

LUNG CANCER UPDATE

The Respiratory Perspective

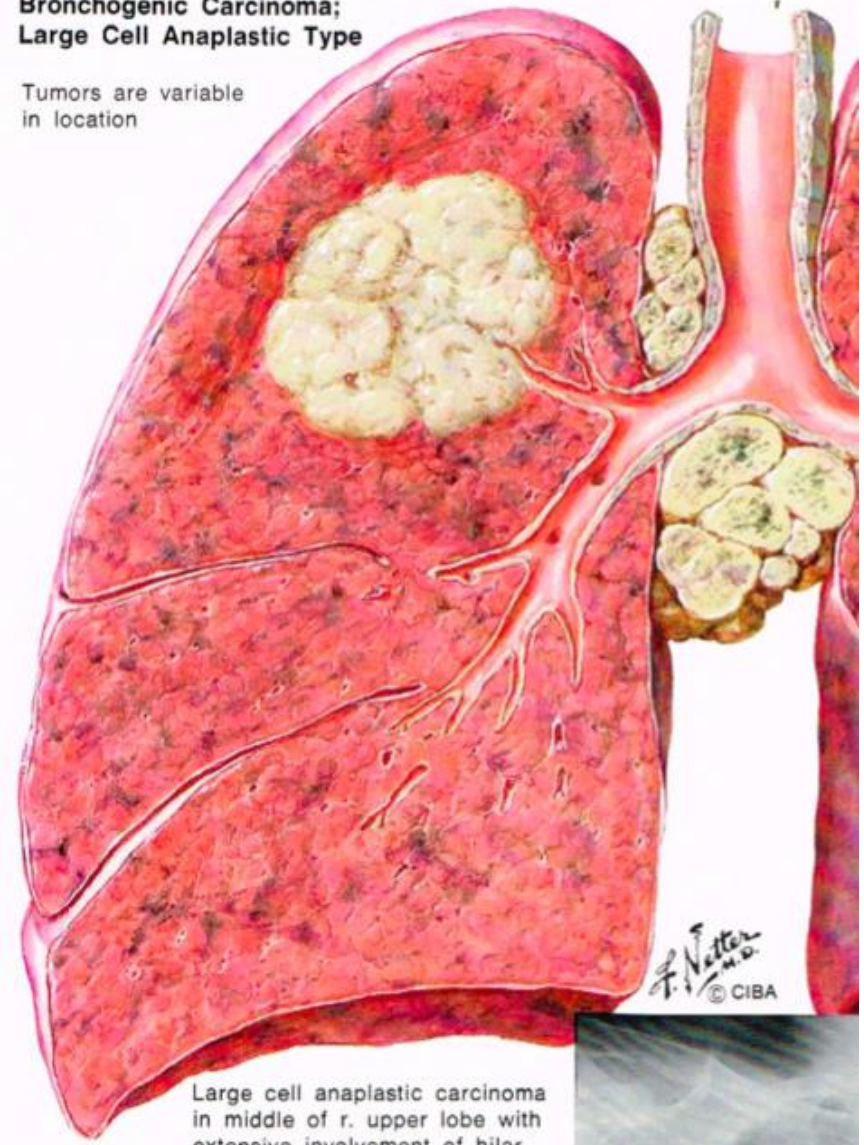
Dr Emma Ball

Respiratory Physician

Royal Hobart Hospital

Bronchogenic Carcinoma; Large Cell Anaplastic Type

Tumors are variable
in location



Topics

Basics

Referral to clinic

Diagnosis

Staging

Lung Cancer MDT

History and Examination

Symptoms

Cough/SOB

Weight loss

Haemoptysis

Night sweats

Chest pain

Smoking history

Occupational history

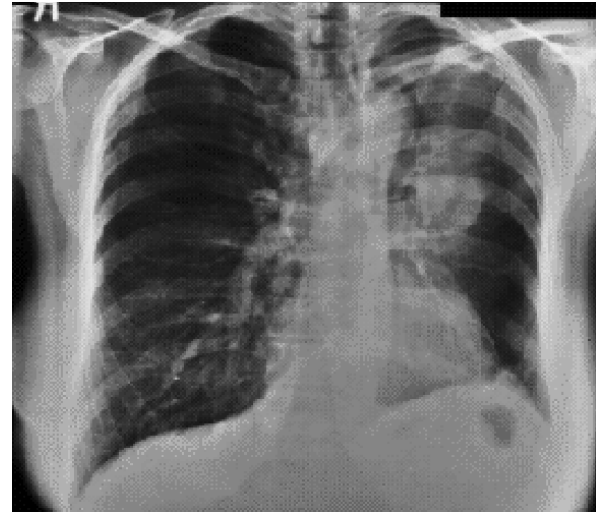
Ex:

Clubbing

Lymphadenopathy

Collapse/Effusion

Bony tenderness



Initial Investigations

CXR

CT Chest and upper abdomen with
contrast

Liver/adrenals/lymphadenopathy for
staging

Bloods:

FBC

U+E

LFT

Ca

Coagulation

Case Study

59 yo male

Cough and SOB for 4 months

40 pack yr history


Examination: NAD

CXR: ?opacity RLL

CT Chest: 10mm nodule in RLL

WHAT NEXT?

Fleischner 2017 Guideline

Solid	Size	Follow up		
	< 6 mm (<100mm ³)	Single	Low risk High risk	No routine follow Optional CT at 12 months
		Multiple	Low risk High risk	No routine follow Optional CT at 12 months
	6-8 mm (100-250mm ³)	Single	Low risk High risk	CT at 6-12 mo, then consider CT at 18-24 CT at 6-12 mo, then CT at 18-24
		Multiple	Low risk High risk	CT at 3-6 mo, then consider CT at 18-24 CT at 3-6 mo, then CT at 18-24
	> 8 mm (> 250mm ³)	Single	All	Consider CT at 3 mo, PET/CT or Biopsy
		Multiple	Low risk High risk	CT at 3-6 mo, then consider CT at 18-24 CT at 3-6 mo, then CT at 18-24

Referral for work up

Important points for triaging:

Age

Main symptoms/examination findings

E.g. Pain, hypoxia

Performance status (ECOG 0-4)

Co morbidities

Copy of bloods and imaging

If concerned please contact Respiratory on call to discuss

ECOG Performance status

- 0 Fully active
- 1 Restricted in physical activity but able to carry out work of a light sedentary nature
- 2 Ambulatory and capable of all self care but unable to carry out work activities; up and about for more than 50% of waking hours
- 3 Limited self-care; confined to bed or chair for more than 50% of waking hours
- 4 Completely disabled and unable to carry out any self care

Clinic

Urgent

Seen within two weeks

Clinic (consultant or advanced trainee)

Repeat history and examination

Discuss imaging

Discuss diagnostic pathway

Lung Function

Diagnostic Pathway

Patient, imaging findings and is a case-by-case decision

THE THREE HOOPS

What is it?



Where is it?



What can we do?

THE THREE HOOPS

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graph TD; A[What is it?] --> B[Where is it?]; B --> C[What can we do?];
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What is it?

Where is it?

What can we do?

WHAT IS IT: Options for diagnosis?

Bronchoscopy

CT Guided Biopsy

Endobronchial Ultrasound

Pleural aspirate

USS guided

Supraclavicular lymph node biopsy

USS/Aspirate

CT guided biopsy of bone/soft tissue lesions

Surgical biopsy

Pulmonary nodules increasing in size, PET positive but difficult position to biopsy.

On table frozen section

Which one to choose?

Location of the lesion

Central versus peripheral

Lung function: FEV1 >1L

Co-existing medical disease

Location of metastatic disease

Bronchoscopy



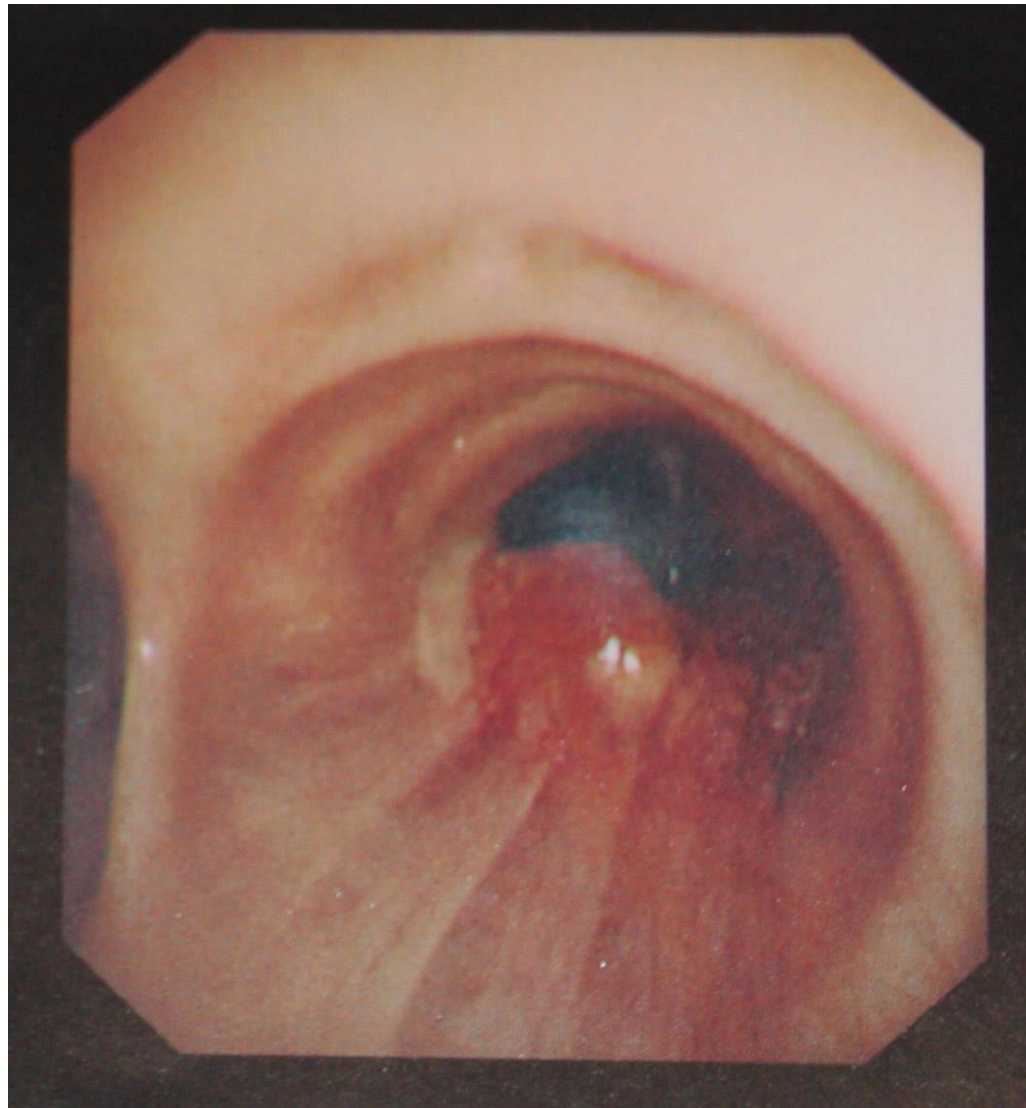
Endobronchial lesions

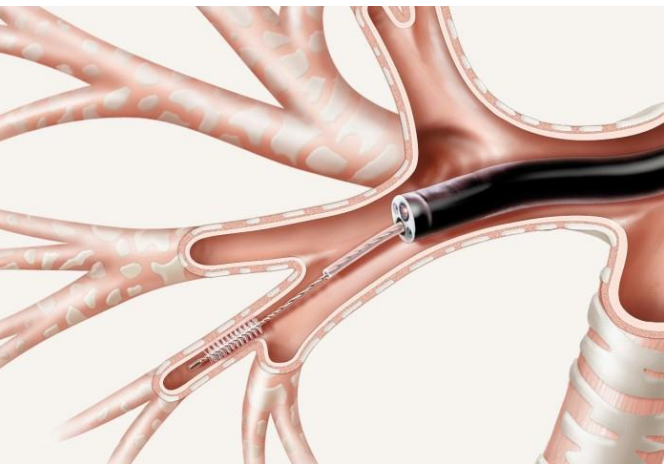
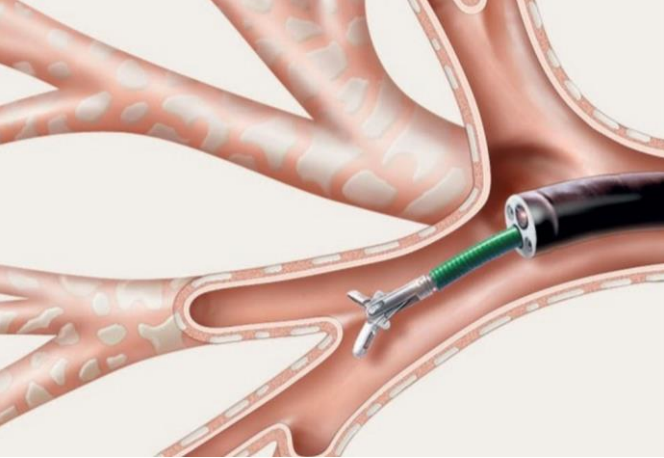
Biopsy, brushings, washings

Risk of bleeding

Local sedation

Determine distance from carina





Specific Procedures

Biopsy

- Small pair of forceps
- Endobronchial lesion

Brushings:

- Thin brush on the end of a wire
- Abnormal mucosa
- Endobronchial lesion seen

Bronchial washings

Bronchoscopy

Day procedure

Fasting

Withhold anticoagulants

Risks

- Bleeding

- Infection

- Cough/Fever

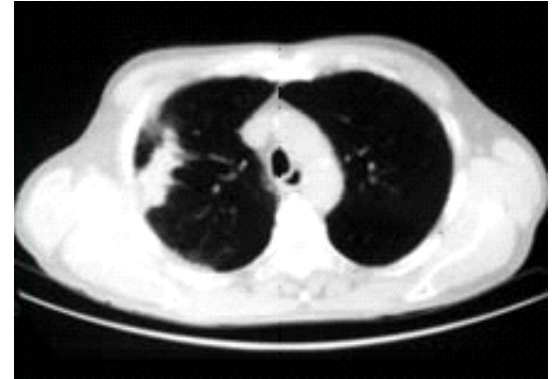
CT- Guided FNA

High yield(> 80%) if close to pleura
Lower yield if more central
Not possible in all cases (extensive emphysema)

FNA and Core Biopsies

Molecular testing

Pneumothorax rate up to 20%



Endobronchial Ultrasound and Biopsy

Bronchoscope with ultrasound

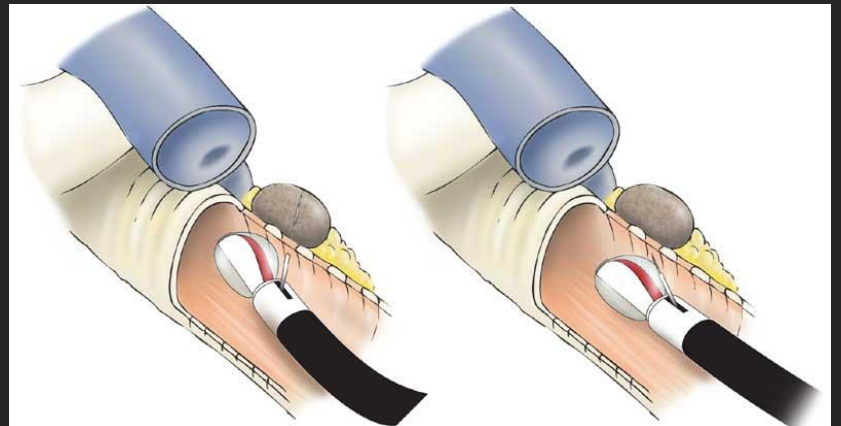
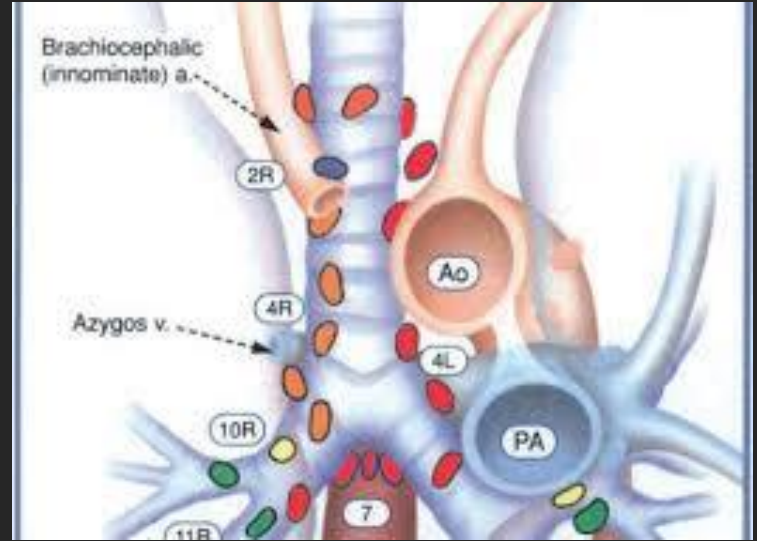
Visualise enlarged lymph nodes

Trans bronchial biopsy

Doppler

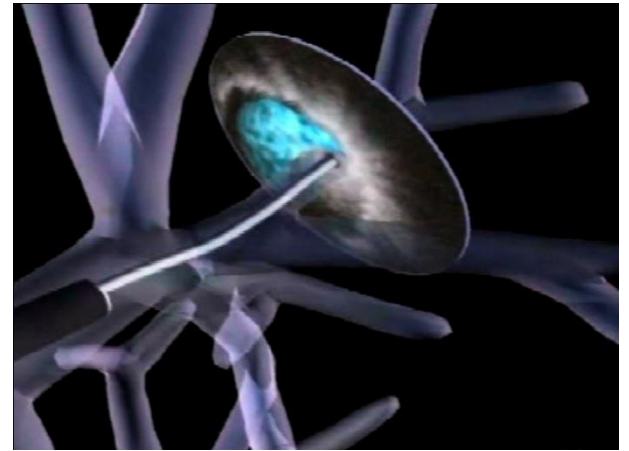
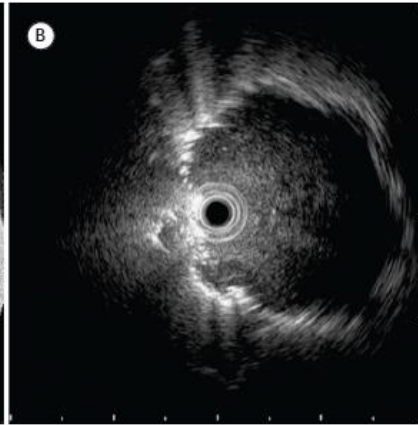
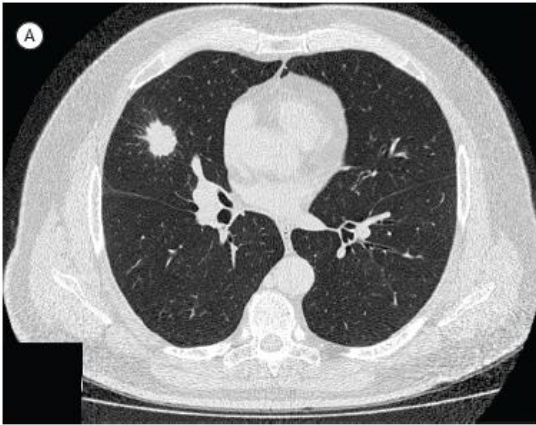
Diagnosis and staging of malignancy

?N2 disease especially if surgical candidate



Radial EBUS

- Passed sequentially into sub-segmental bronchi until lesion located



THE THREE HOOPS

What is it?



Where is it?



What can we do?

WHERE IS IT: Staging

CT

PET

EBUS

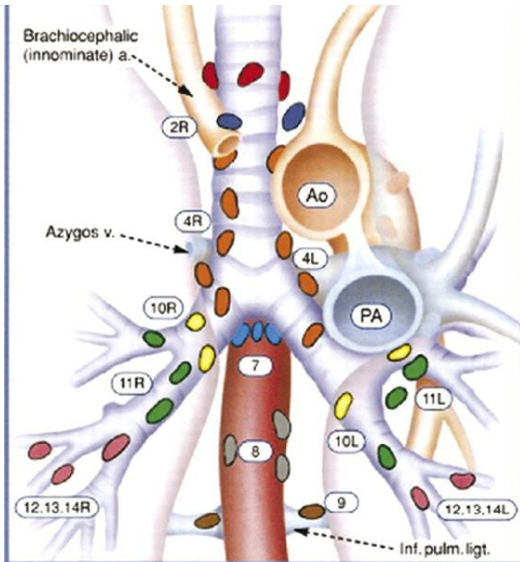
EUS

Mediastinoscopy

Pleural tap

Biopsy other

CT Brain/MRI



Superior Mediastinal Nodes

- 1 Highest Mediastinal
- 2 Upper Paratracheal
- 3 Pre-vascular and Retrotracheal
- 4 Lower Paratracheal (including Azygos Nodes)

N₂=single digit, ipsilateral
N₃=single digit, contralateral or supraclavicular

Aortic Nodes

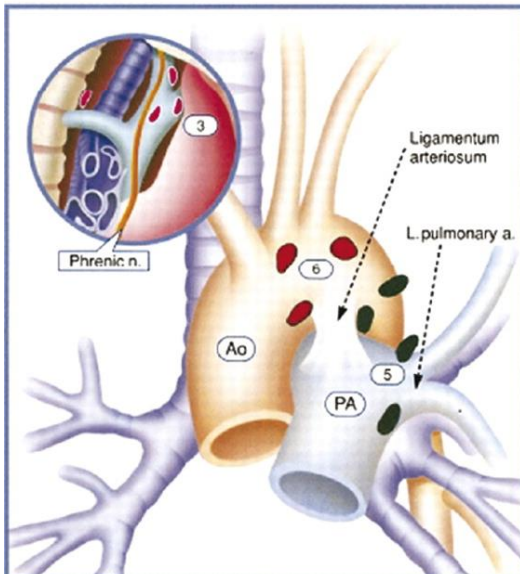
- 5 Subaortic (A-P window)
- 6 Para-aortic (ascending aorta or phrenic)

Inferior Mediastinal Nodes

- 7 Subcarinal
- 8 Paraesophageal (below carina)
- 9 Pulmonary Ligament

N₁ Nodes

- 10 Hilar
- 11 Interlobar
- 12 Lobar
- 13 Segmental
- 14 Subsegmental



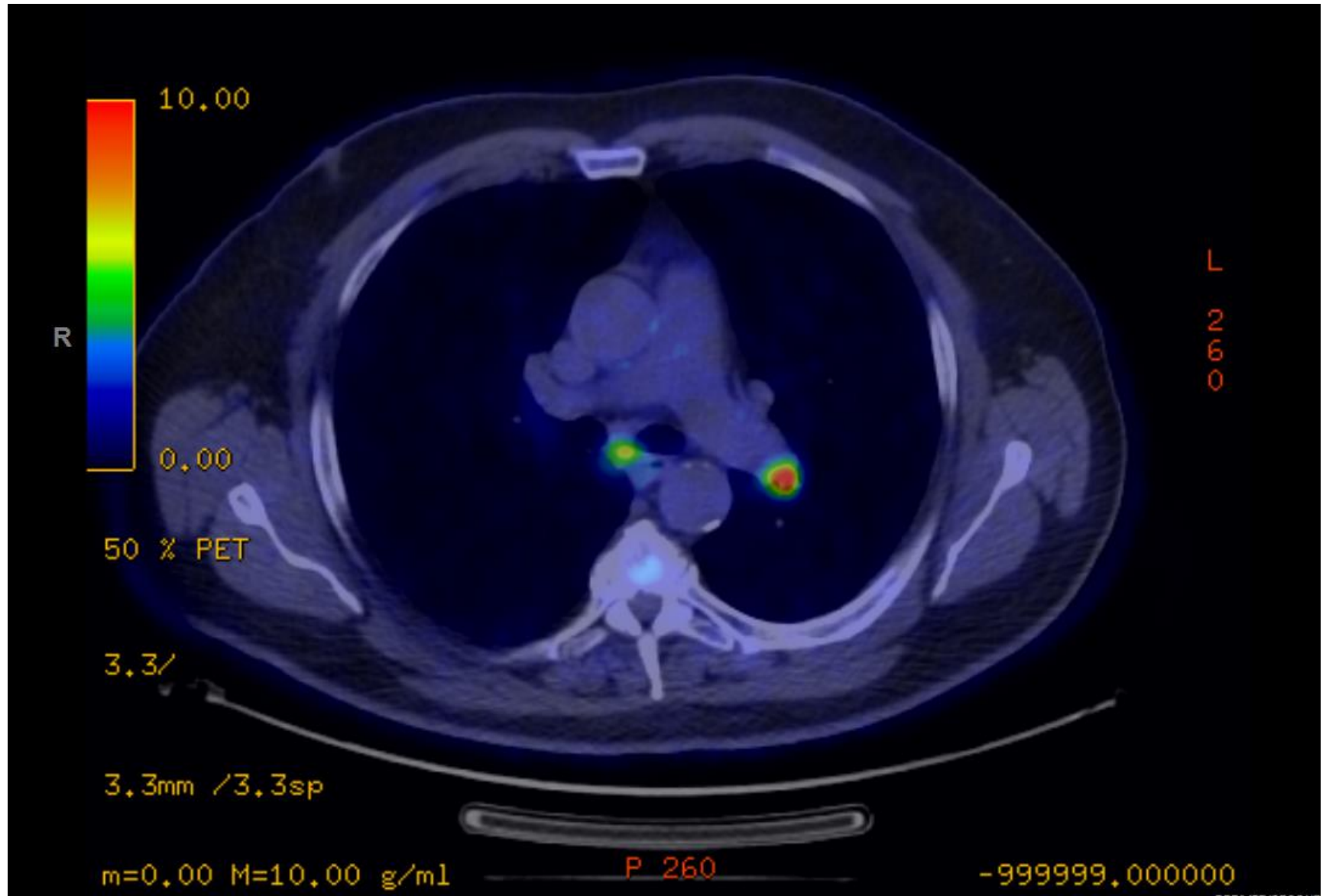
CT and PET: Nodal disease

CT Nodal staging:

- Sensitivity 60–65% Specificity 60–70%
- Incorrect staging in 40%

PET:

- PPV 79% NPV 97%
- False positive results are seen in ~ 15% therefore node sampling is still necessary
- Roberts et al AnnThoracSurg 2000, Toloza Chest 2003



Lung Function

Calculating predicted post operative pulmonary function using FEV1 and DLCO

>60% low risk

<30% high risk

FEV1 >2L generally tolerate a pneumonectomy

FEV1 >1.5L generally tolerate a lobectomy

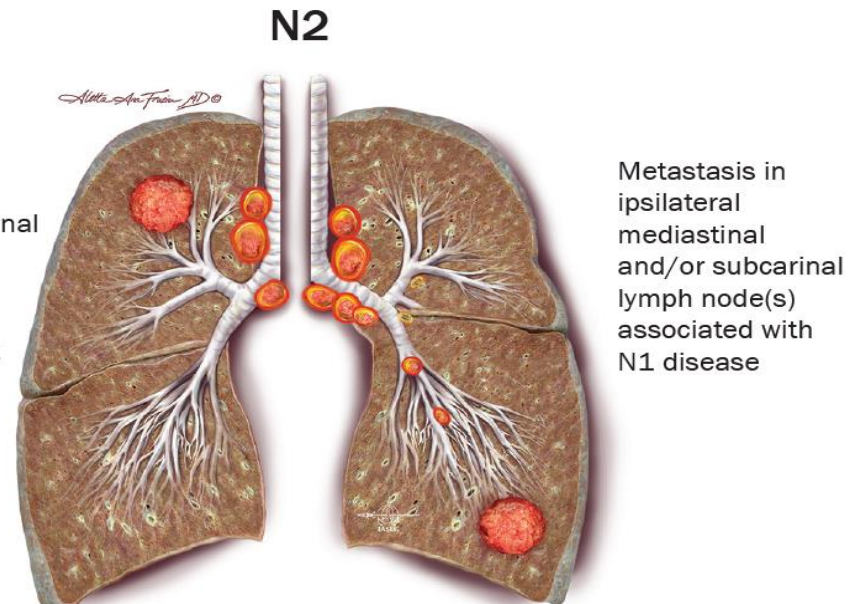
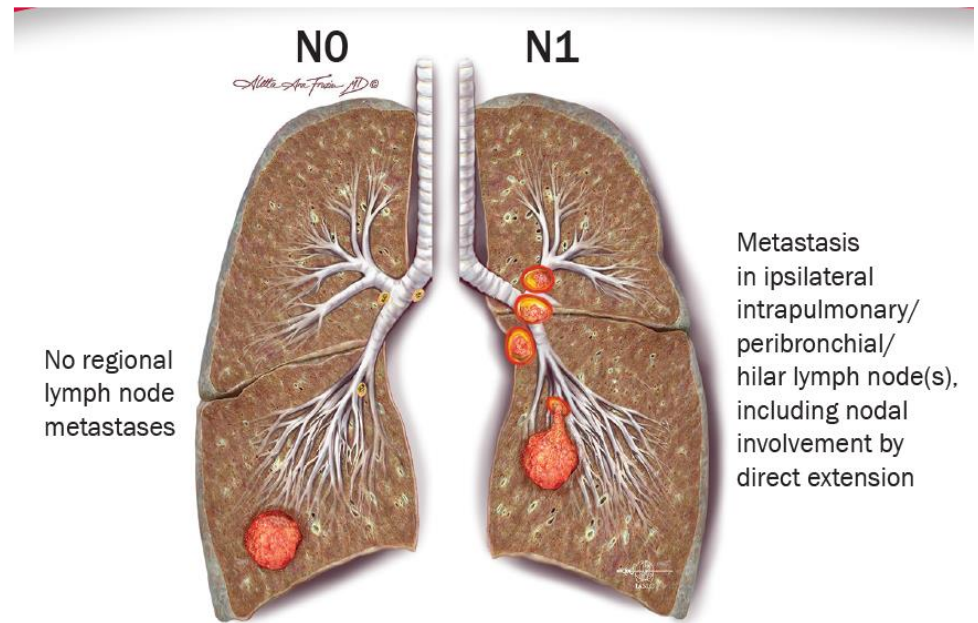
TNM (Tumour, node,
metastases)
8th Edition Lung Cancer

T – Primary Tumour

TX		Primary tumour cannot be assessed, or tumour proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy
T0		No evidence of primary tumour
Tis		Carcinoma in situ
T1		Tumour 3 cm or less in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus) ¹
	T1mi	Minimally invasive adenocarcinoma ²
	T1a	Tumour 1 cm or less in greatest dimension ¹
	T1b	Tumour more than 1 cm but not more than 2 cm in greatest dimension ¹
	T1c	Tumour more than 2 cm but not more than 3 cm in greatest dimension ¹
T2		Tumour more than 3 cm but not more than 5 cm; or tumour with any of the following features ³ <ul style="list-style-type: none"> • Involves main bronchus regardless of distance to the carina, but without involving the carina • Invades visceral pleura • Associated with atelectasis or obstructive pneumonitis that extends to the hilar region, either involving part of the lung or the entire lung
	T2a	Tumour more than 3 cm but not more than 4 cm in greatest dimension
	T2b	Tumour more than 4 cm but not more than 5 cm in greatest dimension
T3		Tumour more than 5 cm but not more than 7 cm in greatest dimension or one that directly invades any of the following: chest wall (including superior sulcus tumours), phrenic nerve, parietal pericardium; or associated separate tumour nodule(s) in the same lobe as the primary
T4		Tumours more than 7 cm or one that invades any of the following: diaphragm, mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, oesophagus, vertebral body, carina; separate tumour nodule(s) in a different ipsilateral lobe to that of the primary

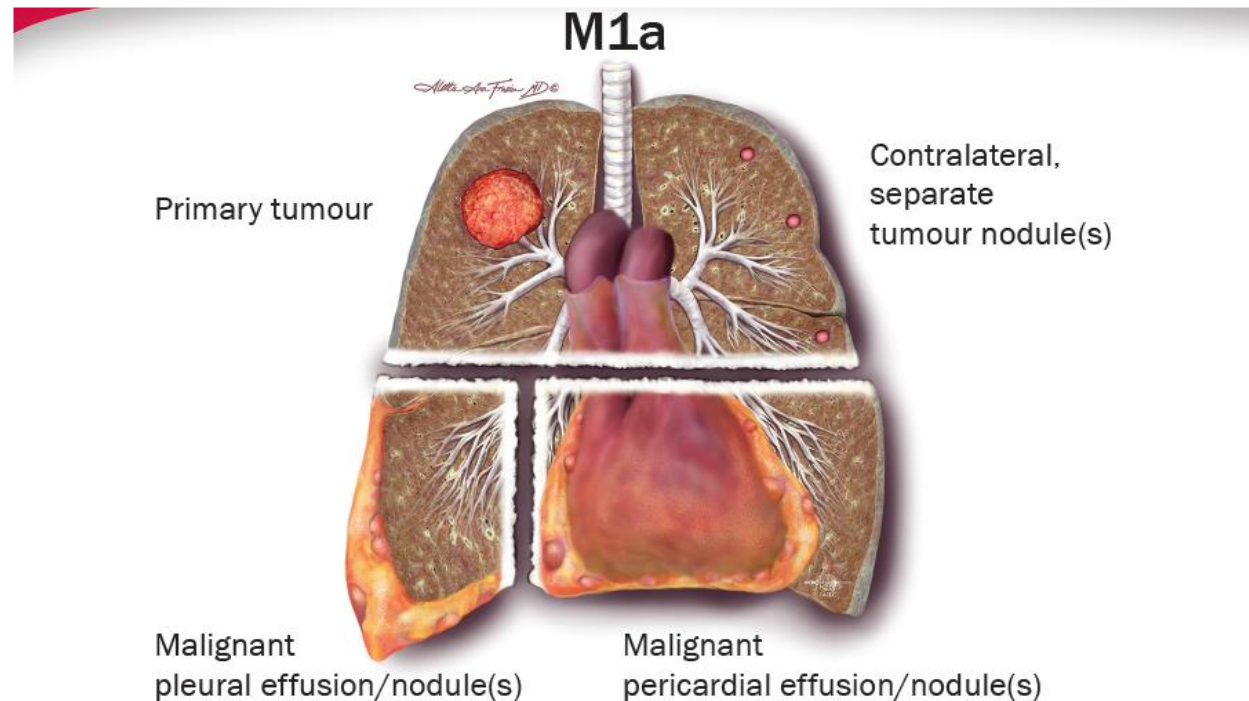
N – Regional Lymph Nodes

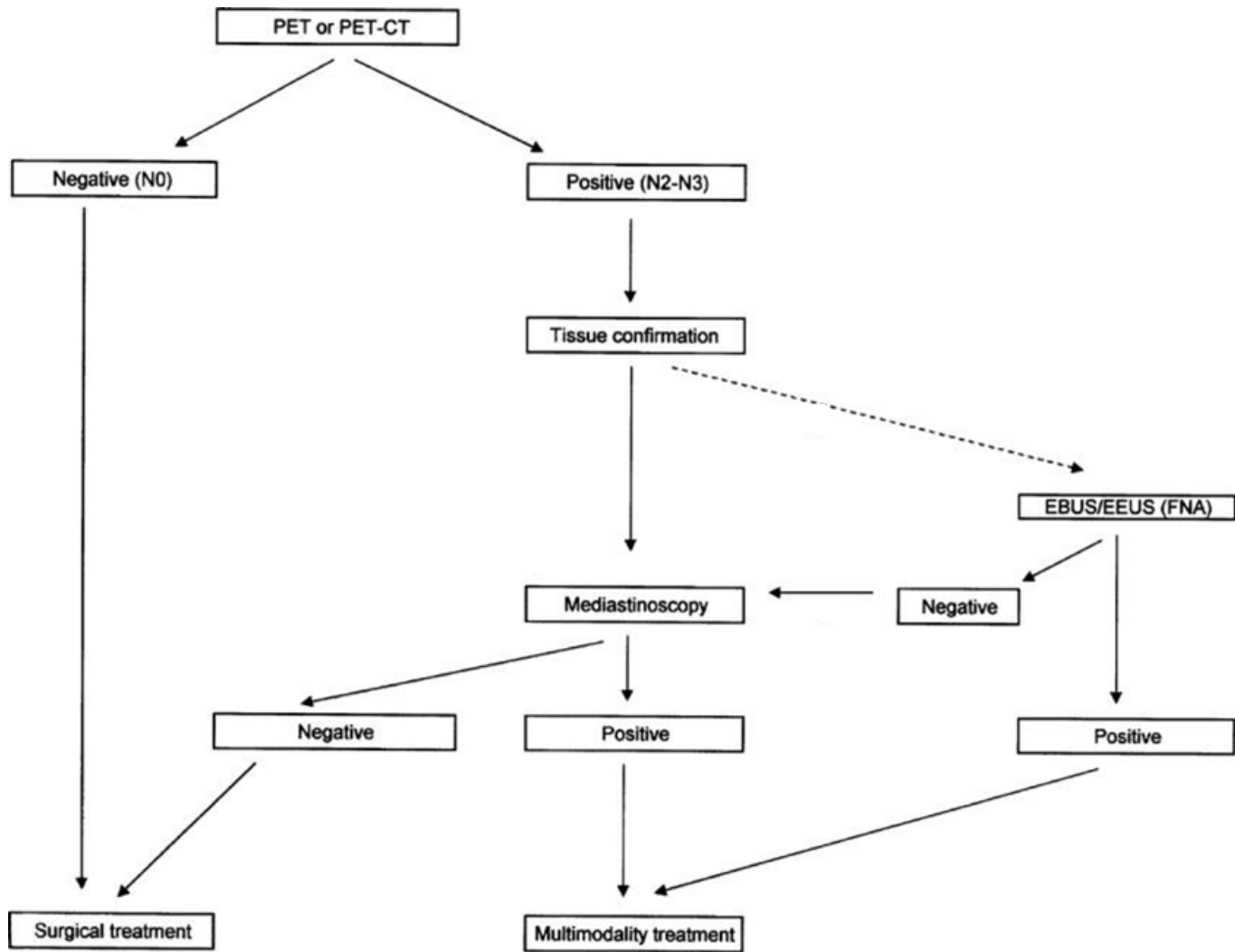
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
N2	Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
N3	Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene or supraclavicular lymph node(s)



M- Distant Metastasis

M0		No distant metastasis
M1		Distant metastasis
	M1a	Separate tumour nodule(s) in a contralateral lobe; tumour with pleural or pericardial nodules or malignant pleural or pericardial effusion ⁴
	M1b	Single extrathoracic metastasis in a single organ ⁵
	M1c	Multiple extrathoracic metastases in one or several organs





THE THREE HOOPS

What is it?



Where is it?



What can we do?

WHAT
CAN WE
DO:
Lung
Cancer
MDT

Respiratory, Medical Oncology, Radiation Oncology, Surgeons, Pathology, Radiology including Nuclear Medicine and Palliative care plus supporting nursing staff.

Weekly meeting

New cases, surgical pathology specimens, review imaging of patients undergoing treatment, recurrence.

All patients, regardless of their disease stage, have access to all relevant treatment and supportive care options

Patients are then fully informed of their treatment choices

New Patients

History

Radiology

Pathology

Confirm Stage

ECOG/PFTs

Management Discussion

Follow up in Respiratory clinic with the results of the MDT and then referral on to the appropriate specialist for their ongoing management.

████████████████████

THORACIC ONCOLOGY MULTIDISCIPLINARY MEETING



F T 1 5 9 2 4 5

██████████
Sorell Family Practice
Shop 11 / 12 Cole Street
Sorell Tasmania 7172

Dear ██████████

RE: ██████████ **THCI:** ██████████ **DOB:** ██████████

Lead Consultant –

██████████ was discussed at the above meeting, below is a summary of the discussion:

Clinical Details: 69yo LUL nodule picked up on skeletal survey by haem for MGUS. Ex-smoker 30 pack year. FEV1 1.97L (68%), DLCO 62%. X2 left sided pneumothoraces requiring ICC insertion 2019. ECOG 0.

Please review:

Radiology: CT Chest 7/1/21 Rad Tas, CTB pending, PET RHH

Pathology: Bronchoscopy biopsy and brushings 12/2/21

Radiology: CT chest scan at Rad Tas on 7th January shows 21mm spiculated LUL nodule. Background centrilobular and paraseptal COPD changes and a 10mm ILL lymph node.

PET scan at RHH on 23rd February shows LUL lesion and ILL lymph node are both intensely avid. Bilateral hilar lymph node mild uptake appears inflammatory.

Pathology: Bronchoscopy biopsy is consistent with adenocarcinoma, TTF-1 positive, ROS and ALK negative. There is insufficient tissue for PDL1 and NGS studies.

Stage: cT1cN1

ECOG: 0

Management Suggestions:

1. Referral to cardiothoracics for consideration of LUL lobectomy.

Please note this is a summary for your records and no further action is required. If there are any queries about the above please discuss with the lead consultant.

Yours sincerely

Edited but not signed

████████████████████
Chair, TOMM

Questions?