

Lung Abscess & Bronchiectasis

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Lung Abscess

Definition – Localised area of lung necrosis with suppuration.

- Two types – primary – develops in (N) lung tissue.
- Secondary – develops as complication of some other dis. of lung or from another site.

Etiopathogenesis

Organisms

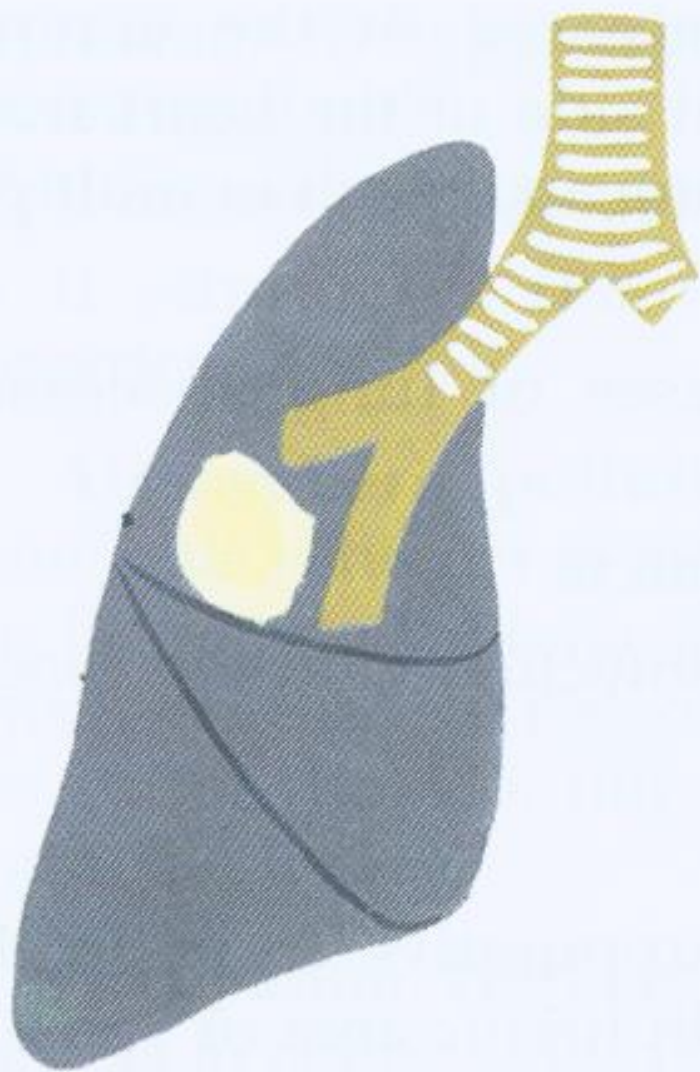
- Streptococci
- Staphylococci
- Various gr. –ve org.

Portal of entry

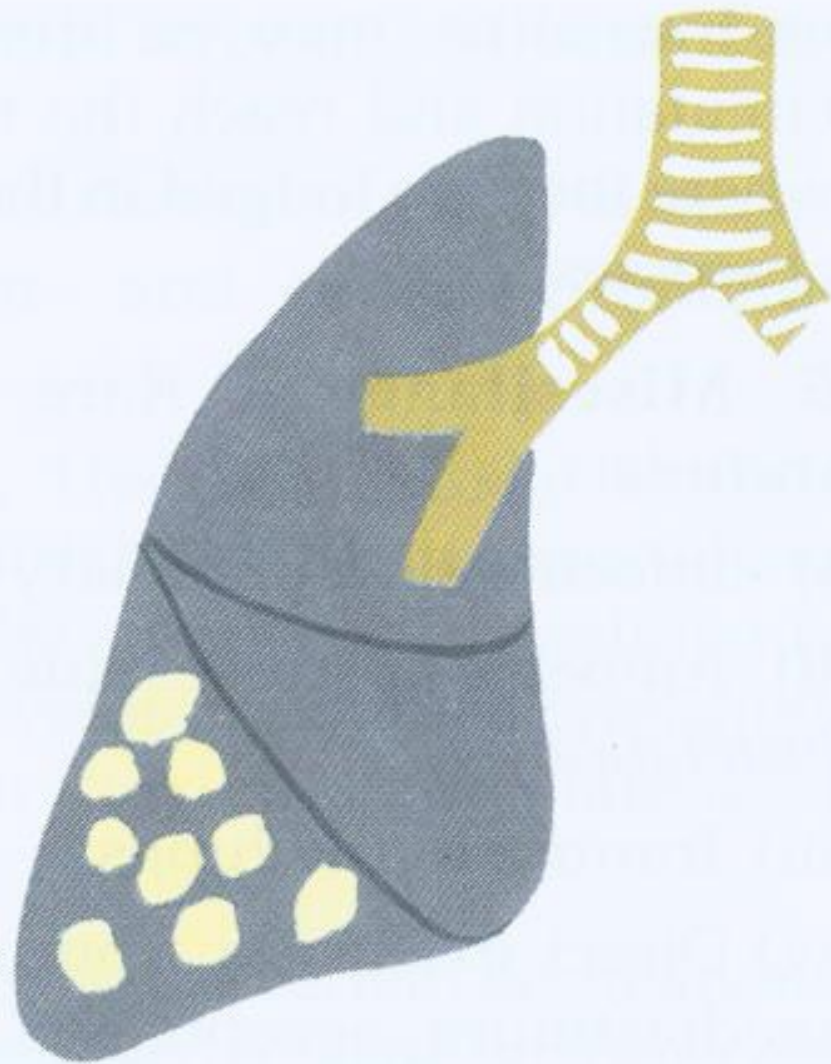
- Aspiration, infected foreign material, food, decaying teeth, gastric contents
- Infected gingivae and teeth.
- Necrotic tissues from lesion in mouth, upp. Resp. tract or nasopharynx.
- Occurs – in during sleep, unconsciousness, anaesthesia, general debility and alcoholism.
- Preceding bacterial infection – like bronchopneum in debilitated patient
- Other inf. Condition like T.B. Bronchiectasis and mycotic infn.
- Distal to an obst. Bronchus such as bronchial T or F body.
- Septic embolism – infective emboli from pyemic, thrombophlebitis or from veg.bacterial endocarditis.

Miscellaneous

- Infn. In pul. Infarcts
- Amoebic abs.
- Trauma to lungs
- Direct ext. from suppurative focus in mediastinum, oesophagus, subphrenic area or spine



**A, PRIMARY
LUNG ABSCESS**



**B, SECONDARY
LUNG ABSCESSES**

Pathological Changes

- Aspiration – in rt. Lung →vertical main bronchus & Lower part of upp.lobe lung or apex of lower lobe.
- Abscess are multiple – preceding pneumonia septic or pyemic abs.

Gross – variable size from few mm to large cavities 5 to 6 cm in dia,Cavity contain exudate having poorly defined ragged wall.

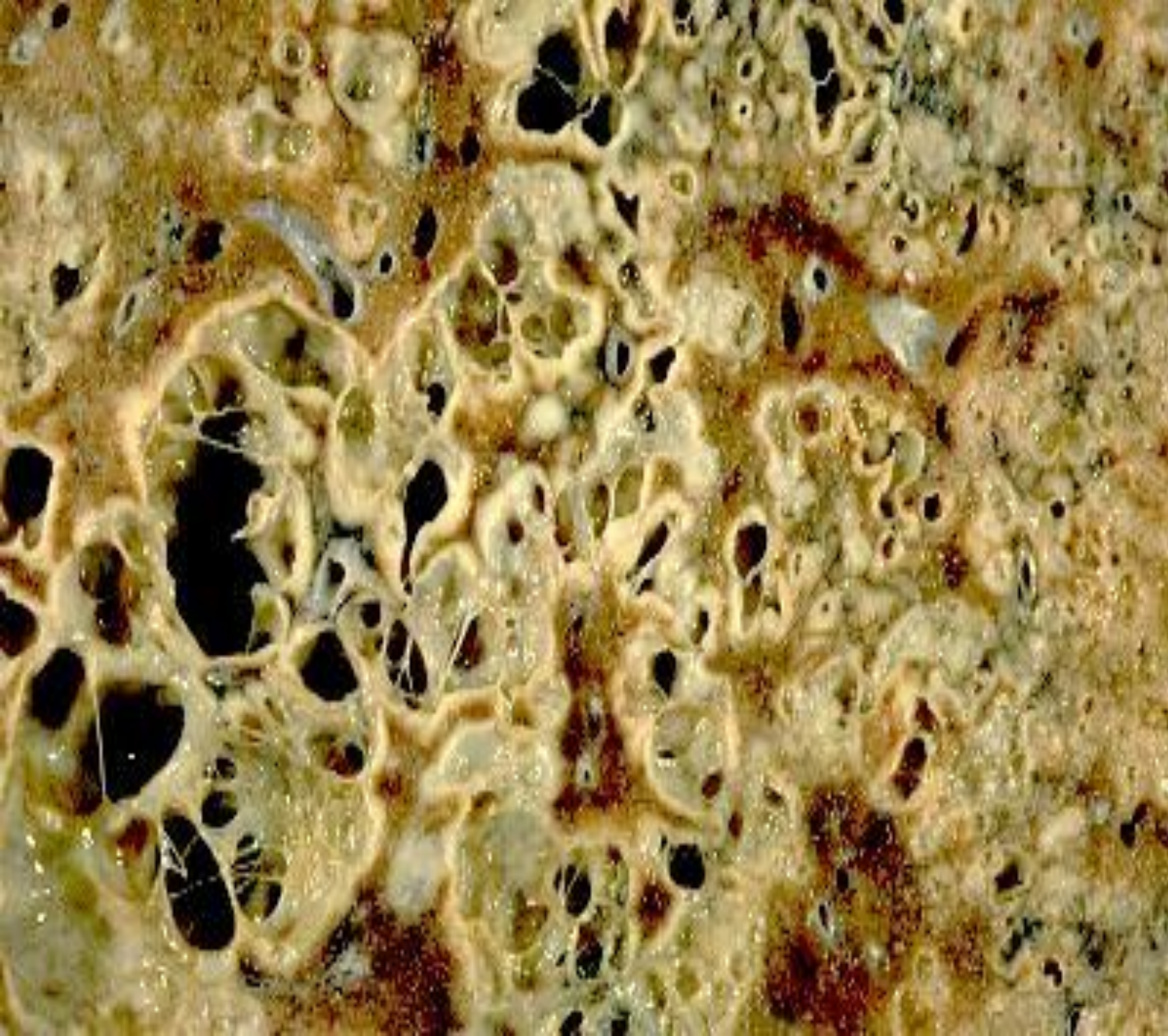
-Chronic abscess has fibrous wall.

Micro- destruction of parenchyma with suppurative exudate. Initially –acute inf. Later on lymf, plasma cells and macrophages.Fibroblastic proliferation forming fibrocollagenous wall.

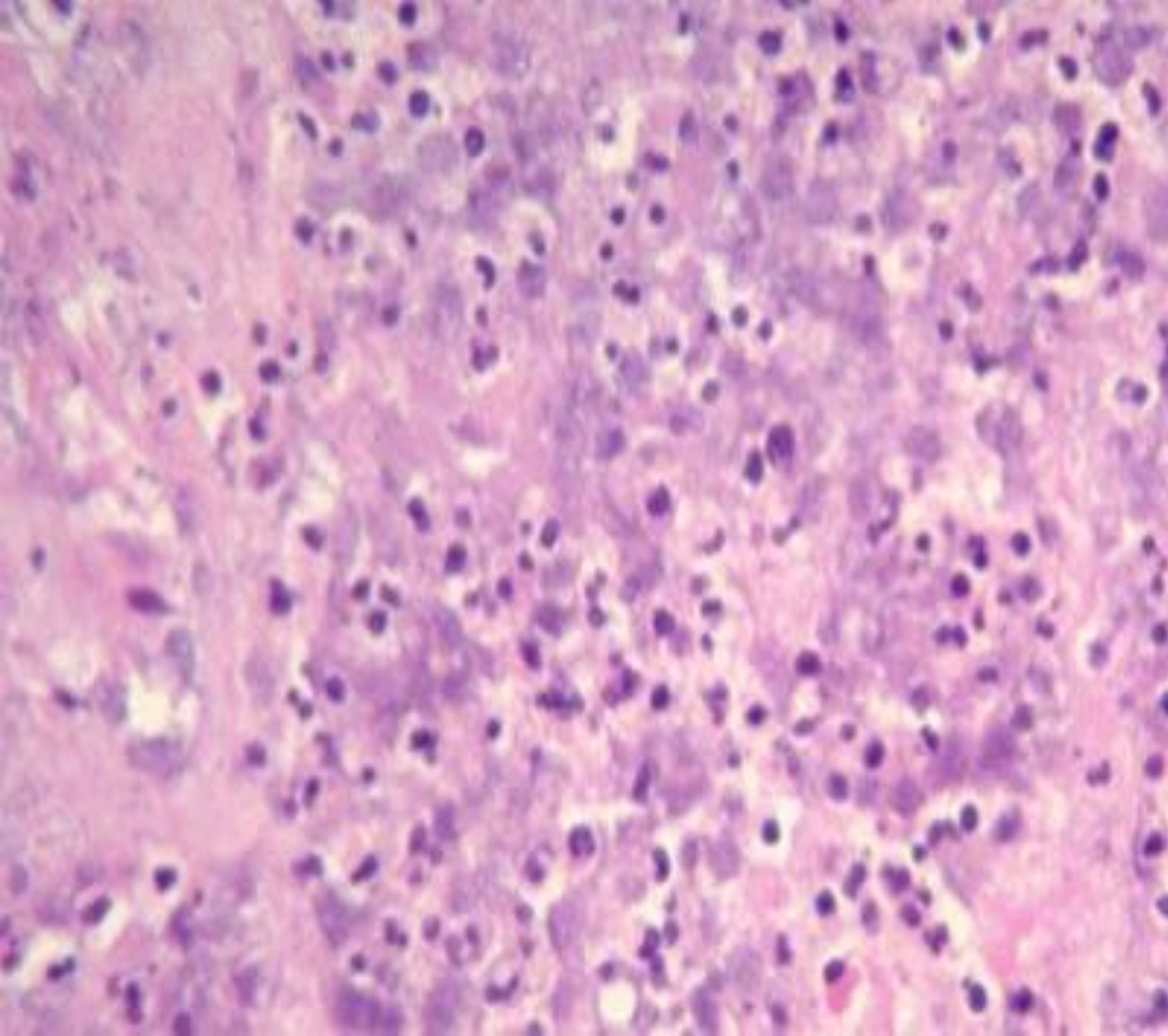


Lung Abscesses

-
These discrete, large abscesses are probably the result of aspiration of bacteria or other noxious material.



Lung Abscesses
Multiple, coalescing, small abscesses are usually the result of a previous bacterial pneumonia



Lung Abscess -

There is necrosis of the lung tissue in the center of the abscess. The central area of this abscess has necrotic debris and neutrophils.

Stain:
Hematoxylin and Eosin.
Orig Mag: 400X

Chronic obstructive Pulmonary Disease(COPD)

- Clinical term – group of path. Conditions in which chronic, partial or complete, obstn to the airflow at any level from trachea to the smallest airways results in functional disability.
 1. Chr. Bronchitis
 2. Emphysema
 3. Bronchial asthma
 4. Bronchiectasis.

Bronchiectasis

Definition- Abnormal and irreversible dilatation of bronchi and bronchioles (greater than 2 mm dia) developing secondary to inflammatory weakening of the bronchial walls.

Clinical Manifestations – persistent cough with expectoration of copious foul smelling purulent sputum.

Etiopathogenesis

- obstruction / infection
- 1. Endobronchial obst. – F body, neoplastic growth, enlarged lymph node causes obst. with consequent atelectasis and retention of secretions.
- 2. Infection – sec. To local obst. And impaired systemic defence mech. promoting bact. growth.
- Primary ie. bronchiectasis developing in suppurative necrotising pneumo.

Etioopathogenesis(contd..)

Hereditary and Congenital. Factor.

- Cong. Bronchiectasis-Developmental defect of br. System.
- Cystic fibrosis- a generalised defect of exocrine gland secretion, result in obst, infn. and bronch.
- Hereditary immune deficiency dis.are often ass. with high incidence of bron.
- **Immotile cilia syndrome** that includes kartagener's synd. (bronch, situs inverses and sinusitis)
 - EM changes in microtubules causing immotility of cilia of resp. tract epi.sperms & other cells.
 - Males are infertile.
- Atopic bronchial asthma – Pt. Have often positive F/H/O allergic dis and may rarely develop diffuse bronchi.

Etio-pathogenesis(contd..)

- Obstruction—confined to one part not diffuse like hereditary.
 - F. Body, endobronchial tumors. Compression by enlarged hilar lymph nodes and post infl.
 - Scarring (e.g. in healed T.B.)
- As **Secondary complication** of Bacterial Necrotising Pneumonias and TB.

Pathological Changes

- Characteristically affects distal bronchi and bronchioles beyond segmented bronchi.

Gross— Lungs is involved diffusely or segmentally.

- Bilat. Lower lobes. Left lower lobe > than right.
- Pleura-fibrotic, thickened with adh. to chest wall.
- C/S honey comb app.
- Bronchi are extensively dilated near to pleura
- Walls are thickened
- Lumina are filled with mucus or muco-pus.
- Intervening lung parenchyma is reduced and fibrotic.

Classification

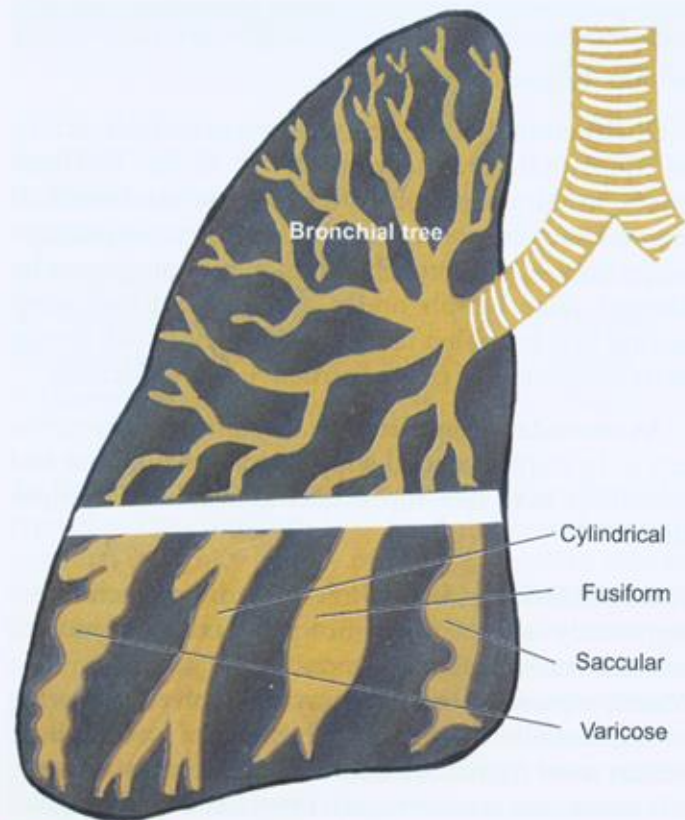


FIGURE 15.18

Types of bronchial dilatations in bronchiectasis.

1. Cylindrical – *tube like bron.dila.*
2. Fusiform – *spindle shape bron. dila.*
3. Saccular – *rounded sac-like dila.*
4. Varicose – *irregular bron. dila*

Microscopy

Fully developed cases show:

- Bro.epi may be (N), ulcerated or show sq. metaplasia
- Br. Wall infiltration by acute or chr. Infl. Cells and destruction of (N) muscle and elastic tissue with replacement by fibrosis.
- Intervening lung paren. Show fibrosis while surrounding lung show changes of interstitial Pneumonia.
- Pleura adherent, show bands of fibrosis tissue between the bronchus and the pleura.

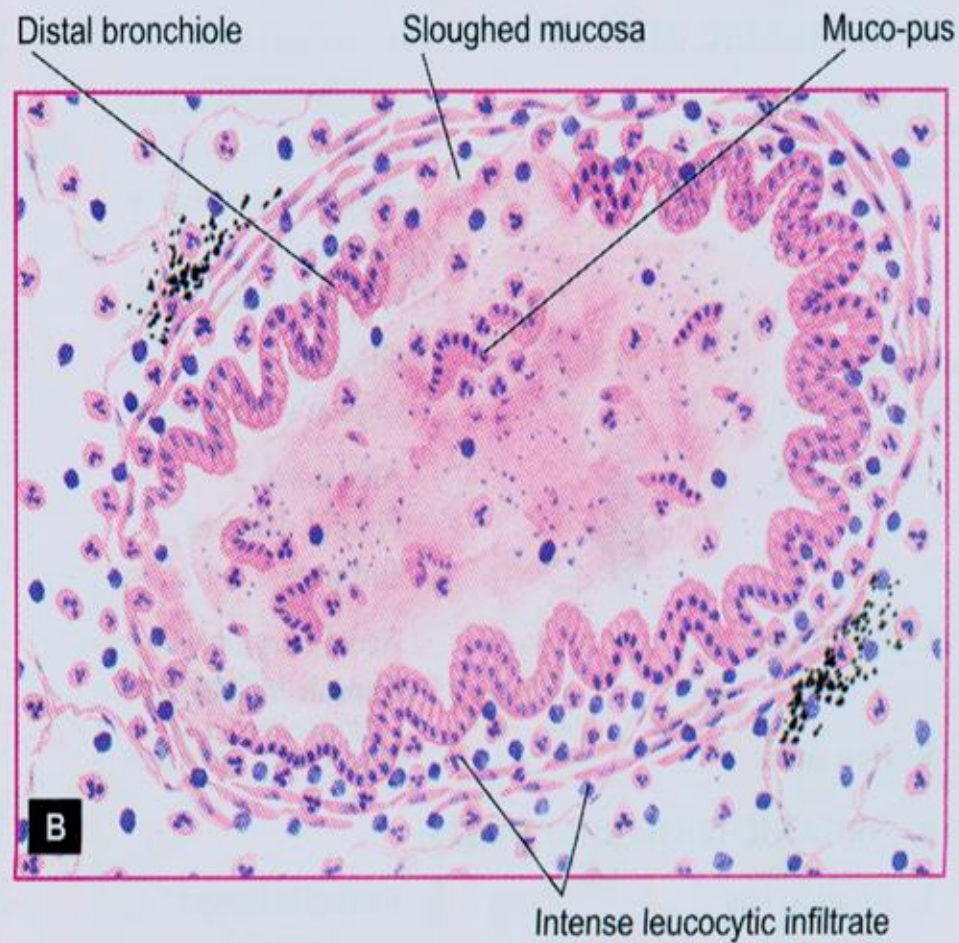
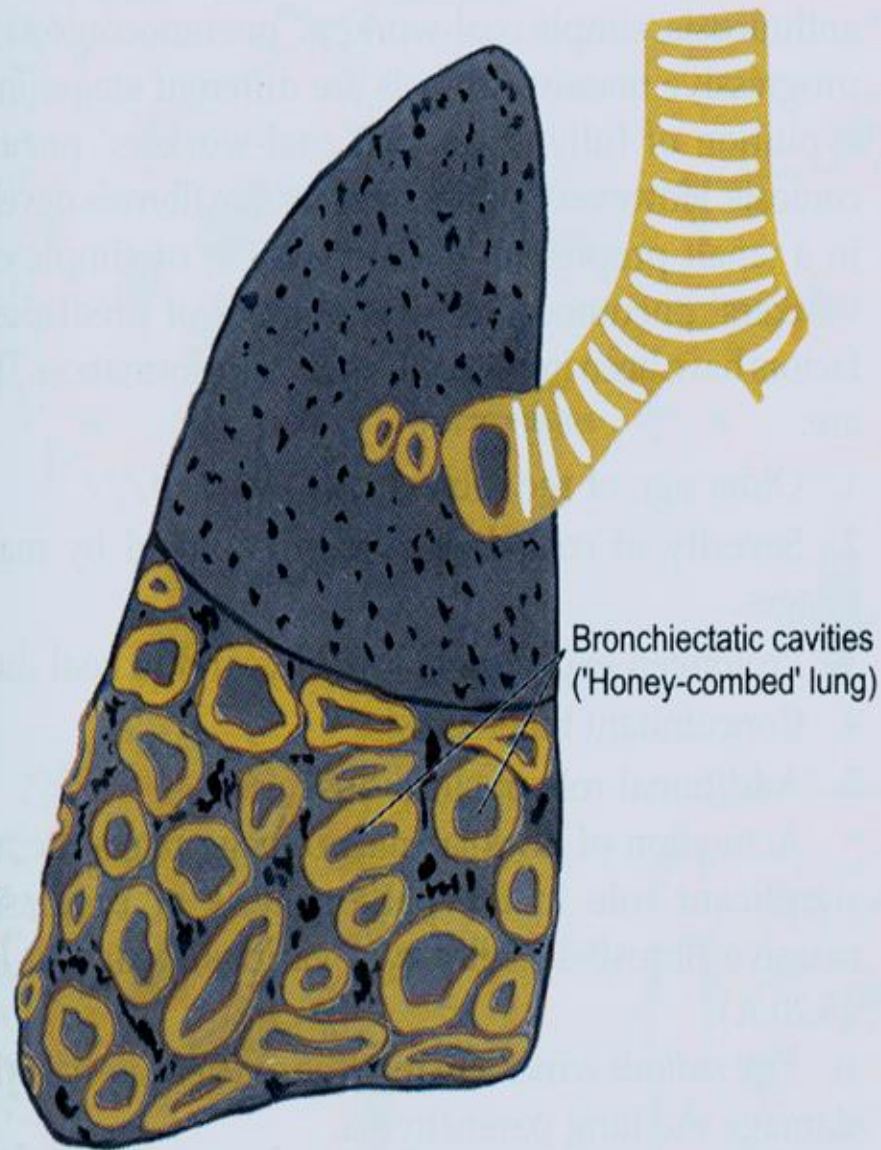
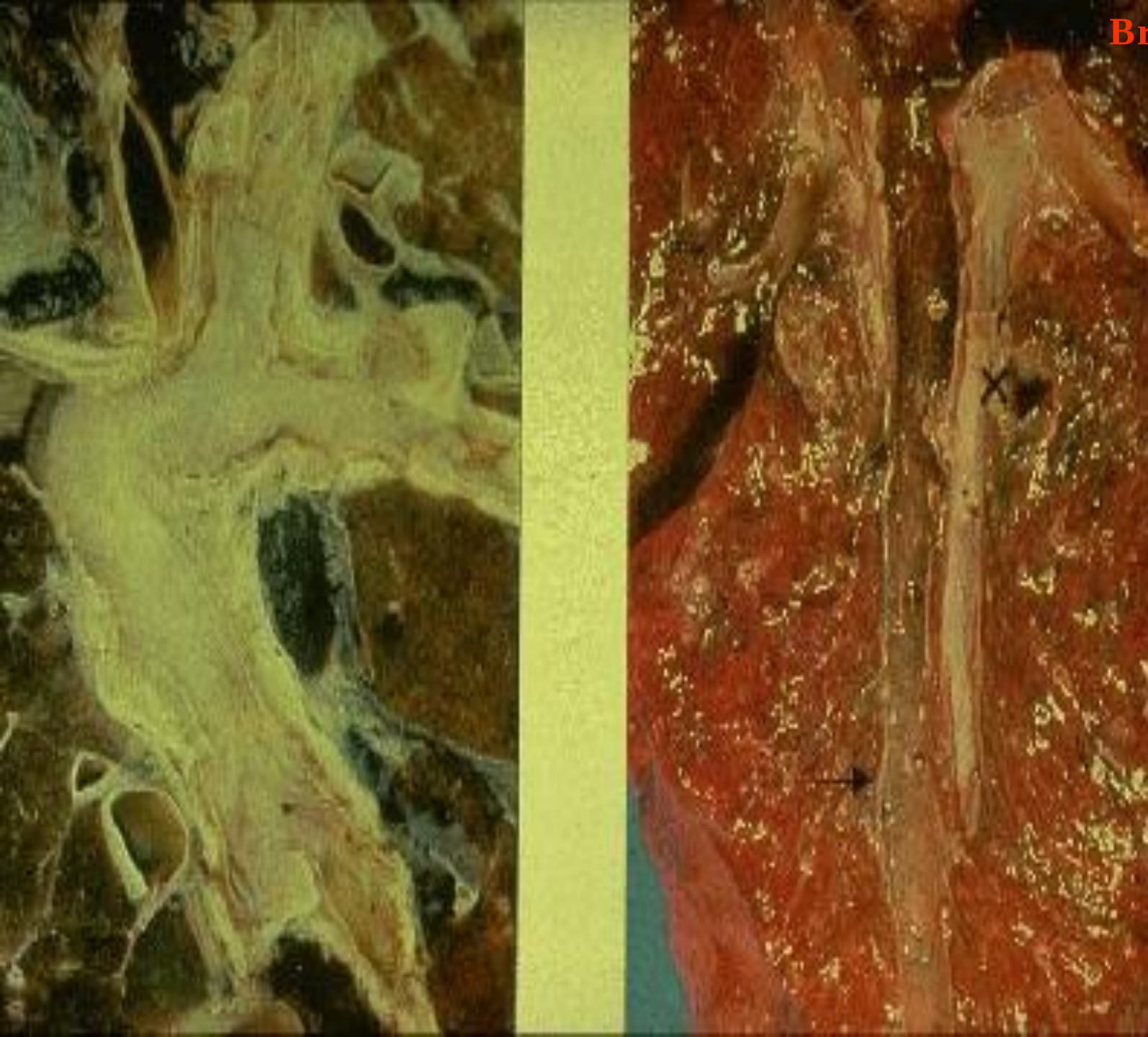


FIGURE 15.19

A, Sectioned surface of the lung showing bronchiectasis in the lower lobe. B, Microscopic appearance of a dilated distal bronchiole in bronchiectasis. The bronchial wall is thickened and infiltrated by acute and chronic inflammatory cells. The mucosa is sloughed off at places with exudate of muco-pus in the lumen.

Bronchiectasis



- The bronchi are dilated. On the right side of the picture, the dilated bronchi are wider than the adjacent branch of the pulmonary artery. On the left side of the picture, the bronchus contains a mucous plug, such as may be seen in severe asthma.

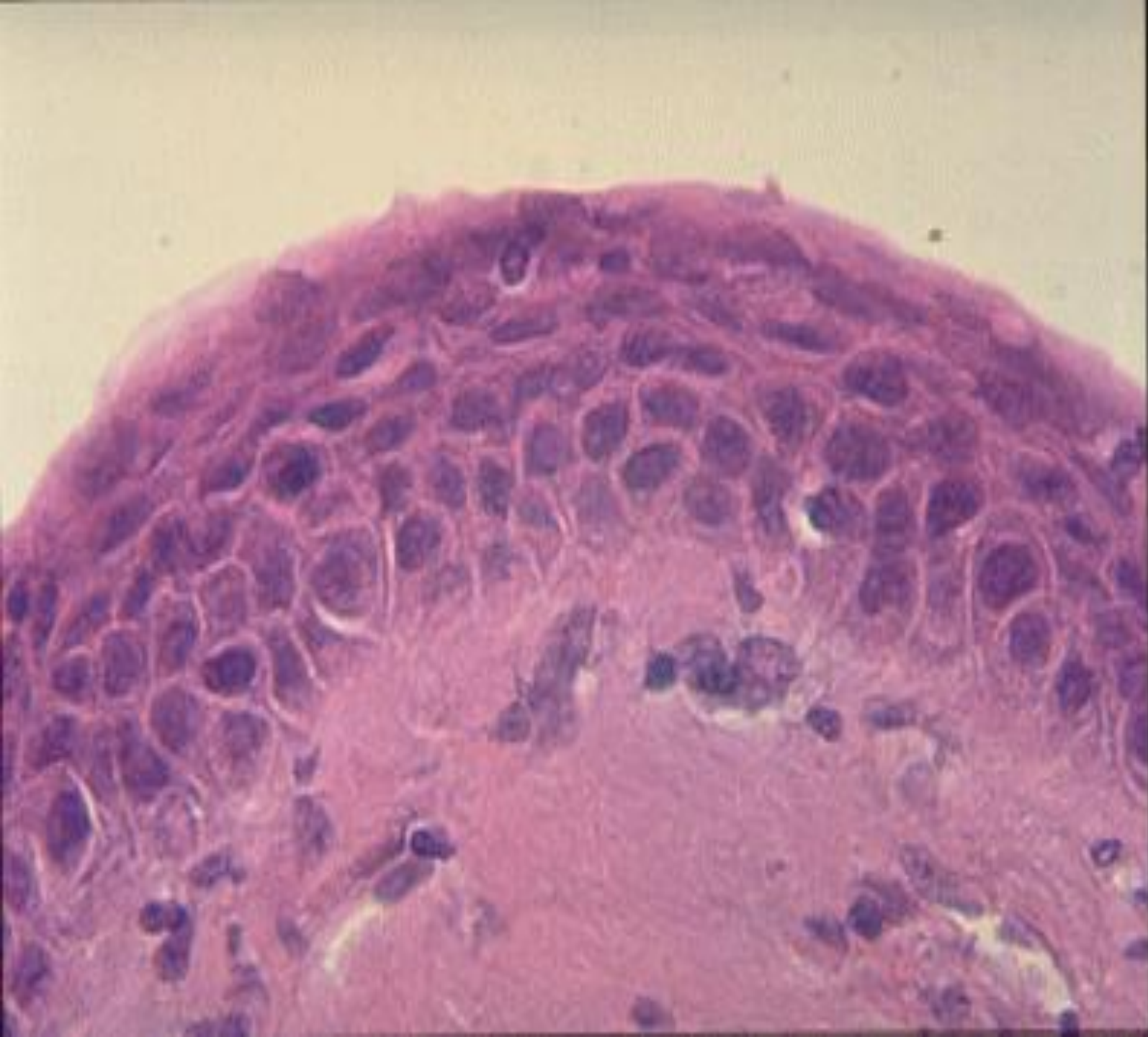


**Severe
Bronchiectasis**
The section of lung shows dilated bronchi that contains grumous, brown material (Aspergillus). the parenchyma shows grey fibrosis.

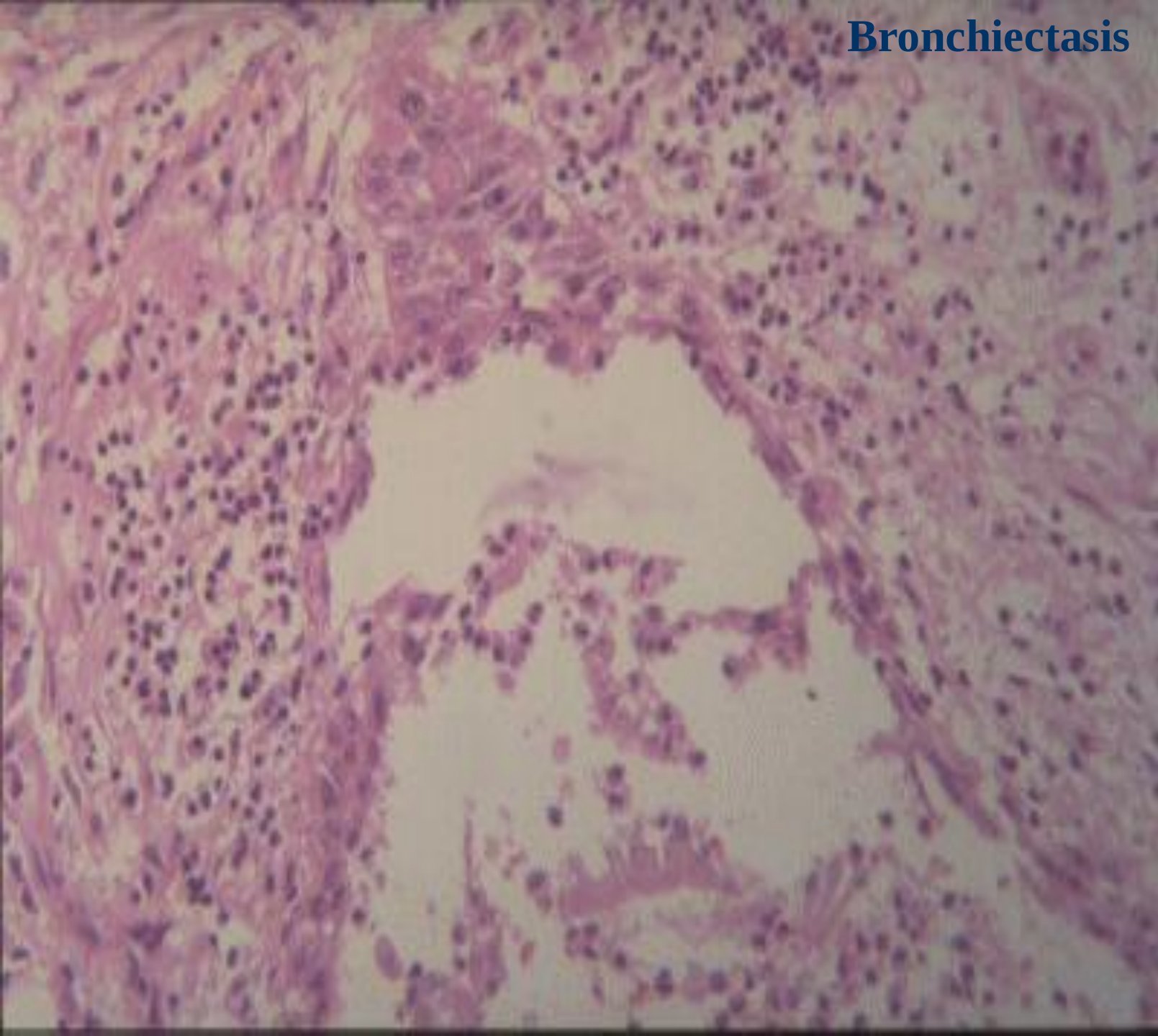
**Bronchiectasis,
Squamous
Metaplasia**

In the severe cases of bronchiectasis, well developed squamous epithelial cells that have intercellular bridges may replace large areas of ciliated columnar epithelial cells that line the bronchus.

Stain:
Hematoxylin
and Eosin. Orig
Mag: 400X



Bronchiectasis



There is focal destruction and loss of the ciliated epithelial cells that line the bronchiole.

Focal squamous metaplasia is also present.

An inflammatory infiltrate (dark staining cells) is present in the wall of the bronchus.

Stain:
Hematoxylin and Eosin.

Orig Mag
160X



Thank You!!