Surgical management in Lung cancer

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Topics

• Indications for Surgery in Lung Cancer
• Preoperative assessment & Optimization
• Relevant Surgical Anatomy
• Surgery– Primary & Mediastinal Lymph nodes
• Post operative Management
• Adjuvant Treatment & Followup
Indications

- Early stage NSCLC
  - Stage IA, IB, IIA, IIB
- Locally Advanced NSCLC
  - Stage IIB/IIIA (T3 N0/N1, T4 N0/N1)
  - Stage IIIA/IIIB (cT1-3 N2/3) ➔ Pathological mediastinal LN Negative
- Early Stage SCLC - T1/2 N0 ➔ Pathological mediastinal LN Negative
- Resectable recurrence
- Palliative
Indications

- Separate Nodules/Multiple cancers in same lobe/same side lung
  - Parenchyma preserving resection
- Chest wall/parietal pleura/parietal pericardium/phrenic nerve – No problem
- Superior sulcus tumours?
Preoperative Assessment & Optimization

• MDT
  • Surgical Oncologist/Thoracic Surgeon
  • Medical Oncologist
  • Radiation Oncologist
  • Radiologist
  • Pulmonologist
  • Specialist Nurses
  • Pathologists

• Patient and Family
Preoperative Assessment & Optimization

Medically Fit Patient

Resectable Disease
Preoperative Assessment & Optimization

- Clinical Assessment including Performance status
- CT Chest and Abdomen or PETCT
- Bloods
- Smoking cessation
- Pathology
- Bronchoscopy
- Pulmonary function tests/CPET
Preoperative Assessment & Optimization

Mediastinal Evaluation – Clinical(Imaging) → Pathological

Rule out N2/N3 disease

N1 – Ipsilateral peribronchial/hilar/intrapulmonary LN
N2 – Ipsilateral mediastinal or subcarinal LN
N3 – Contralateral LN or supraclavicular LN
Mediastinal Evaluation

- EBUS TBNA
- EUS FNA/B
- CT guided needle biopsy
- Mediastinoscopy
- Thoracoscopy
- Mediastinotomy

EBUS TBNA Neg but CT/PET suspicious
↓
Mediastinoscopy biopsy
Relevant Surgical Anatomy

Lung

Lymph Nodes
Lungs
Lungs

Courtesy of Dr Matt Skalski, Radiopaedia.org
Lymph Nodes
Surgery

Primary-Lung Lesion
Mediastinal LN
Surgery - Primary

- Anatomic Pulmonary Resections – lobectomy/pneumonectomy – preferred
- Sublobar resections – Segmentectomy/Wedge resections
  - <=2 cm tumours
  - >= 2 cm margin
  - Peripheral nodule
  - Poor pulmonary reserve or major comorbidity
  - Includes LN sampling of appropriate N1/N2 stations
Surgery - VATS

• High volume centres
• No compromise of oncological safety
• Improved early post op outcomes
• Reduced hospital stay
• Rapid return to function
• Reduced delay in adjuvant Rx
Surgery - Primary

- Separate nodules in same lobe/same lung – Lung parenchyma preserving sleeve lobectomy > pneumonectomy

- T3/T4 local invasion/extension – en bloc resections

- No surgery in N2/N3 disease
Surgery – Lymph nodes

- Formal Ipsilateral mediastinal LN dissection esp. in Stage IIB/IIIA tumours

- All N1 and at least 3 N2 LN stations should be sampled if formal dissection not done.
Surgery

- **Left Upper Lobectomy** – Segments I-V + LN 10-14L (N1 Nodes) + 2L,4L,5,6,7,8,9 (N2 Nodes)
- **Left Lower Lobectomy** – Segments VI-X + LN 10-14L (N1 Nodes) + 4L,5,6,7,8,9(N2 Nodes)
- **Right Upper Lobectomy** – Segments I-III ± IV-V + LN 10-14R (N1 Nodes) + 2R,4R,7,8,9 (N2 Nodes)
- **Right Lower Lobectomy** – Segments VI-X ± IV-V + LN 10-14R (N1 Nodes) + 2R,4R,7,8,9(N2 Nodes)
Surgery

Video – Left Upper lobectomy
Post operative Care

- Early post operative period – ICU/HDU
- Chest drain – bronchopleural fistula
- Chest physiotherapy
- Analgesia
Adjuvant Treatment

• Post operative histopathology → MDT

• T1/2 + N0 +R0 – observe/chemotherapy

• T3 or T4 or N1 or N2 or R1 – Chemo + RT
Thank you
Post Test MCQs
Question 1

In which of the following clinical stages of NSCLC is surgery NOT the primary modality of treatment?

a) T2 N1
b) T3 N1
c) T4 N1
d) T2 N2
Question No 2

Which of the following T stages is matched correctly as per TNM 8Th Edition staging system for NSCLC?

a) T1 – involves visceral pleura
b) T2 – involves main bronchus
c) T3 – involves recurrent laryngeal nerve
d) T4 – involves phrenic nerve
Question 3

Which of the following N stages is matched correctly as per TNM 8\textsuperscript{th} Edition staging system for NSCLC?

a) N1 – Ipsilateral scalene LN
b) N2 – Subcarinal LN
c) N3 – Intrapulmonary LN
d) N3 – Ipsilateral mediastinal LN
Question 4

• Which of the following IASLC LN stations are NOT correctly matched?
  • 3 – Prevascular
  • 4 – Subaortic
  • 5 – AP window
  • 6 – Para aortic
Question 5

• Which of the following is not a contraindication for surgery in lung cancer?

  a) Tumour nodule in contralateral lobe
  b) Single extrathoracic metastases
  c) Involvement of superior mediastinal LN
  d) Involvement of chest wall
Question 6

• Which of the following statements is TRUE regarding surgery of lung cancer?

a) Sublobar resections are preferred over anatomic resections
b) Poor pulmonary reserve is a contraindication for surgery
c) Pneumonectomy is preferred over sleeve lobectomy in patients with multiple cancers
d) Atleast 3 N1 LN stations should be sampled
Question 7

Which of the following is NOT an indication for adjuvant radiation treatment post lung cancer surgery?

- Margin positive T1 N0 cancer treated with a lobectomy + MLND
- En bloc resection of chest wall for a T3 left upper lobe tumor
- T2 N0 tumor treated with lobectomy + MLND. Margins are negative
- T2 N1 tumor treated with lobectomy + MLND. Margins are negative
Question 8

• Which of the following is true regarding the surgical anatomy of the Lung?
  • Right lung does not have a horizontal fissure
  • Right lung has 10 segments, Left lung has 8 segments
  • Lingula contains 2 segments on the left side
  • Right middle lobe is divided into superior and inferior segments