

Part 10A: Histopathology of nonsmall cell lung cancer



Prepared By
Bronchoscopy International

Contact us at
BI@bronchoscopy.org

How to use this presentation

- At anytime you may click anywhere with the left mouse button to advance to the next slide.
- This presentation contains NO video or Audio.
- This presentation can be viewed **FULL SCREEN** by right clicking on the slide and selecting Full Screen on the menu bar.
- To exit Full Screen, press the ESCAPE key.

This presentation is part of a comprehensive curriculum for Flexible Bronchoscopy. Our goals are to help health care workers become better at what they do, and to decrease the burden of procedure-related training on patients.

Classification of Lung Tumors

The most recent classification of the World Health Organization has gained wide acceptance. Several histological variant of each type of lung cancer are described. Major categories include :

- **Squamous cell carcinoma** 25% to 40%
- **Adenocarcinoma** 25% to 40%
- **Small cell carcinoma** 20% to 25%
- **Large cell carcinoma** 10% to 15%

The incidence of adenocarcinoma has increased significantly in the last two decade; it is now the most common form of lung cancer in women and, in many studies, men as well.

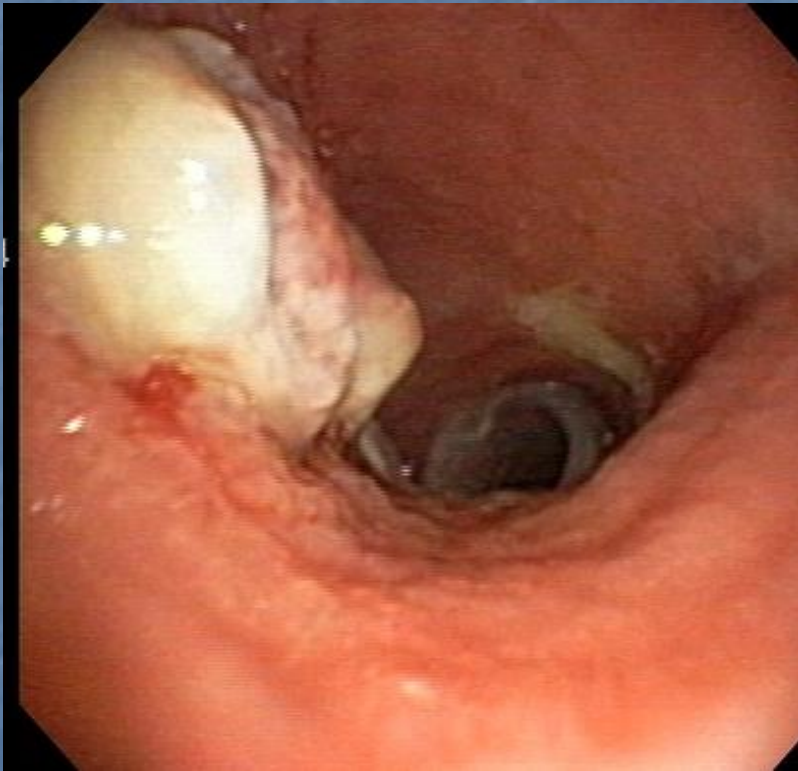
Squamous cell carcinoma

- Most commonly found in men and closely correlated with a smoking history.
- Histologically characterized by keratinization and/or intercellular bridges. Keratinization may take the form of squamous pearls or individual cells with eosinophilic dense cytoplasm.
- Features are prominent in well-differentiated tumors. Easily seen but not extensive in moderately differentiated tumors, and focally seen in poorly differentiated tumors.
- Mitotic activity is higher in poorly differentiated tumors.

Squamous cell carcinoma

- Squamous metaplasia, epithelial dysplasia, and foci of frank carcinoma in situ may be seen in bronchial epithelium adjacent to the tumor mass.
- In the past , most squamous cell carcinomas were seen to arise centrally from the segmental or subsegmental bronchi. However, the incidence of squamous cell carcinoma of the peripheral lung is increasing .

Squamous cell carcinoma often has gross necrosis on bronchoscopic examination

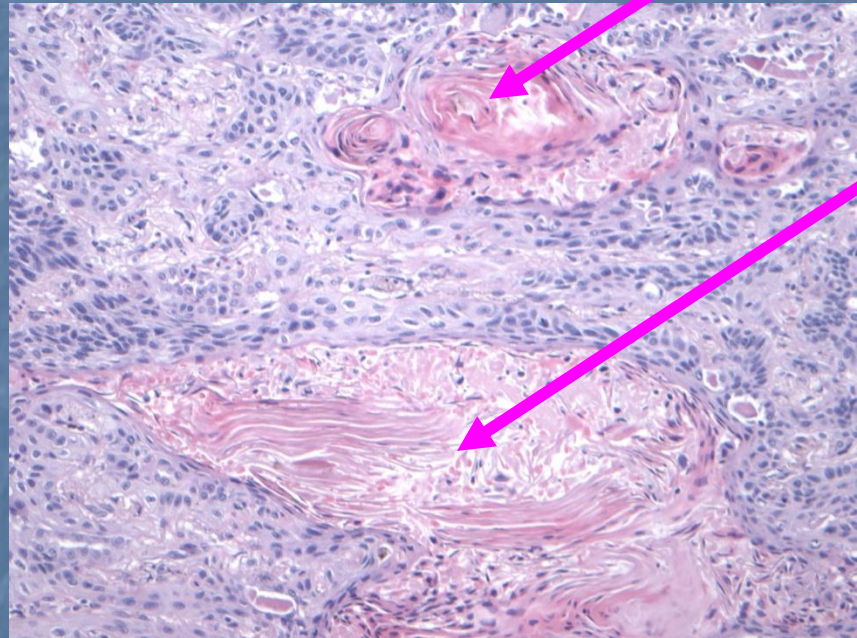
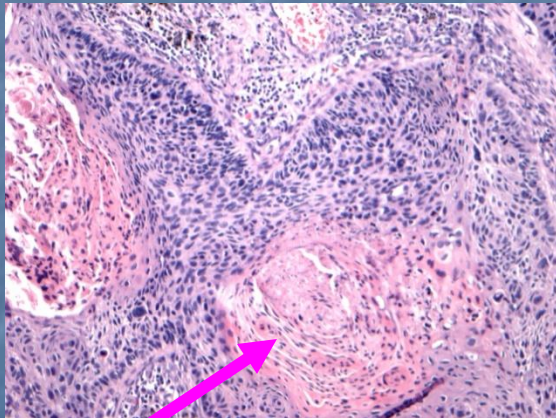
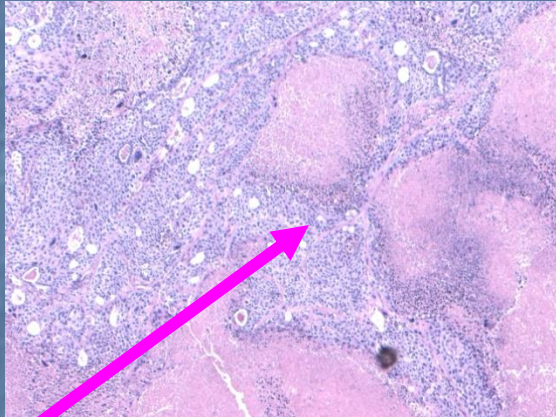


Photo, courtesy H. Colt



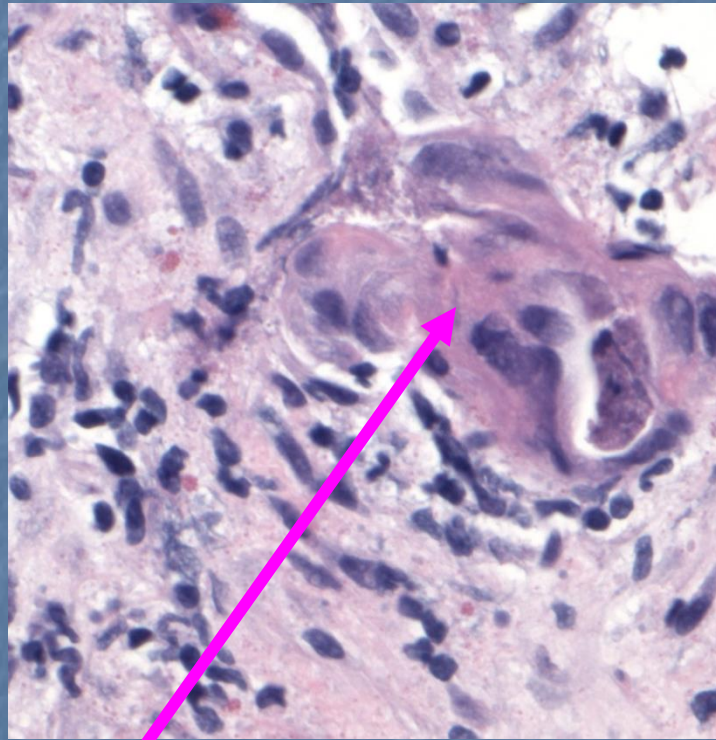
Photo, Hopital St. Marguerite,
Marseille France

Squamous cell carcinoma Keratin pearls



Keratin pearls
Hemotoxylin-Eosin stain

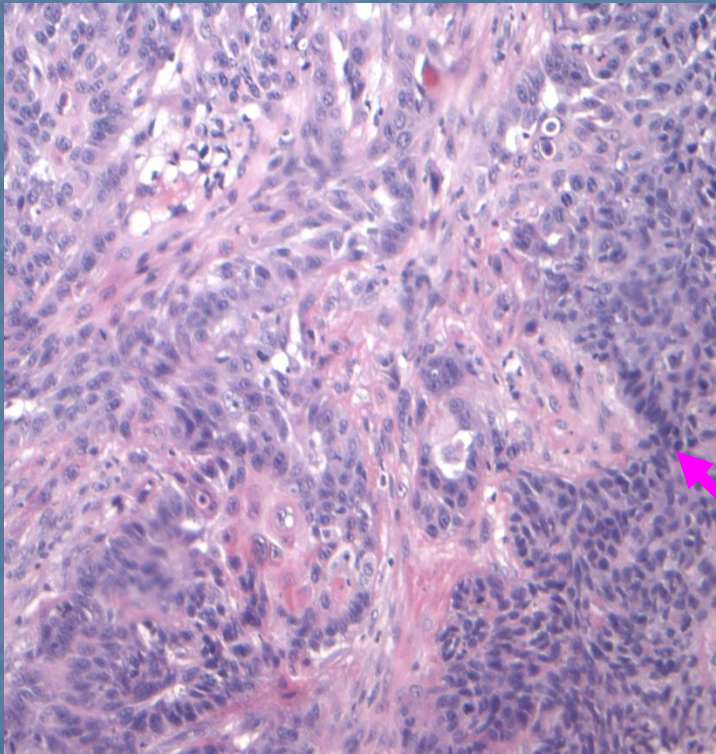
Squamous cell carcinoma keratinization



Keratinizing SCC
Hemotoxylin –Eosin stain

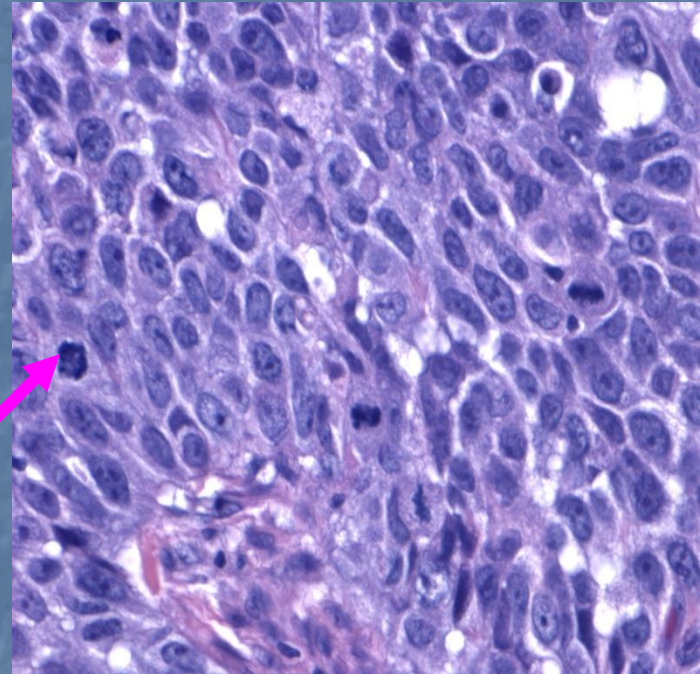
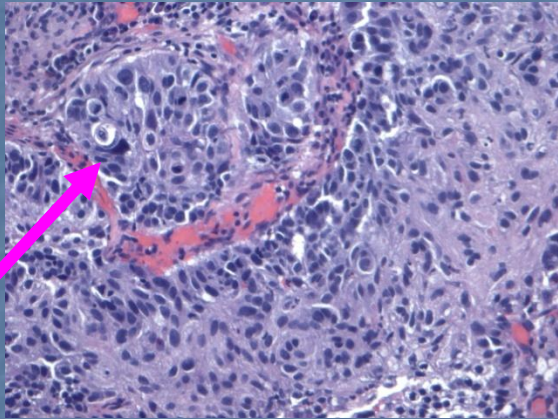
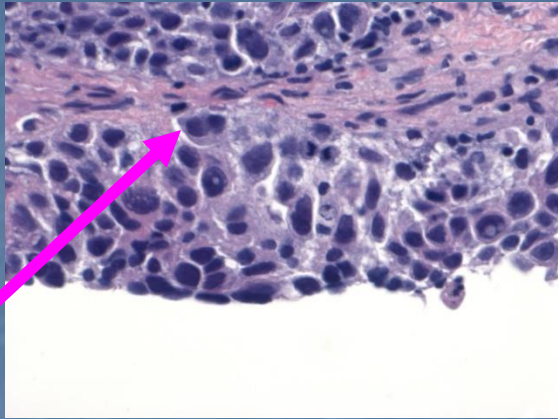
Surghpath images courtesy N. Narula, UCI Medical Center

Squamous cell carcinoma polygonal cells



polygonal cells with pink cytoplasm
Hematoxylin –Eosin stain

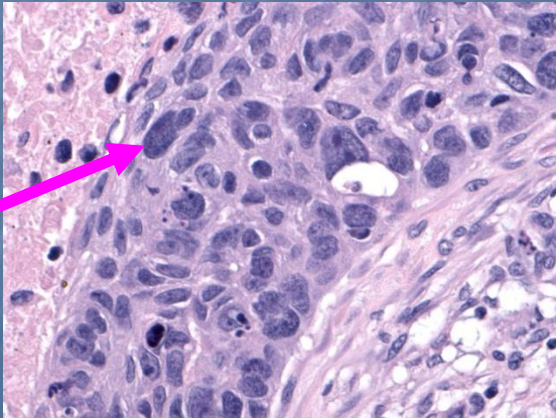
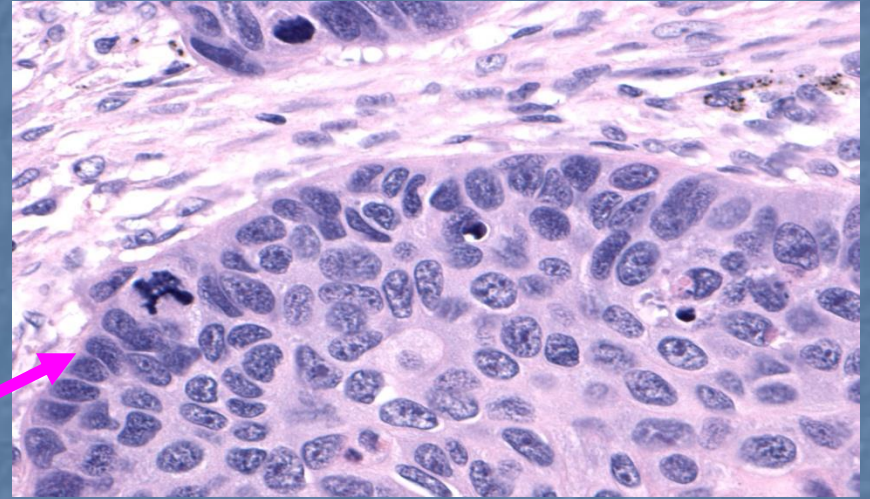
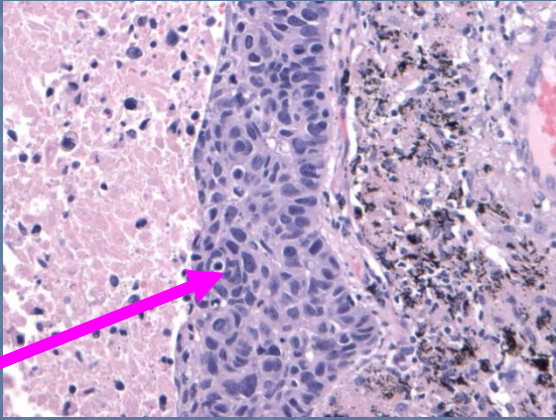
Squamous cell carcinoma hyperchromatic nuclei



**Malignant cells with dense and hyperchromatic nuclei
and scanty cytoplasm in
Hematoxylin –Eosine stain**

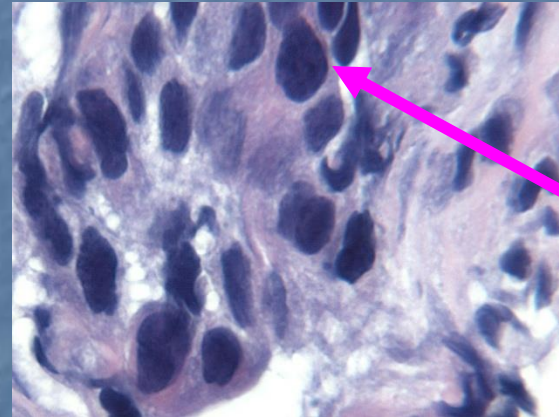
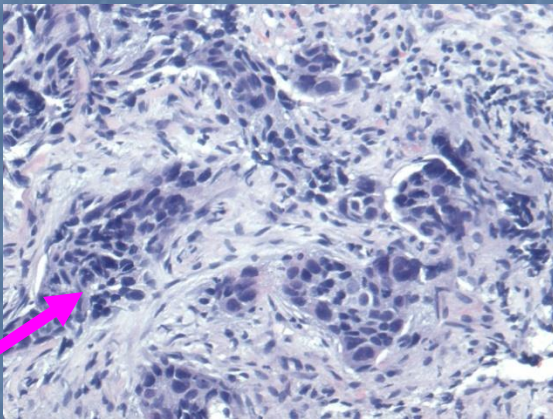
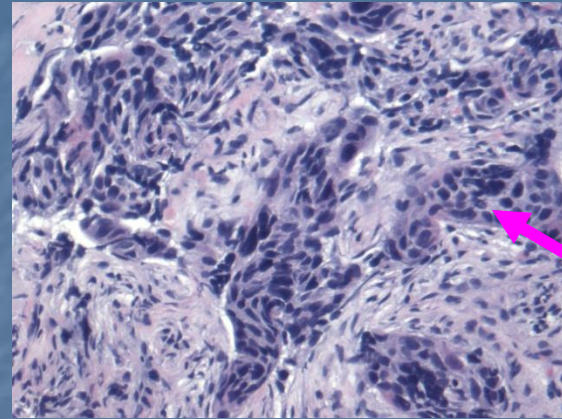
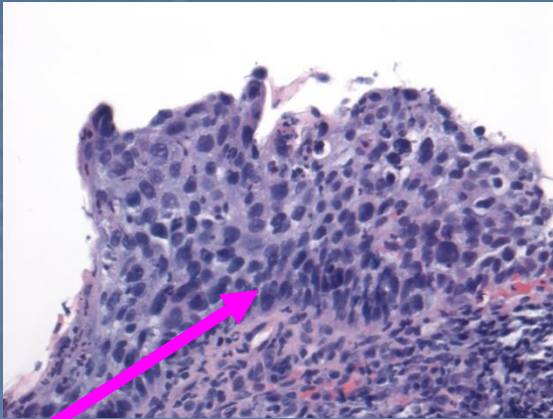
Squamous cell carcinoma

polygonal cells, bridges, and hyperchromatic nuclei



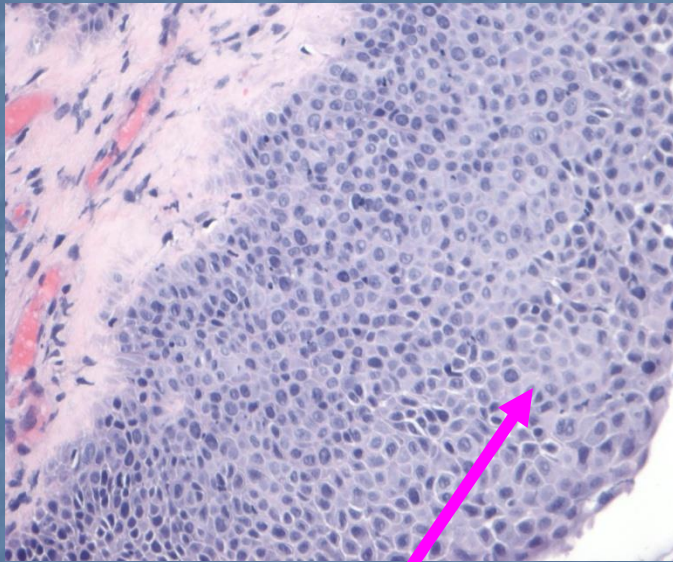
SCC with :
Nest of polygonal cells , pink cytoplasm
and interacellular bridges .
The nuclei are hyperchromatic and angular
Hemotoxylin –Eosin stain

Squamous cell carcinoma mitoses

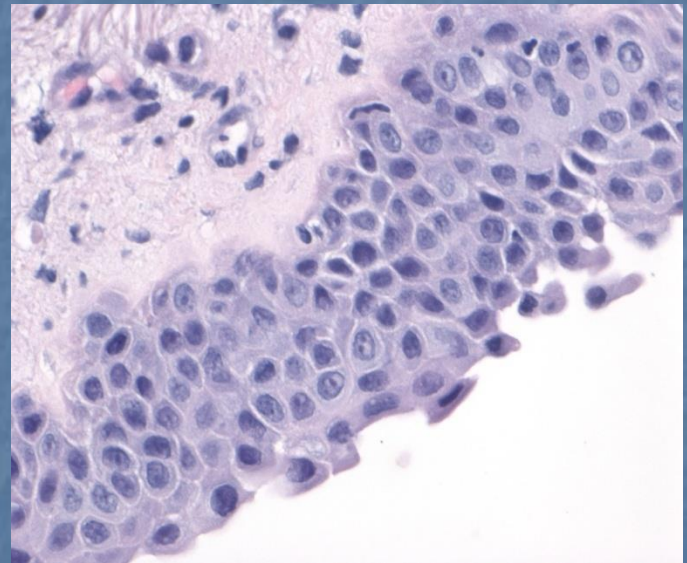


Mitosis in malignant cells
Hematoxylin –Eosine stain

Squamous cell carcinoma with dysplasia

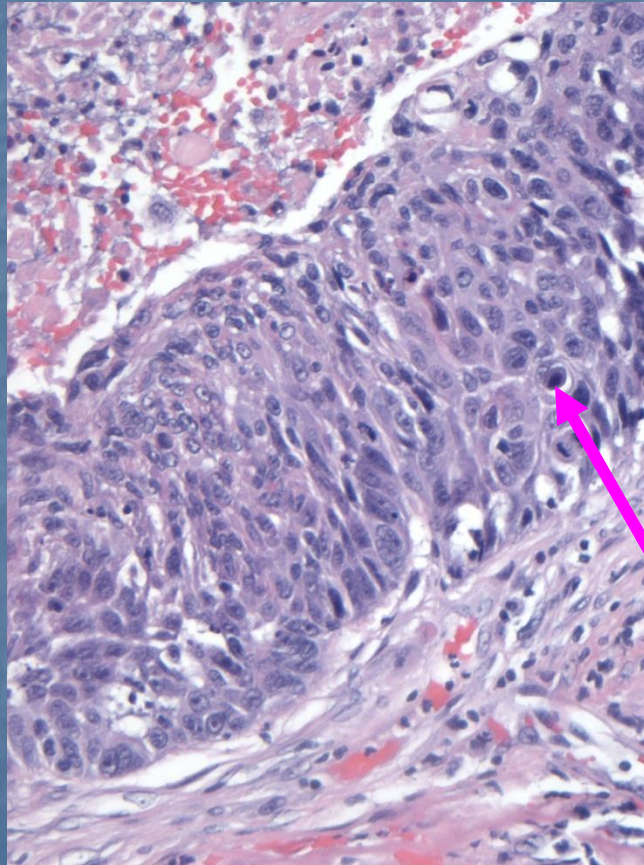


SCC dysplasia in metaplastic epithelium
Hematoxylin –Eosine stain



High power view

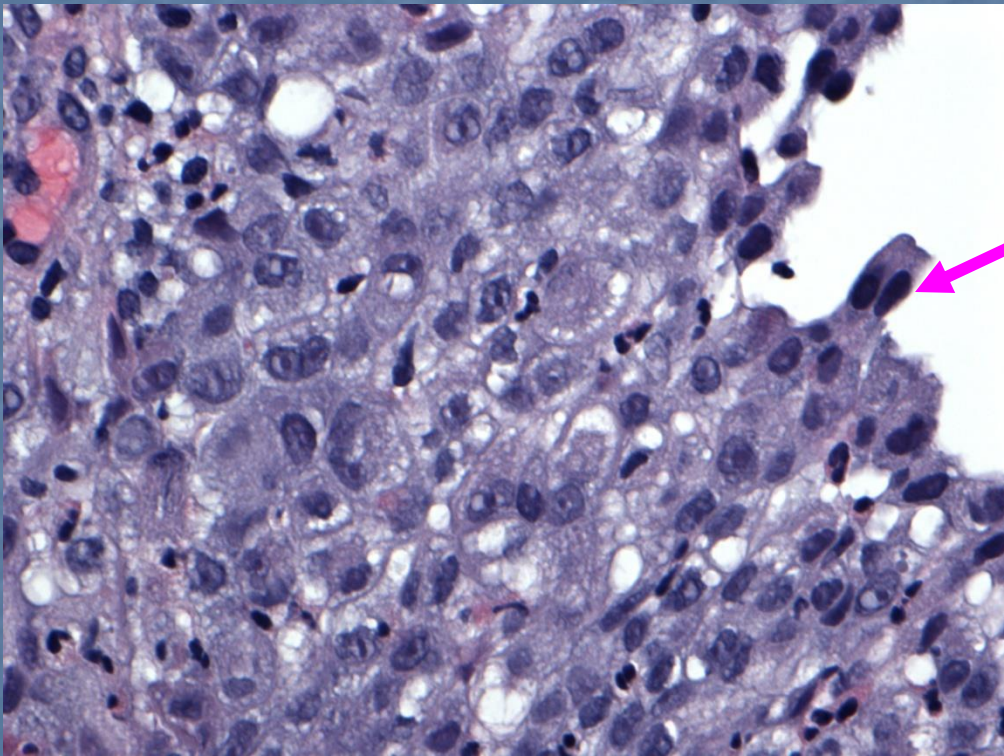
Squamous cell carcinoma metaplasia and dysplasia



Malignant cells in
Dysplastic Epithelium
Hematoxylin-eosin stain

Surgpath images courtesy N. Narula, UCI Medical Center

Squamous carcinoma in-situ



Malignant cells
High power
Hemotoxylin –Eosin stain

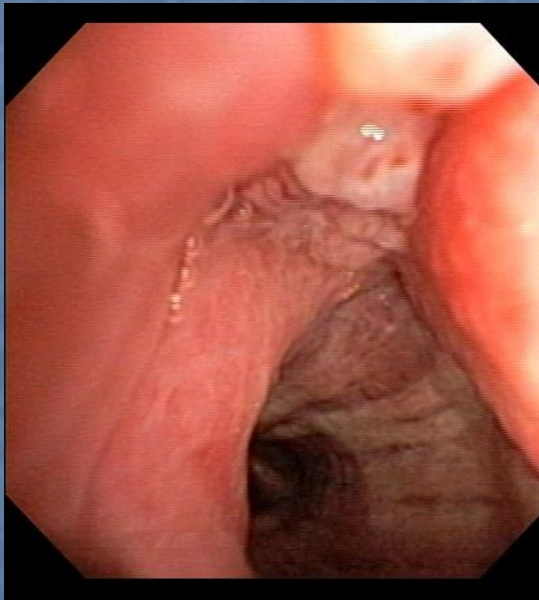
Adenocarcinoma

- Malignant epithelial tumor with glandular differentiation or mucin production.
- More common in women and nonsmokers.
- As compared to squamous cell carcinoma, lesions are often more peripherally located, and tend to be smaller.
- Adenocarcinoma tends to metastasize widely and earlier.
- Adenocarcinomas show various growth patterns:
 - Acinar, papillary, bronchioloalveolar, and solid with mucin formation.
 - Bronchioloalveolar pattern.

Adenocarcinoma

Bronchoscopic appearances

Right upper lobe obstruction
by smooth walled mass

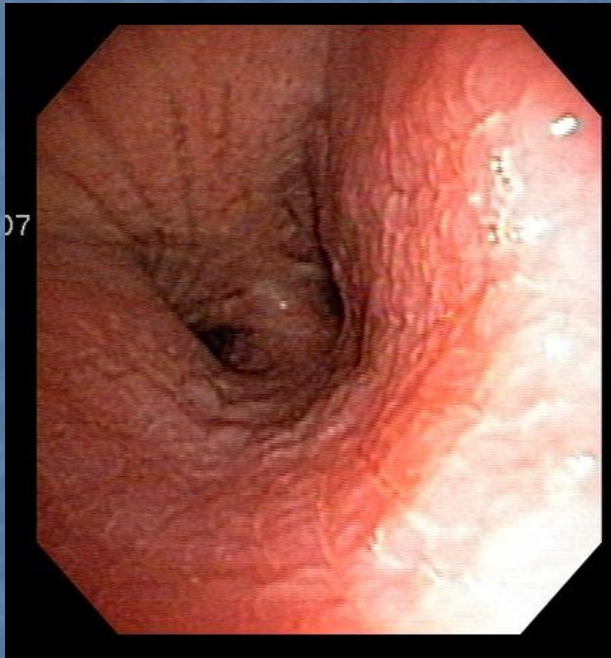


Infiltrated right middle
lobe carina



Adenocarcinoma

Bronchoscopic appearances



Diffusely nodular form

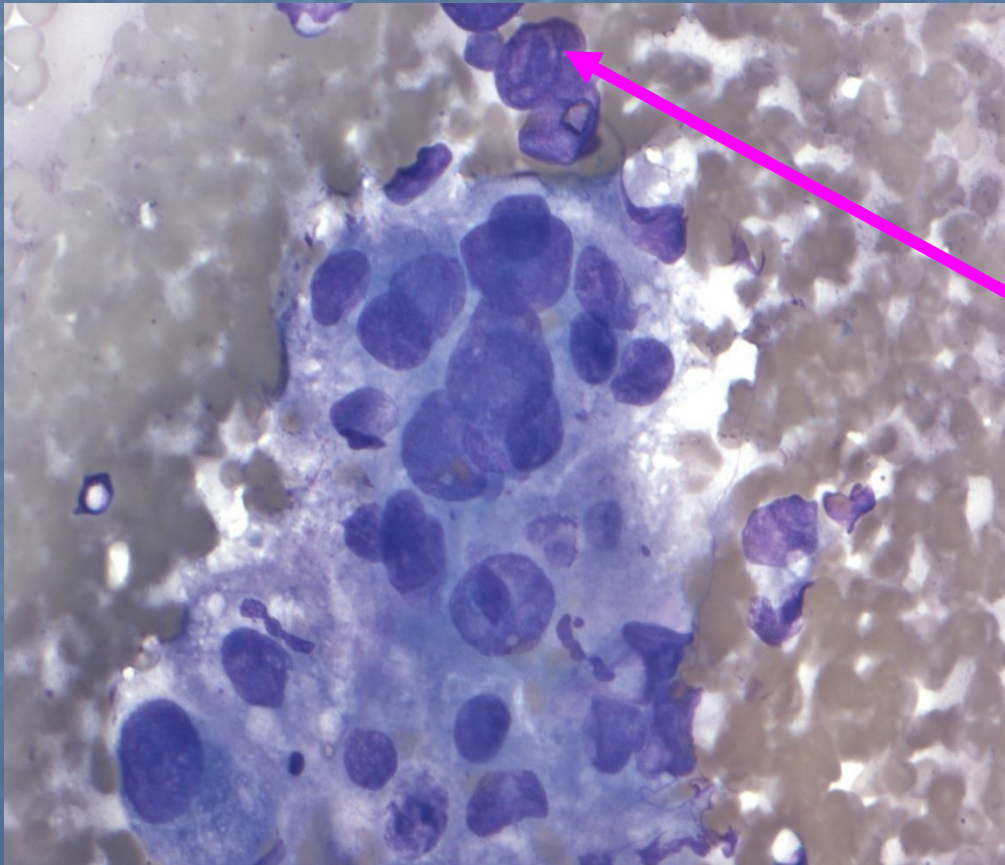


Diffusely nodular form

Gross pathology : Cystic Mucinous Adenocarcinoma

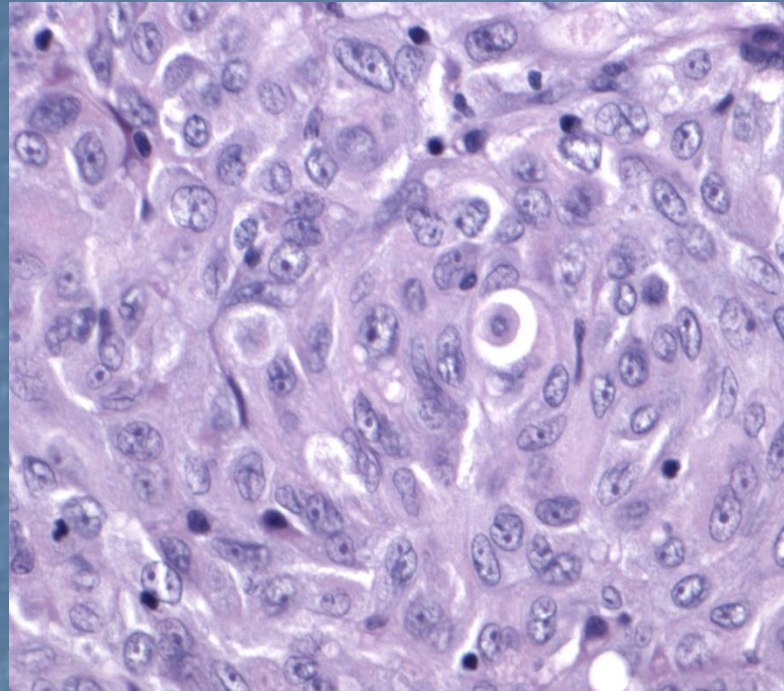


Adenocarcinoma with glandular differentiation



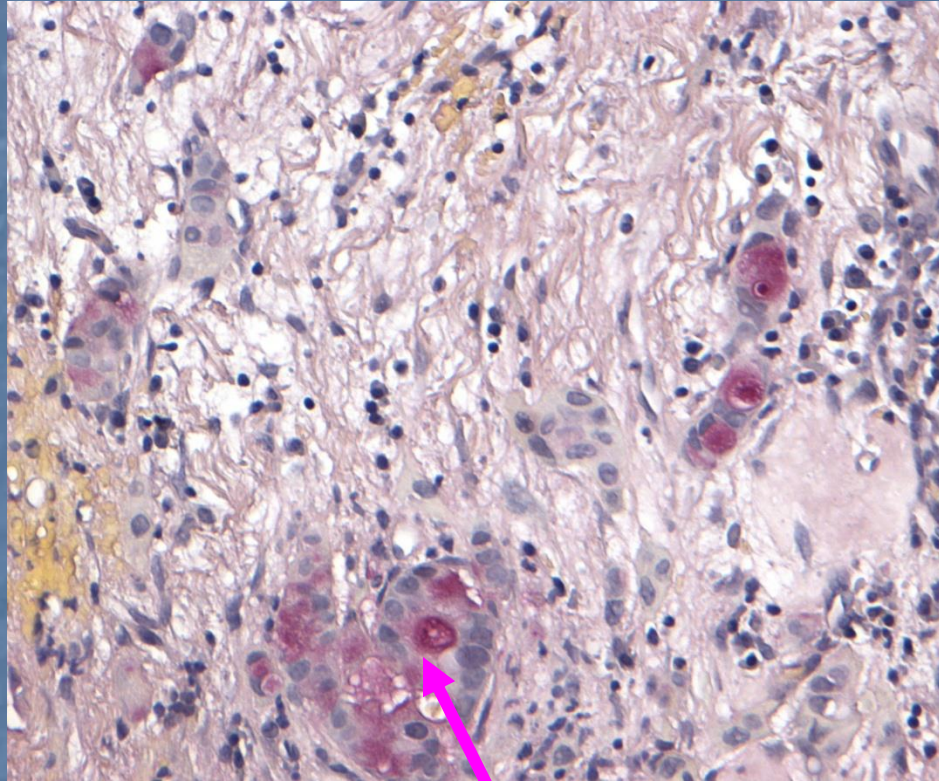
Malignant cells
Diff Quik

Adenocarcinoma Solid pattern



Hemotoxylin-Eosin stain

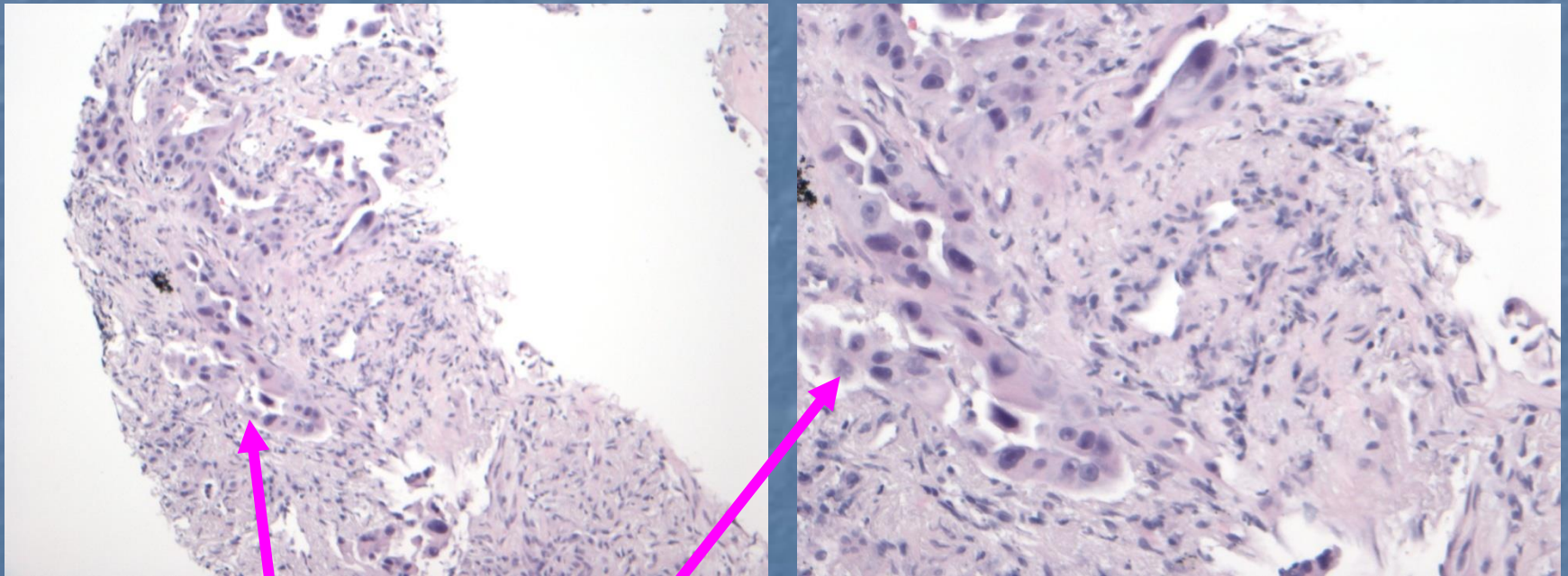
Adenocarcinoma mucin stain



Mucin Stain

Adenocarcinoma Acinar Pattern

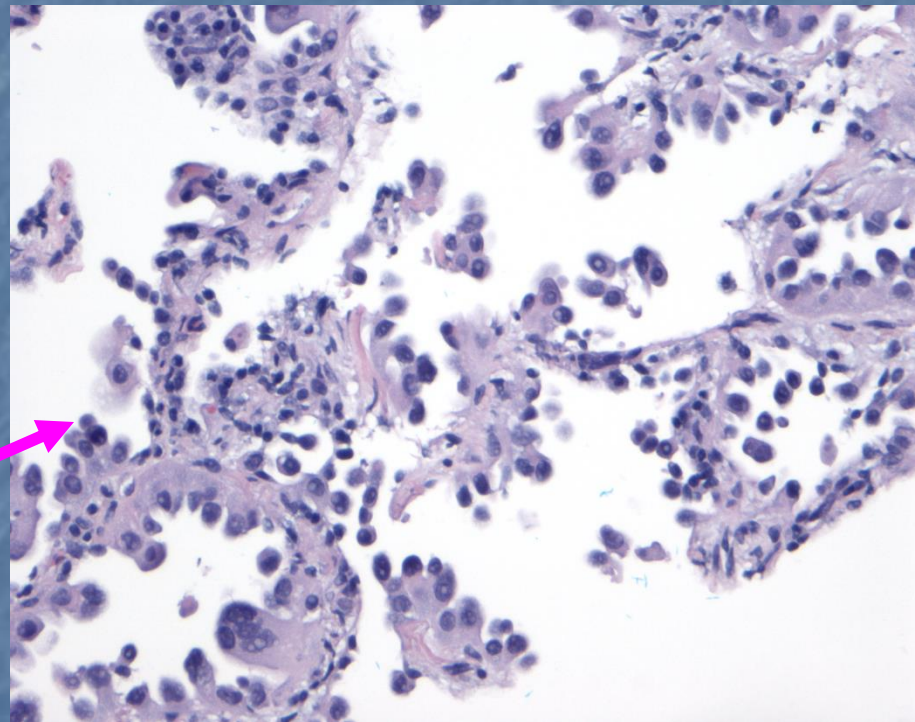
High Power



Hemotoxylin-Eosin stain

Surgpath images courtesy N. Narula, UCI Medical Center

Adenocarcinoma (Bronchioloalveolar Type)



Malignant cells growing along
the alveolar septae
Hemotoxylin-Eosin staining

Surgpath images courtesy N. Narula, UCI Medical Center

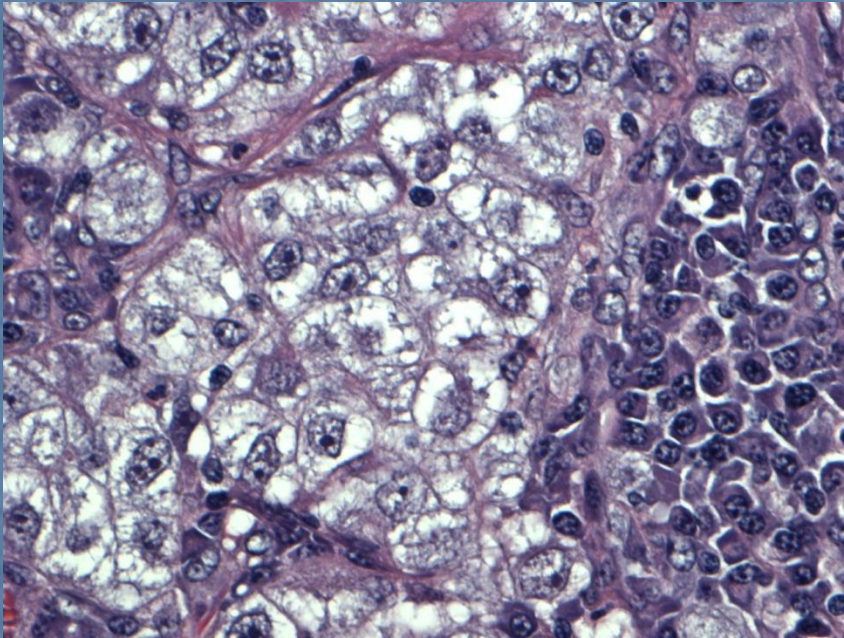
Large cell carcinoma

- Undifferentiated malignant epithelial tumor that lacks cytologic features of small cell carcinoma, and has no glandular or squamous differentiation.
- Cells typically have large prominent nuclei, nucleoli and a moderate amount of cytoplasm.

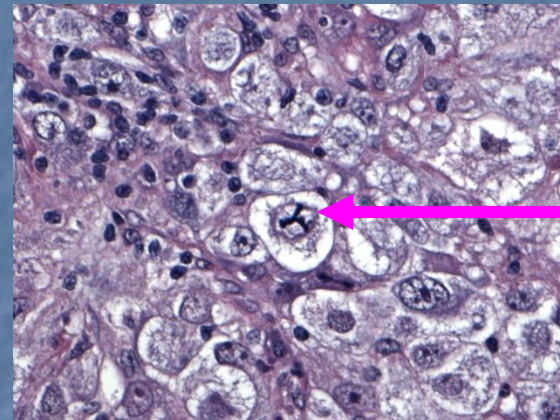
Large Cell Tumor Fragments



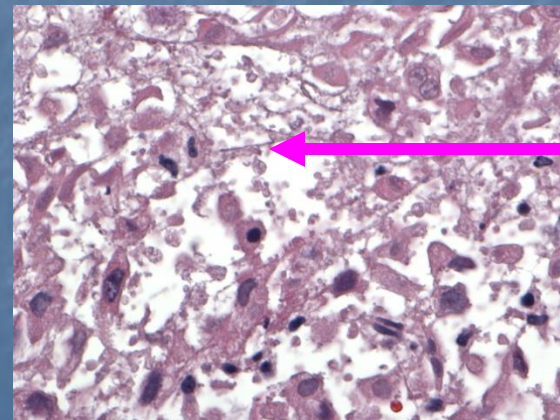
Large Cell Carcinoma



Hematoxylin – Eosin stain



Mitosis



Necrosis

The Essential Bronchoscopist



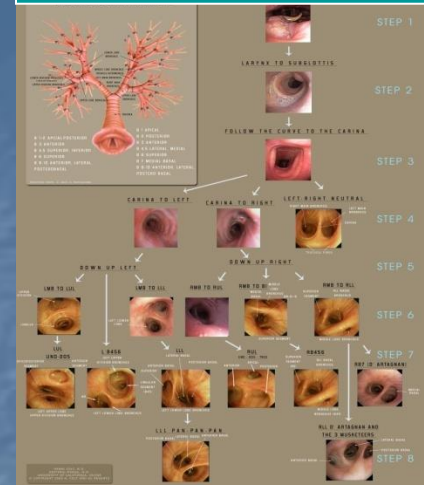
MODULE 1

A new curriculum

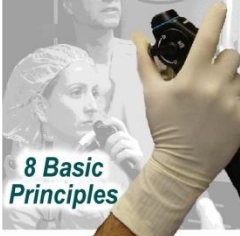
Assured competency and proficiency

1. Web-based Self-learning study guide.
2. Computer-based simulations, didactic lectures, and image encyclopedia.
3. Bronchoscopy step-by-step©: Practical exercises, skills and tasks, competency testing.
4. Guided apprenticeship.
5. Learning the art of Bronchoscopy.

Step by Step©



The Art of Bronchoscopy



8 Basic Principles

1. The bronchoscope wants to do the bronchoscopy
2. Stay in the midline (Get off the wall).
3. Moderation in everything; slow down, think, act.
4. If you don't know where you are you probably shouldn't be there
5. Force is wrong. Return to what you know; then move on and grow.
6. Slow down to finish faster.
7. Treasure basic values: peace, harmony and kindness
8. You and the bronchoscope are one

DEMOCRATIZATION AND
GLOBALIZATION OF KNOWLEDGE

BRONCHATLAS©



All efforts are made by Bronchoscopy International to maintain currency of online information. All published multimedia slide shows, streaming videos, and essays can be cited for reference as:

Bronchoscopy International: BronchAtlas©, an Electronic On-Line Multimedia Slide Presentation.

<http://www.Bronchoscopy.org/Bronchatlas/>. Published 2007 (Please add "Date Accessed").



Thank you