

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 1
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
January 4, 2007

Clinical History: 48 year old smoker found to have a right upper lobe mass on chest x-ray and is being evaluated for chest pain. PET scan demonstrated a mass in the right upper lobe and also a mass in the right lower lobe, which were also identified by CT scan. The lower lobe mass was approximately 1 cm in diameter and the upper lobe mass was 4 cm to 5 cm in diameter. The patient was referred for surgical treatment.

Specimen:

- A. Lung, wedge biopsy right lower lobe
- B. Lung, resection right upper lobe
- C. Lymph node, biopsy level 2 and 4
- D. Lymph node, biopsy level 7 subcarinal

Final Diagnosis:

- A. Wedge biopsy of right lower lobe showing: Adenocarcinoma, Grade 2, Measuring 1 cm in diameter with invasion of the overlying pleura and with free resection margin.
- B. Right upper lobe lung resection showing: Adenocarcinoma, grade 2, measuring 4 cm in diameter with invasion of the overlying pleura and with free bronchial margin. Two (2) hilar lymph nodes with no metastatic tumor.
- C. Lymph node biopsy at level 2 and 4 showing seven (7) lymph nodes with anthracosis and no metastatic tumor.
- D. Lymph node biopsy, level 7 subcarinal showing (5) lymph nodes with anthracosis and no metastatic tumor.

Comment:

The morphology of the tumor seen in both lobes is similar and we feel that the smaller tumor involving the right lower lobe is most likely secondary to transbronchial spread from the main tumor involving the right upper lobe. This suggestion is supported by the fact that no obvious vascular or lymphatic invasion is demonstrated and adjacent to the smaller tumor, there is isolated nests of tumor cells within the air spaces. Furthermore, immunoperoxidase stain for Ck-7, CK-20 and TTF are performed on both the right lower and right upper lobe nodule. The immunohistochemical results confirm the lung origin of both tumors and we feel that the tumor involving the right lower lobe is due to transbronchial spread from the larger tumor nodule involving the right upper lobe.

END Lung Case 1

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**Lung Case 2
OPERATIVE REPORT**

Operative Report
June 15, 2007

History of Present Illness: 67 year old gentleman who presented to the emergency room with chest pain, cough, hemoptysis, shortness of breath, and recent 30-pound weight loss. He had a CT scan done of the chest there which demonstrated bilateral hilar adenopathy with extension to the subcarinal space as well as a large 6-cm right hilar mass, consistent with a primary lung carcinoma. There was also a question of liver metastases at that time.

Operation Performed: Fiberoptic bronchoscopy with endobronchial biopsies

The bronchoscope was passed into the airway and it was noted that there was a large, friable tumor blocking the bronchus intermedius on the right. The tumor extended into the carina, involving the lingula and the left upper lobe, appearing malignant. Approximately 15 biopsies were taken of the tumor.

Attention was then directed at the left upper lobe and lingula. Epinephrine had already been instilled and multiple biopsies were taken of the lingula and the left upper lobe and placed in a separate container for histologic review. Approximately eight biopsies were taken of the left upper lobe.

**Lung Case 2
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
June 15, 2007

Specimen:

- A. Right bronchus intermedius, biopsy
- B. Left upper lobe, biopsy

Final Diagnosis:

- A. Right bronchus intermedius, biopsy: Invasive squamous carcinoma
- B. Left upper lobe, biopsy: Invasive squamous carcinoma

END Lung Case 2

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 3
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
October 31, 2007

Gross Description:

- A. Received fresh labeled with patient's name, designated 'right upper lobe wedge', is an 8.0 x 3.5 x 3.0 cm wedge of lung which has an 11.5 cm staple line. There is a 0.8 x 0.7 x 0.5 cm sessile tumor with surrounding pleural puckering.
- B. Received fresh, labeled with patient's name, designated "lymph node", is a 1.7 cm possible lymph node with anthracotic pigment.
- C. Received fresh labeled with patient's name, designated 'right upper lobe', is a 16.0 x 14.5 x 6.0 cm lobe of lung. The lung is inflated with formalin. There is a 12.0 cm staple line on the lateral surface, inked blue. There is a 1.3 x 1.1 x 0.8 cm subpleural firm ill-defined mass, 2.2 cm from the bronchial margin and 1.5 cm from the previously described staple line. The overlying pleura is puckered.
- D. Received fresh, labeled with patient's name, designated '4 lymph nodes', is a 2.0 x 2.0 x 2.0 cm aggregate of lymphoid material with anthracotic pigment and adipose tissue.
- E. Received fresh, labeled with patient's name, designated 'subcarinal lymph node', is a 2.0 x 1.7 x 0.8 cm aggregate of lymphoid material with anthracotic pigment .

Final Diagnosis:

- A. Right upper lobe wedge lung biopsy: Poorly differentiated non-small cell carcinoma. Tumor Size: 0.8 cm. Arterial (large vessel) invasion: Not seen. Small vessel (lymphatic) invasion: Not seen. Pleural invasion: Not identified. Margins of excision: Negative for malignancy.
- B. Biopsy, 10R lymph node: Anthracotically pigmented lymphoid tissue, negative for malignancy.
- C. Right upper lobe, lung: Moderately differentiated non-small cell carcinoma (adenocarcinoma). Tumor Size: 1.3 cm. Arterial (large vessel) invasion: Present. Small vessel (lymphatic) invasion: Not seen. Pleural invasion: Not identified. Margins of excision: Negative for malignancy.
- D. Biopsy, 4R lymph nodes: Lymphoid tissue, negative for malignancy.
- E. Biopsy, subcarinal lymph node: Lymphoid tissue, negative for malignancy.

Comments:

Pathologic examination reveals two separate tumors in the right upper lobe. They appear histologically distinct, suggesting they are separate primary tumors (pT1). The right upper lobe wedge biopsy (part A) shows a poorly differentiated non-small cell carcinoma with a solid growth pattern and without definite glandular differentiation by light microscopy. The right upper lobe carcinoma identified in the resection (part C) is a moderately differentiated adenocarcinoma with obvious gland formation.

END Lung Case 3

**2007 Multiple Primary and Histology Rules
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**Lung Case 4
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report

April 26, 2007

Clinical History: Probable right upper lobe lung adenocarcinoma

Specimen: Lung, right upper lobe resection

Gross Description

Specimen is received fresh for frozen section, labeled with the patient's identification and "Right upper lobe lung". It consists of one lobectomy specimen measuring 16.1 x 10.6 x 4.5 cm. The specimen is covered by a smooth, pink-tan and gray pleural surface which is largely unremarkable. Sectioning reveals a round, ill-defined, firm, tan-gray mucoid mass. This mass measures 3.6 x 3.3 x 2.7 cm and is located 3.7 cm from the closest surgical margin and 3.9 cm from the hilum. There is no necrosis or hemorrhage evident. The tumor grossly appears to abut, but not invade through, the visceral pleura, and the overlying pleura is puckered.

Final Diagnosis

Right lung, upper lobe, lobectomy: Bronchioloalveolar carcinoma, mucinous type

Comment:

Right upper lobe, lobectomy

Tumor type: Bronchioloalveolar carcinoma, mucinous type

Histologic grade: Well differentiated

Tumor size (greatest diameter): 3.6 cm

Blood/lymphatic vessel invasion: Absent

Perineural invasion: Absent

Bronchial margin: Negative

Vascular margin: Negative

Inked surgical margin: Negative

Visceral pleura: Not involved

In situ carcinoma: Absent

Non-neoplastic lung: Emphysema

Hilar lymph nodes: Number of positive lymph nodes: 0; Total number of lymph nodes: 1

P53 immunohistochemical stain is negative in the tumor

END Lung Case 4

**2007 Multiple Primary and Histology Rules
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**Lung Case 5
SURGICAL PATHOLOGY REPORT #1**

Surgical Pathology Report
March 19, 2007

Clinical History: Approximate 4 cm multilobulated mass in the right lower lung with nodular pattern suggestive of metastatic disease. Multiple bilateral ill-defined tumor nodules noted on CT within lung parenchyma of bilateral lower lobes. There are also subtle calcifications of the pleura which may be related to mesothelioma.

Specimen: Biopsy of right lower lobe mass

Final Diagnosis: Lung, right lower lobe, core biopsies: Large cell carcinoma with neuroendocrine differentiation

Comment: Tumor demonstrates morphology of a large cell carcinoma. The tumor cells are relatively large (non-small cell) without evidence of glandular differentiation (lumen formation) or squamous differentiation (intercellular bridging). Though neuroendocrine differentiation is identified by immunohistochemistry (synaptophysin and chromogranin stains), morphologic features of the tumor do not support a neuroendocrine carcinoma.

**Lung Case 5
SURGICAL PATHOLOGY REPORT #2**

Surgical Pathology Report
April 1, 2007

Specimen: Right lower lobe lung, resection

Final Diagnosis: Lung, right lower lobe: Large cell neuroendocrine carcinoma of lung with the following features:

- A. Size: Two separate nodules 6.5 and 0.7 cm in greatest dimension
- B. Regional Lymph Nodes: 10 lymph nodes negative for metastatic tumor

Comment: Immunohistochemical studies will be performed to help differentiate whether these two lesions represent the same tumor or two separate tumors.

Addendum Diagnosis:

Immunohistochemical studies support a separate lineage for these tumors. As per AJCC staging guidelines, separate staging would result in a pT2 pN0 pMX for the larger tumor and pT1 pN0 pMX for the smaller.

END Lung Case 5

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 6
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
November 13, 2007

Clinical History: Submucosal tumor infiltrating minor carina at left lower lobe.

Specimen: Lung, left lower lobe biopsy

Gross Description:

Two specimens are received in formalin with patient's name and demographics. They are from the same site and they are combined from both containers into one cassette and they consist of three pieces of red-tan tissue that are all roughly the same size at 0.2 x 0.3 cm.

Microscopic Description:

The lung biopsy tissue includes portions of a crushed cellular infiltrate with a neuroendocrine component showing some preservation of small cells having loose organization, some nuclear molding and nuclear streaming artifact which is atypical of small cell carcinoma.

Final Diagnosis:

Left lower lung biopsy: Small cell undifferentiated carcinoma

END Lung Case 6

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 7
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
December 13, 2007

Clinical History: Patient is a 37 year old female with a history of colectomy for adenoma. During her preop evaluation it was noted that she had a lesion on her chest x-ray. CT scan of the chest confirmed a left lower mass.

Specimen: Lung, left lower lobe resection

Immunohistochemical studies are performed. Tumor cells show no reactivity with cytokeratin AE1/AE3. No significant reactivity with CAM5.2 and no reactivity with cytokeratin-20 are seen. Tumor cells show partial reactivity with cytokeratin-7. PAS with diastase demonstrates no convincing intracytoplasmic mucin. No neuroendocrine differentiation is demonstrated with synaptophysin and chromogranin stains. Tumor cells show cytoplasmic and nuclear reactivity with S100 antibody. No significant reactivity is demonstrated with melanoma marker HMB-45 or Melan-A. Tumor cell nuclei (spindle cell and pleomorphic/giant cell carcinoma components) show nuclear reactivity with thyroid transcription factor marker (TTF-1). The immunohistochemical studies are consistent with primary lung sarcomatoid carcinoma with pleomorphic/giant cell carcinoma and spindle cell carcinoma components.

Final Diagnosis:

Histologic Tumor Type: Sarcomatoid carcinoma with areas of pleomorphic/giant cell carcinoma and spindle cell carcinoma

Tumor Size: 2.7 x 2.0 x 1.4 cm

Visceral Pleura Involvement: The tumor closely approaches the pleural surface but does not invade the pleura

Vascular Invasion: Present

Margins: Bronchial resection margins and vascular margins are free of tumor

Lymph Nodes: Metastatic sarcomatoid carcinoma into one of four hilar lymph nodes

Pathologic Stage: pT1N1MX

END Lung Case 7

**2007 Multiple Primary and Histology Rules
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**Lung Case 8
CT SCAN OF CHEST**

CT Scan of Chest
May 27, 2007

Clinical History: 68 year-old white male with recently diagnosed adenocarcinoma by sputum cytology. An abnormal chest radiograph shows right middle lobe infiltrate and collapse. Patient needs staging CT of chest with contrast. Right sided supraclavicular and lower anterior cervical adenopathy noted on physical exam.

Technique: Multiple transaxial images utilized in 10 mm sections were obtained through the chest. Intravenous contrast was administered.

Findings: There is a large 3 x 4 cm lymph node seen in the right supraclavicular region. There is a large right paratracheal lymph node best appreciated on image #16 which measures 3 x 2 cm. A subcarinal lymph node is enlarged also. It measures 6 x 2 cm. Multiple pulmonary nodules are seen along the posterior border of the visceral as well as parietal pleura. There is a pleural mass seen within the anterior sulcus of the right hemithorax as well as the right crus of the diaphragm. There is also a soft tissue density best appreciated on image #36 adjacent to the inferior aspect of the right lobe of the liver which most likely also represents metastatic deposit. The liver parenchyma is normal without evidence of any dominant masses. The right kidney demonstrates a solitary cyst in the mid pole of the right kidney.

Impression:

1. Greater than twenty pulmonary nodules demonstrated on the right side to include pulmonary nodules within the parietal as well as various visceral pleura with adjacent consolidation most likely representing pulmonary neoplasm.
2. Extensive mediastinal adenopathy as described above
3. No lesion seen within the left lung at this time
4. Supraclavicular adenopathy

END Lung Case 8

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 9
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
October 4, 2007

Frozen Section Diagnosis: Malignant. Two tumor nodules found grossly were frozen. One is well-differentiated and may be a broncioloalveolar. The other is poorly differentiated.

Bronchial margins, vascular margin, bronchopulmonary lymph nodes, and pleural surface all negative for tumor.

Mild anthracosis and emphysema.

Nodular fibrous subpleural scar, possibly old infarct

No lymph nodes identified in specimen

Final Diagnosis: Lung, right upper lobectomy – two tumor nodules of carcinoma with mucin production consistent with pulmonary primary are identified. One nodule shows broncioloalveolar features. The other nodule shows squamous differentiation.

END Lung Case 9

**2007 Multiple Primary and Histology Rules
Practice Cases**

**Lung Case 10
SURGICAL PATHOLOGY REPORT**

Surgical Pathology Report
April 1, 2007

Final Diagnosis:

1. Left lower lobe, bronchial biopsy: Bronchial wall with mild chronic inflammation and focal dysplasia of the surface epithelium. Negative for tumor
2. Right lower paratracheal lymph node, excision: Anthracotic lymph node, negative for tumor
3. Right tracheobronchial angle lymph node, excision: Two anthracotic lymph nodes, negative for tumor
4. Right pretracheal lymph node, excision: Anthracotic lymph node, negative for tumor
5. Right lower paratracheal lymph node, excision: Anthracotic lymph node, negative for tumor
6. Inferior pulmonary ligament lymph node, excision: Small lymph node and adipose tissue, negative for tumor
7. Subcarinal lymph node, excision: Anthracotic lymph node, negative for tumor
8. Lobar lymph node excision: Anthracotic lymph node, negative for tumor
9. Superior segment right lower lobe, resection: Moderately differentiated adenocarcinoma with mucin secreting cells showing mixed acinar, papillary, and bronchioloalveolar features. Tumor Size: 5.0cm maximum diameter. Lymphatic invasion: not identified. Venous invasion: not identified. Pleural invasion: not identified. Resection margin: free of tumor. Peribronchial lymph node is negative for tumor.

END Lung Case 10