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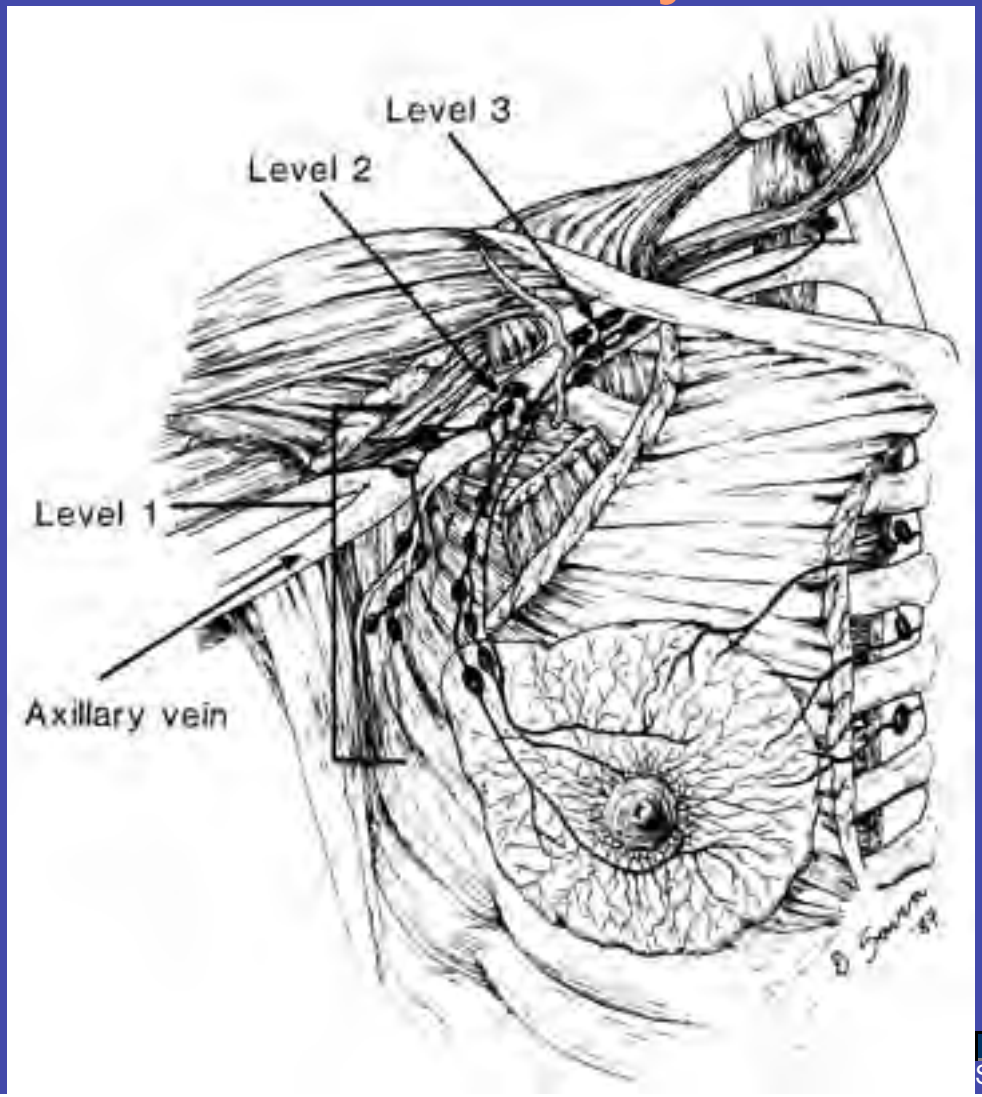
Breast Lab

Stephen Ramsburgh, M.D.,
Gerald Abrams, M.D.

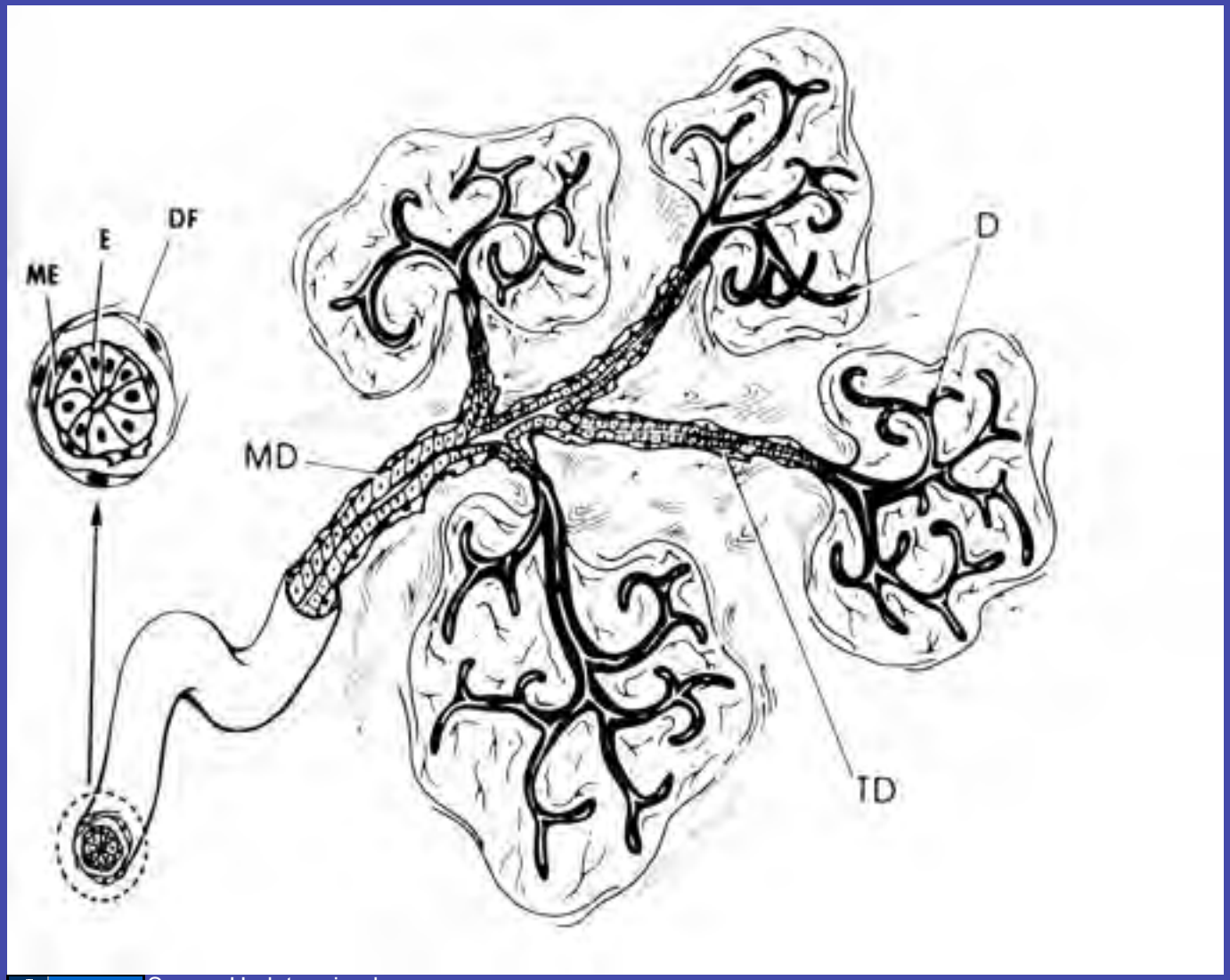
Winter
2009

University of Michigan
Medical School

Breast
Anatomy



Breast Lobule



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Breast Lobule

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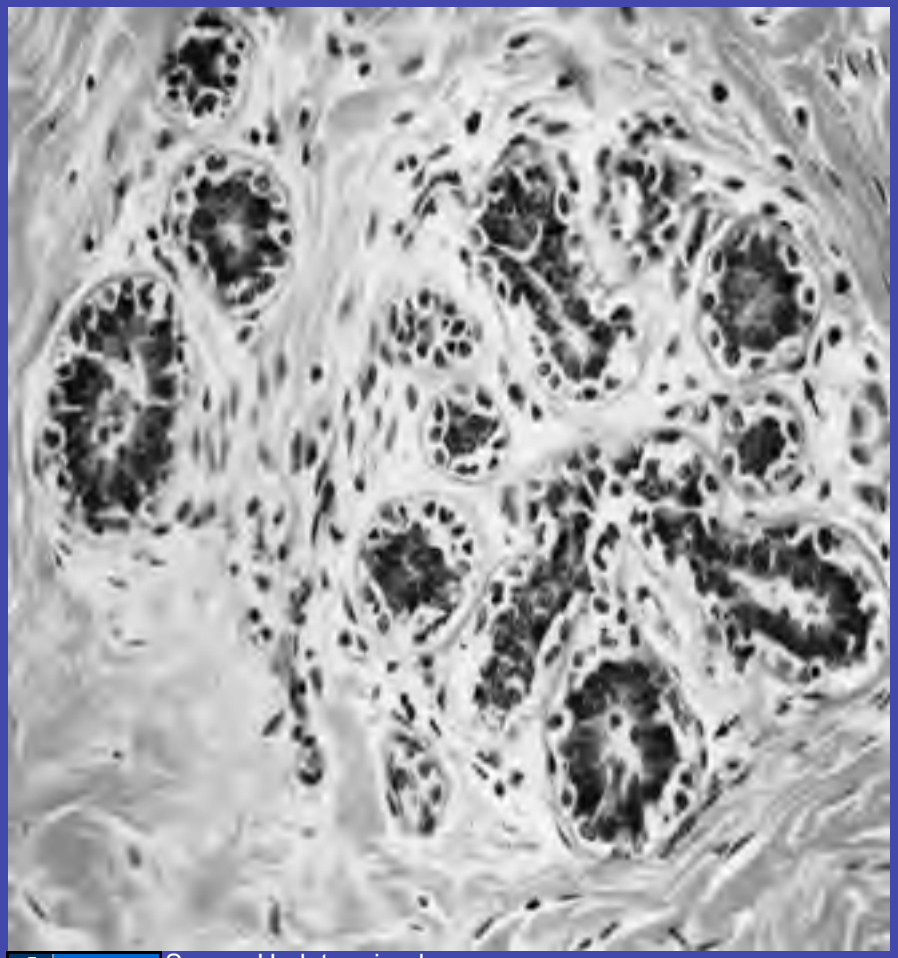
A terminal duct (*arrow*) leads into the lobule (terminal duct/ lobular unit).

Breast Lobule



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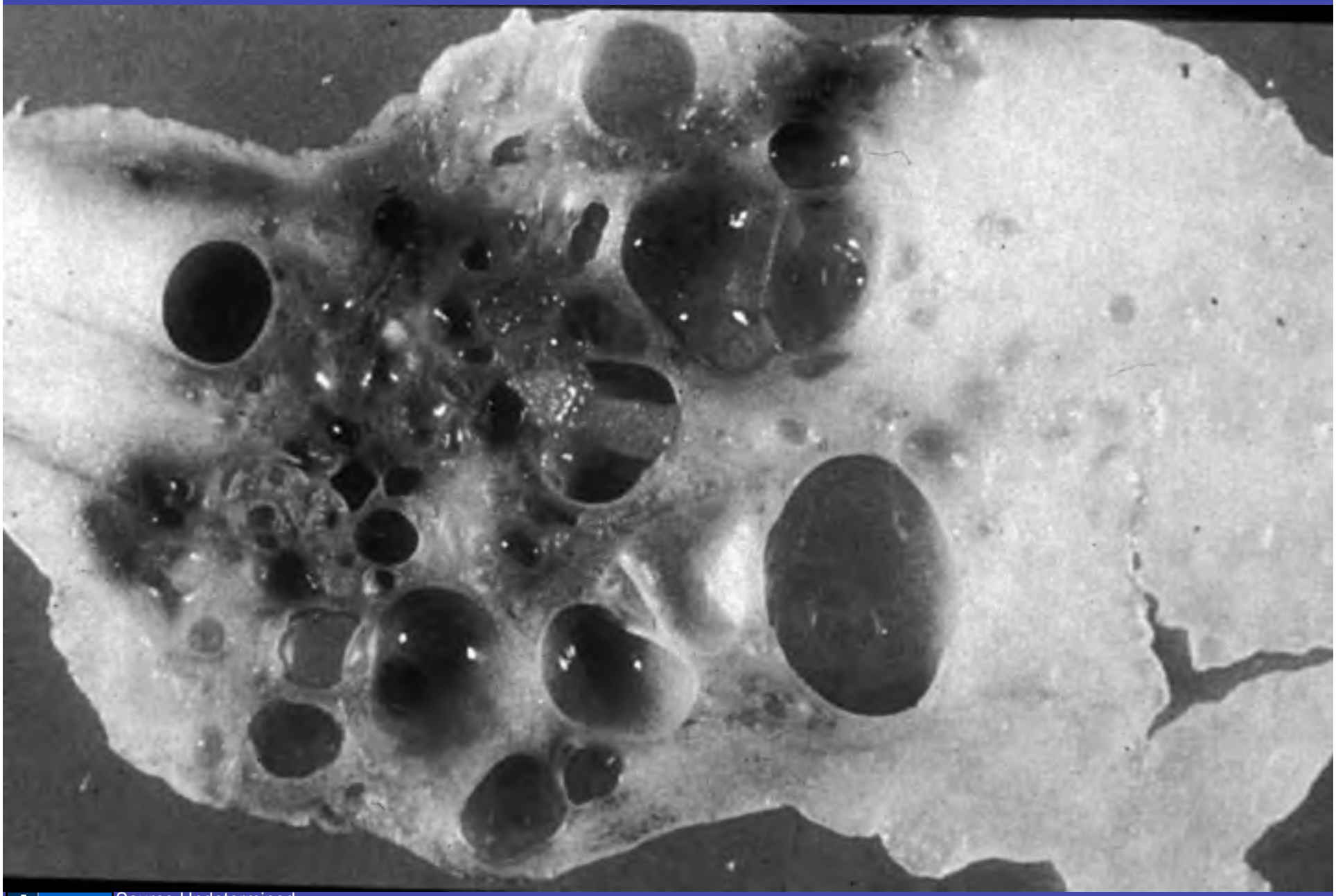
Lobule composed of multiple ductules. Each ductule consists of luminal epithelial cells surrounded by myoepithelial cells with clear cytoplasm.

Benign Breast Lesions

Fibrocystic Changes
Gynecomastia
Fibroadenoma
Intraductal Papilloma

Fibrocystic Changes

- Affect 30% to 35% of women between ages of 20 and 40 years
- Usually multifocal and bilateral
- Most common complaint is premenstral swelling and tenderness, the duration of which lasts longer and longer as she passes through her 20's and into her 40's
- Symptoms gradually disappear after menopause



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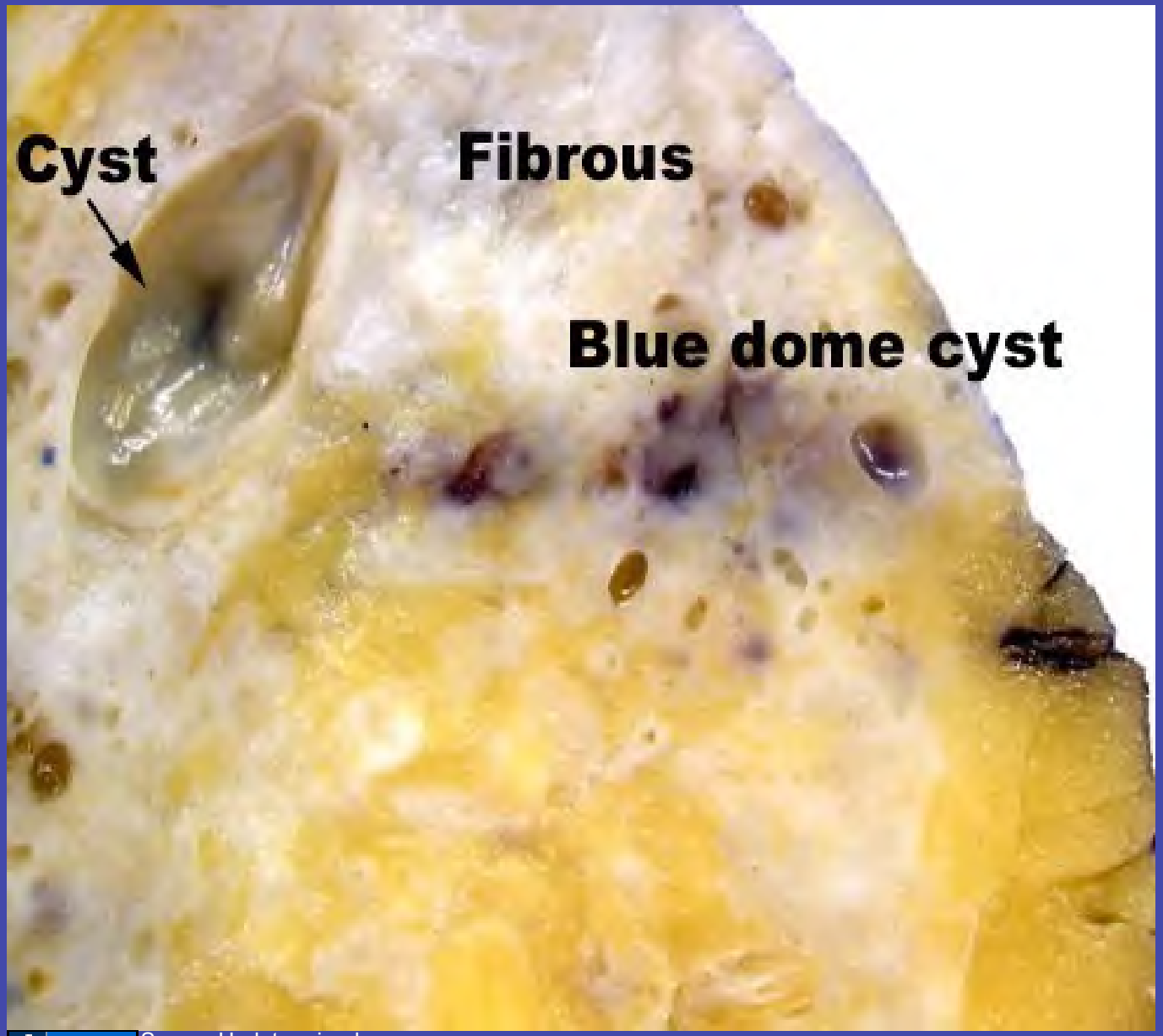

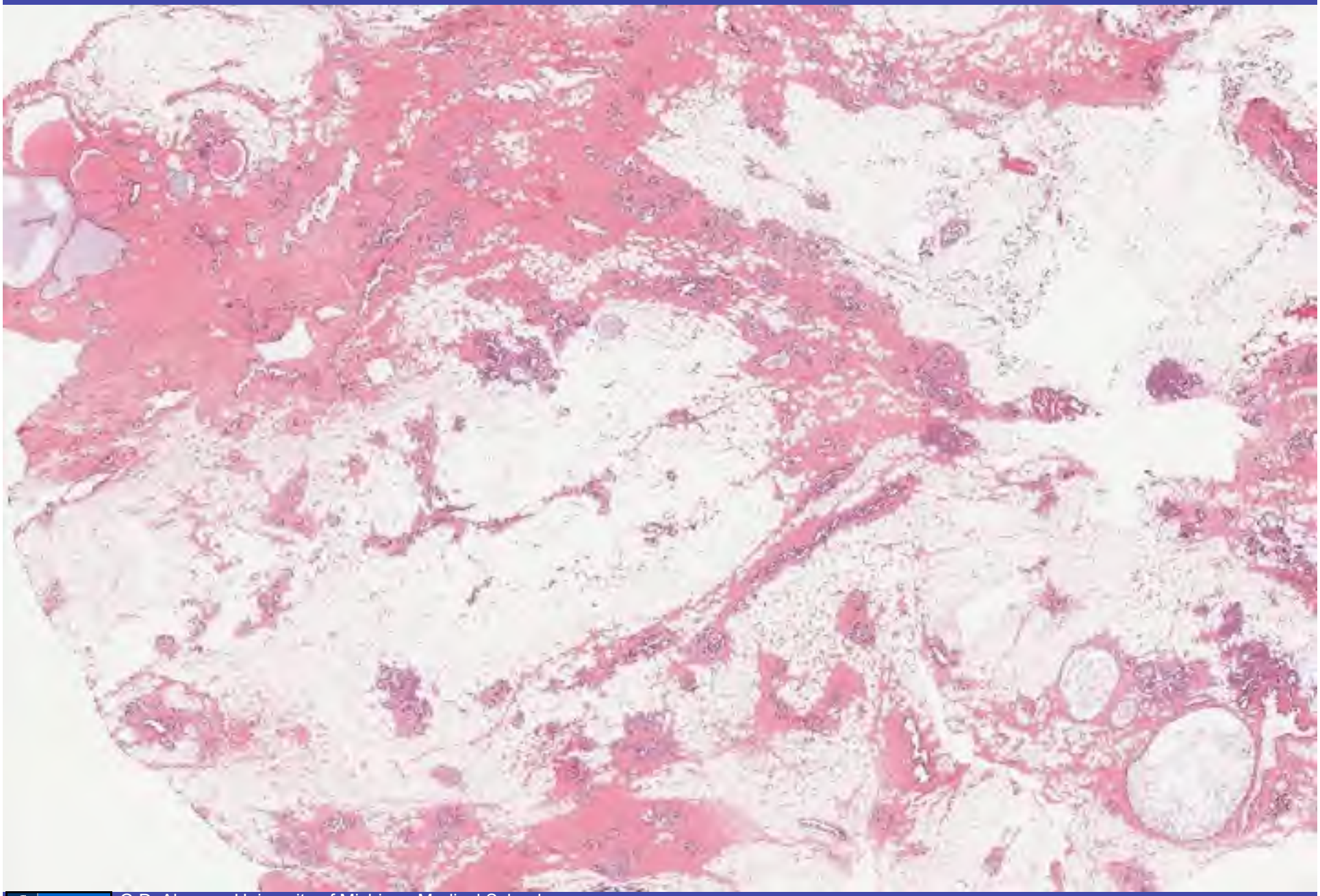

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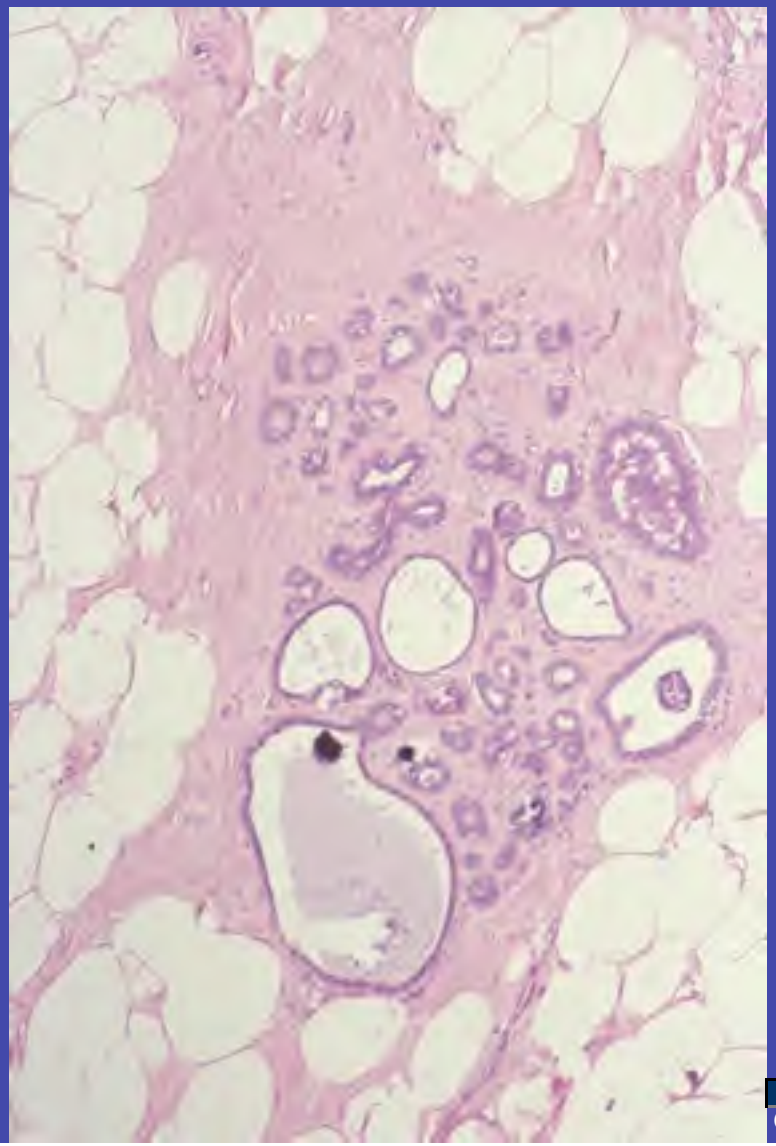
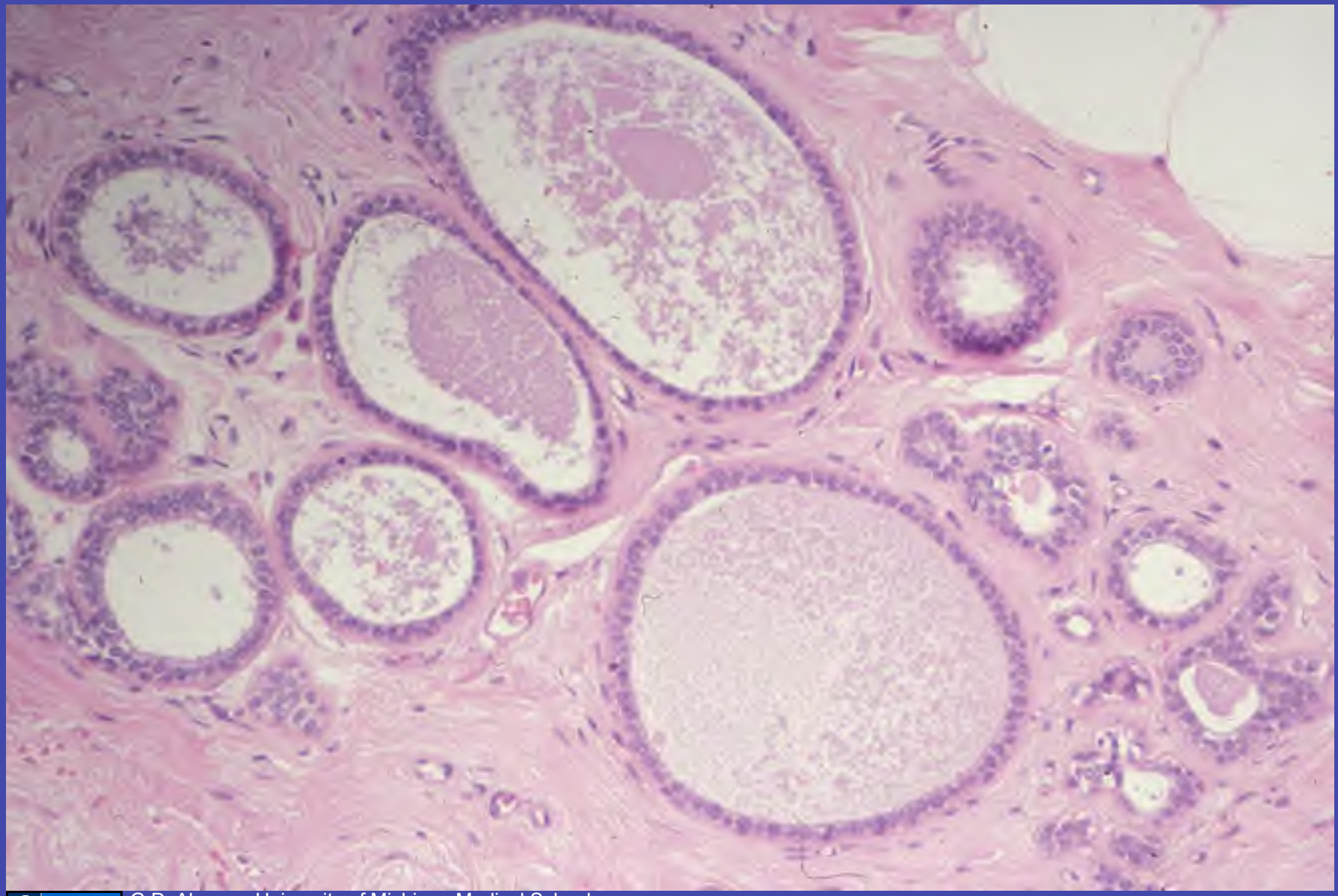
Fibrocystic Changes



Cystically dilated round to oval spaces lined by slightly attenuated epithelial and myoepithelial cells. Stroma between cystic spaces usually sclerotic.



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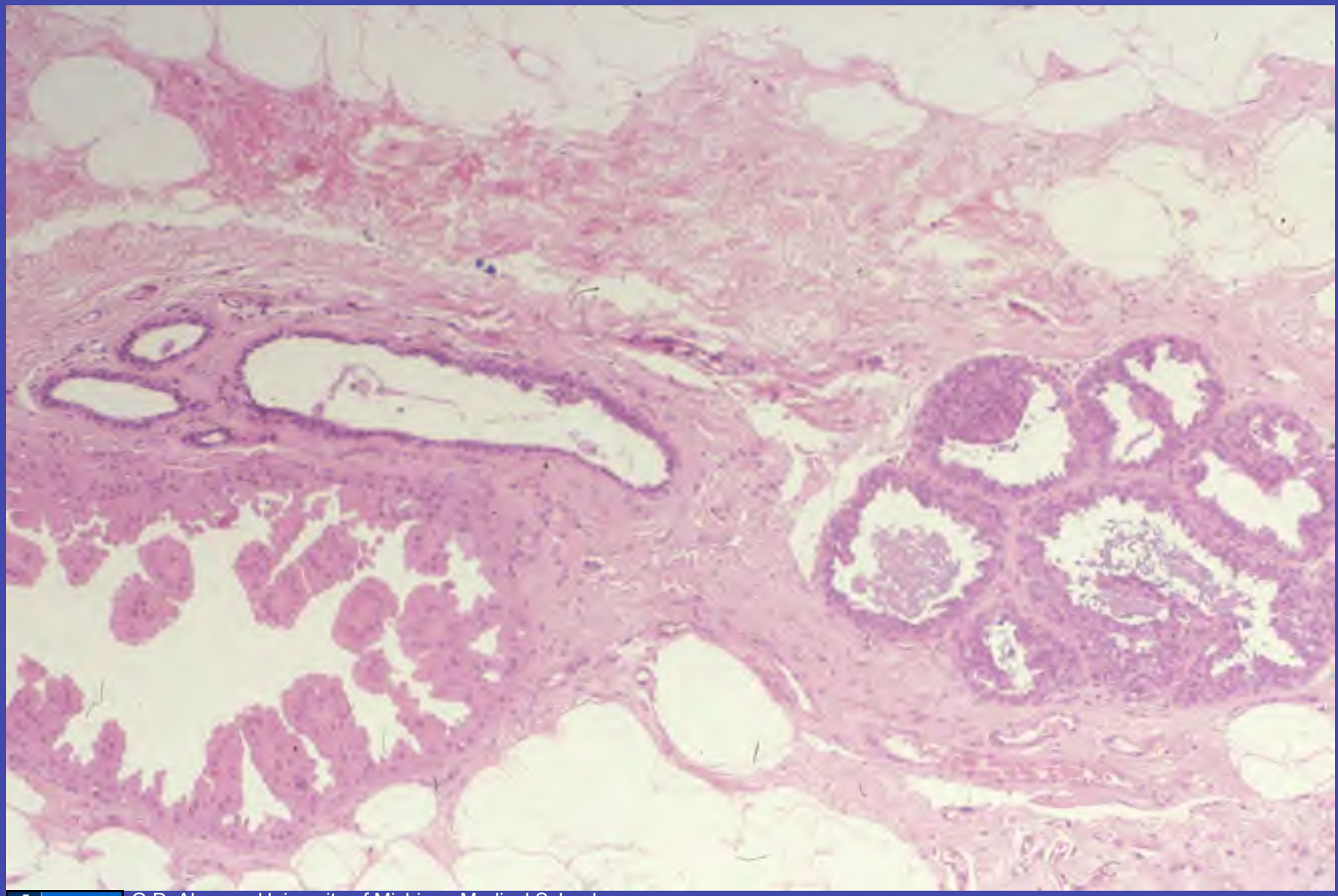


Gynecomastia

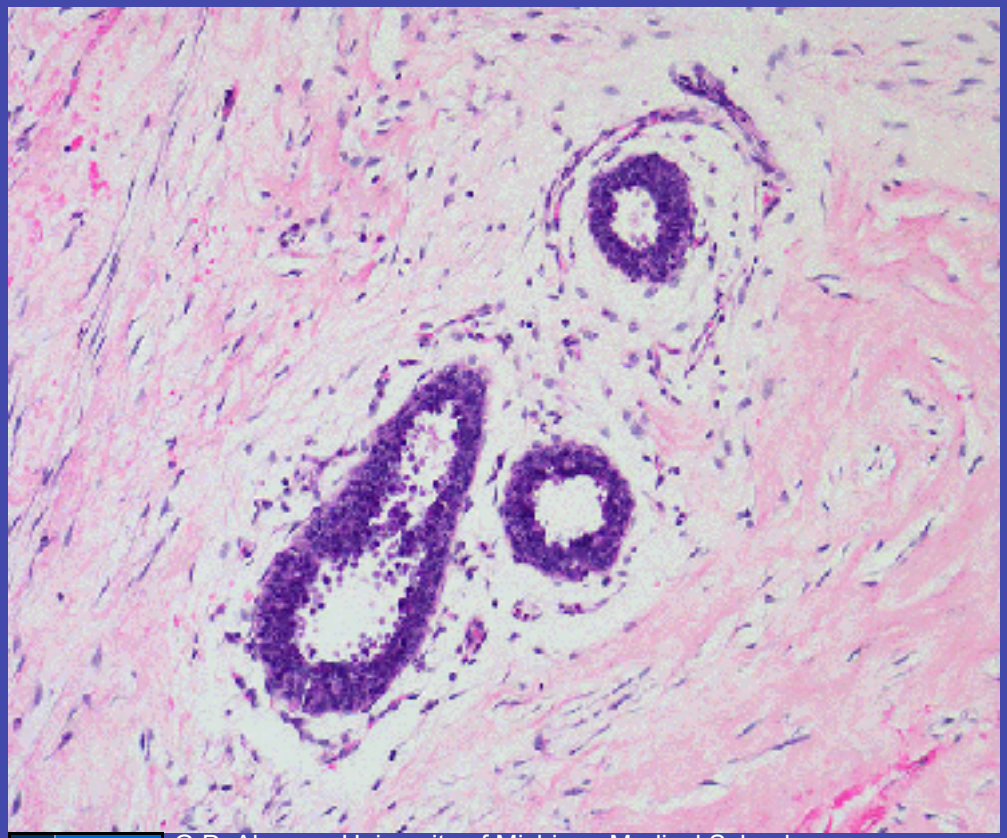
Most common abnormality of male breast

Associated conditions: hyperthyroidism, cirrhosis, chronic renal failure, and chronic pulmonary disease

Drugs: anabolic steroids, digitalis, cimetidine, spironolactone, marihuana, and tricyclic antidepessants

Tumors: carcinoma of lung and testicular germ cell tumors

Gynecomastia



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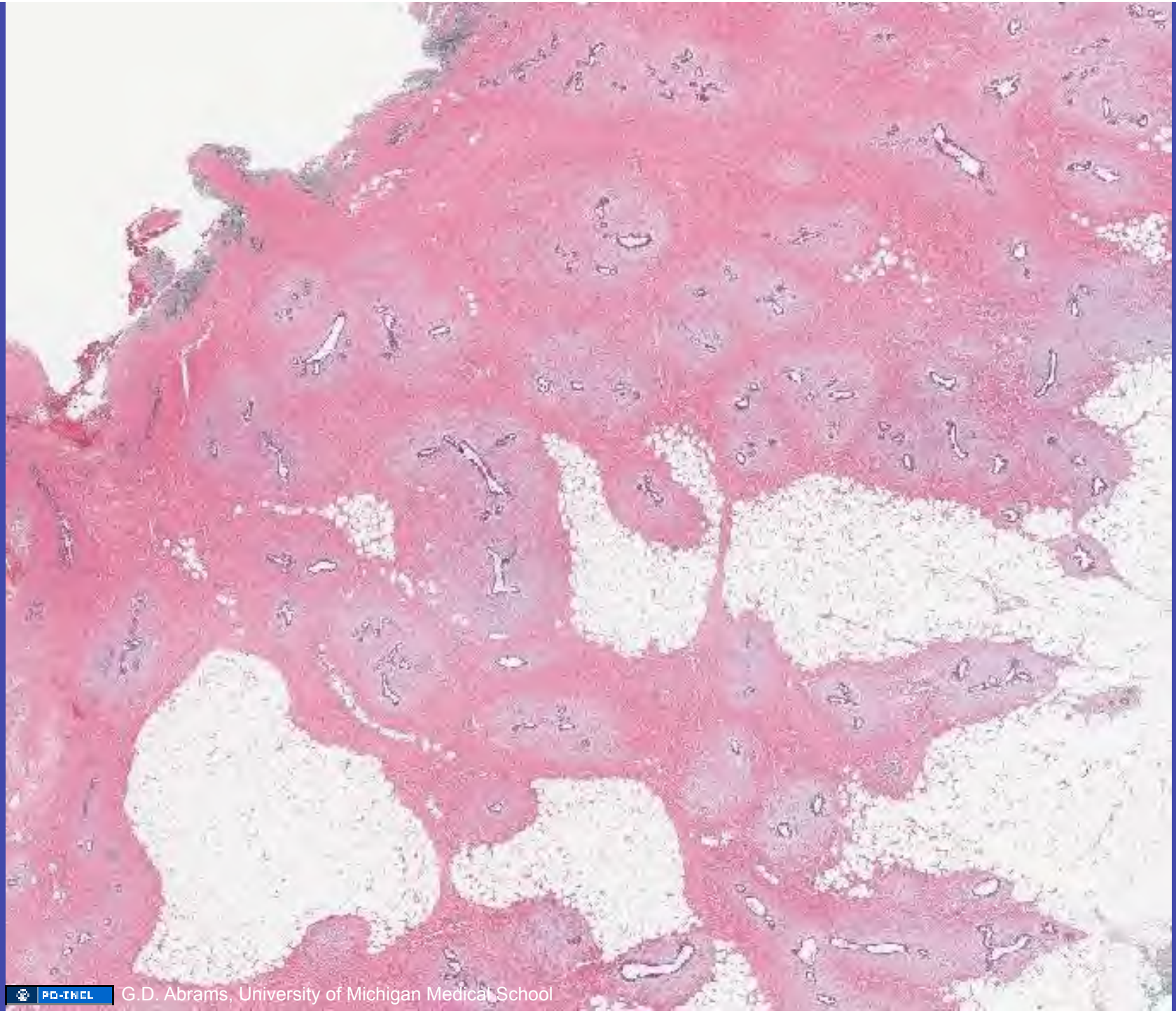
Characterized by an increased number of budding ducts, some proliferation of ductal epithelium, periductal edema, and a cellular fibroblastic stroma that is accompanied by adipose tissue.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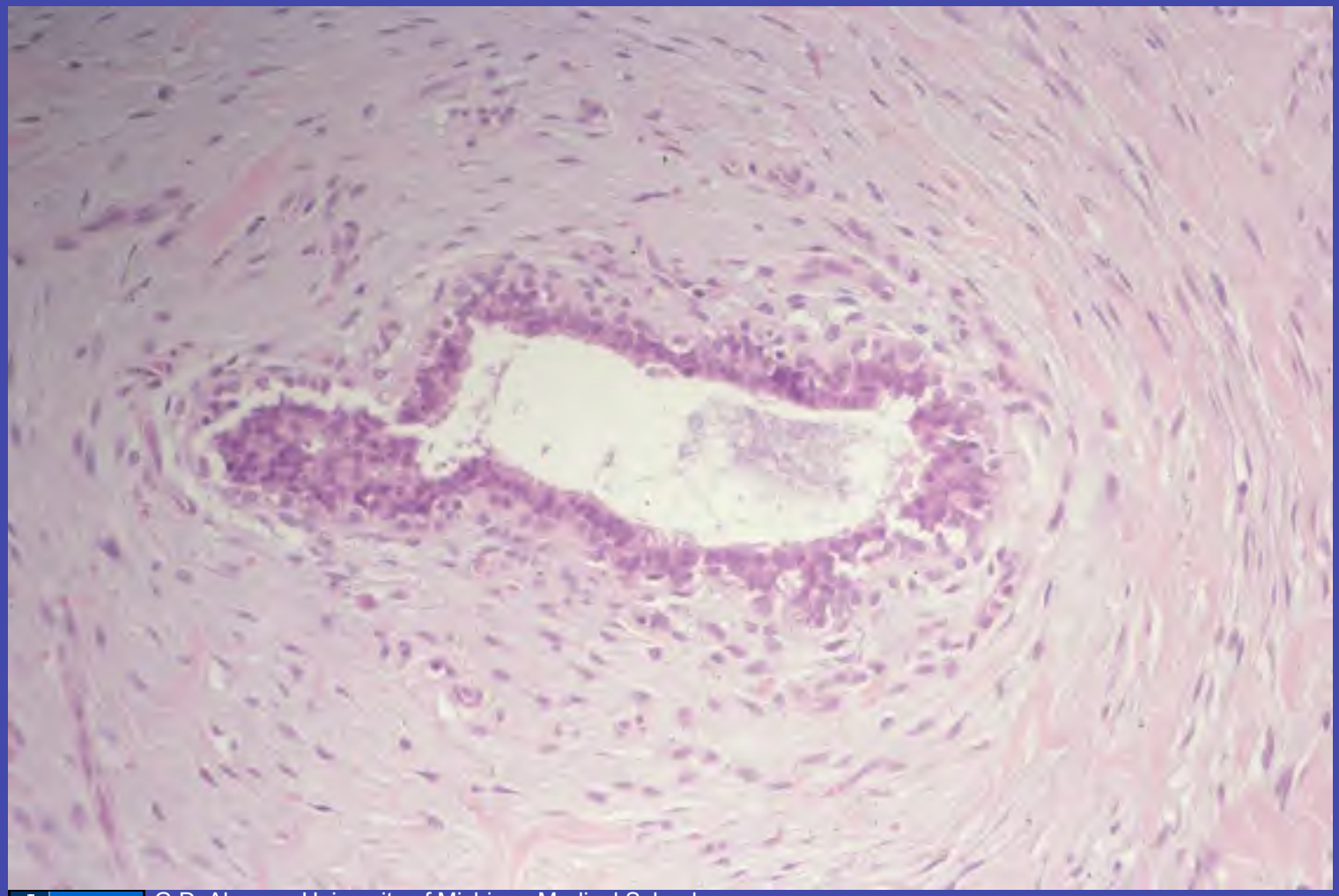

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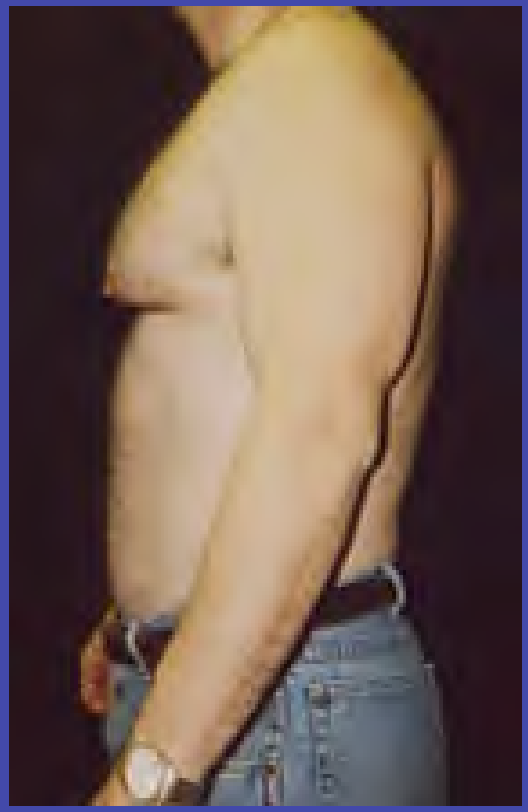

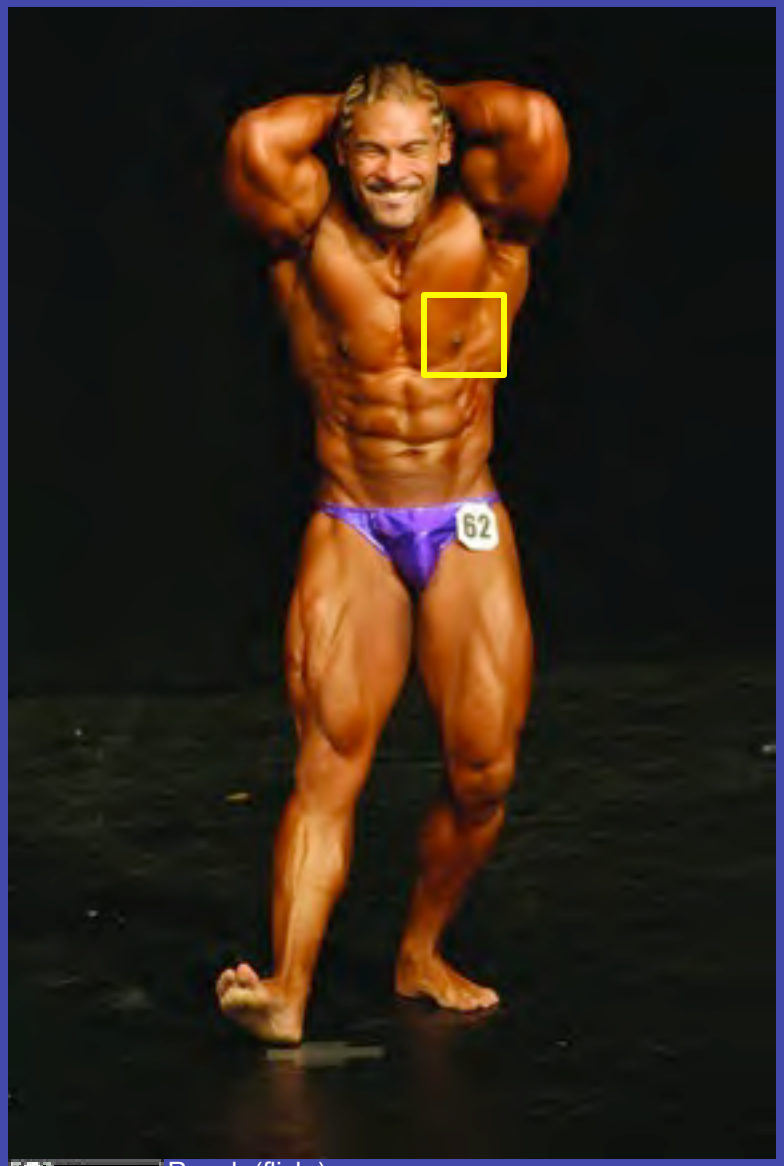

Fibroadenoma

- Most common breast neoplasm in adolescents and young adult women
- Presents as a solitary, painless, well-circumscribed, mobile mass
- 25% are multiple
- Not associated with an increased risk for the development of carcinoma

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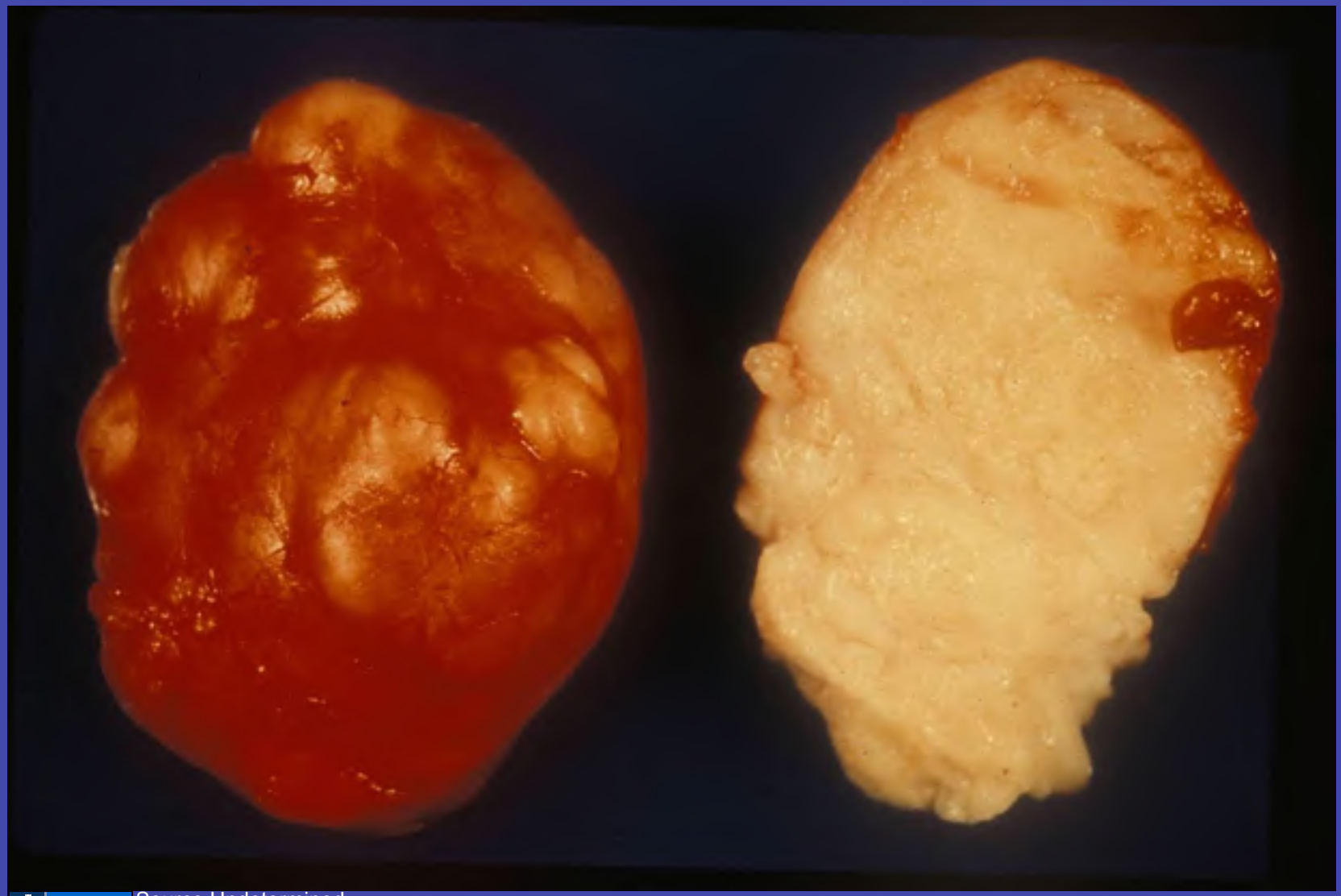
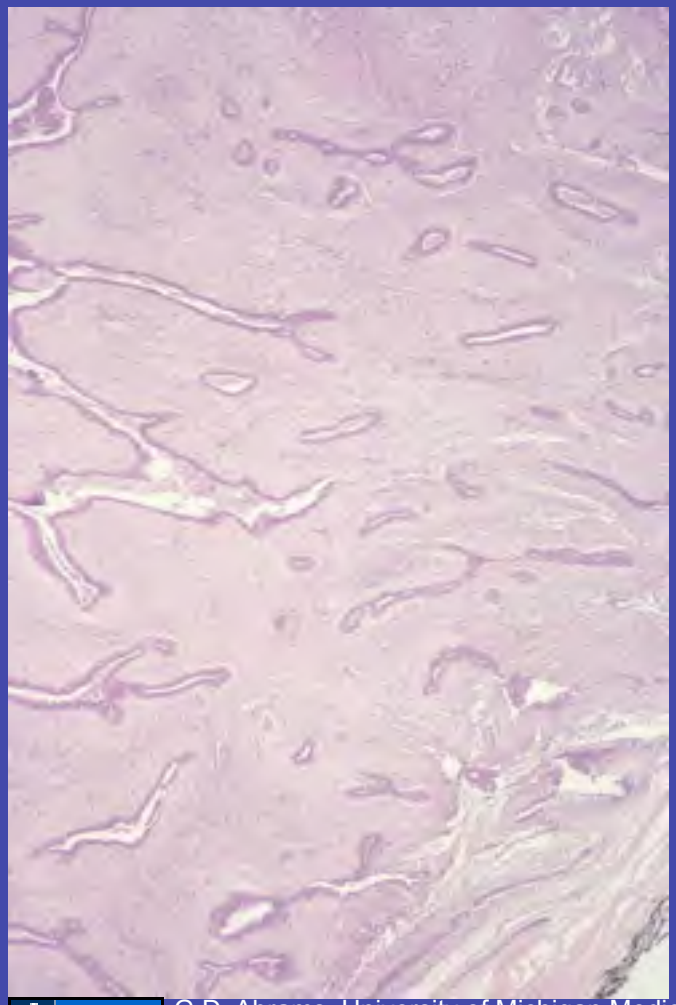


Fibroadenoma



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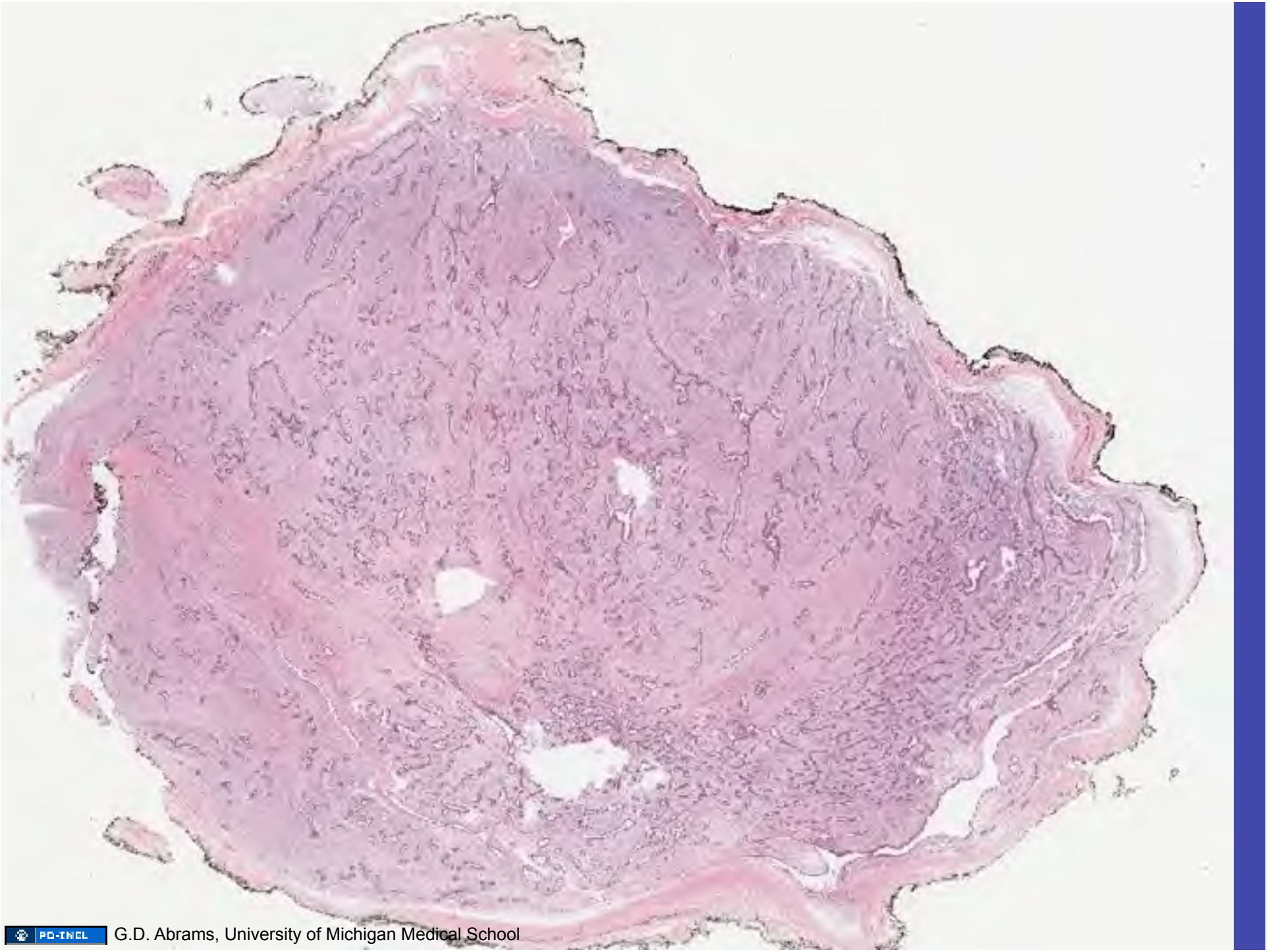
A biphasic tumor consisting of a proliferation of epithelial (ductal) and mesenchymal (stromal) elements. Ducts lined by luminal epithelial layer and outer myoepithelial layer. Stroma consists of fibroblasts and collagen; myxoid mucinous change may be present.



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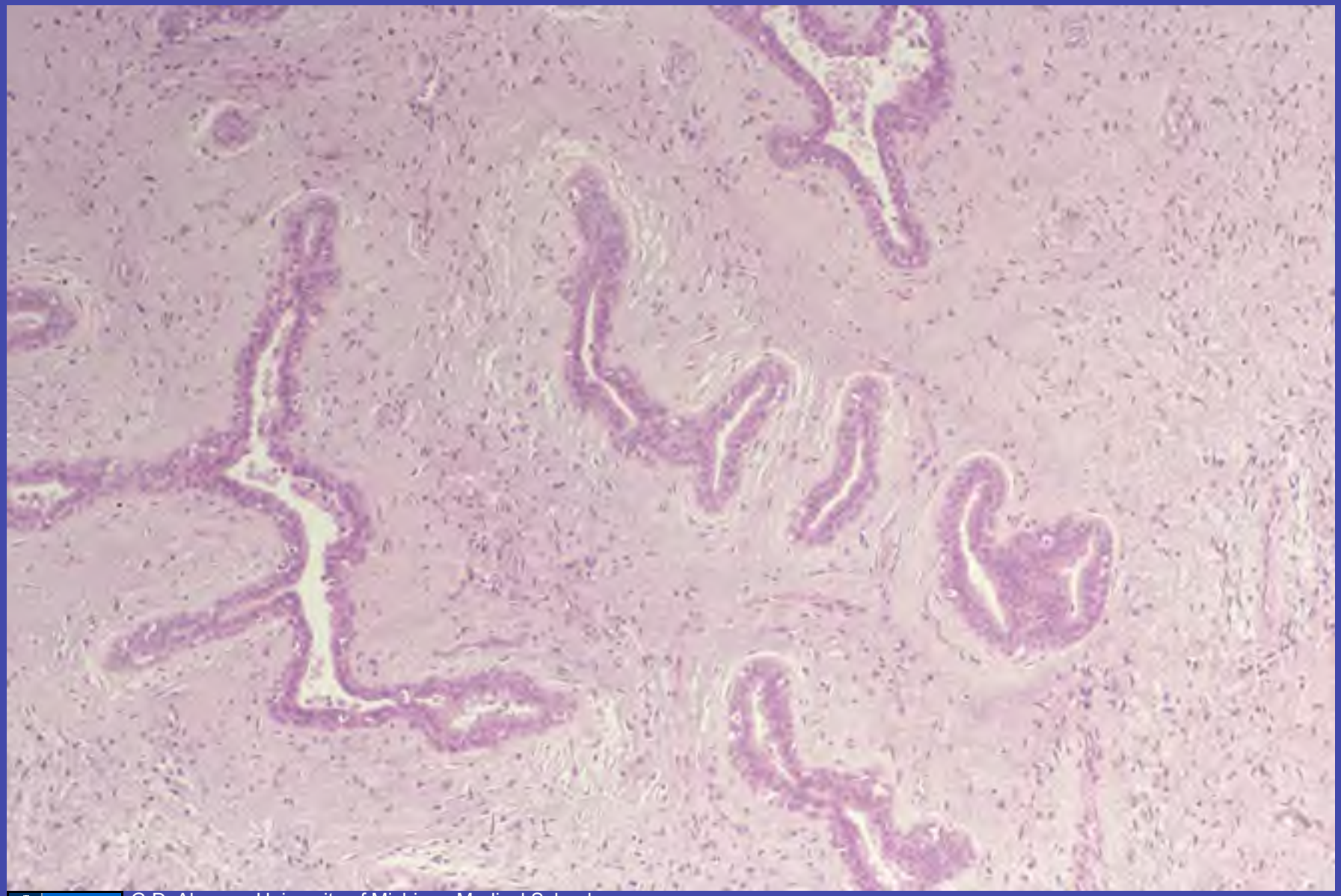

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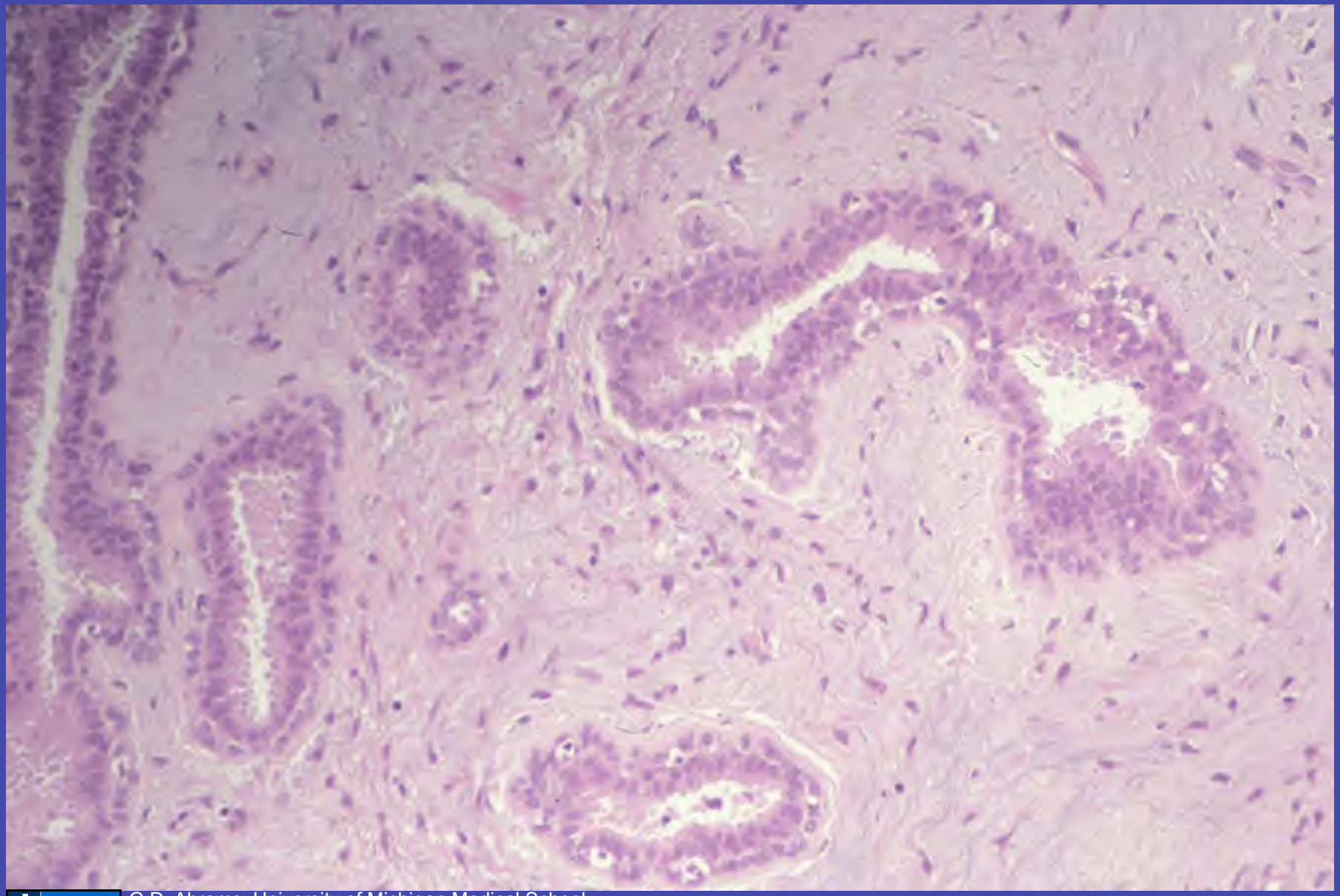

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Intraductal Papilloma

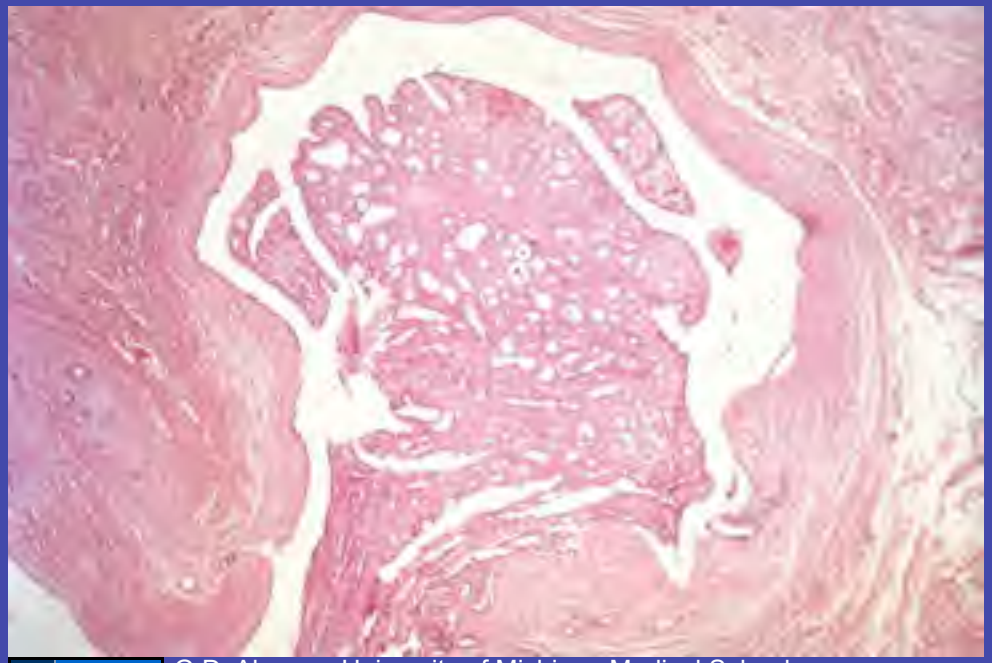
Usually solitary and arise from a major, central, subareolar duct

May or may not be palpable

90% produce a serous or serosanguinous nipple discharge

Associated with a slight increased risk for the development of invasive carcinoma

Intraductal Papilloma



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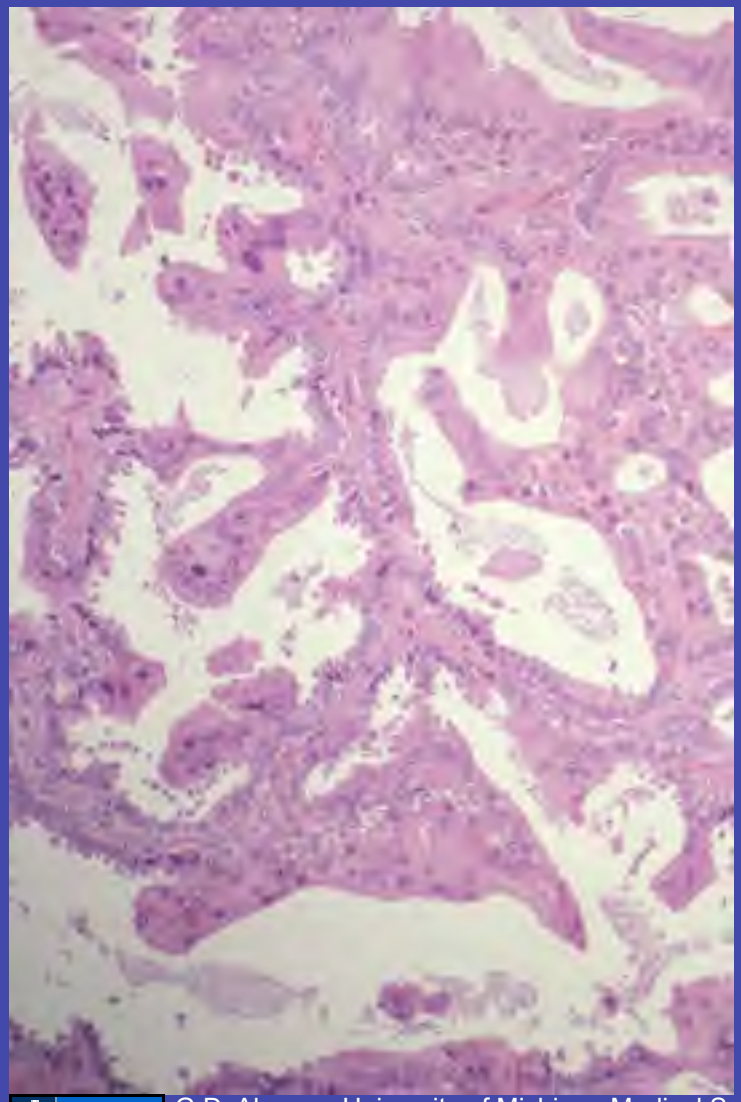
A papillary lesion distends a single duct. The arborescent nature of the proliferation and its point of attachment or origin from the duct wall are apparent.

Intraductal Papilloma



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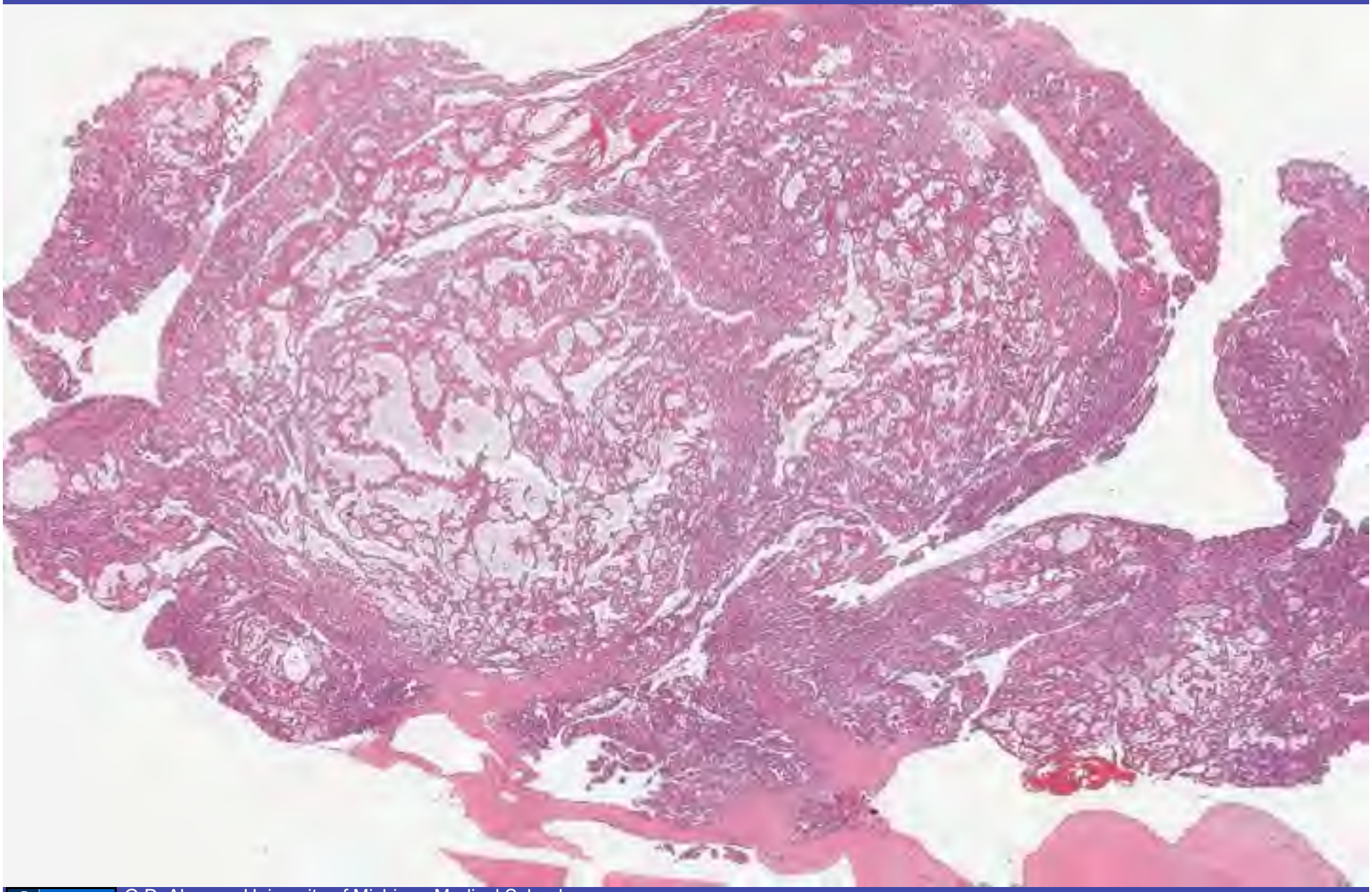
Epithelial fronds supported by a fibrovascular stroma within a dilated or cystic duct. Epithelial cells line the luminal surface of the papillae and a myoepithelial cell layer is *always* present.



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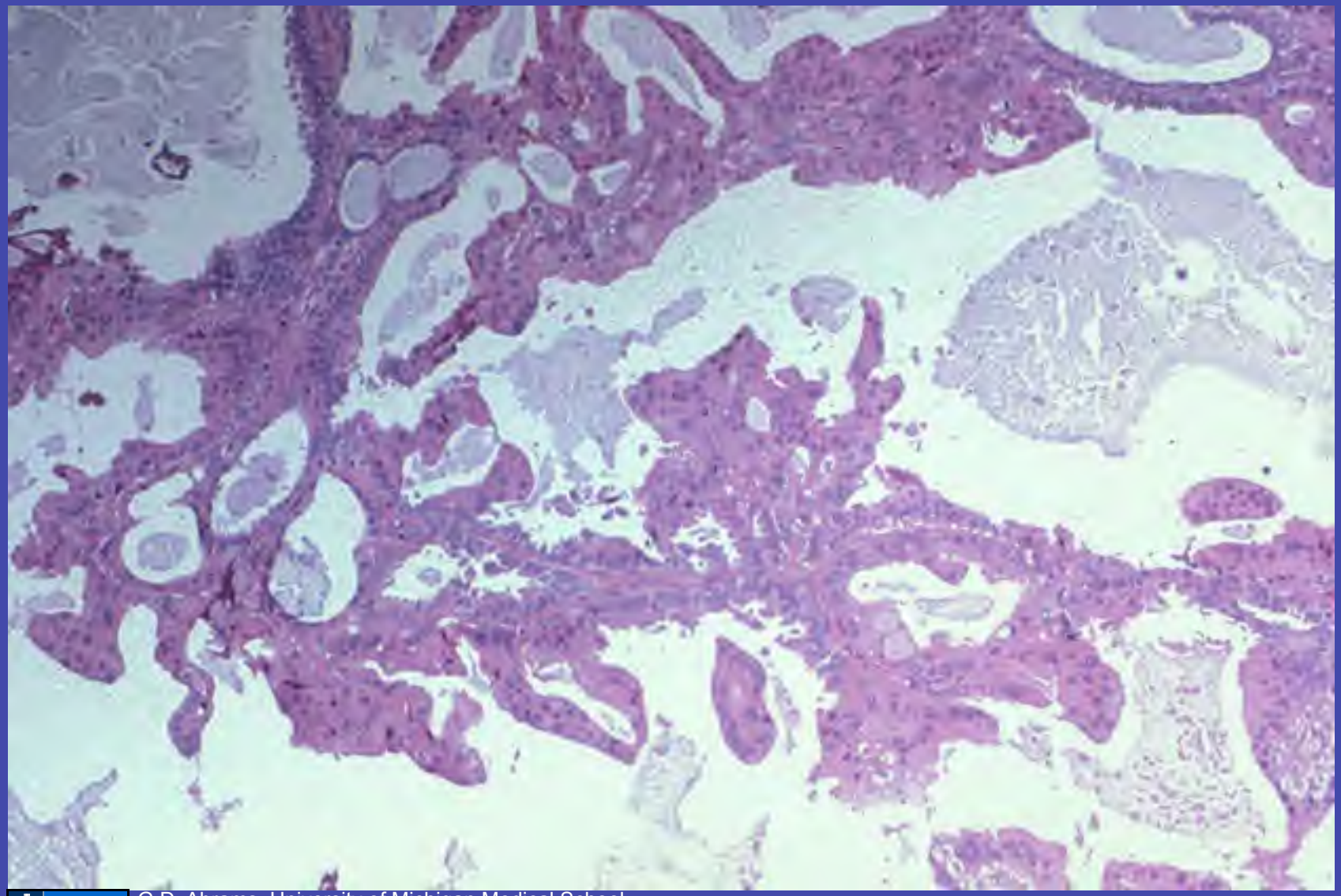

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Malignant Breast Lesions

Intraductal Carcinoma (DCIS)

Invasive Ductal Carcinoma

Intraductal Carcinoma (DCIS)

Represents 30% of all mammographically detected malignancies

In theory no potential for metastases, but positive lymph nodes found in 1 to 2%

A true anatomic precursor for invasive carcinoma; two lines of evidence:

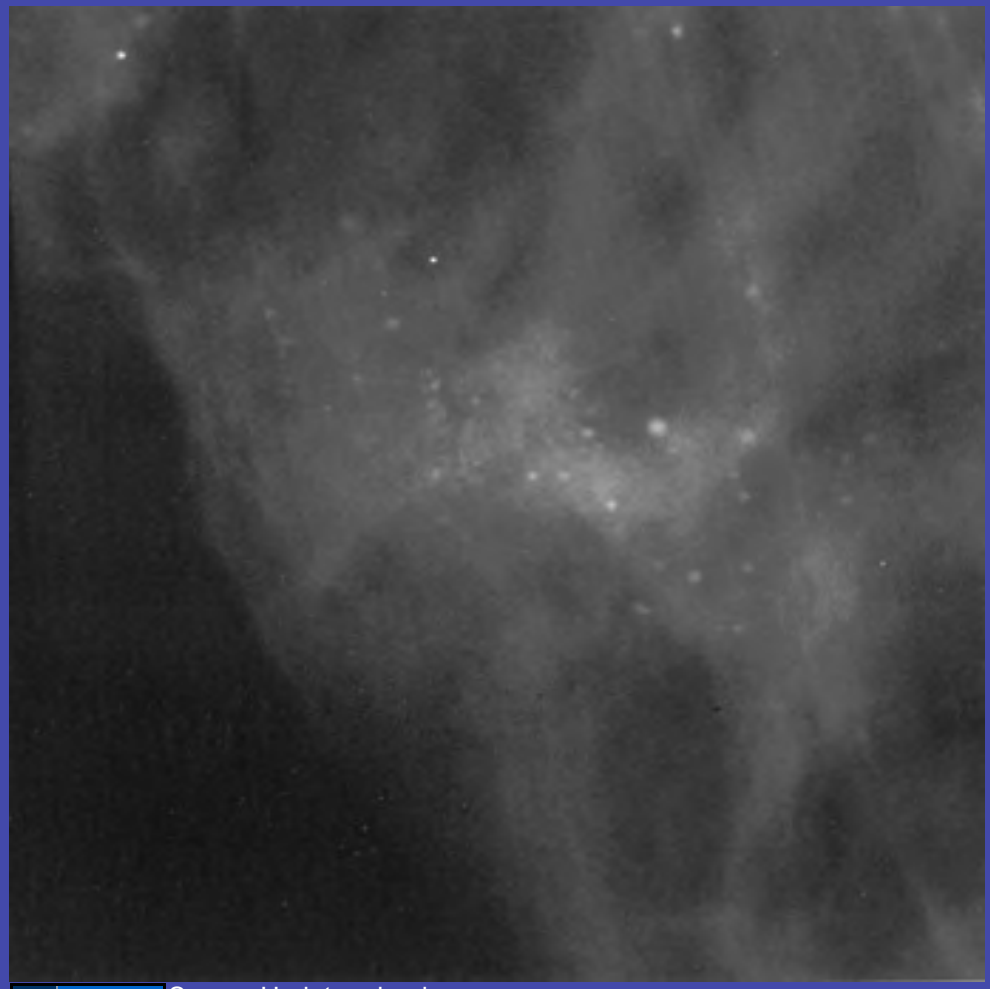
1. Invasive carcinoma develops at the site of biopsy in 25% to 50% of patients with DCIS treated with biopsy alone
2. When DCIS recurs after conservative surgery, invasive carcinoma is present in 50%

Intraductal Carcinoma (DCIS)

- Usually a nonpalpable incidental mammographic finding; but may present as a palpable mass, nipple discharge, or Paget's disease
- Lesions with comedonecrosis may appear on mammogram as irregularly shaped microcalcifications
- Multicentric (> 1 quadrant) in ~30%
- Invasive carcinoma will develop in the contralateral breast in 3% to 5%

Ductal Carcinoma In-situ

Mammogram



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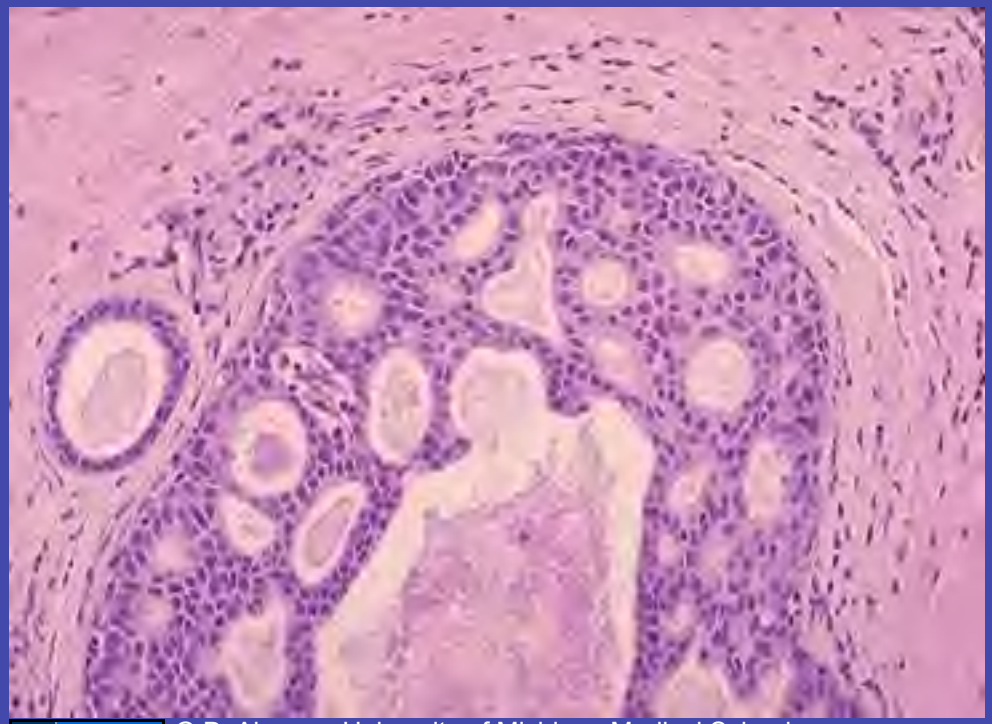
Intraductal Carcinoma (DCIS)



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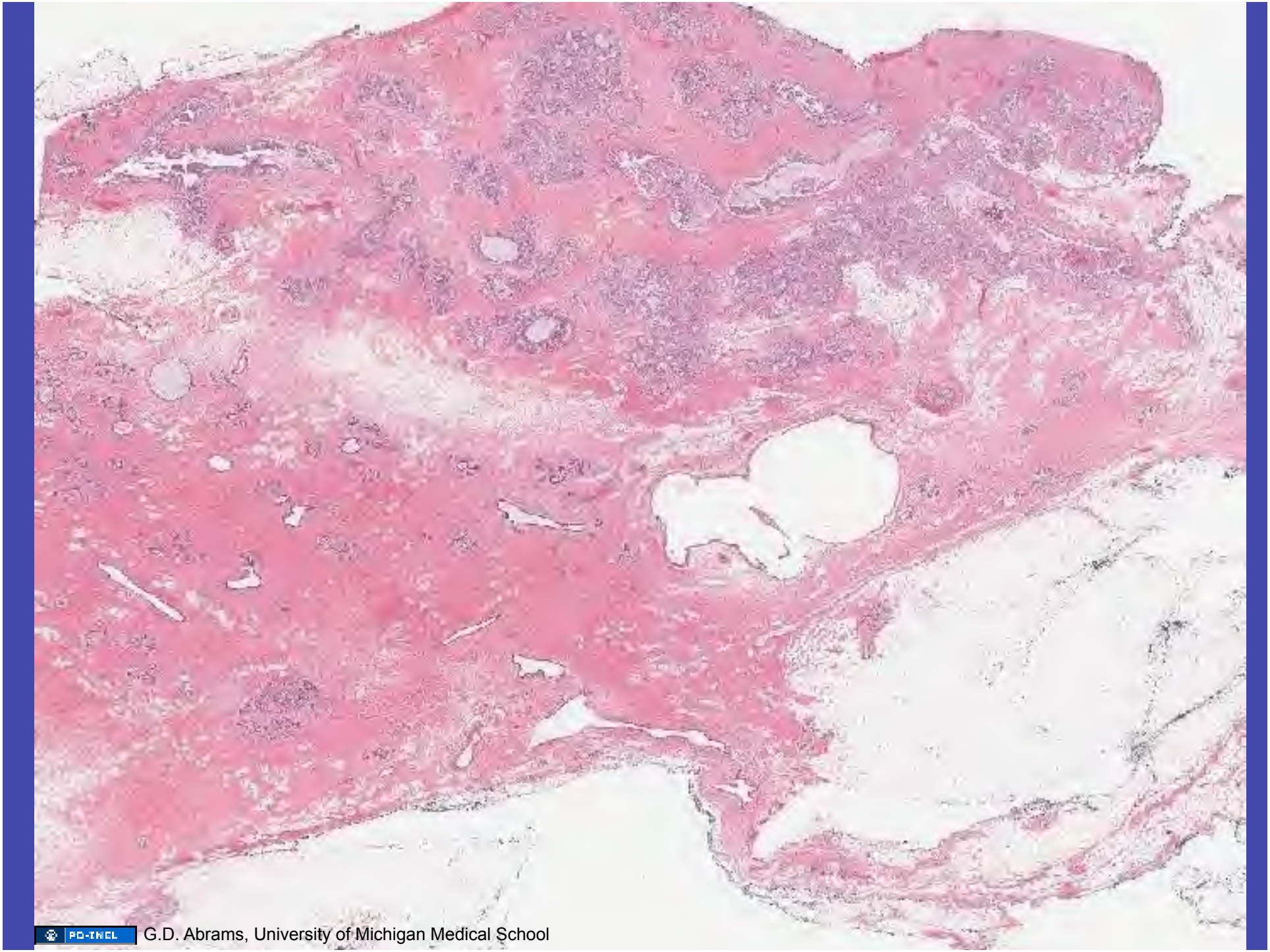
A proliferation of epithelial cells with morphologic features of malignancy that are confined to the ductal system and do not demonstrate stromal invasion. Myoepithelial cell layer may be present.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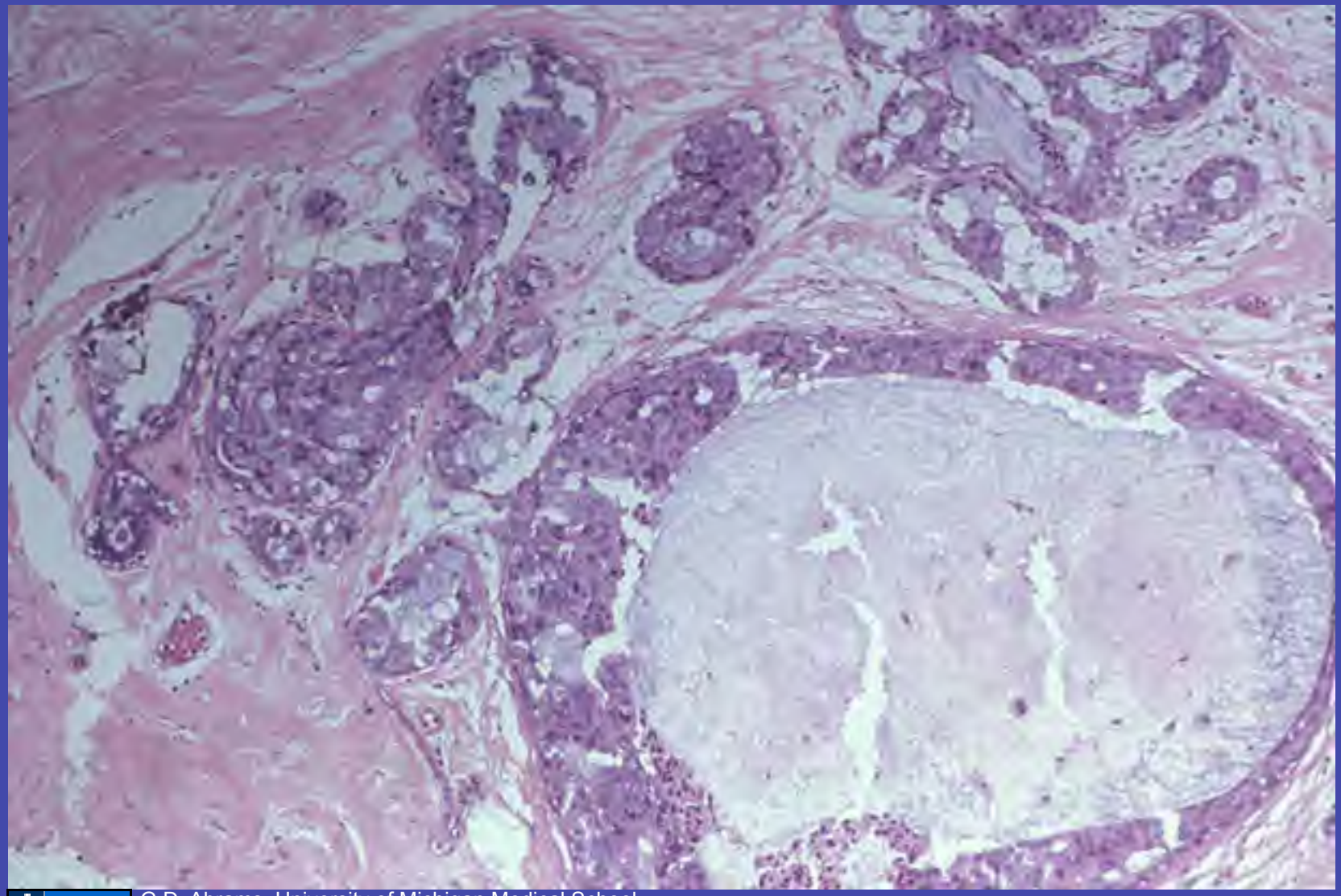

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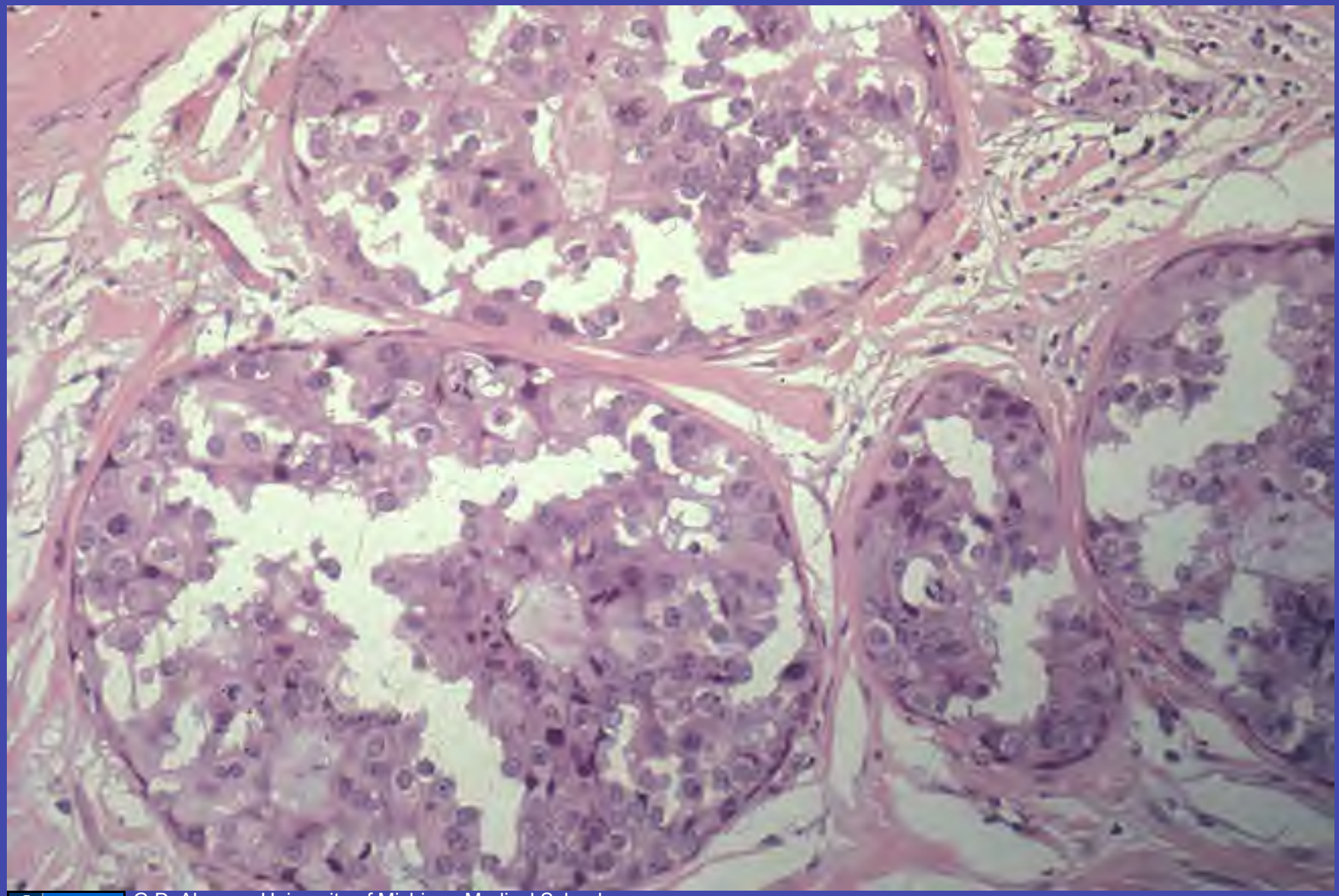

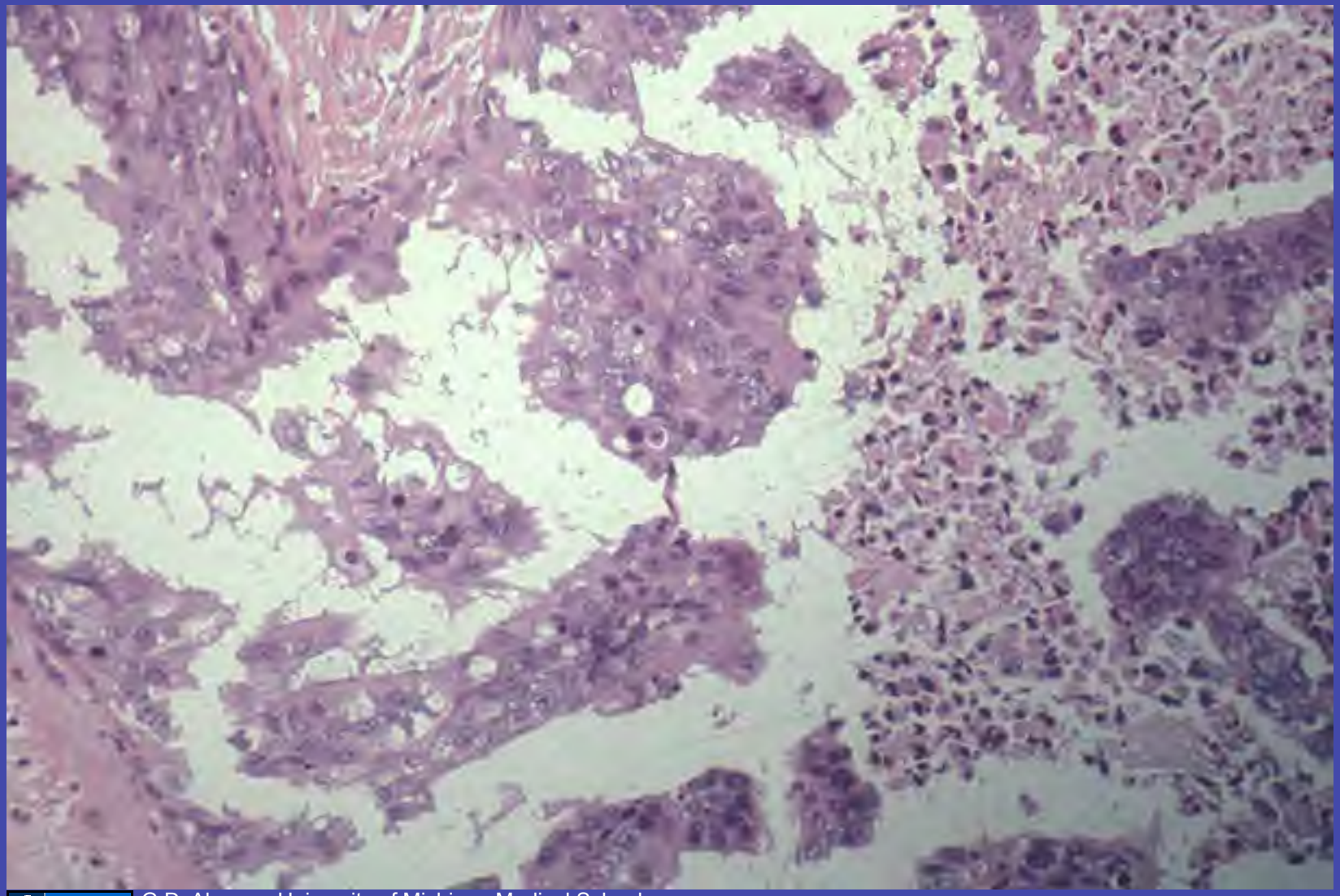

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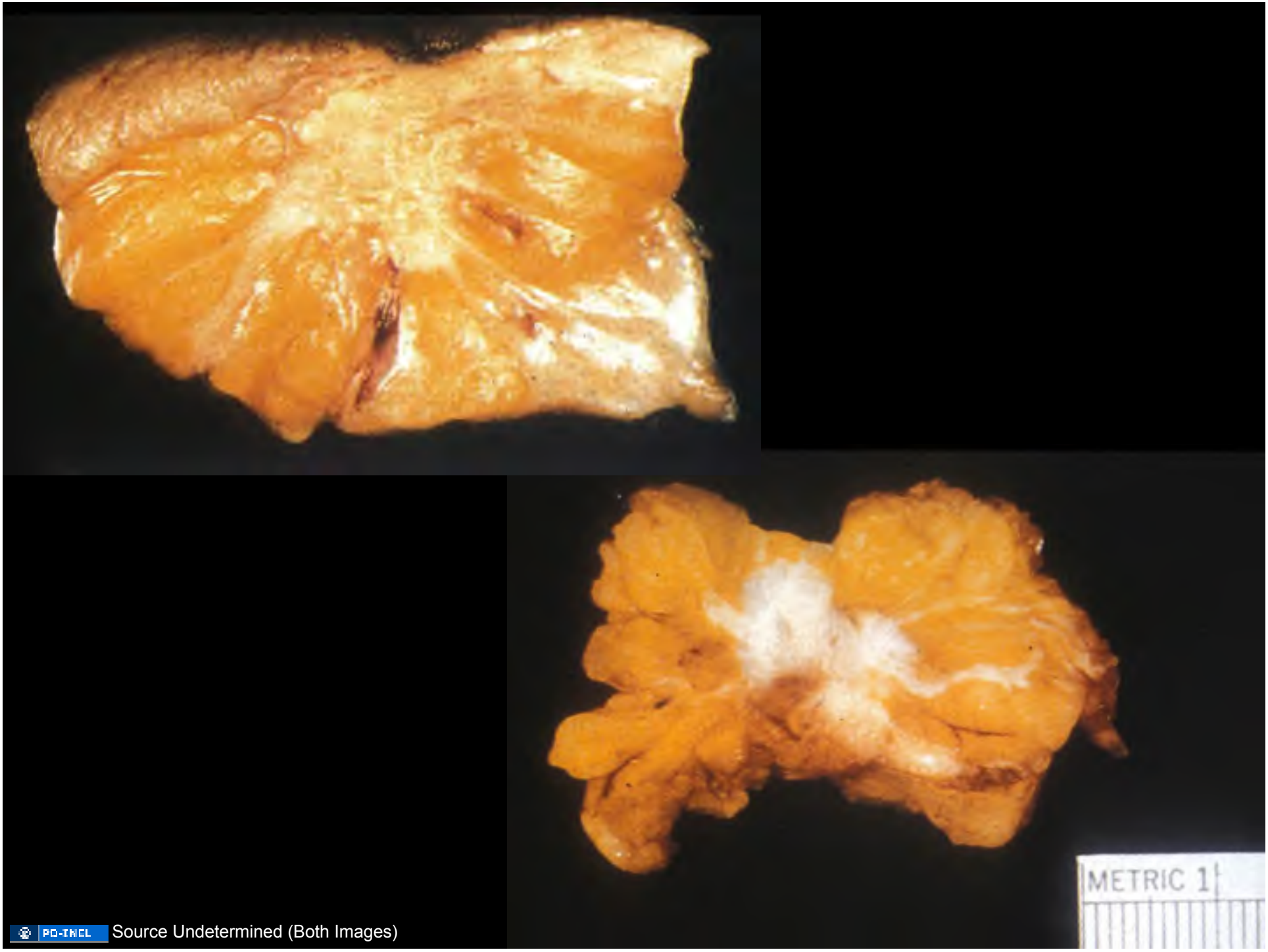
Invasive Ductal Carcinoma

50% to 75% of all invasive carcinomas of the female breast

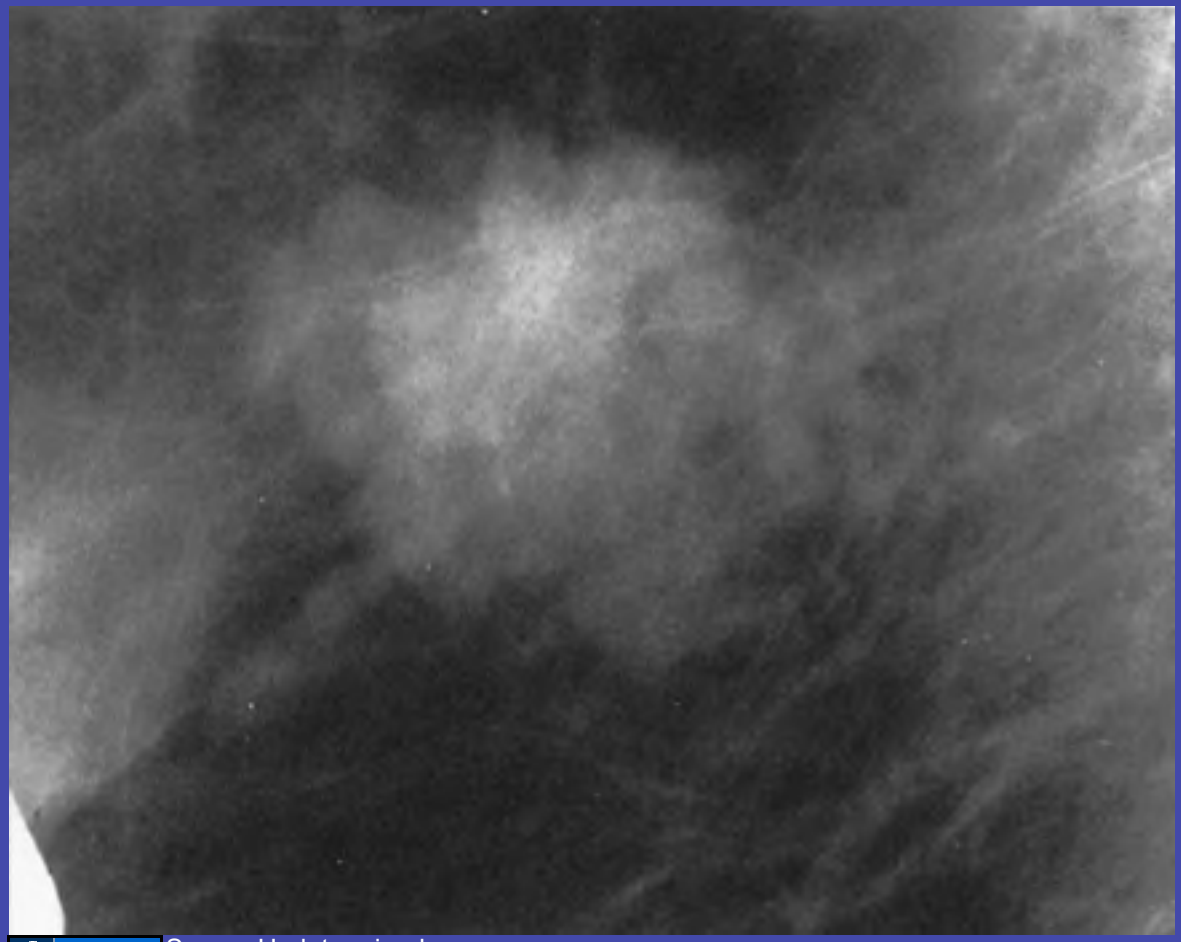
Most present with palpable mass or mammographic abnormality

Occasionally a patient will present with nipple retraction or discharge, skin edema ("peau d' orange"), fixation to the chest wall, or Paget's disease

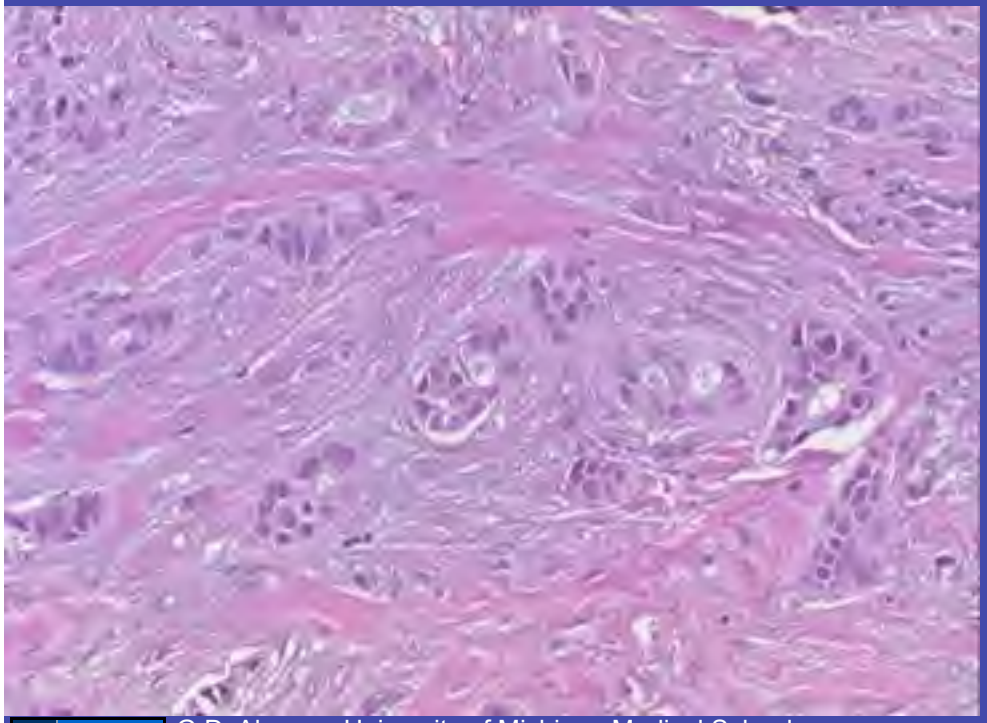


Invasive Ductal Carcinoma

Mammogram



Invasive Ductal Carcinoma



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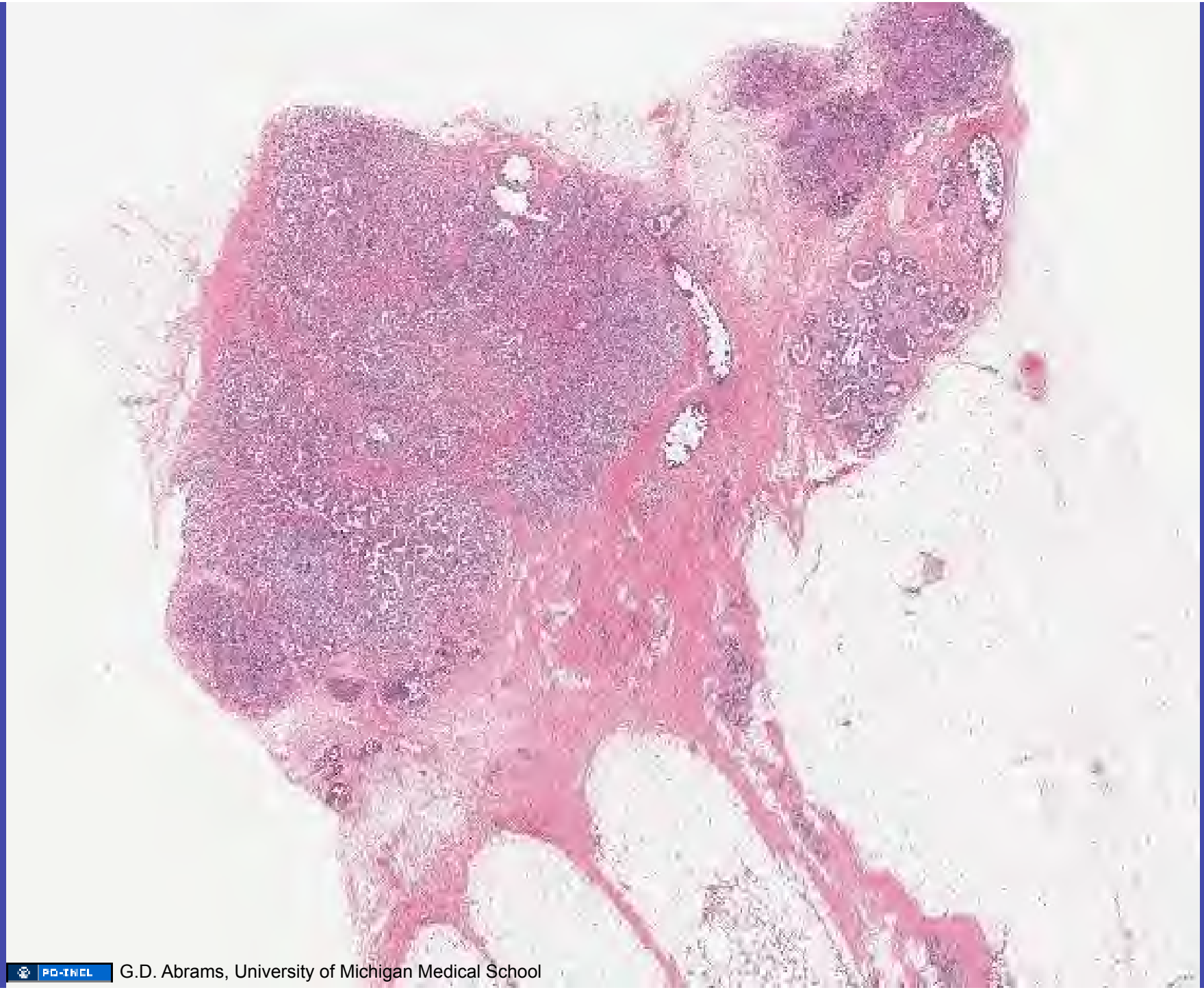
Irregular or rounded solid aggregates of cells admixed with single cells and cords that usually appear as poorly formed tubules and have glandular lumens. Tubules and aggregates lack a basal lamina and surrounding myoepithelial cells.



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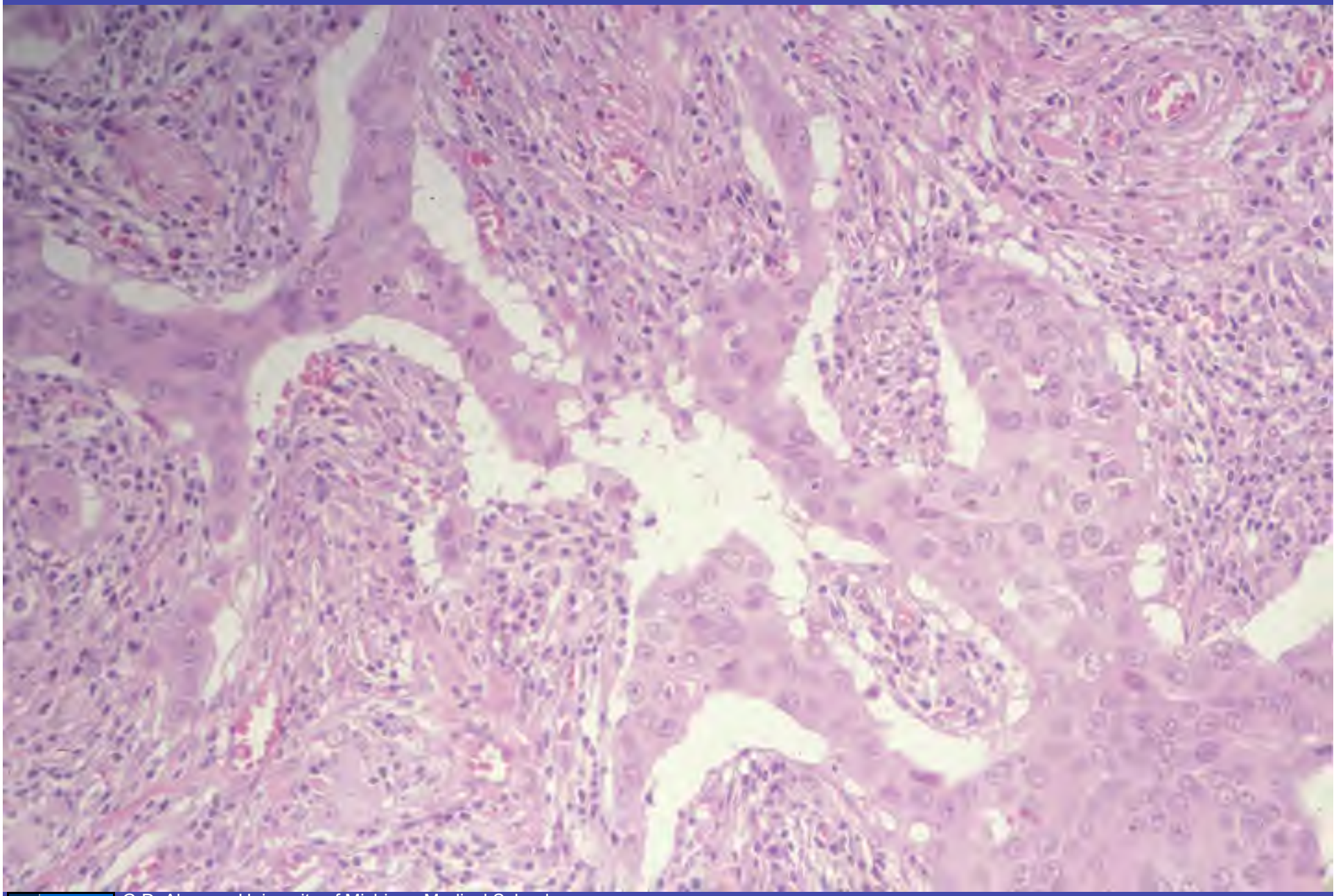

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Radial Scar

- Mimics invasive carcinoma on mammogram and on physical exam (especially if large enough to be palpable)
- Multicentric in 65%
- Bilateral in 45%
- A frequent finding in women with FCC (45%)
- Some risk for the subsequent development of invasive carcinoma

Radial Scar

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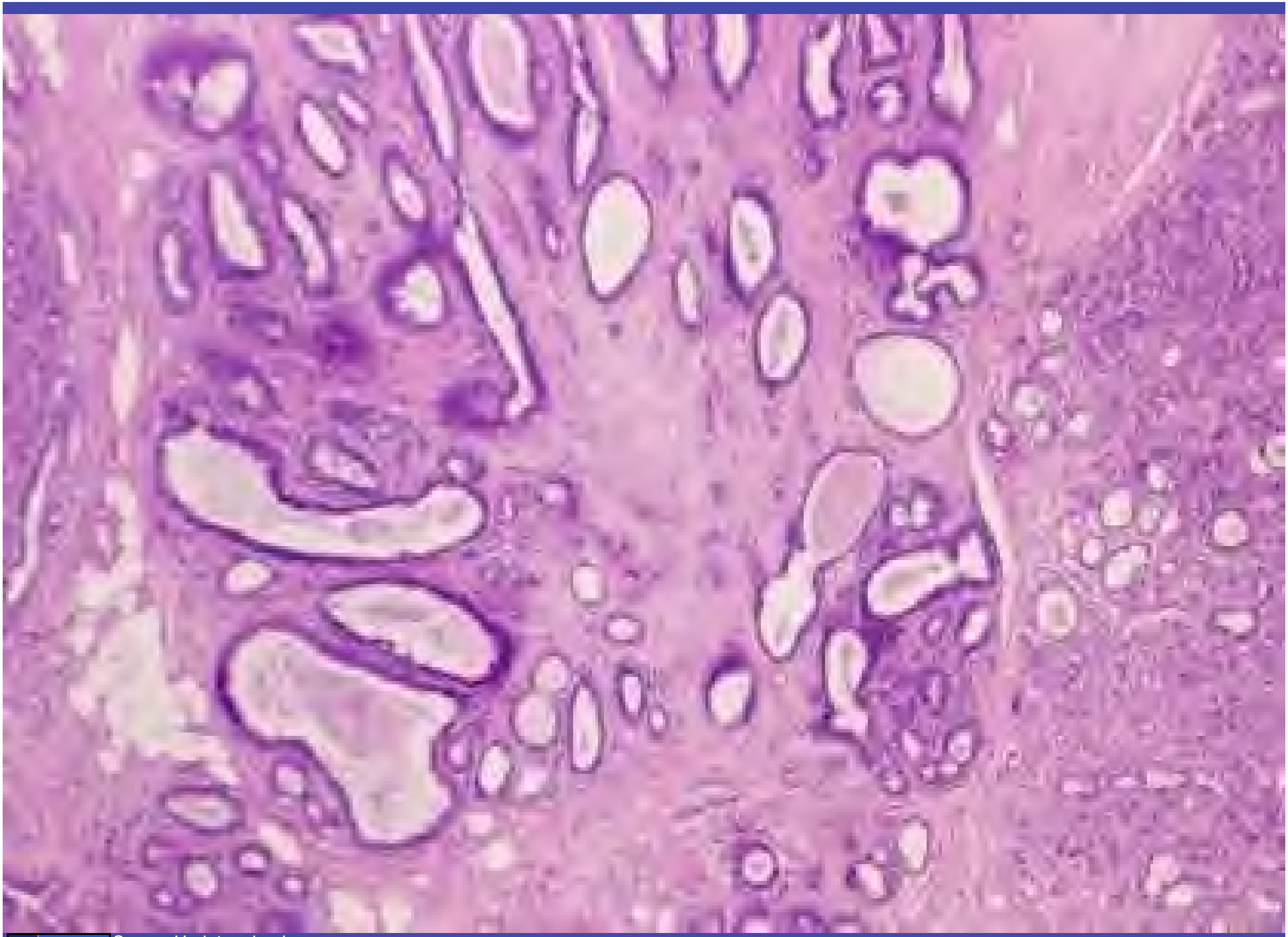
- A fibroelastotic core with radiating bands of fibrous connective tissue that contain round, gland-like structures and ducts with hyperplastic epithelium and a surrounding myoepithelial layer.



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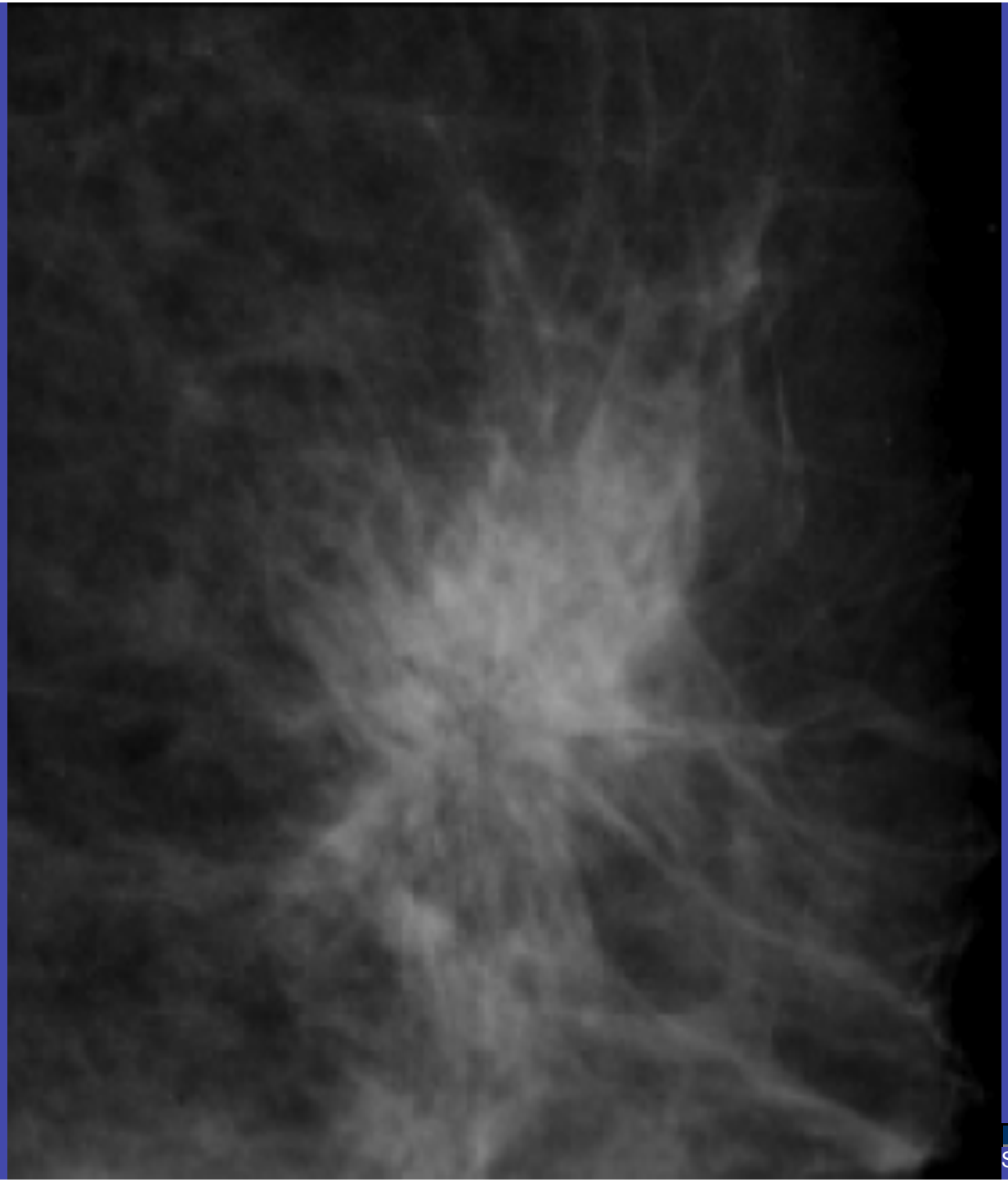

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Source Undetermined

Phyllodes Tumor
(Cystosarcoma Phyllodes)

- < 0.5% of all breast tumors
- Most patients present with a large mass;
  some will give a history of having a small hard mass for many years that suddenly enlarges
- Occasional lesions are quite massive and stretch the skin, displace the nipple, and distend overlying superficial veins

Phyllodes Tumor

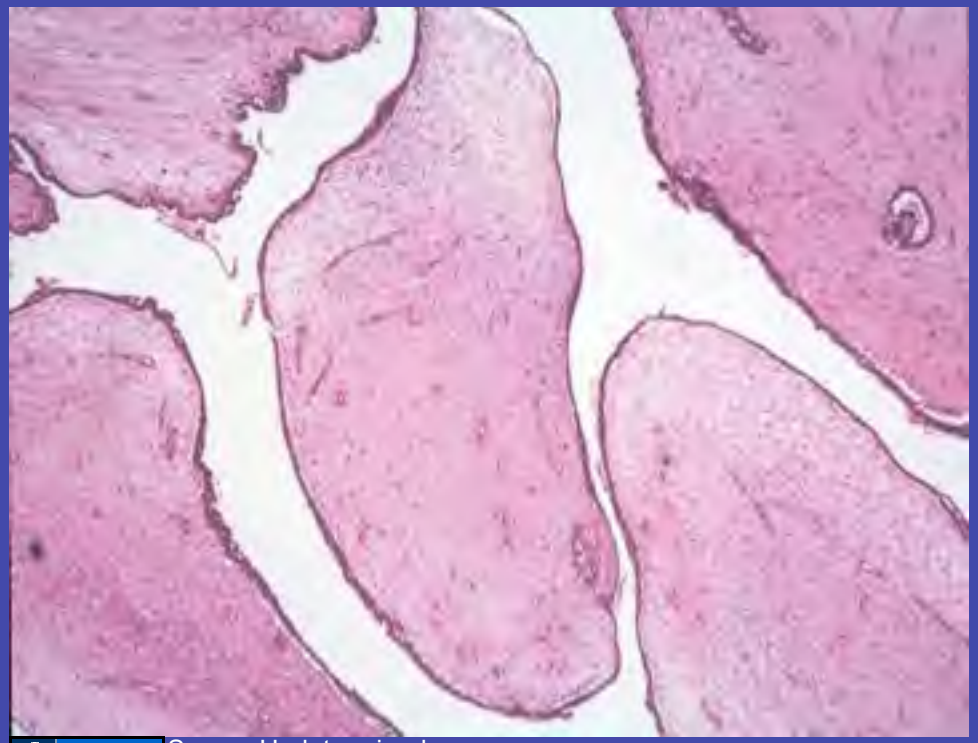
- Low-grade Intermediate-grade High-grade

- Grading based on five criteria: stromal cellularity, stromal atypia, microscopic appearance of tumor margin (infiltrating, effacing, or bulging), number of mitoses per 10 hpfs, and macroscopic size of the tumor

- High-grade tumors may have stroma similar to that of other types of soft tissue sarcomas (e.g., fibrosarcoma, rhabdomyosarcoma, liposarcoma, chondrosarcoma, osteosarcoma, etc.)

Phyllodes Tumor

Low-grade



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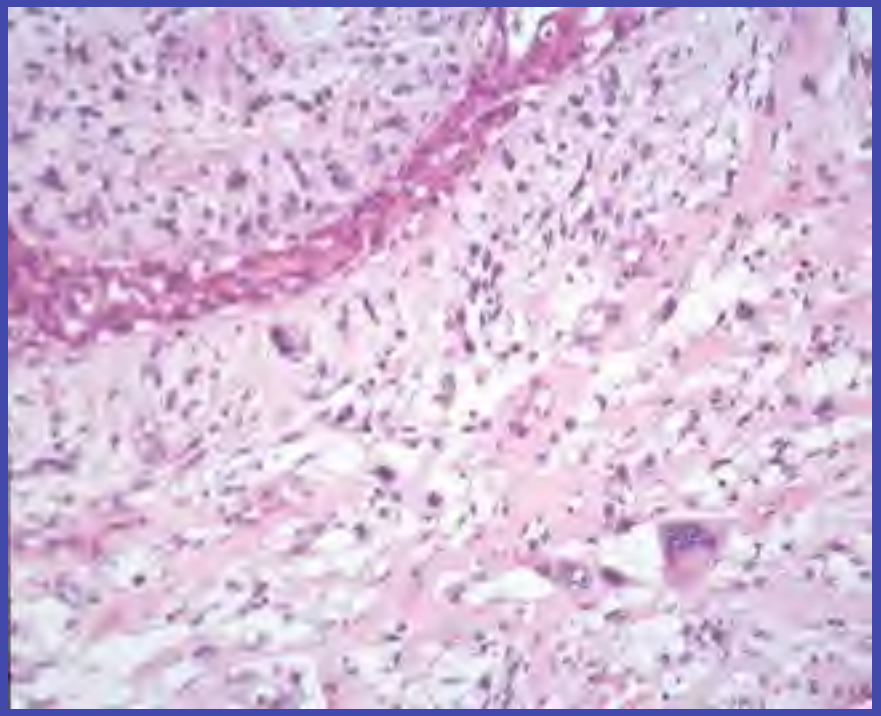
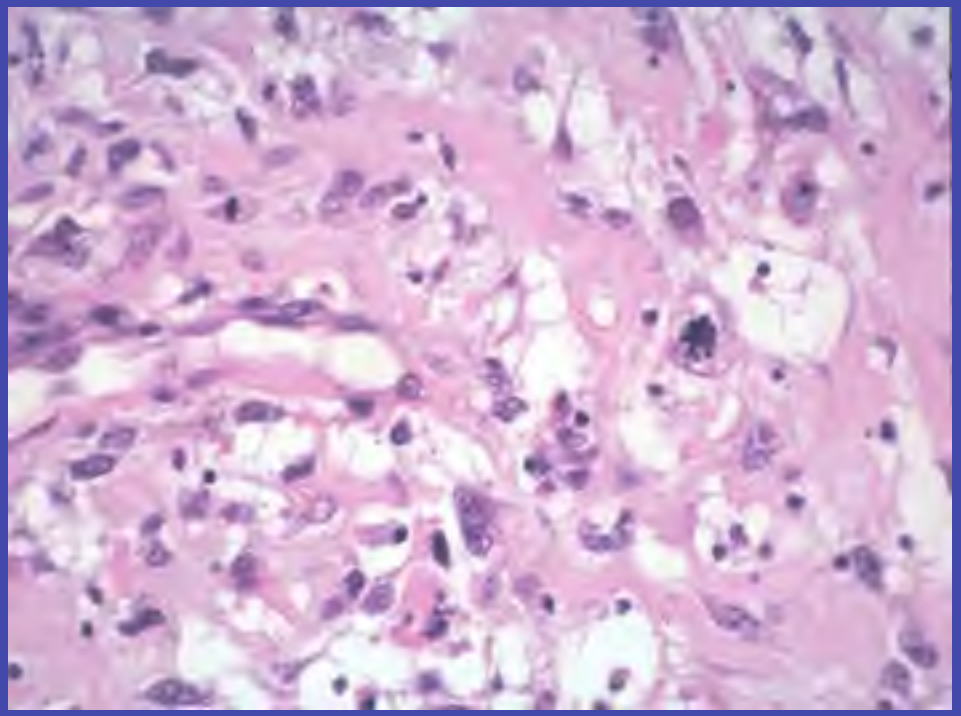
- Leaf-like processes protrude into cystic slit-like spaces. Epithelial cells (luminal and myoepithelial) line ducts and cover leaf-like processes. Stroma tends to be cellular and consists of spindle-shaped cells (fibroblasts and myofibroblasts).

Phyllodes Tumor

High-grade





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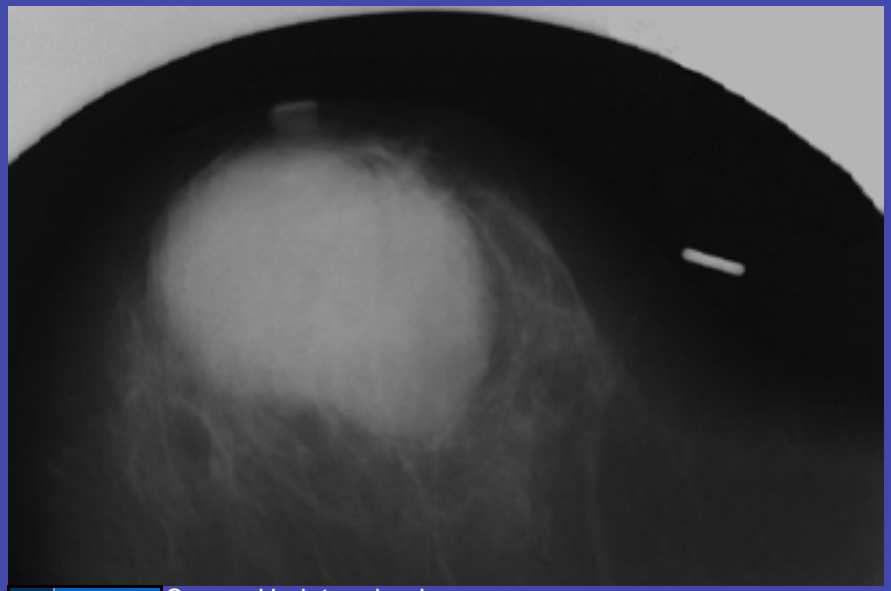

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Paget's Disease

- Early nipple involvement characterized by erythema and puritis
- With progression, nipple develops a moist, scaling, eczematoid change that eventually ulcerates
- 95% have an underlying in-situ or invasive carcinoma

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PD-INCL Source Undetermined

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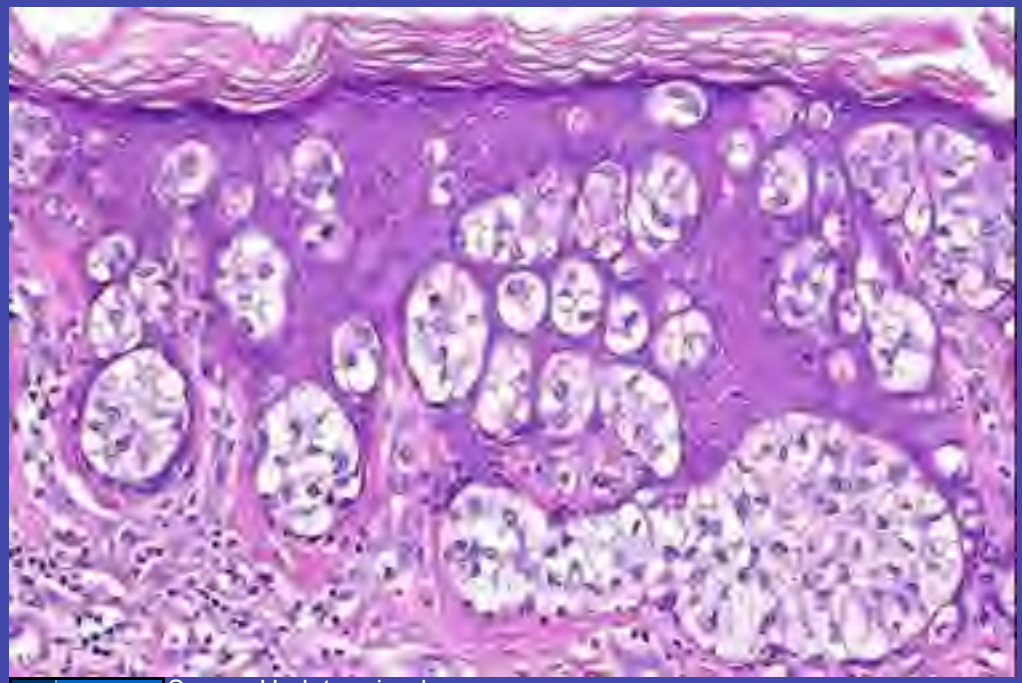
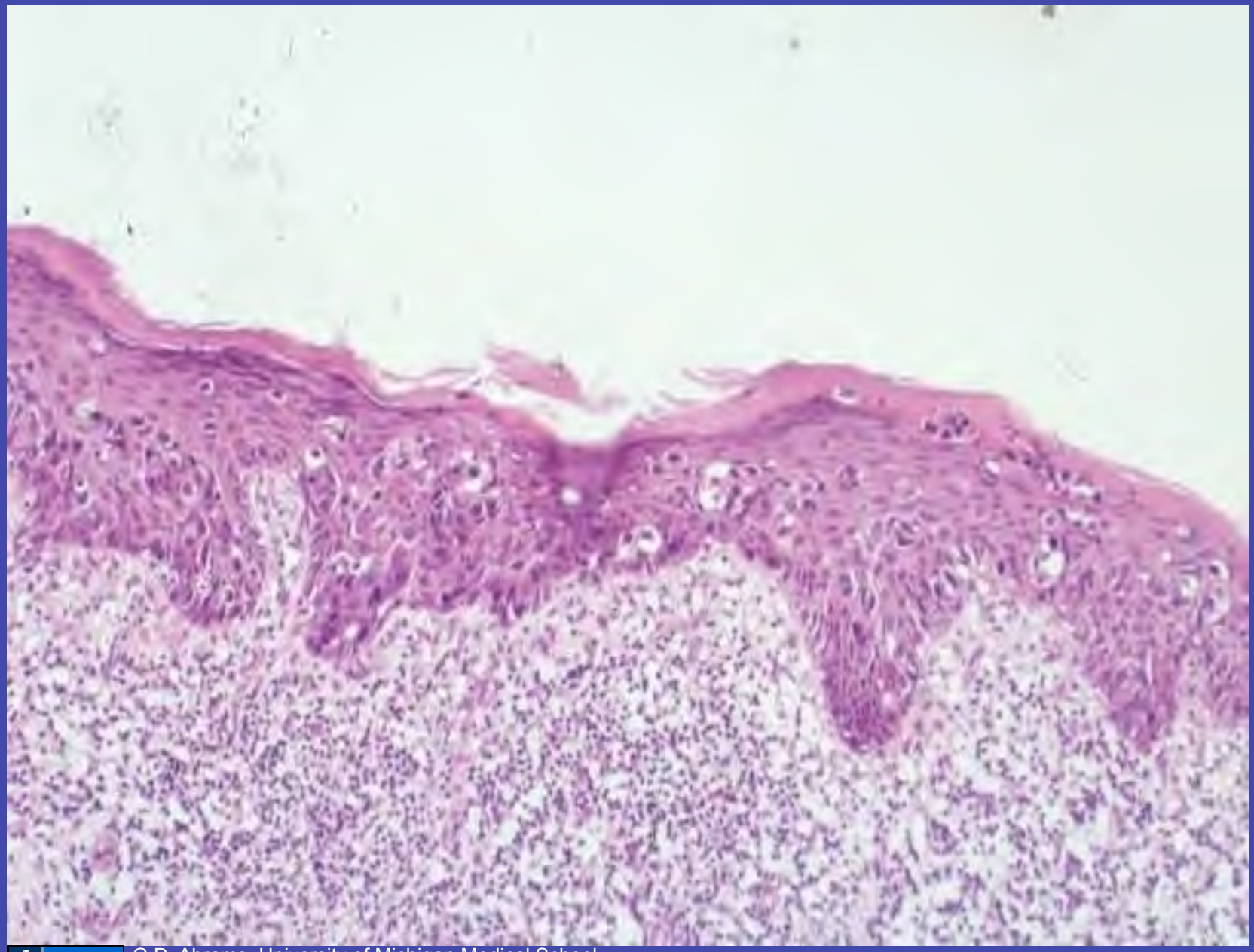
Paget's Disease



Source Undetermined

- Large, round to oval cells with abundant, pale eosinophilic or amphophilic cytoplasm with prominent round nuclei and distinct nucleoli are scattered singly or in clusters in the surface epithelium of the nipple. An underlying carcinoma present in 95%.



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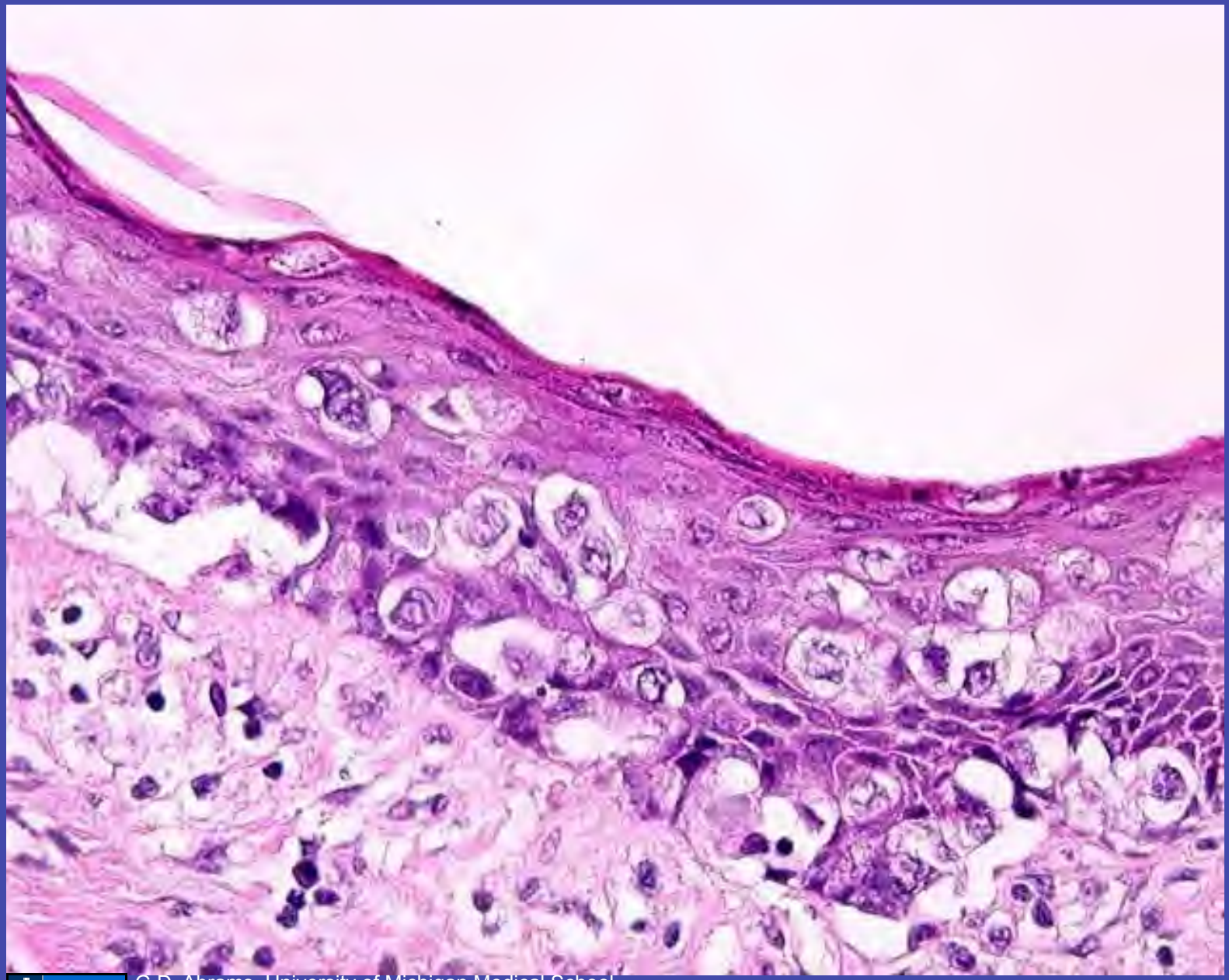

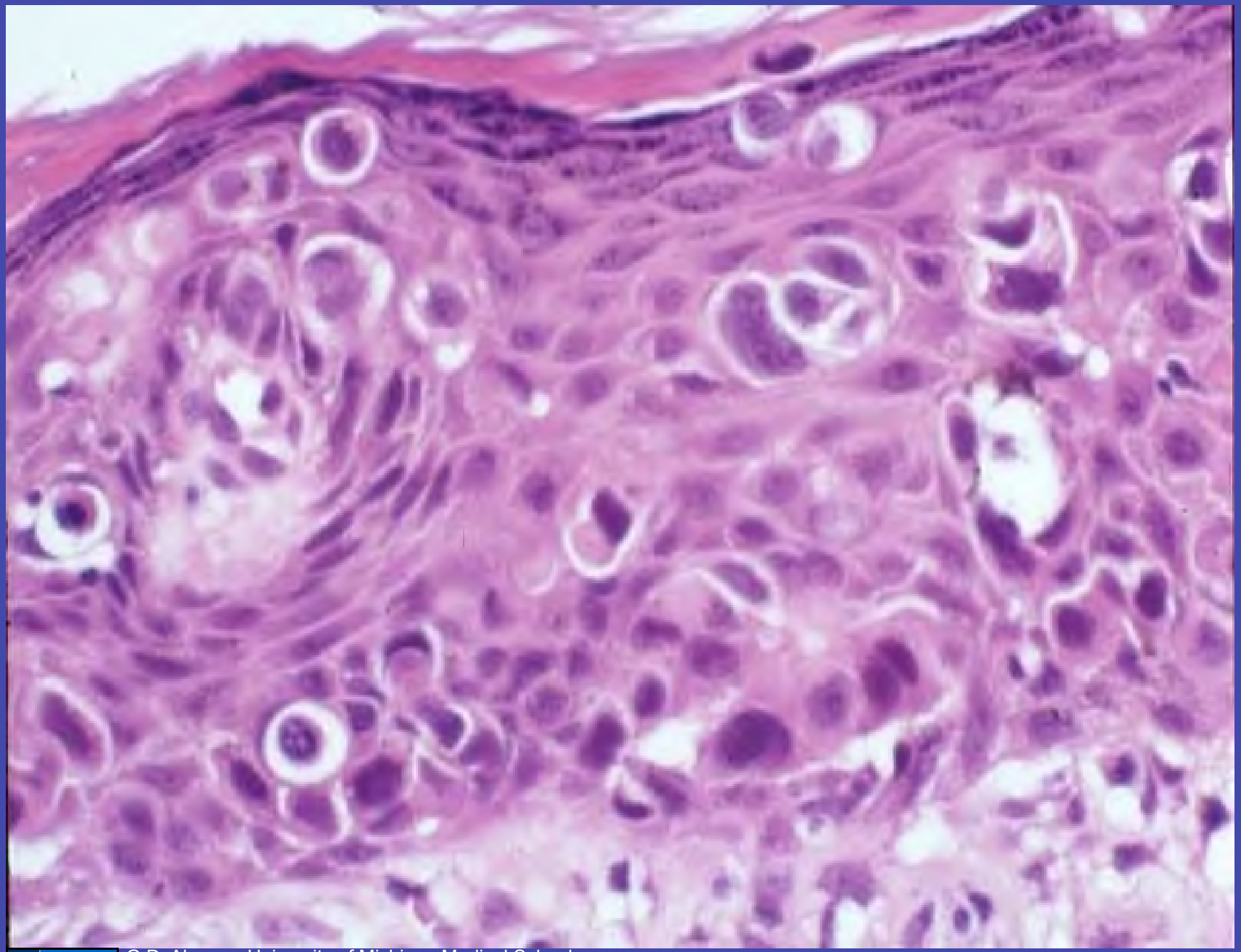
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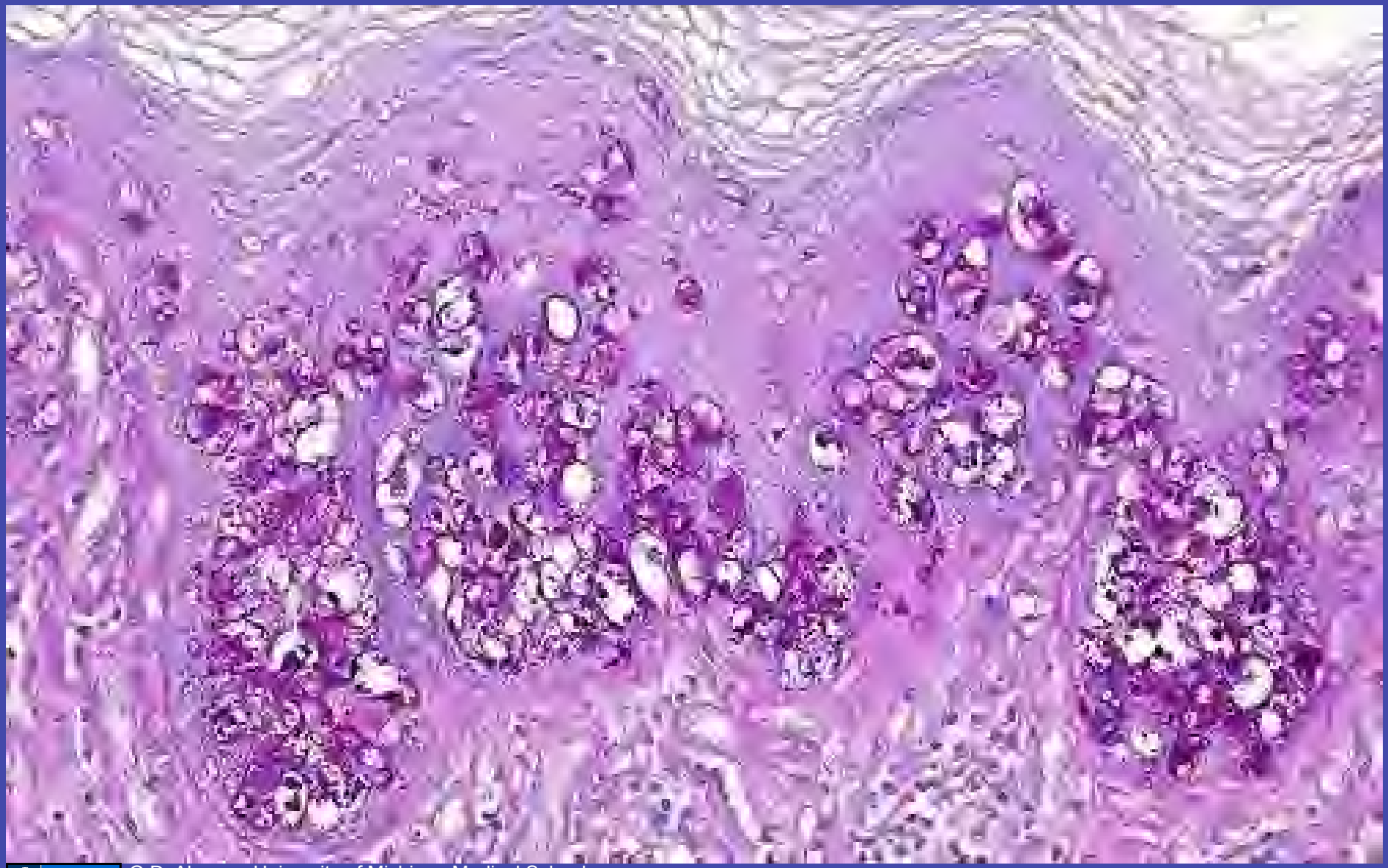

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