

CASE OF THE MONTH-OCTOBER 2025
GLANDULAR CELLS IN A LYMPH NODE : THINK TWICE BEFORE CALLING
METASTASIS

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CLINICAL PRESENTATION

This is a **77-year-old woman** with a 10-mm **BI-RADS 4 mass** in the upper inner quadrant of the left breast. Core needle biopsy shows **invasive carcinoma of no special type (NST), Nottingham grade II (Elston–Ellis). Hormone receptors positive (100%), HER2 1+, Ki-67 20%**. Homolateral **axillary lymph node** ultrasound demonstrates **cortical thickening to 4 mm**. An ultrasound-guided fine-needle aspiration of the atypical lymph node was performed. Two direct smears were prepared and stained with MGG.

CYTOLOGICAL FINDINGS

Smears show a **hemorrhagic and lymphocyte-rich** specimen, containing **numerous foamy histiocytes**, admixed with **a few clusters of epithelial glandular cells** and rare **fibroconnective stromal fragments**. Most epithelial cell clusters formed regular, two-dimensional sheets; a minority formed three-dimensional clusters with mild nuclear atypia. One epithelial cluster demonstrates abundant more eosinophilic cytoplasm and slightly enlarged anisonucleosis nuclei.

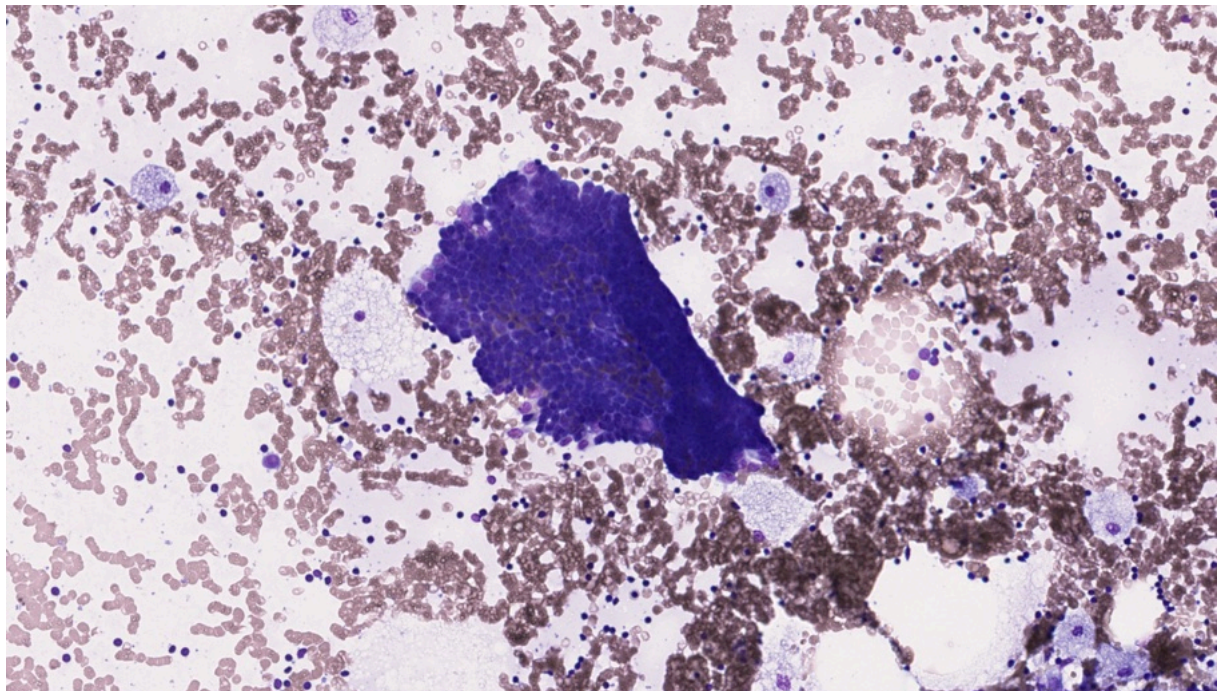


Figure 1. Epithelial flat honeycomb sheet composed of regular cells with round-to-oval, equidistant nuclei, without atypia.

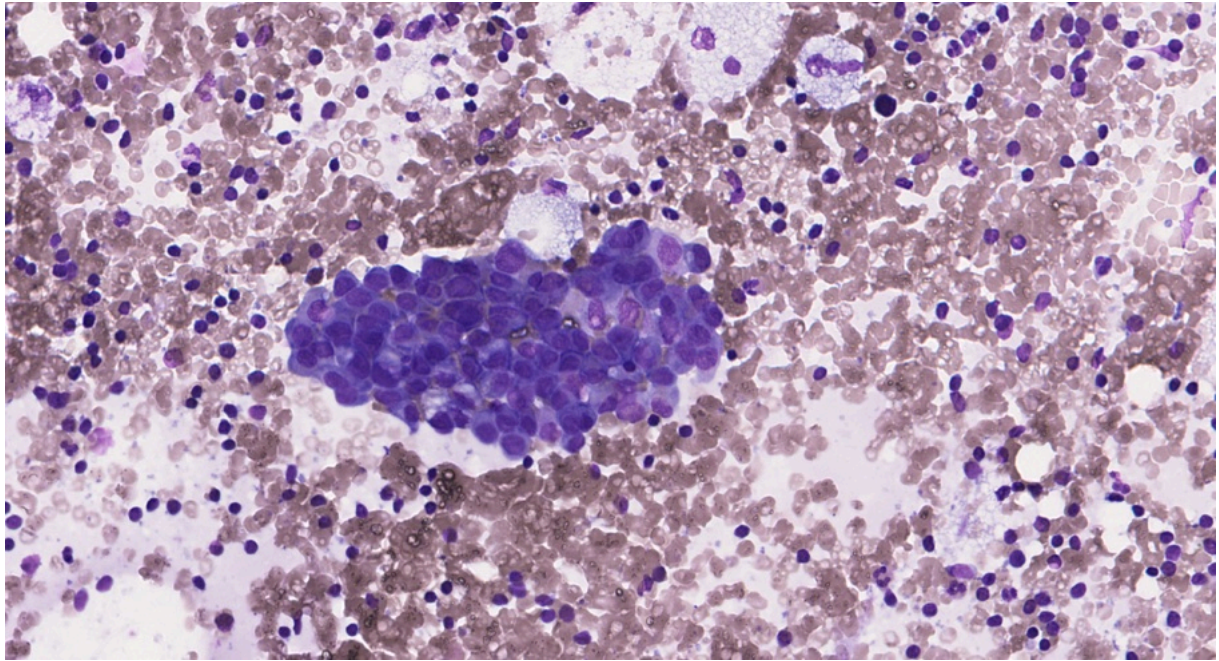


Figure 2. An epithelial cluster, composed of enlarged polygonal cells with more abundant and more eosinophilic cytoplasm, shows nuclei that are slightly enlarged with occasional nucleoli.

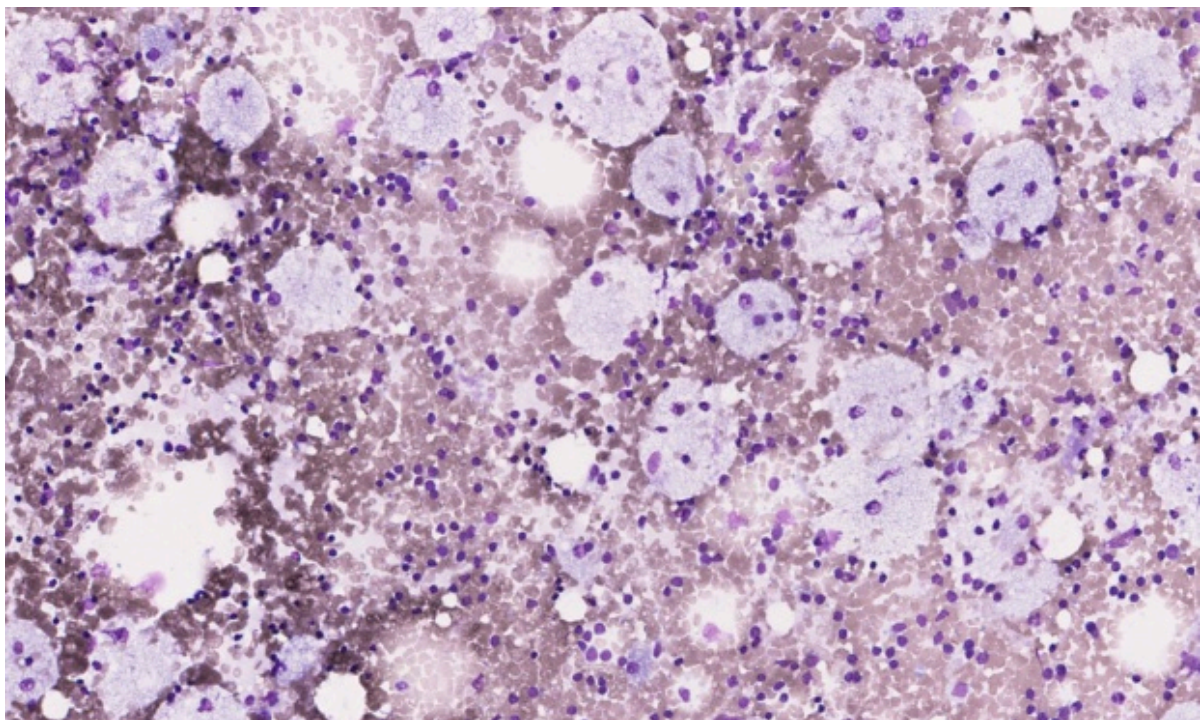


Figure 3. The foamy cells display numerous clear lipid vacuoles with little to no visible nuclear debris, a pattern consistent with mammary origin rather than tingible-body macrophages, which typically contain basophilic intracytoplasmic granules representing phagocytosed apoptotic nuclei.

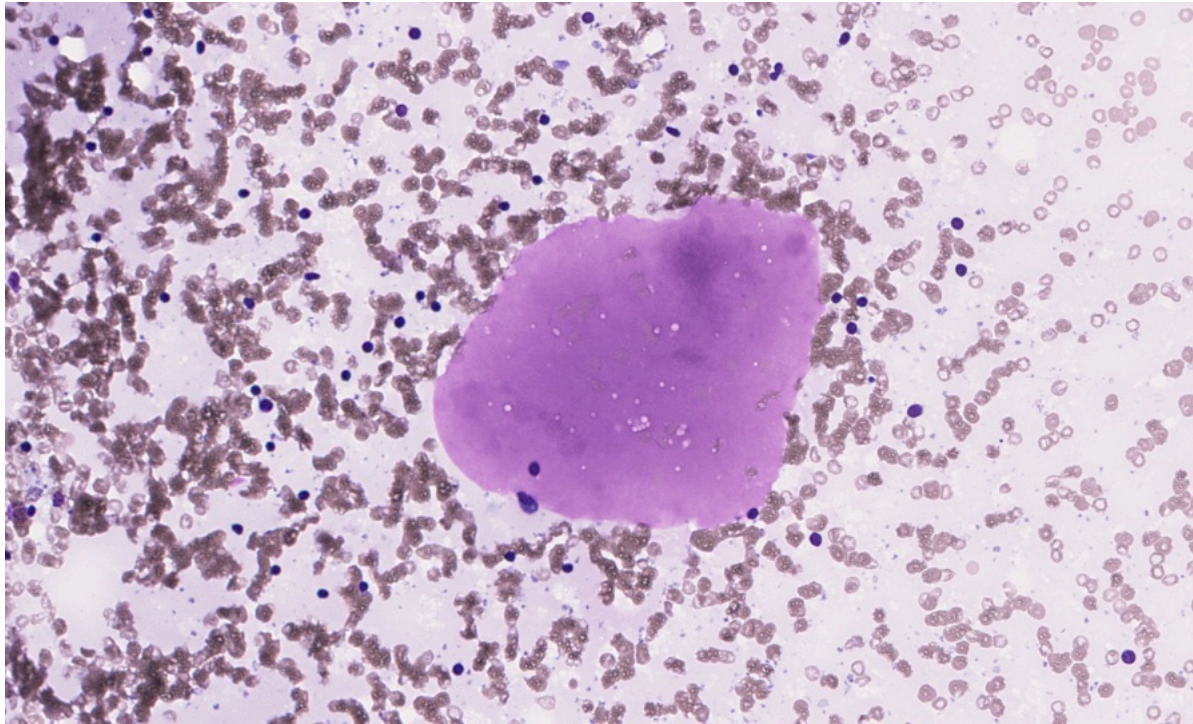


Figure 4. Presence of paucicellular fibroconnective stromal fragments without atypia.

Taken together, cytologic smears show a **lymphocyte-rich background** with **numerous foamy histiocytes**, **benign glandular epithelial cells consistent with a mammary origin**, and a cluster exhibiting **early apocrine change, without atypia**. Given these findings, the cytologic diagnosis was : **benign intranodal mammary epithelial inclusion (ectopic normal breast tissue) within a lymph node**.

However, given the patient's clinical history, and the rarity of this cytopathological diagnosis, the cytopathologist considered that an intraoperative frozen section of the sentinel lymph node would be appropriate in order to avoid a second surgery, in the case the cytological diagnosis was false negative.

Frozen section examination of the lymph node was performed, showing **lymphoid parenchyma containing a papillary epithelial lesion** with **associated glandular structures**. **Adjacent glands** of variable size are lined by a **dual cell layer**. The epithelial cells are **spindled to columnar**, with **occasional mitotic figures**. **Numerous microcalcifications** are present. **No capsular invasion/rupture** is identified. The pathological report on the frozen section stated that a definitive characterization will be provided on permanent sections after formalin fixation and paraffin embedding.

FINAL SURGICAL PATHOLOGY FINDINGS

No metastatic lymph node identified (2 sentinel lymph nodes negative), after examination of four step levels on routine HES (haematoxylin eosin saffron) and immunohistochemistry for cytokeratins (AE1/AE3).

In one lymph node, there is a **well-circumscribed 6-mm papillary epithelial lesion** with microcalcifications. The lesion is partially cystic, containing foamy macrophages. The papillary cores are lined by heterogeneous epithelial cells of simple hyperplasia type, with focal apocrine metaplasia.

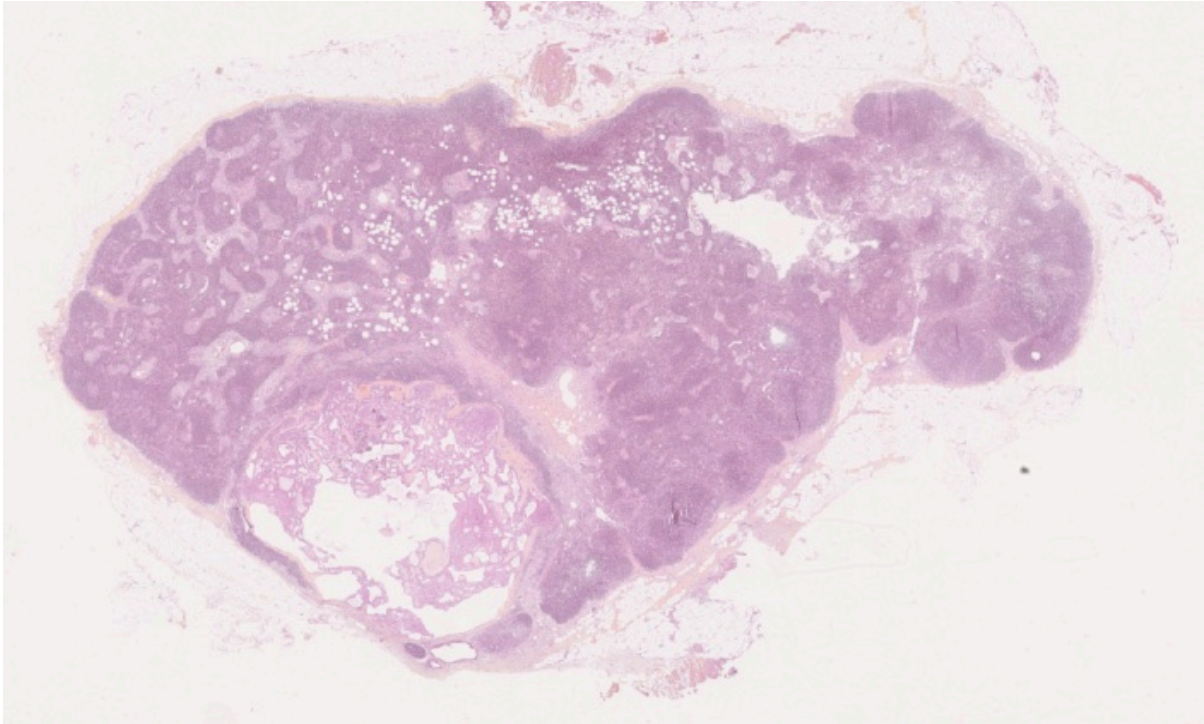


Figure 5. Low-power view of the lymph node (HES).

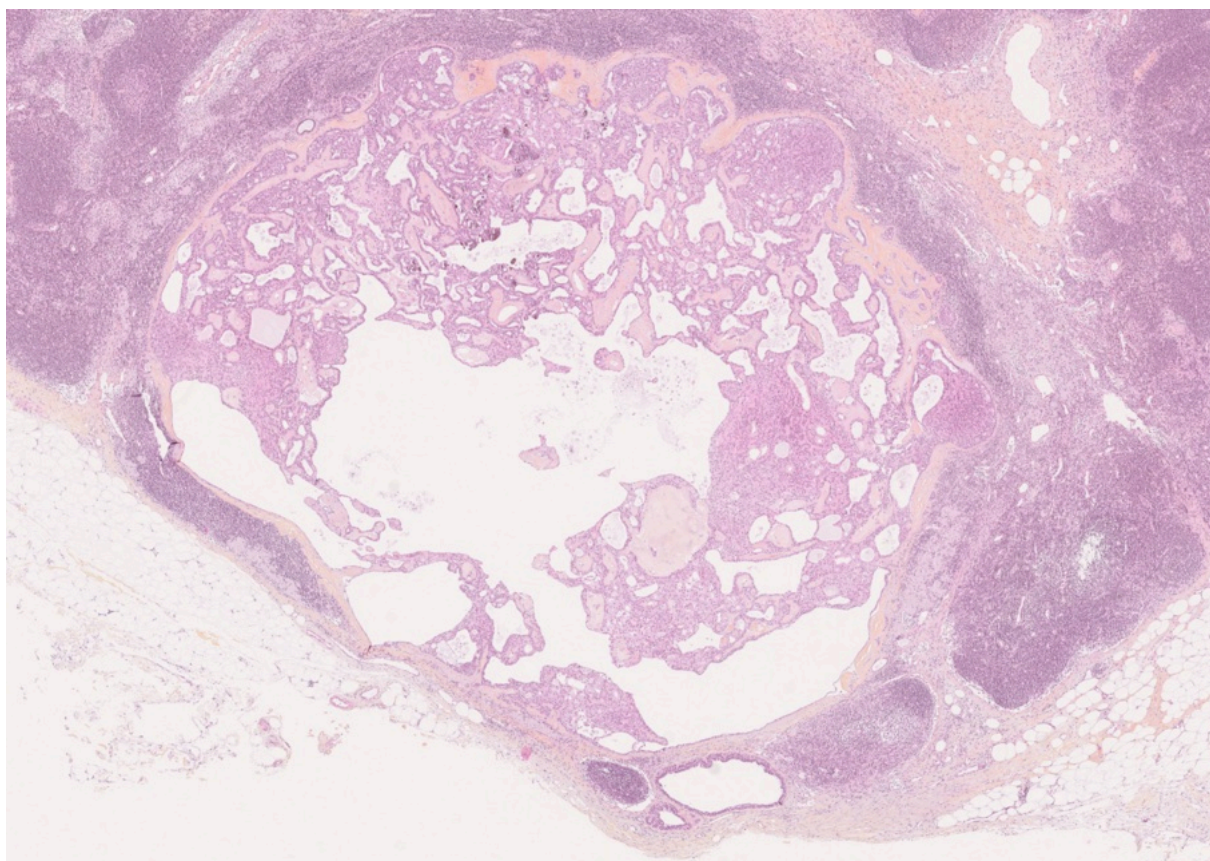


Figure 6. Papillary lesion (HES, x5).

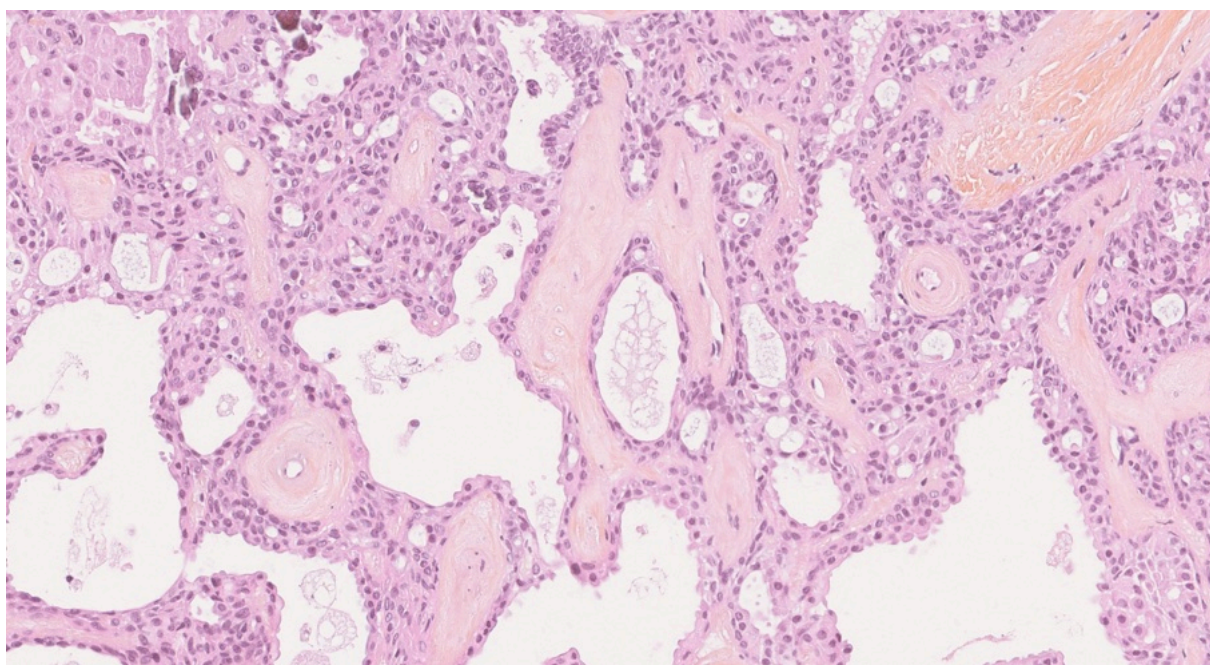


Figure 7. Papillary lesion (HES, x20)

IMMUNOHISTOCHEMISTRY PANEL

Marker	Result
p63	Highlights myoepithelial cells
Calponin	Highlights myoepithelial cells
CK14	Highlights myoepithelial cells and simple ductal hyperplasia
GATA3	Nuclear staining of the papillary lesion cells
PAX8	No staining in the papillary lesion.
WT1	Cytoplasmic staining in myoepithelial cells
Ki-67	<1%
Estrogen receptor (ER)	Heterogeneous expression in the papillary lesion cells
Progesterone receptor (PR)	Heterogeneous expression in the papillary lesion cells

The immunophenotype supports a **benign nodal lesion** consistent with an **intraductal papilloma** arising within a **benign intranodal mammary epithelial inclusion**.

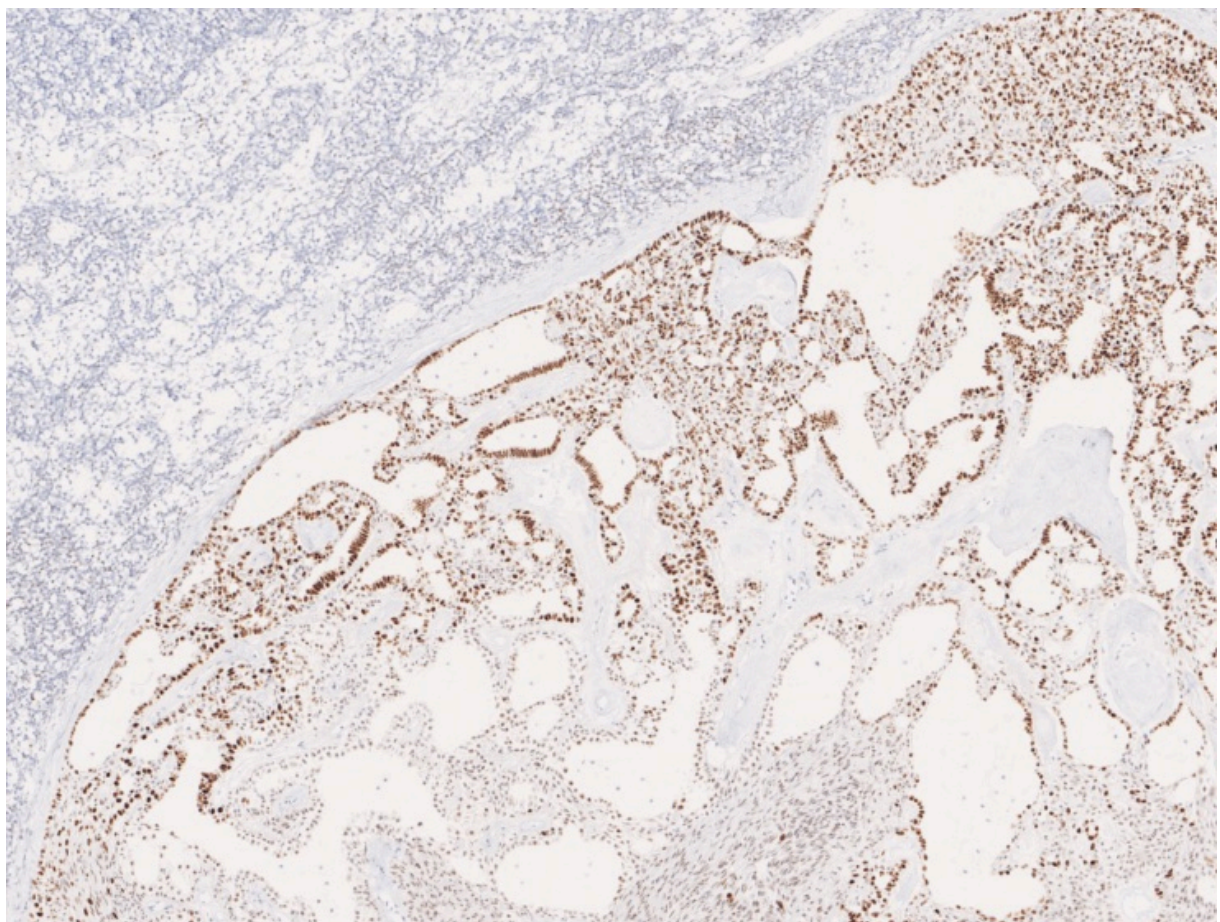


Figure 8 : GATA3 immunostain.

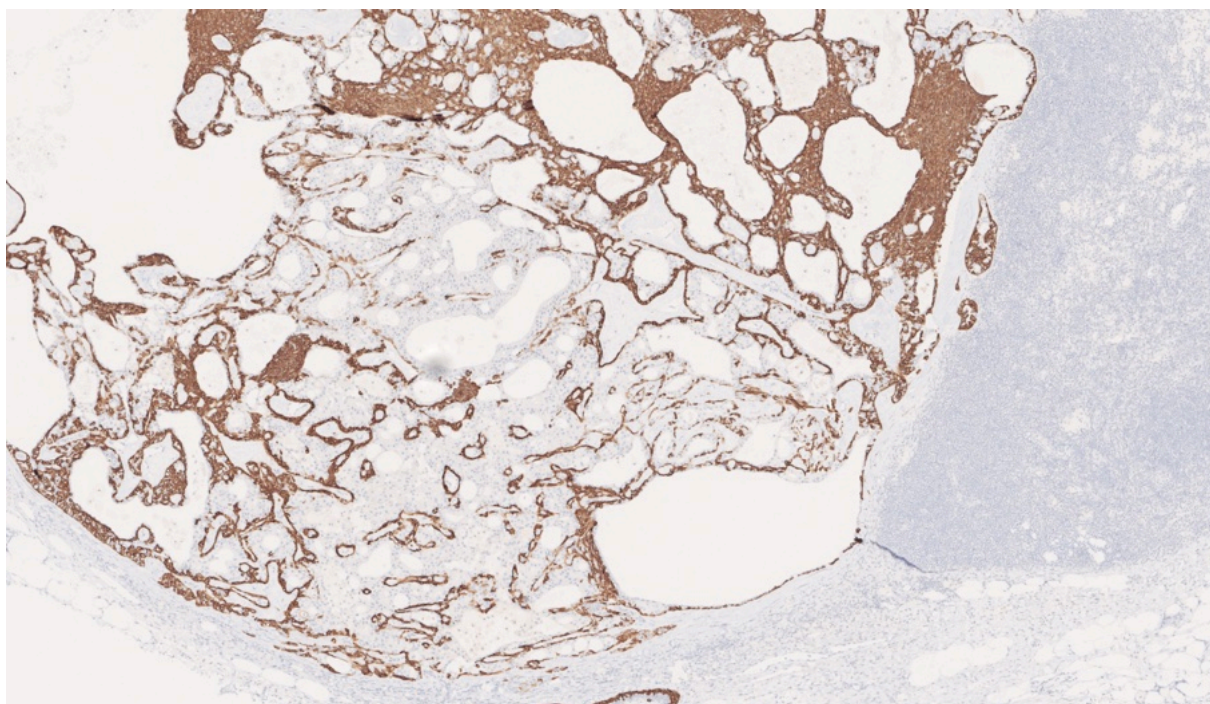


Figure 9 : CK14 immunostain.

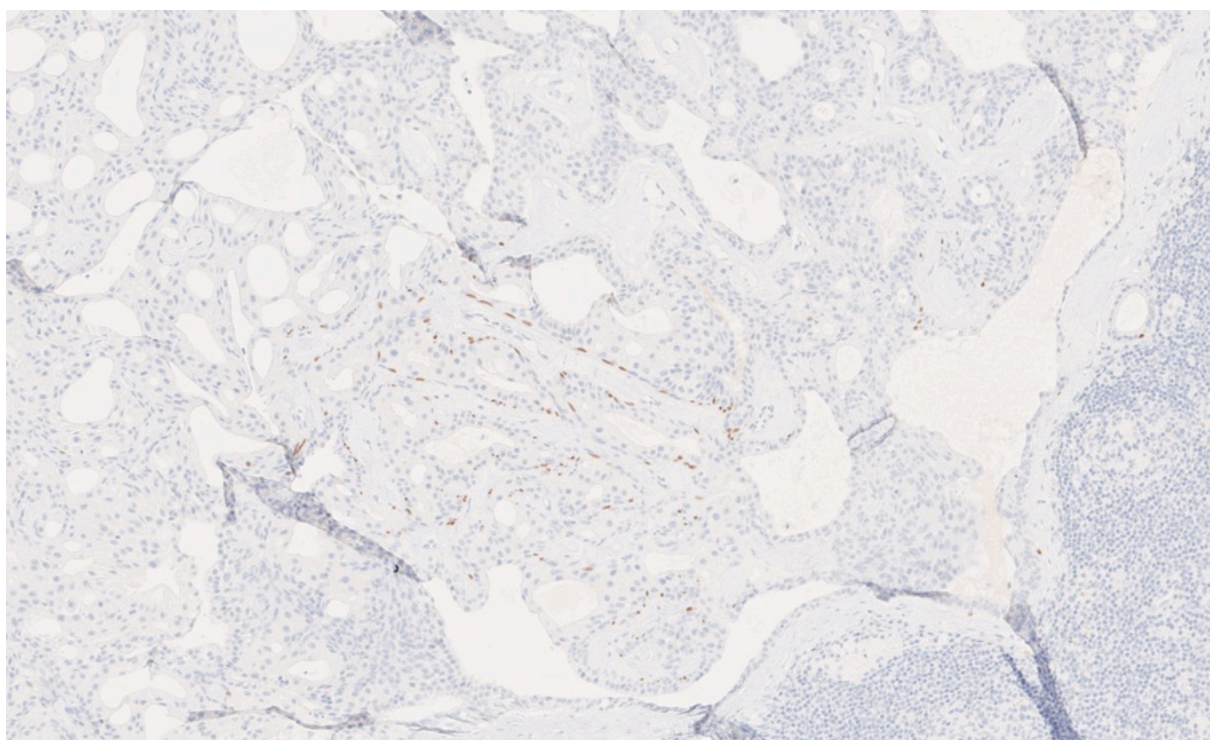


Figure 10. p63 immunostain.

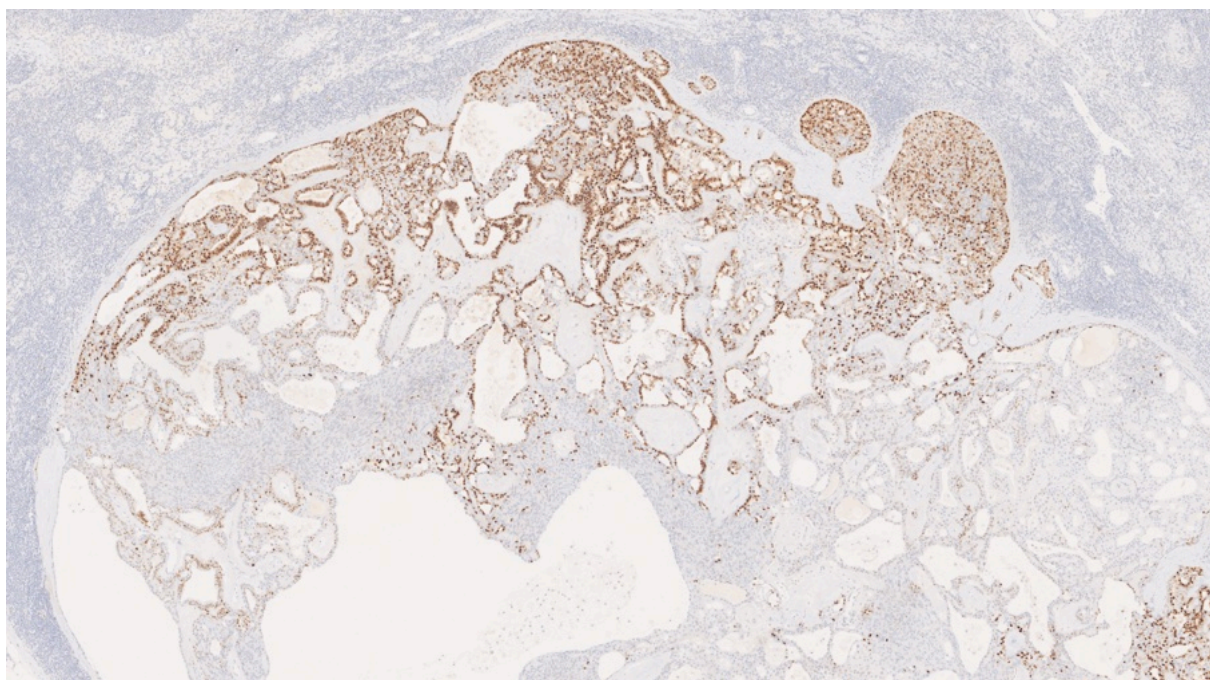


Figure 11. ER immunostain.

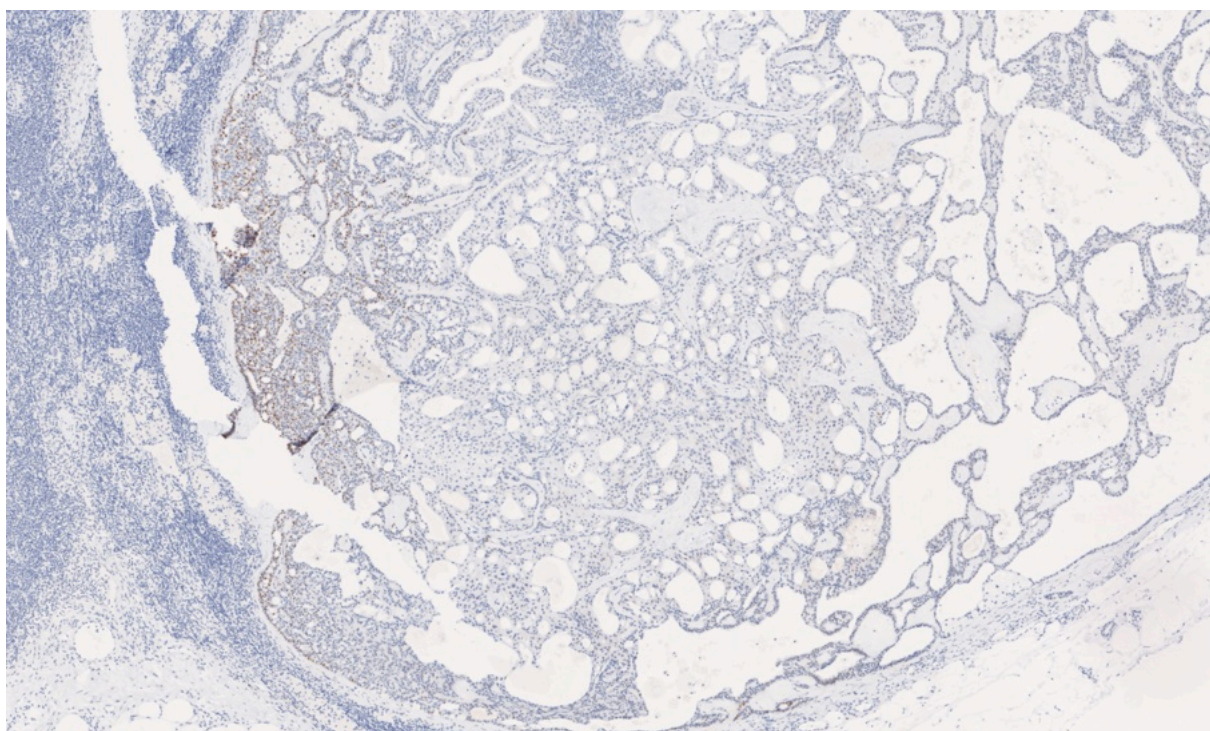


Figure 12. PR immunostain.

FINAL DIAGNOSIS

Intraductal papilloma arising within a benign intranodal mammary epithelial inclusion.

DISCUSSION

Caution regarding epithelial cells in lymph node cytology

Detection of epithelial cells in a lymph node aspirate does not equal metastasis. In axillary and cervical nodes especially, one must consider benign intranodal epithelial inclusions or ectopic benign tissue (e.g., mammary-type inclusions in axillary nodes; salivary or thyroid inclusions in head-and-neck lymph nodes), as well as procedure-related displacement/contamination. Despite this, ectopic breast tissue can be present in the axilla and may be unrecognized on ultrasound; as a result, the laboratory may receive a specimen labeled “lymph node cytology” in which predominantly epithelial material is seen—an easy pitfall that can lead to a false-positive call of axillary metastasis. Accordingly, one should not simply document epithelial differentiation when diagnosing metastasis, but also require convincing cytologic atypia in the metastatic cells. Favor a benign ectopic breast tissue origin when clusters show bland cytology (uniform nuclei, smooth contours, fine chromatin, inconspicuous nucleoli), low-to-intermediate N:C ratios, preserved polarity and honeycomb architecture, myoepithelial/bare bipolar nuclei at the periphery, and no necrosis, tumor diathesis, mitoses, or marked pleomorphism. Correlation with the site and clinical/imaging context is essential; if a cell block is available, myoepithelial markers (e.g., p63, calponin, SMMHC) can support a benign duct–acinar unit, while broad epithelial/mammary markers (e.g., GATA3, ER/PR) should be interpreted cautiously.

KEY LEARNING POINTS

- **Do not overcall metastasis intra nodal epithelial cells without supportive**
- **cytologic atypia**
- **Abundant foamy histiocytes associated with benign appearing glandular cells were suggestive of a breast ectopic lesion.**