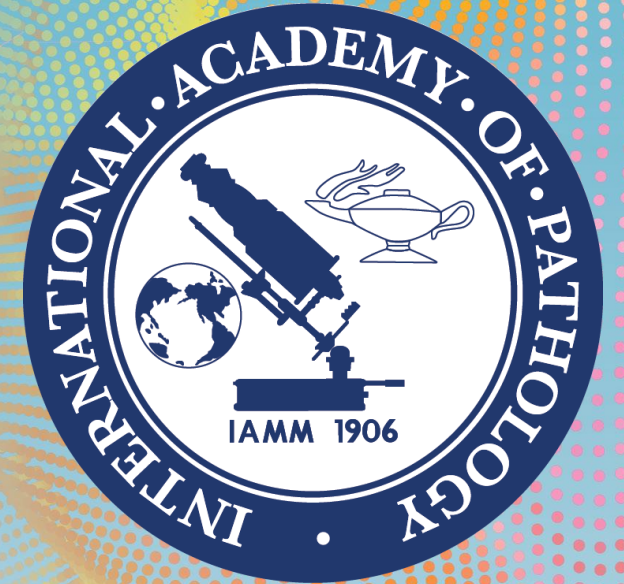


A Neoplastic Rarity in Pulmonary Pathology

Dr Anastassia Silaeva –
Anatomical Pathology Registrar

SA Pathology



 The 48th Annual Scientific Meeting *of the*

Australasian Division of the
International Academy of Pathology

Disclosure of Relevant Financial Relationships

No relevant financial relationships.

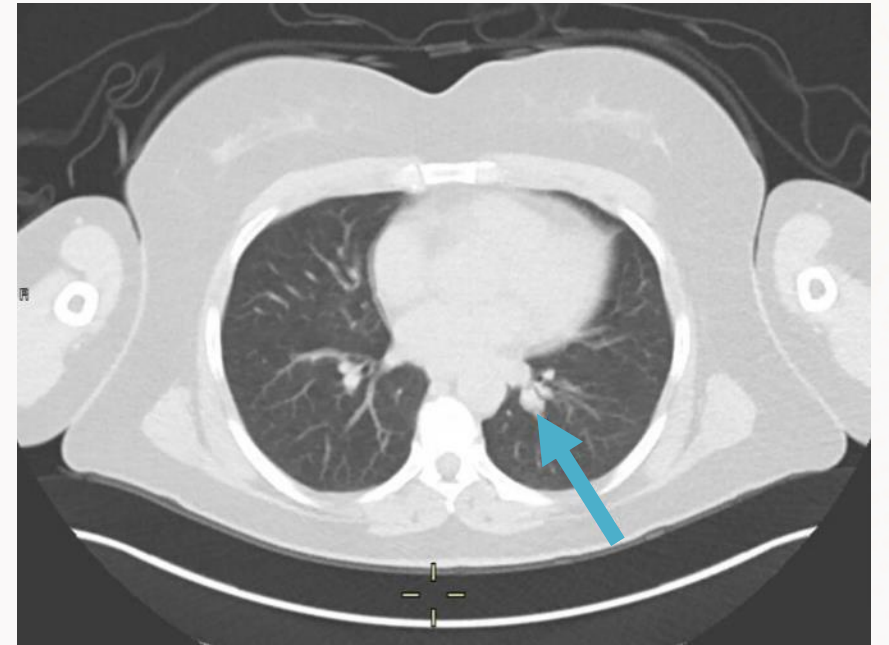
Clinical History

Ex-smoker, 50s

Left lower lobe lesion identified incidentally on CTCA

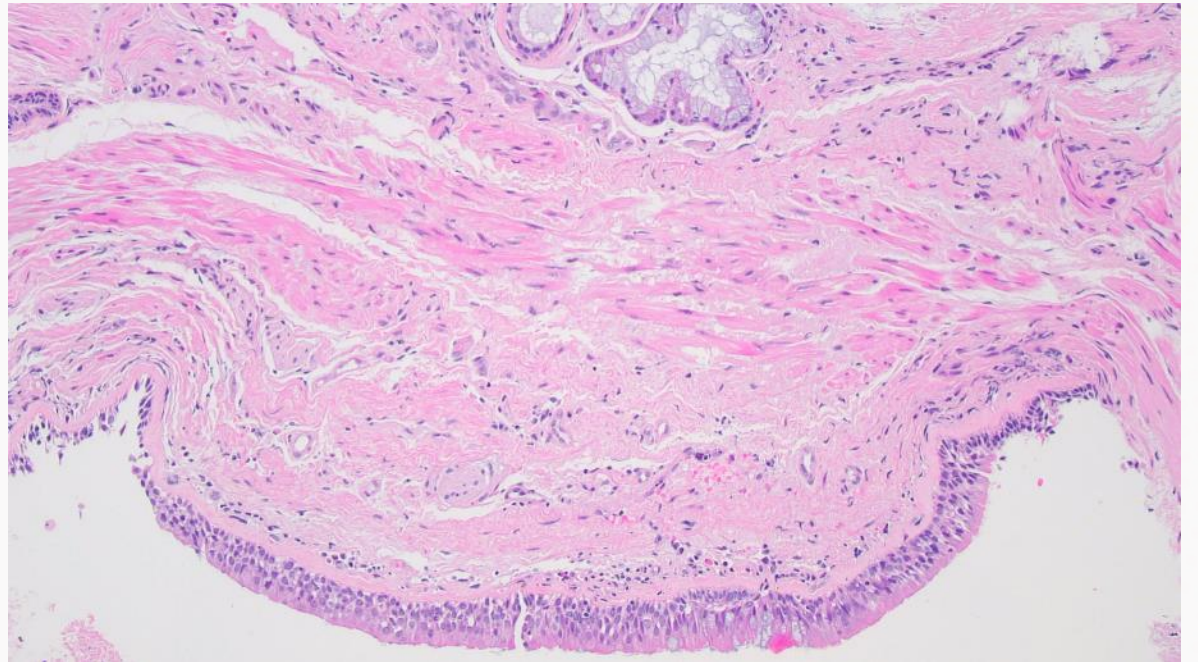
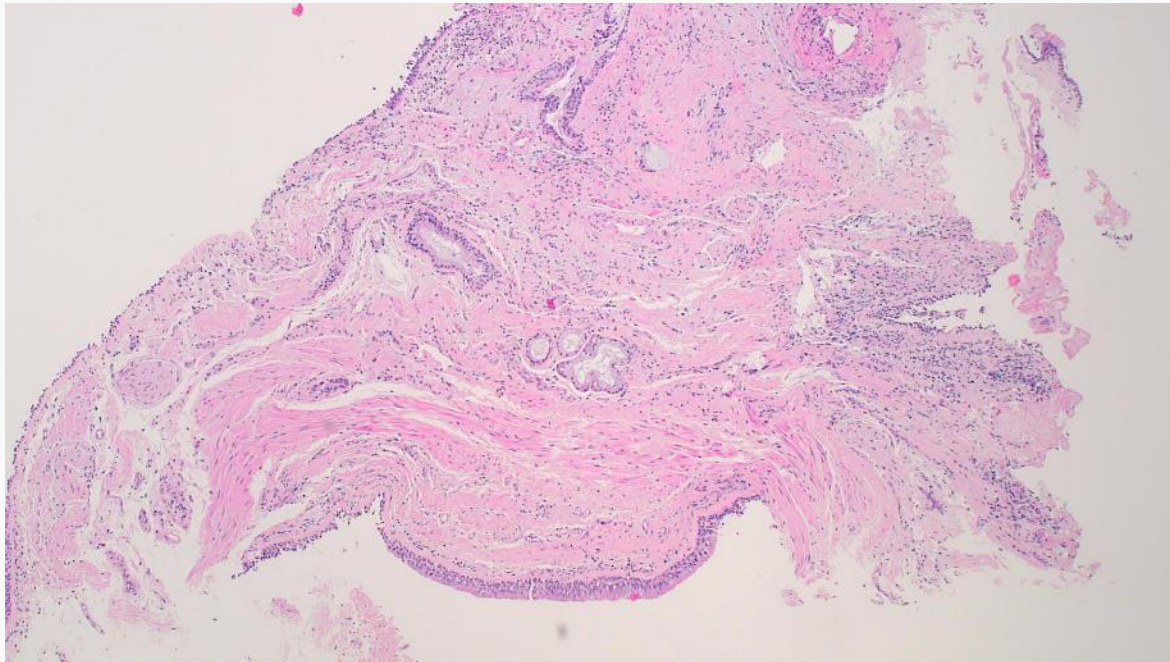
- **12mm endobronchial lesion** → incomplete obstruction of the left lower lobe bronchus + subsegmental distal collapse at left lung base
- PET + Ga68 negative

Initial clinical suspicion of carcinoid



Initial Biopsy

Radial guide sheath forceps biopsy - 6 fragments of tissue, 1-2mm in size
- no significant pathology (bronchial wall with respiratory epithelium)

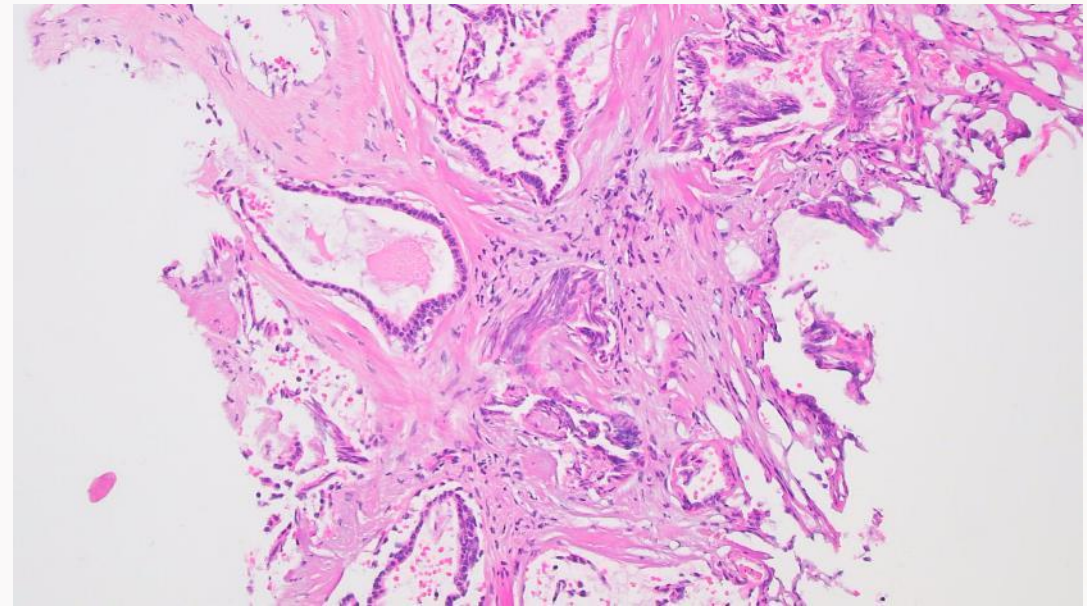
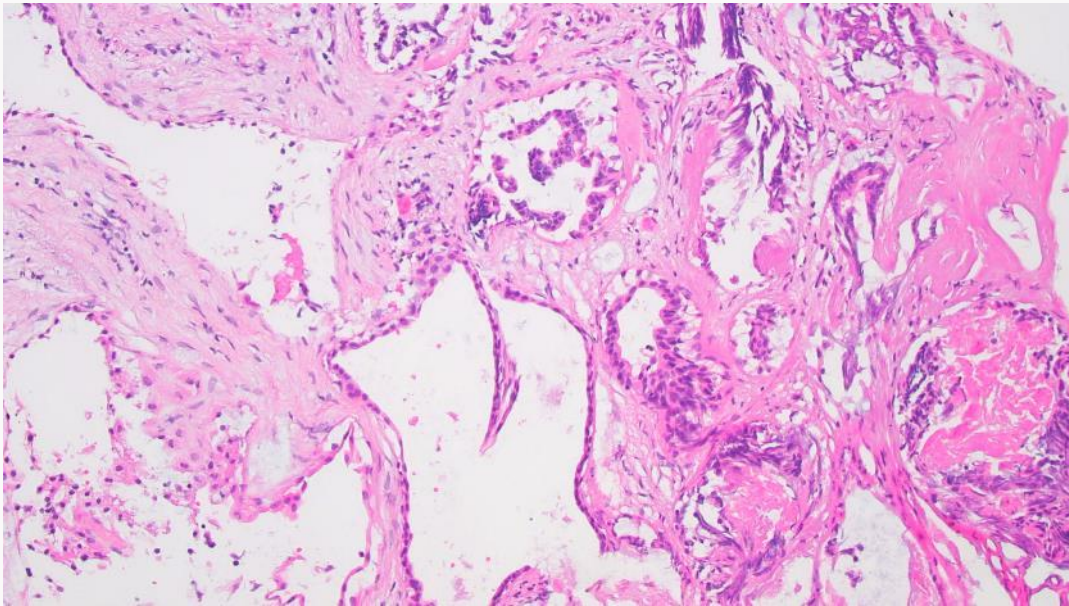


Repeat Biopsy

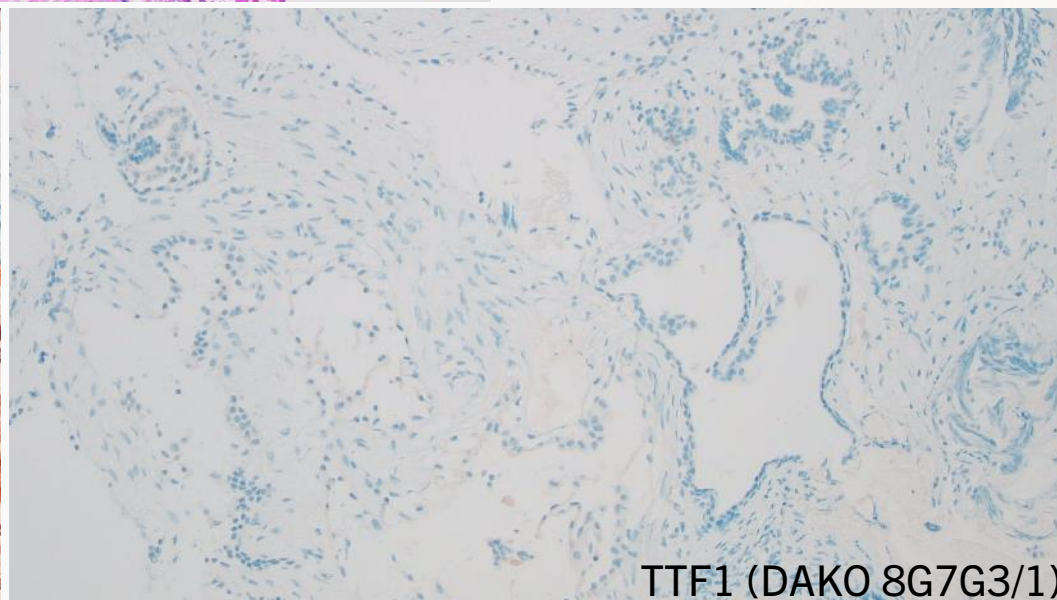
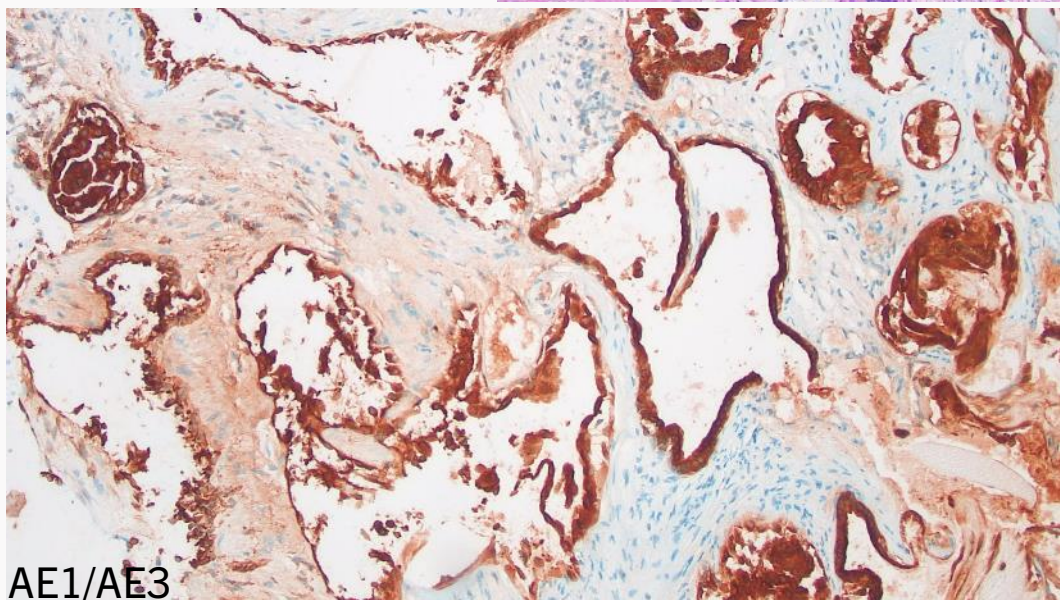
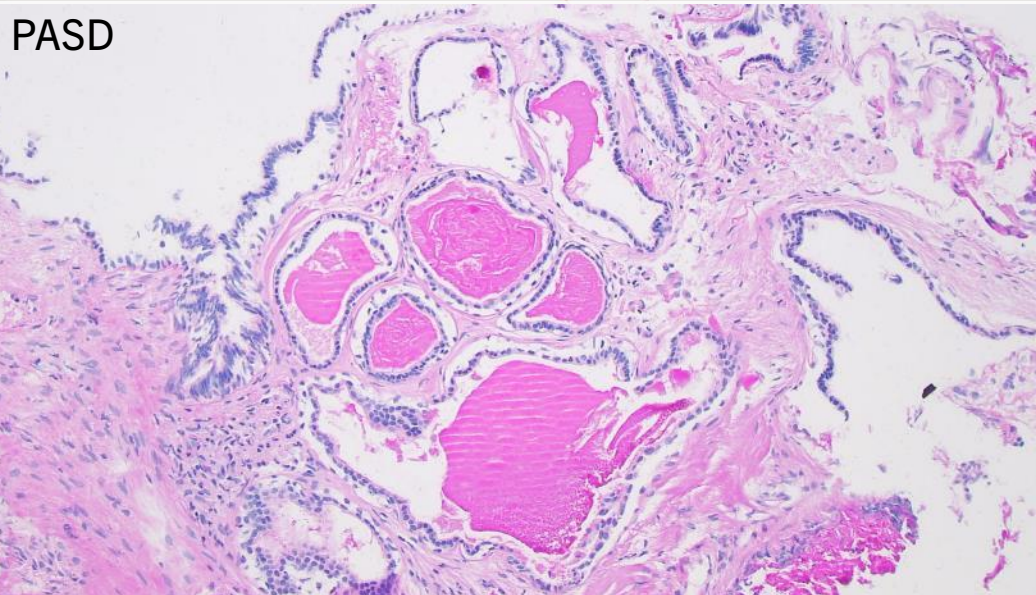
Forceps biopsy + cryobiopsy - Multiple fragments 2-6mm in size

Submucosal glandular lesion, possible mucus gland adenoma (MGA). Definitive diagnosis not possible on small biopsy.

- Glandular proliferation and loose fibrous stroma, with scattered mononuclear infiltrate.
- No significant cytological atypia or proliferative activity.
- Mucin confirmed on PASD. Positive AE1/AE3. Negative TTF1.



Special Stains & IHC



Recurrence on Surveillance Imaging

→ *Decision to proceed to left VATS Lower Lobectomy*

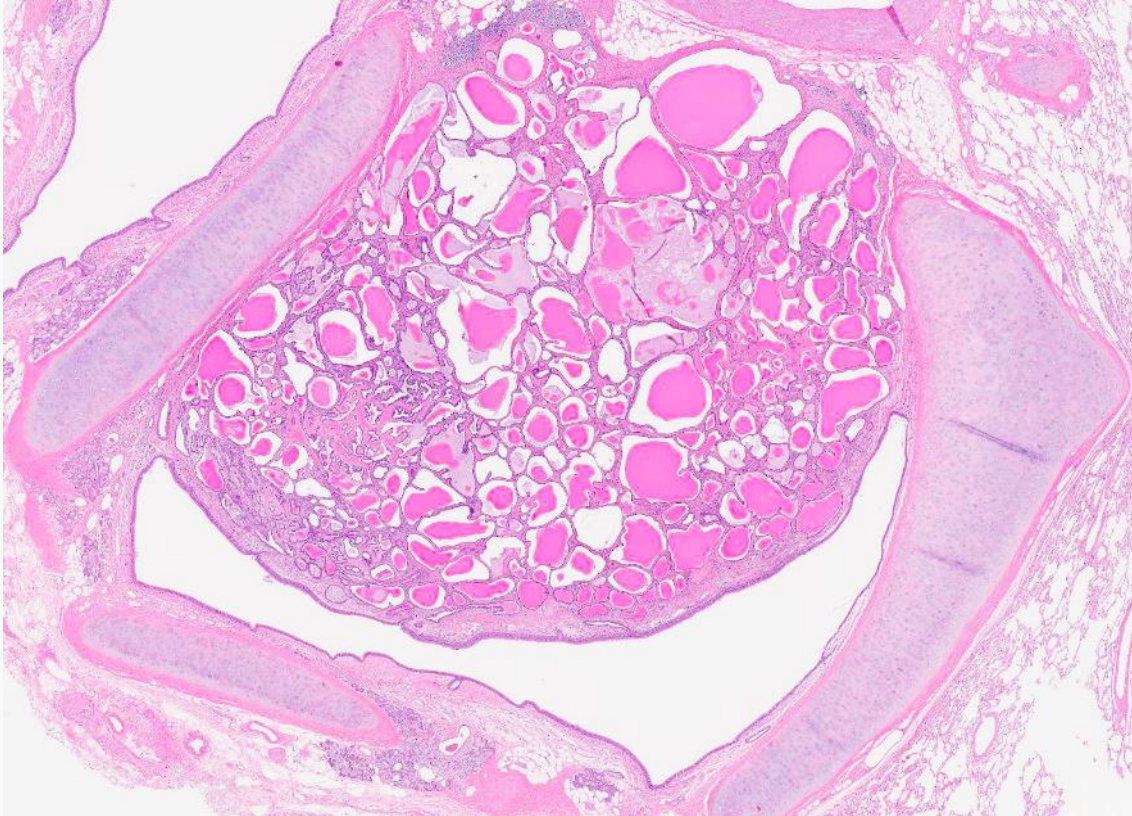
Excision Specimen

Left lower lobe lung + left lymph nodes
from Stations 9 & 10: *Mucous gland
adenoma, completely excised + benign
lymph nodes.*

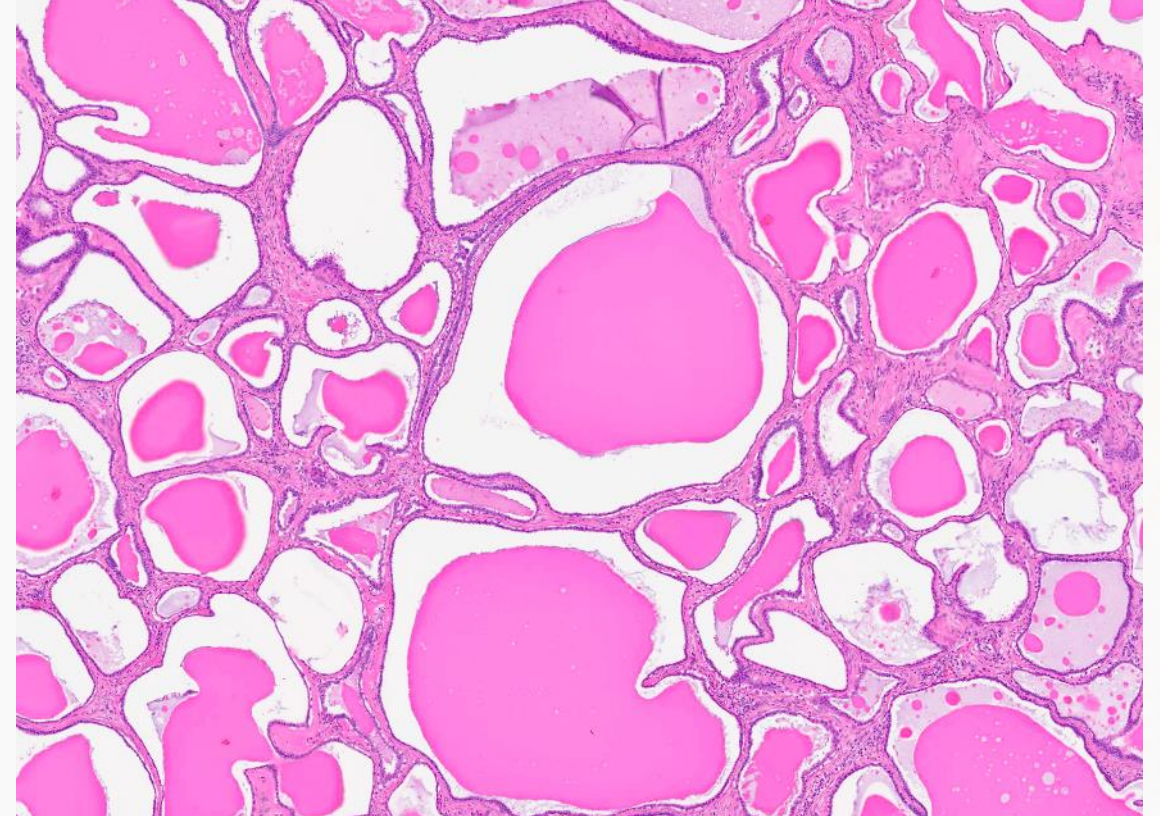
Photograph of Left Lower Lobe Slices:



Histology Photos – Part 1

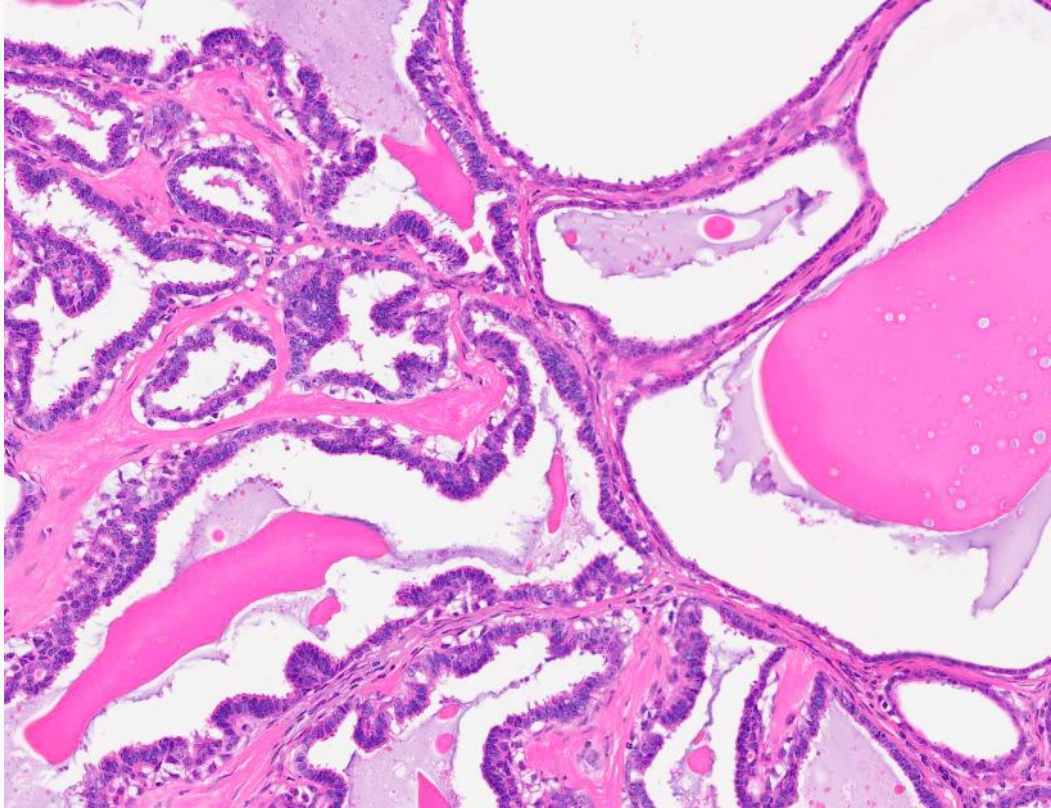


Well-circumscribed lesion, between the bronchial cartilage and the *bronchial epithelial mucosa*.

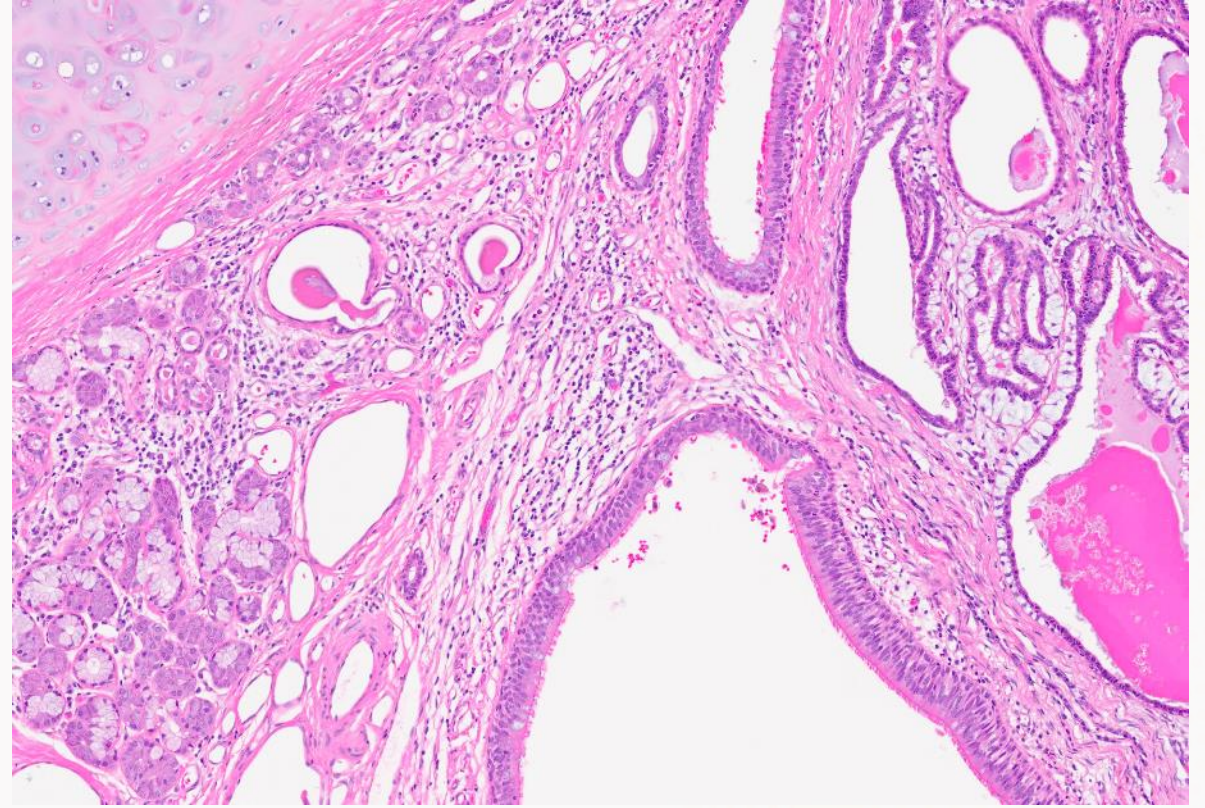


Fibrous stroma with a scattered mixed inflammatory infiltrate.

Histology Photos – Part 2



Lined by attenuated and columnar epithelium.



Adjacent normal endobronchial gland component.

Clinical Features of Mucus Gland Adenoma

- **Etiology:**
 - Extremely rare
 - Wide age range (25-67) and no gender predilection
- **Symptoms:** Obstructive – cough, hemoptysis, dyspnea, recurrent pneumonia
- **Imaging:** Well-defined mass

Morphology of Mucus Gland Adenoma

- **Location:** Generally found in proximal airways (most commonly lobar/segmental bronchi)
 - Few with similar histology seen in lung periphery
- **Appearance:** Predominantly *exophytic and well circumscribed*
 - Confined above cartilaginous plates
 - Cut surface tan-pink, solid or cystic
 - Often mucoid
- **Size:** 8-68mm in size

MGA In Literature

First description of *bronchial adenoma* by Mueller in 1882

In 1995 England et al. first defined the *histopathological criteria* for diagnosis of MGA

Mucus Gland Adenoma: The Spectrum of Growth

Patterns and the Diagnostic Challenges — Advanced

Anatomical Pathology, 2020

Zaleski MP, Neda, K & Moran, CA

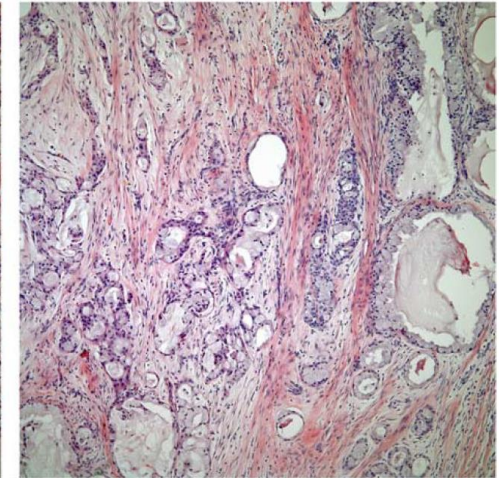
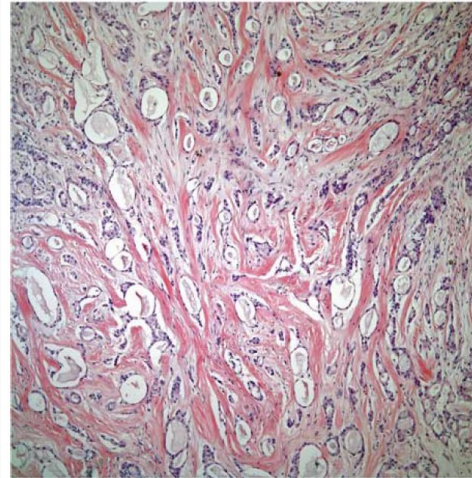
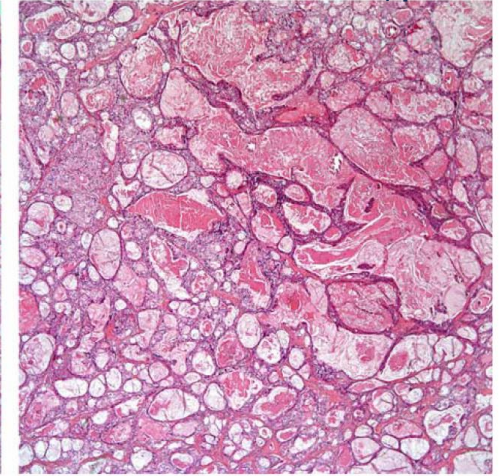
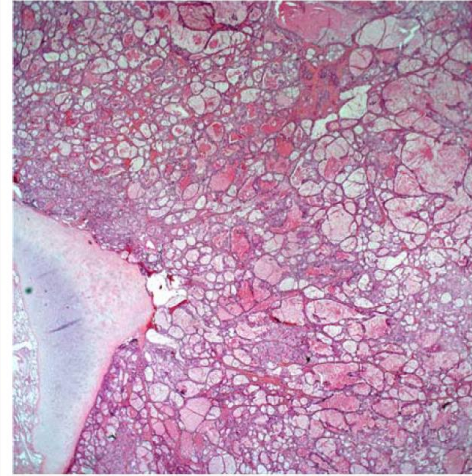
Features contributing to a challenging diagnosis:

- No specific symptomatology linked to mucus gland adenoma
- Given rarity, radiological features not well characterized
- For peripheral lesions, the cartilaginous plate may not be easily identifiable

Mucus Gland Adenoma: The Spectrum of Growth Patterns and the Diagnostic Challenges

Histological features categorised into 5 growth patterns:

- Pure Mucinous
 - Acinar, Acinar with basal cell hyperplasia, Microacinar
 - In Microacinar, there may be focal adenomatoid-like or signet-ring cell-like areas
- Pure Cystic
- Combined cystic – microcystic – papilocystic
- Combined cystic and acinar
- Mucoepidermoid-like
 - Mimics low grade mucoepidermoid carcinoma



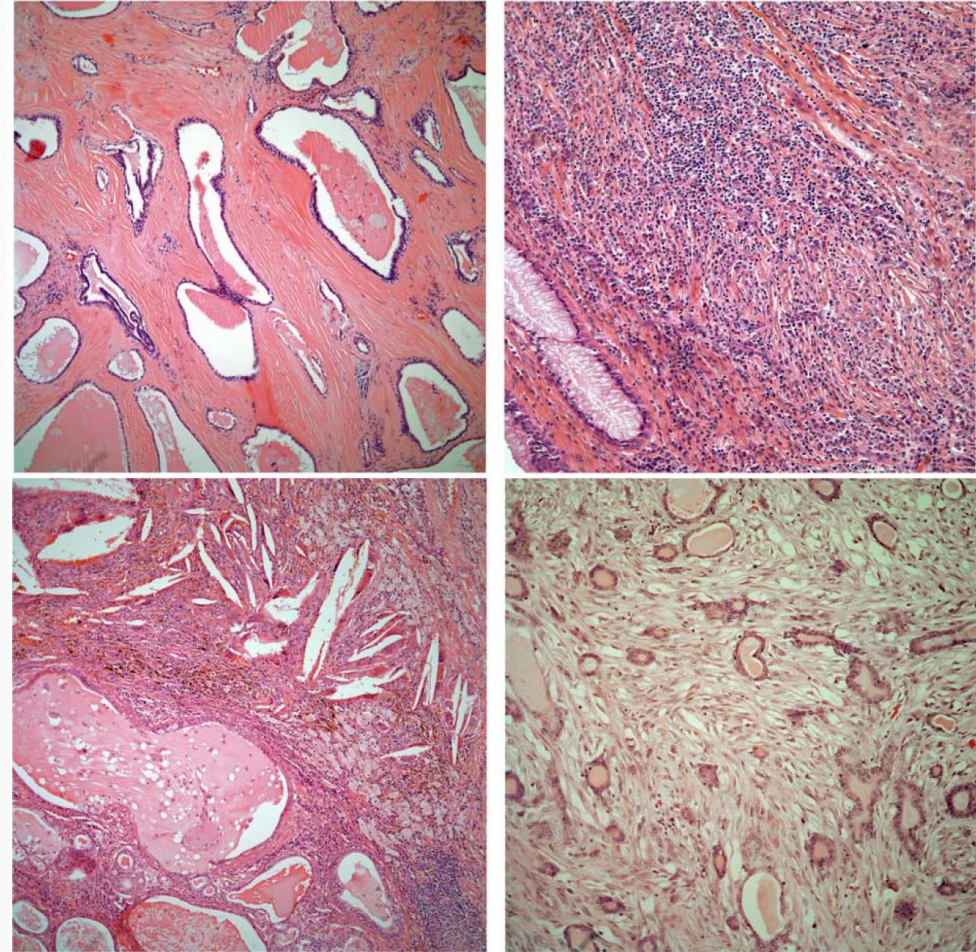
Zaleski et al. 2020, p. 375

Zaleski et al. 2020, p. 376

Mucus Gland Adenoma: The Spectrum of Growth Patterns and the Diagnostic Challenges

Stromal component separated into 4 primary types:

- Hyalinized
- Inflammatory – predominantly lymphocytes + plasma cells in fibroconnective tissue background
- Xanthogranulomatous changes with cholesterol cleft granulomas
- Cellular – spindle fibroblastic/myofibroblastic



Zaleski et al. 2020, p. 377

Mucous Gland Adenoma of the Lung: A Neoplastic Counterpart of Mucinous Bronchial Glands — Modern Pathology, 2023

Sasaki, E et al.

NKX3.1 gene expression higher in MGA – *suggesting MGA neoplastic counterpart of mucinous bronchial glands*

- NKX3.1 normally expressed in *mucinous acinar cells* of bronchial glands
- Negative in other pulmonary tumours with mucinous cells
- Two MGA tumours were assessed:
 - **Tumour 1** – no BRAF, KRAS, AKT1 mutations
 - **Tumour 2 (less tissue)** – No V600E, AKT1 or E17K mutations
- Abluminal cells in MGA and normal bronchial glands show SOX10/p40 dual expression

Differential Diagnoses & Discussion

TABLE 1. Morphologic Features of Mucous Gland Adenoma and Their Differential Diagnosis

Histologic Growth Pattern (MGA)	Differential Diagnosis
Pure mucinous	
Acinar	Mucinous adenocarcinoma
Acinar with basal cell hyperplasia	Mucinous adenocarcinoma Acinar cell carcinoma
Microacinar	Signet ring cell adenocarcinoma
Pure cystic	
	Adenocarcinoma Cystadenoma
Combined cystic-microcystic-papillocystic	
	Adenocarcinoma Mucoepidermoid carcinoma
Papillocystic or associated with papilloma	Squamous papilloma Adenocarcinoma
Combined cystic and acinar	
	Adenocarcinoma
Mucoepidermoid-like	
	Mucoepidermoid carcinoma Adenocarcinoma Squamous cell carcinoma Adenosquamous carcinoma

MGA indicates mucous gland adenoma.

Zaleski et al. 2020, p. 378

Diagnostic challenge, due to lack of distinctive clinical and imaging findings.

Mucous cell predominant bronchiolar adenoma/Ciliated muconodular papillary tumour (peripheral lesions)

- Negative for NKX3.1
- Basal cells p40 +ve, SOX10 –ve

No documented metastatic disease or malignant transformation.

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Questions?

Thank you to Prof. Sonja Klebe, SA
Pathology.

