CoC Operative Standard 5.8: Pulmonary Resection

December 15, 2020

Presentation created by CSSP Education Committee
Webinar Logistics

• All participants are muted during the webinar

• Questions – including technical issues you may be experiencing – should be submitted through the question pane

• Questions will be answered as time permits

• Please complete the post-webinar evaluation you will receive via email
Cancer Surgery Standards Program (CSSP)

- The ACS launched the CSSP in June 2020, recognizing growing evidence that adherence to specific operative techniques leads to:
  - Longer survival
  - Better surgical outcomes
  - Improved quality of life

- Shift from standards based in facilities/equipment to outcomes-based standards
Cancer Surgery Standards Program (CSSP)

- **Mission:** To **improve the quality of care** for persons with cancer

- **Goals:**
  - **Set evidence-based standards** for the technical conduct of oncologic surgery
  - **Educate surgeons** on the key technical aspects of oncologic procedures
  - **Create tools** which support implementation and adherence to the standards
    - Synoptic operative report templates
Cancer Surgery Standards Program (CSSP)
## The CoC Operative Standards (2020)

<table>
<thead>
<tr>
<th>Standard</th>
<th>Disease Site</th>
<th>Procedure</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3</td>
<td>Breast</td>
<td>Sentinel node biopsy</td>
<td>Operative report</td>
</tr>
<tr>
<td>5.4</td>
<td>Breast</td>
<td>Axillary dissection</td>
<td>Operative report</td>
</tr>
<tr>
<td>5.5</td>
<td>Melanoma</td>
<td>Wide local excision</td>
<td>Operative report</td>
</tr>
<tr>
<td>5.6</td>
<td>Colon</td>
<td>Colectomy (any)</td>
<td>Operative report</td>
</tr>
<tr>
<td>5.7</td>
<td>Rectum</td>
<td>Mid/low resection (TME)</td>
<td>Pathology report (CAP)</td>
</tr>
<tr>
<td>5.8</td>
<td>Lung</td>
<td>Lung resection (any)</td>
<td>Pathology report (CAP)</td>
</tr>
</tbody>
</table>
Multidisciplinary Panel

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Standard 5.8: Lung Resection

Rationale
Pulmonary Nodal Staging as an Operative Standard: Rationale

• Staging is dependent on status of N1 and N2 nodal stations

• Mediastinal lymph node assessment is recommended

• Audits of surgeon operative notes and pathology reports show poor concordance regarding procedure performed and extent of lymph node sampling

Nelson et al. 2015, De Leyn et al. 2014, Osarogiagbon et al. 2015
ACOSOG Z0030: Equivalent survival for Systematic Mediastinal lymph node sampling (MLNS) vs Mediastinal lymph node dissection (MLND)

Darling et al. 2011
Examining Mediastinal Lymph Nodes Improves Survival

Osarogiagbon et al. 2012
Examining Mediastinal Lymph Nodes Improves Survival

Following NCCN guidelines improves survival

NCCN Guidelines:
1. Anatomic resection
2. Negative margins
3. Examination of hilar/intrapulmonary LNs
4. Examination of ≥3 mediastinal LNs

Adjusted hazard ratio: 0.64 (0.50-0.80)

Osarogiagbon et al. 2017
Pulmonary Resection Critical Elements: Lymph node staging

• Mediastinal staging prior to treatment (radiographic or invasive)
• Invasive mediastinal staging for central tumors, clinical N1 disease and tumors >3cm
• Confirmation of imaging findings at thoracic exploration
• Mediastinal staging at the time of lung resection

Any curative intent lung resection, including:
Non-small cell lung cancer
Small cell lung cancer
Carcinoid tumor

Nelson et al. 2015
Standard 5.8: Pulmonary Nodal Staging

1 hilar lymph node + 3 mediastinal lymph nodes (3 distinct stations)
Standard 5.8: Lung Resection Technique
Case Presentation: Lung Cancer

- 60 year old man with 40 pack year smoking history, referred by PCP after screening CT
- 2 cm peripheral mass found in right upper lobe
- No apparent nodal disease on CT or PET
- Scheduled for VATS lobectomy
Pulmonary Resection: Lymph Node Stations

**Mediastinal stations:**
Single digit (2-9)

**Hilar stations:**
Double digit (10+)

**LEFT**
- 9L
- 8L
- 7
- 6
- 5
  (4L & 2L if accessible)

**RIGHT**
- 9R
- 8R
- 7
- 10R
- 4R
- 2R
Lymph Node Stations

Superior Mediastinal Nodes
- 1 Highest mediastinal
- 2 Upper paratracheal
- 3 Pre-vascular and retrotracheal
- 4 Lower paratracheal (including azygos nodes)

Aortic Nodes
- 5 Subaortic (A-P window)
- 6 Para-aortic (ascending aorta or phrenic)

Inferior Mediastinal Nodes
- 7 Subcarinal
- 8 Paraeosophageal (below carina)
- 9 Pulmonary ligament

N1 Nodes
- 10 Hilary
- 11 Interlobar
- 12 Lobar
- 13 Segmental
- 14 Subsegmental

Nelson et al. 2015

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Pulmonary resection: Technique (right)

Right sided approach to stations 8 (para-esophageal) & 9 (inferior pulmonary ligament)

Nelson et al. 2015
Pulmonary resection: Technique (right)

Right sided approach to station 7 (subcarinal)

Nelson et al. 2015
Pulmonary resection: Technique (right)

Right sided approach to stations 2R (upper paratracheal) and 4R (lower paratracheal)

Nelson et al. 2015
Pulmonary resection: Technique (left)

Left sided approach to stations 5 (sub-aortic) and 6 (para-aortic)

Nelson et al. 2015
Standard 5.8: Pulmonary Nodal Staging

1 hilar lymph node + 3 mediastinal lymph nodes (3 distinct stations)

RULE
Standard 5.8: Lung Resection

Documentation, Implementation Timeline & Compliance
CoC Compliance Measures: Standard 5.8

1) The hilum and mediastinum should be thoroughly staged at the time of lung resection, even in patients undergoing non-anatomic parenchyma sparing resection (i.e. a wedge resection)

2) The surgical pathology report must contain lymph nodes from at least one hilar station and at least three distinct mediastinal stations

3) The nodal stations examined by the pathologist must be documented in curative pulmonary resection pathology reports in synoptic format
**Example of a CAP Lung Resection Synoptic Report**

**Surgical Pathology Cancer Case Summary**

Protocol posting date: February 2020

**LUNG: Resection**

Select a single response unless otherwise indicated.

**Synchronous Tumors (required if morphologically distinct unrelated multiple primary tumors are present)**

- Present
- Specify total number of primary tumors identified: ___
- Specimen(s) ___

Cannot be determined

* Morphologically distinct tumors that are considered to represent separate primary lung cancers should have separate synoptic reports.

**Procedures (select all that apply)**

- Wedge resection
- Lobectomy
- Segmentectomy
- Completeness lobectomy
- Sleeve lobectomy
- Bilobectomy
- Pulmonary resection

Major airway resection (specify): ___

Other (specify): ___

Not specified

**Number of Lymph Nodes Involved:** ___

- Number cannot be determined (explain): ___
- Specify nodal station(s) involved (applicable only if node(s) involved): ___

**Number of Lymph Nodes Examined:** ___

- Number cannot be determined (explain): ___
- Specify nodal station(s) examined: ___

(...and other sections)

**Lymph Node Examination (required only if lymph nodes present in the specimen)**

<table>
<thead>
<tr>
<th>Number of Lymph Nodes Involved: ___</th>
<th>Number cannot be determined (explain): ___</th>
<th>Specify nodal station(s) involved (applicable only if node(s) involved): ___</th>
</tr>
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</table>

<table>
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<tr>
<th>Number of Lymph Nodes Examined: ___</th>
<th>Number cannot be determined (explain): ___</th>
<th>Specify nodal station(s) examined: ___</th>
</tr>
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</table>

**Extranodal Extension (Note J)**

- + Not identified
- * Present
- + Cannot be determined

**Treatment Effect (Note I)**

- + No known presurgical therapy
- > Greater than 10% residual viable tumor
- ≤ Less than or equal to 10% residual viable tumor
- Cannot be determined
How will compliance be assessed?

• A site visit reviewer will review the **standardized synoptic pathology reports** for curative intent pulmonary resections

• By 2022, sites will be expected to have **70% compliance**
Timeline to Achieve Compliance: Standard 5.8

Steps to Achieve Compliance

- **2020**: Communicate requirements & engage clinicians in implementation plans
- **2021**: Measure compliance with synoptic pathology reports and assure high reliability at 70% compliance
- **2022**: Site Visits review 2021 pathology reports for 70% compliance
- **2023**: Site Visits review 2021 & 2022 pathology reports for 80% compliance
- **2024**: Site Visits review 2021, 2022, and 2023 pathology reports for 80% compliance
How Can Programs Optimize Compliance?

Ensure institution is utilizing **standardized CAP reports** for all lung cancer procedures.

**Document** performance of lymph node sampling during pulmonary resection & label stations **clearly** in operative note.

Encourage **communication** amongst surgeons, pathologists, & registrars.
Pre-labeled Specimen Collection Kits and Checklists Improve Communication

Overall performance of mediastinal lymph node examination

*Median number of MLN examined:*

1 \(\rightarrow\) 6

Concordance in surgeons’ and pathologists’ reporting

39% \(\rightarrow\) 80%

Osarogiagbon et al, 2012
Osarogiagbon et al, 2015
Standardized Collection Kits Improve Compliance With Pulmonary Nodal Staging

Pre-Implementation (N=1270)
Post-Implementation Kit Cases (N=1548)
Post-Implementation Non-Kit Cases (N=1082)

- pNx
- No mediastinal LN examination
- No station 10 examination
- No station 7 examination
- Meeting all 4 NCCN criteria

Courtesy of Dr. Osarogiagbon
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<th>Operation</th>
<th>Pathology Documentation</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For any primary pulmonary resection performed with curative intent</strong> (including non-anatomic parenchymal-sparing resections)</td>
<td>Synoptic report documents lymph nodes from:</td>
<td>2021: Implementation</td>
</tr>
<tr>
<td>Resect nodal stations from:</td>
<td>➥ 1 hilar station</td>
<td>2022 site visits:</td>
</tr>
<tr>
<td>Mediastinum (Stations 2-9) ➥ 3 distinct stations</td>
<td>➥ 3 mediastinal stations</td>
<td>70% Compliance</td>
</tr>
<tr>
<td>Hilum (Stations 10-14) ➥ 1 station</td>
<td>with names and/or numbers of stations</td>
<td></td>
</tr>
</tbody>
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Special Thanks

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Resources
ACS Cancer Surgery Standards Program (CSSP)
www.facs.org/cssp
References


