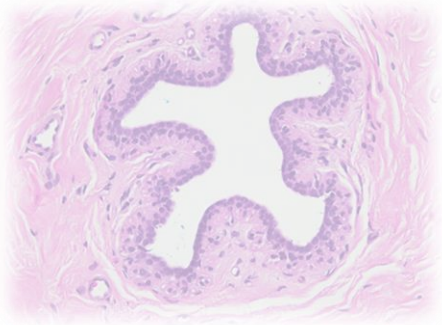

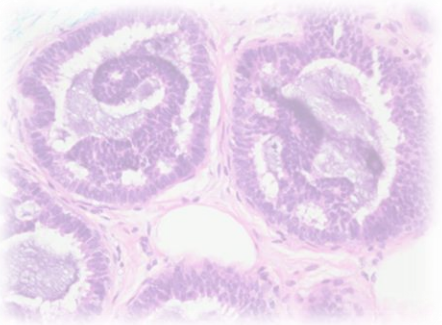

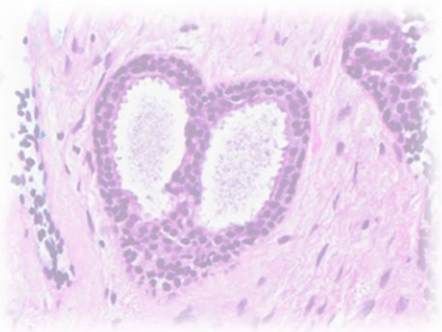

Case 9

Additional findings

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Genomic results

Sample ID: 61213013/11

16-gene FEB panel results: *MED12*, *TERT* promoter, *RARA*, *SETD2* and *KMT2D* mutations

Remark: Consistent with the borderline grade

Case 9

Gene	Type of Mutation	Variant Allele Frequency
MED12	Missense	31.78
TERT	Promoter mutation	34.79
RARA	Missense	34.30
SETD2	Missense	39.09
KMT2D	Missense	52.42

Comparison of 16 gene panel results between borderline and malignant phyllodes tumours

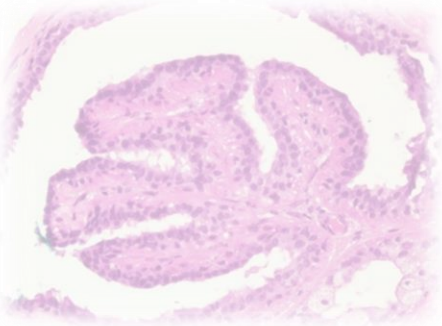
Gene symbol	Borderline (n = 117)	Malignant (n = 54)	p-value
MED12	58 (50%)	20 (37%)	0.1398
TERT	71 (61%)	25 (46%)	0.0975
KMT2D	19 (16%)	10 (19%)	0.8268
RARA	22 (19%)	4 (7%)	0.0668
FLNA	26 (22%)	10 (19%)	0.6881
SETD2	18 (15%)	6 (11%)	0.6362
TP53	10 (9%)	9 (17%)	0.1245
RB1	8 (7%)	6 (11%)	0.375
NF1	6 (5%)	6 (11%)	0.1982
PTEN	1 (1%)	6 (11%)	0.0043 *
PIK3CA	5 (4%)	3 (6%)	0.7085
EGFR	8 (7%)	2 (4%)	0.5074
BCOR	6 (5%)	3 (6%)	>0.9999
ERBB4	2 (2%)	2 (4%)	0.5915
MAP3K1	5 (4%)	0 (0%)	0.1808
IGF1R	3 (3%)	1 (2%)	>0.9999

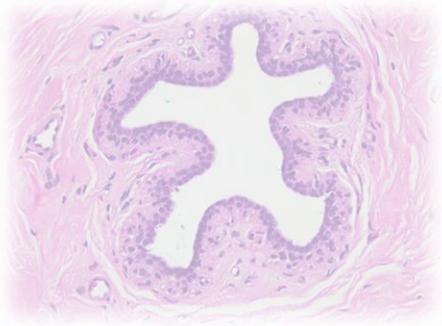
Case 9

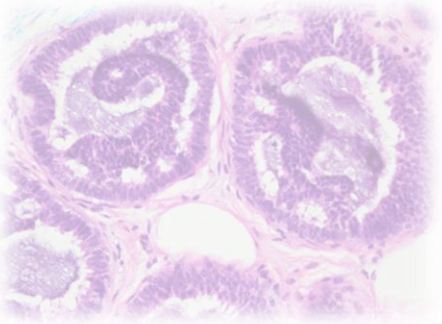
Diagnosis, case 9

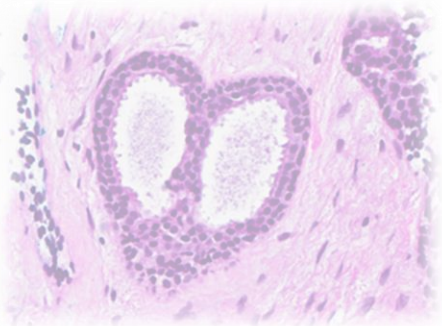
- Right breast mass:

  Borderline phyllodes tumour, 8cm.









Questions

- *Is there round cell liposarcoma in this phyllodes tumour?*

  No

- *Is the diagnosis of liposarcoma indicative of a malignant phyllodes tumour?*

  No

Liposarcoma in phyllodes tumours

- Although liposarcoma was traditionally regarded as a malignant heterologous component, there is evidence to suggest that metastatic risk is low when well-differentiated liposarcoma occurs as the sole heterologous element in a phyllodes tumour.
- These abnormal adipocytes within phyllodes tumours lack *MDM2* or *CDK4* amplifications, in contrast to extramammary well-differentiated liposarcoma.
- Therefore, it is recommended that a diagnosis of malignant phyllodes tumour is not made based purely on the finding of well-differentiated liposarcoma, but also on the basis of other stromal features.
- Rare pleomorphic liposarcomas in phyllodes tumours have shown more-adverse outcomes.
- Although myxoid liposarcoma has been described in phyllodes tumours, the lack of associated characteristic molecular aberrations calls into question its true existence within phyllodes tumours.

WHO 2019

Correlation of phyllodes tumour grades with genomic aberrations, *J Pathol. 2019 Aug 8.*

- A significantly higher number of genetic aberrations was observed **with increasing grade of PTs**, in particular with regard to ***TERT*** promoter (32% vs 61% vs 46%, p<0.0001), ***FLNA*** (13% vs 22% vs 19%, p=0.0289), ***TP53*** (3% vs 9% vs 17%, p=0.0003) and ***RB1*** (3% vs 7% vs 11%, p=0.0297) for benign, borderline and malignant PTs respectively.
- ***MED12*** mutations on the other hand significantly decreased as the PTs progressed (62% vs 50% vs 37%, p=0.0006).
- A comparison between **borderline and malignant PTs** did not show significant differences, apart from ***PTEN*** (1% vs 11%, p=0.0043).

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Thank You

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