

Triage, testing & treatment of the patient with suspected lung cancer

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Community Cancer Care Educational Conference
October 27, 2017

Objectives

- To describe patient referral & triage for the patient with suspected lung cancer
- To describe the initial assessment of the patient with suspected lung cancer, including methods of confirming histology
- To briefly describe how major initial treatment decisions are made for the patient with lung cancer

Disclosures

- Nothing to disclose

Referral Catchment

- > 90% of thoracic surgery in Manitoba takes place at Health Sciences Centre



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Referral Process

Patient referral

HSC thoracic surgery will see:

- Any adult who has or might have a thoracic malignancy
- Regardless of where the patient is in the assessment process.

Patient referral

We do not require

- Any further tests to be arranged by the FP, GP, or other referring physician (for potential cancer patients)
- Any specific consultation forms or submitted histories for the patient to get an appointment

Referral Sources

- Primary Care

- FP offices
- Emergency departments
- Walk-in clinics and Access Centers
- Primary care consults passed through CCMB triage

- Secondary Care

- Inpatient wards
- Consults from CCMB oncologists
- Consults from other specialists
- Secondary care consults passed through CCMB triage

What information do we **NEED** in a consult?

- Patient demographics & contact information
- Referring doctor contact information
- Working diagnosis or clinical question

What other information is helpful for triage?

- PMH
- Current meds
- Allergies
- Any relevant imaging reports
- Biopsy reports if available
- Are any tests ordered or pending? When & where?

What other information is helpful for triage?

- Is the patient aware of clinical suspicion of cancer?
- Is the patient aware that he or she is being referred to a surgeon?
- Is the patient currently admitted to hospital?
- Performance status changes



Larry Tan,
Section Head & Regional Lead for Thoracic Surgery



Sadeesh Srinathan,
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President of Royal College Thoracic Surgery Specialty Committee



Gordon Buduhan
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Minimally invasive lung & esophageal surgery and endoscopy



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Minimally invasive lung & esophageal surgery and endoscopy

How to contact thoracic surgery for a consult

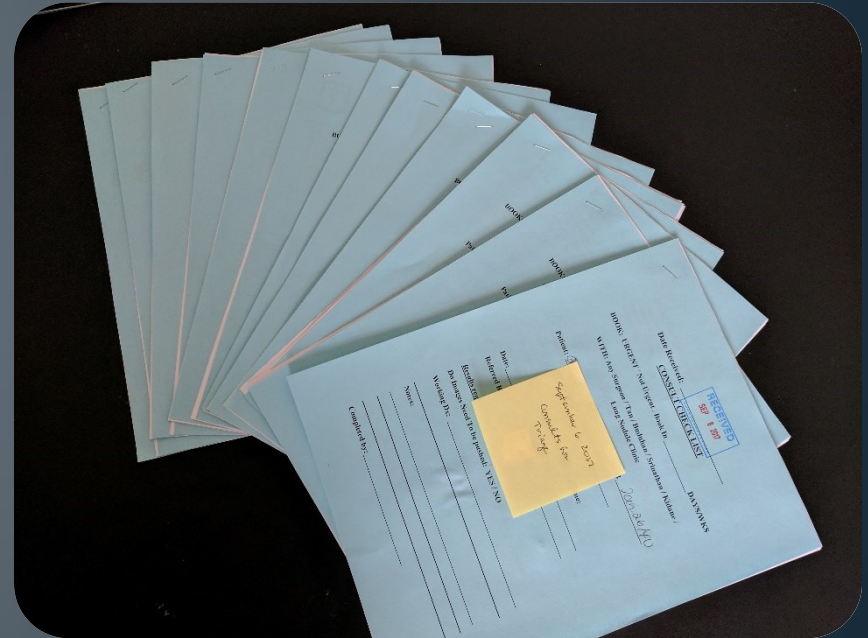
- Fax consult 204-787-7143
- Call HSC
 - Ask for the thoracic surgery office or clinic
 - Call or page a specific surgeon directly
 - Call the on-call thoracic surgeon or senior resident

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Triage

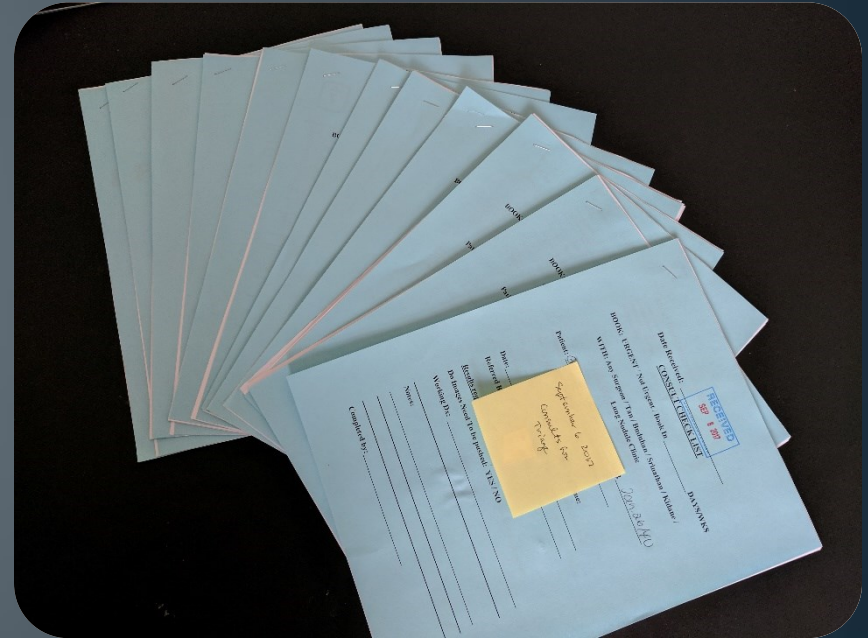
Triage Process

- All new consults are reviewed M-F, at least twice a day
- When possible, requests for a particular surgeon are assigned
- Prioritization is determined by the thoracic surgeon



Triage Process

- Availability of surgeons, clinic time, OR time and endoscopy
- Compare consult request to images available on Impax



Triage Priorities

- Advanced stage > early stage
- Malignant > benign (except life-threatening)
- Lung masses (3 cm +) > large nodules 1.5-3.0 cm > small nodules 0-1.5 cm
- Confirmed histology > unconfirmed diagnosis

Triage Priorities

1 = ASAP

- Patients who can't swallow
- Patients admitted to hospital & unable to be discharged without intervention or consult
- SVC syndrome
- Airway obstruction
- Major hemoptysis

Mediastinal tumor invading SVC



Triage Priorities

2 = within 3-7 days

- Patients with larger tumors > 5 cm
- Patients with locally advanced or metastatic tumors
- Patients with large pleural effusions causing dyspnea – not drainable by local physician
- Declining performance status

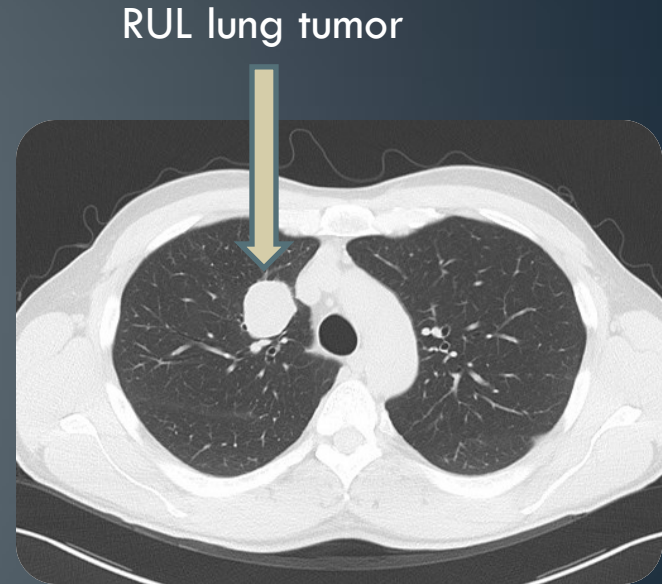
Right hilar lung tumor



Triage Priorities

3 = within 7-10 days

- Patients with larger lung tumors 3-5 cm
- Patients with multiple lung nodules
- Patients with esophageal cancer, still managing oral intake

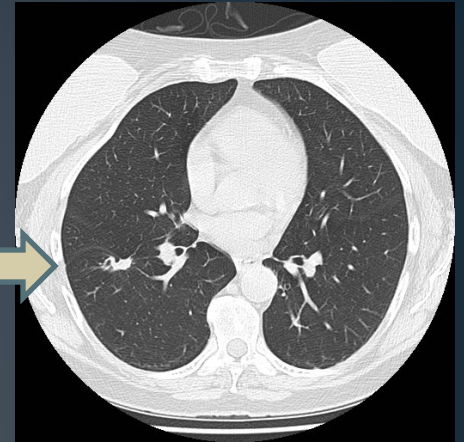
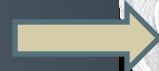


Triage Priorities

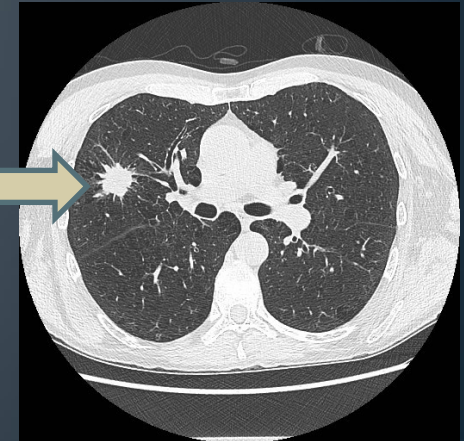
4 = within 1-2 weeks

- Patients with suspicious lung nodules 1-3 cm
- Semi-urgent benign thoracic conditions, not admitted

RLL lung
nodule



RML lung
nodule



Triage Priorities

5 = usually within 3 weeks

- Patients with single lung nodules < 1 cm
- Minimally symptomatic patients
- Probable benign, mediastinal adenopathy or pulmonary conditions requiring biopsy
- Elective non-malignant conditions



Initial Assessment

HSC Thoracic Clinic

- Clinic M, 3rd floor Green Owl Zone, HSC
- 204-787-5733
- 1 clinic nurse, 4 clinic rooms and 1 treatment room
- 8-10 half-day clinics per week



HSC Thoracic Clinic

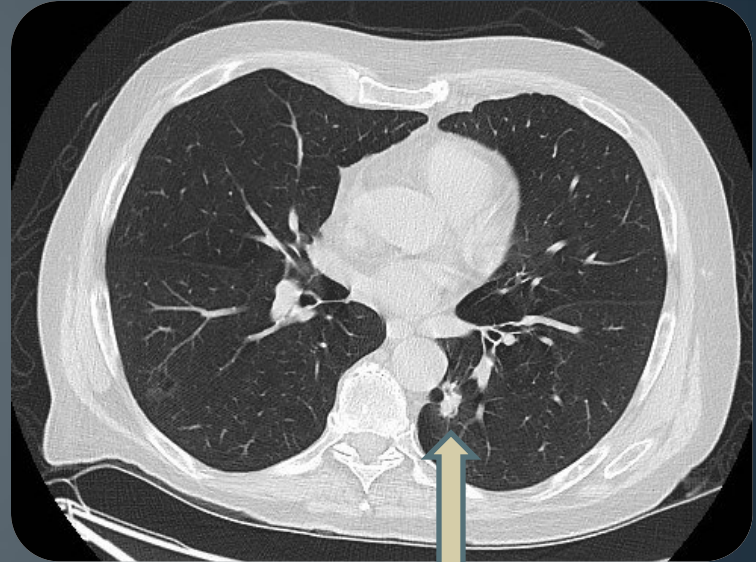
- 8-10 half-day clinics per weeks
- ~ 1000-1200 clinic consults/year
- ~ 4200-4400 appointments/year

- Telemedicine used extensively
- ~ 400-500 appts/year



Lung Nodule Clinic

- Pooled referrals for patients with lung nodules < 1 cm to 1.5 cm
- For patients within close proximity to Winnipeg
 - Otherwise, telemedicine follow-up with an assigned surgeon



LLL lung nodule detected
on CT screening

Testing

Thanks to Dr. Richard Liu, PGY6 resident in Thoracic Surgery

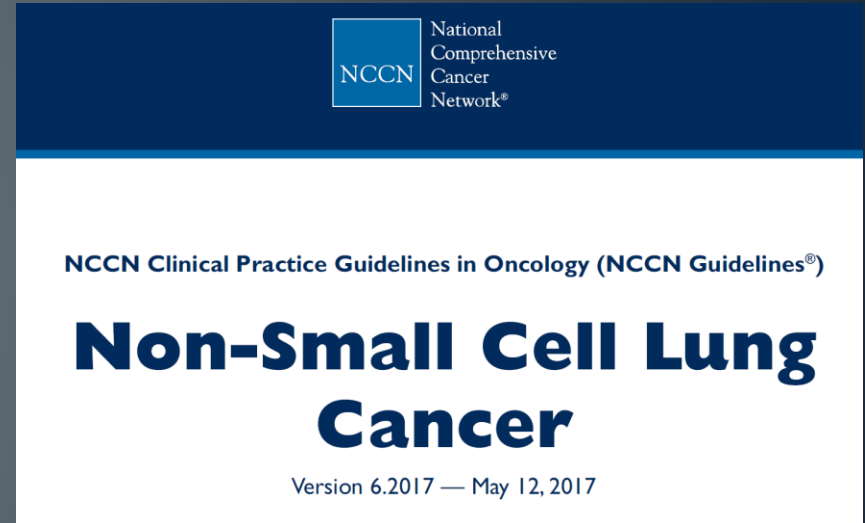


Timing of evaluation

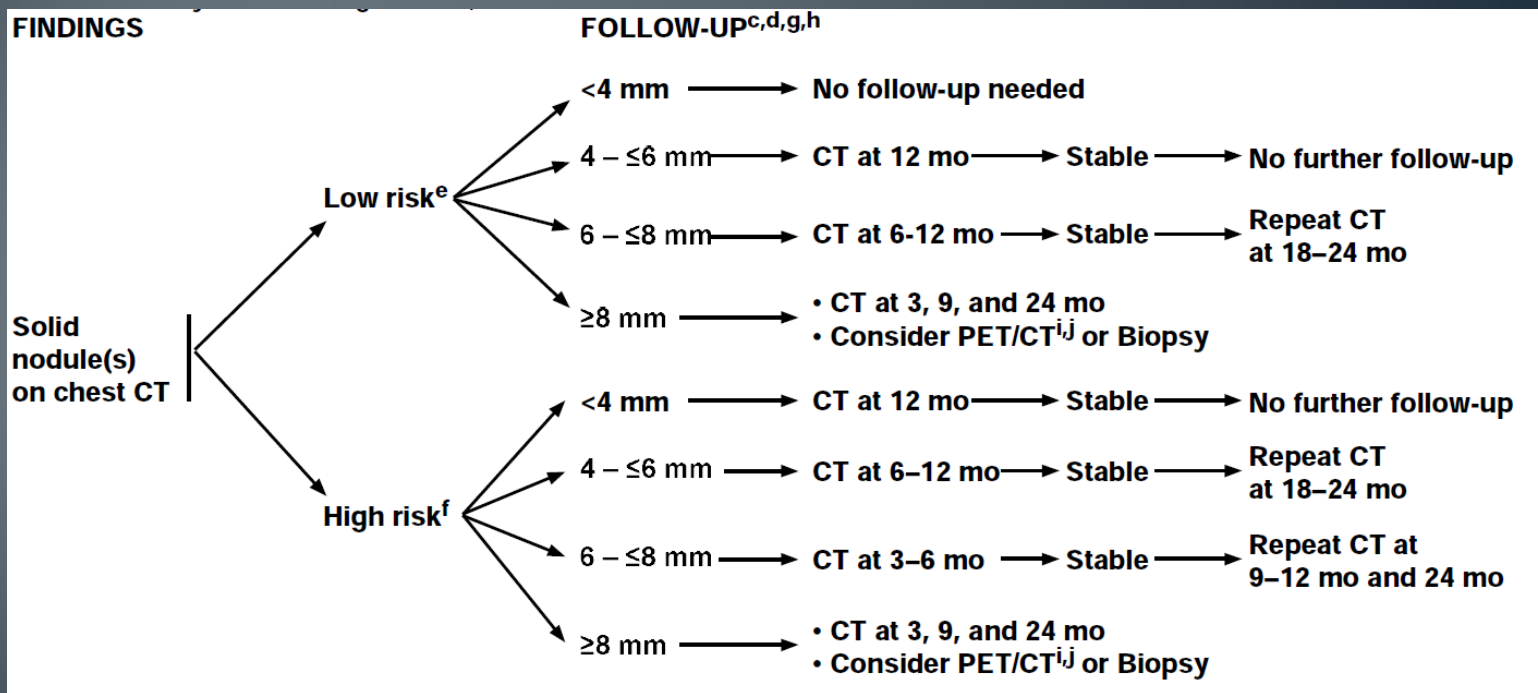
- Recommendation to complete the initial evaluation within six weeks
- Most NSCLCs are slow growing (doubling time of 90 to 180 days)
- But some can progress during the evaluation period

Assessment of Patients

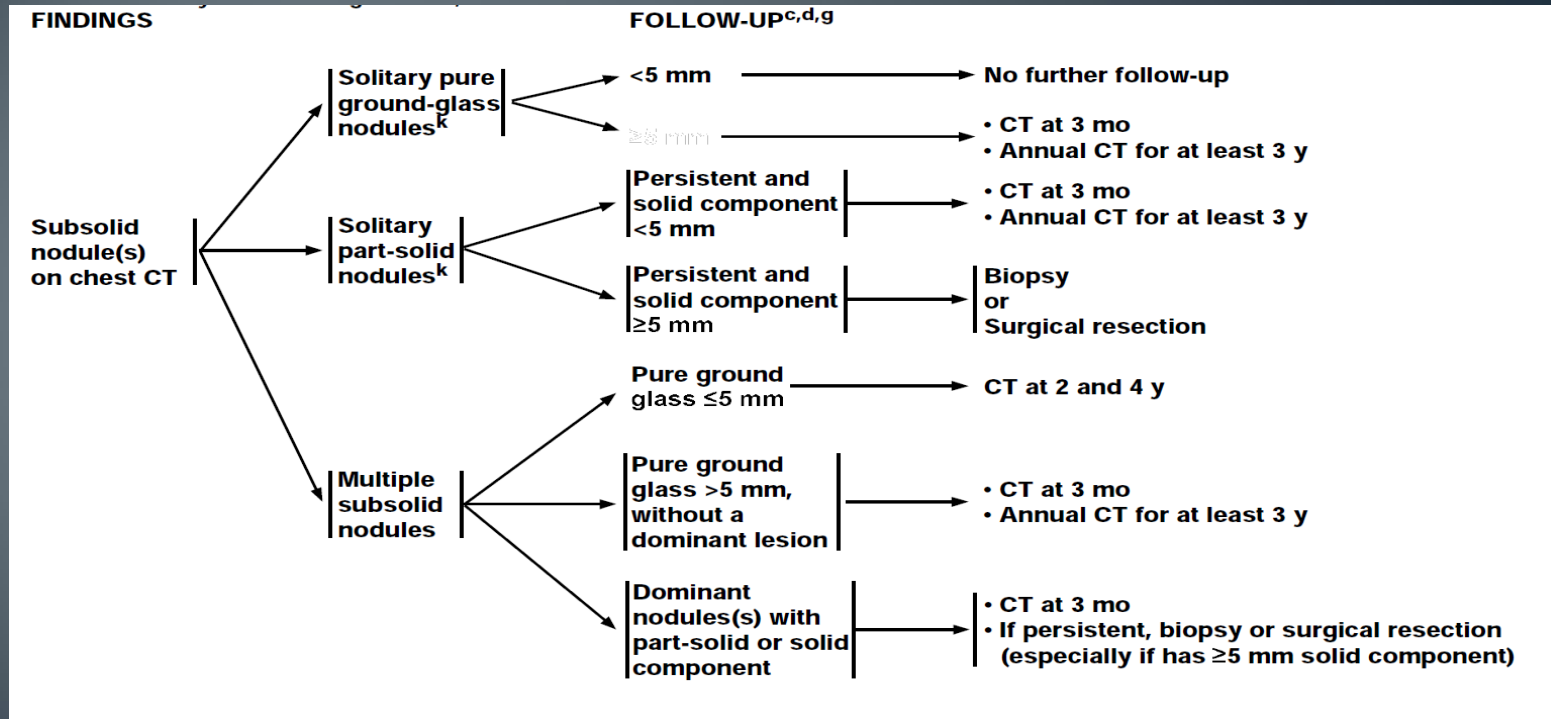
- Assessment is based on guidelines
 - NCCN
 - ACCP
 - ESTS
- Occasionally conflicting recommendations



Solid Lung Nodules (Fleischner Criteria)



Sub-solid Lung Nodules (Fleischner Criteria)



Fleischner Criteria 2017 Revised Risk Factors

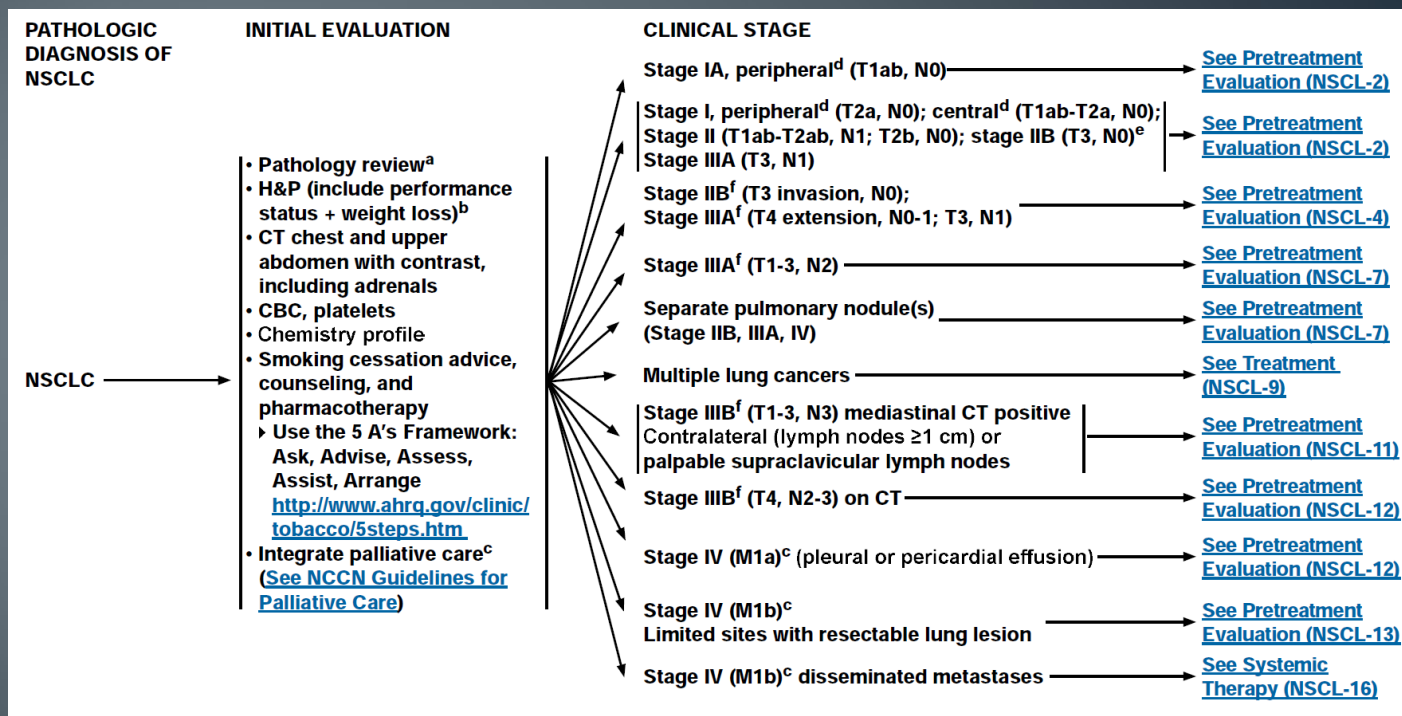
Low Risk (< 5% chance)

- Young
- Less smoking
- No prior cancer
- Small nodule
- Regular margins
- Non-upper lobe

High Risk (> 65% chance)

- Older
- Heavy smoking
- Prior cancer
- Larger size
- Irregular margin
- Upper lobe

Evaluation for Lung Cancer



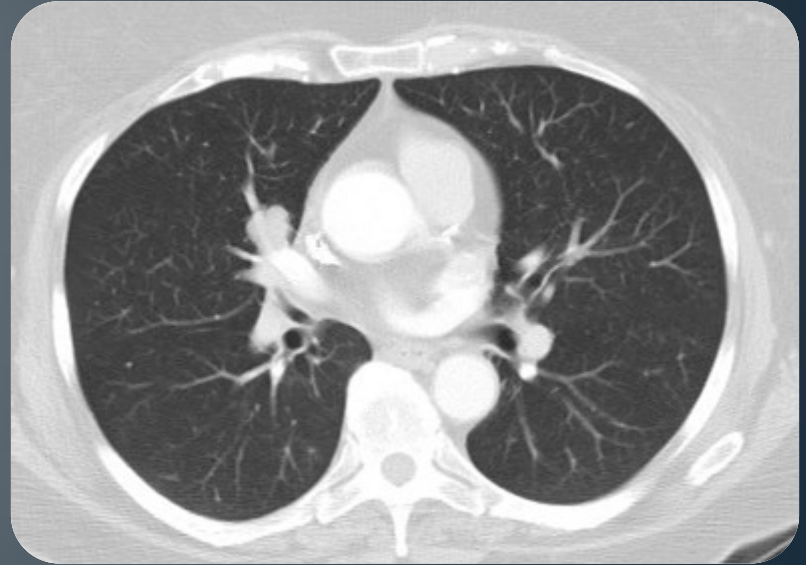
Initial History & Physical

- Respiratory symptoms
- Symptoms of local invasion (hoarseness, SVC syndrome, chest wall pain)
- Symptoms of metastatic disease (constitutional, musculoskeletal, neurologic)
- Risk factors - smoking, family history (85-90%), occupational (asbestos, silica, uranium), radon, air pollution, previous radiation
- Functional status
- Lymphadenopathy
- Hepatomegaly

Initial Diagnostic Imaging

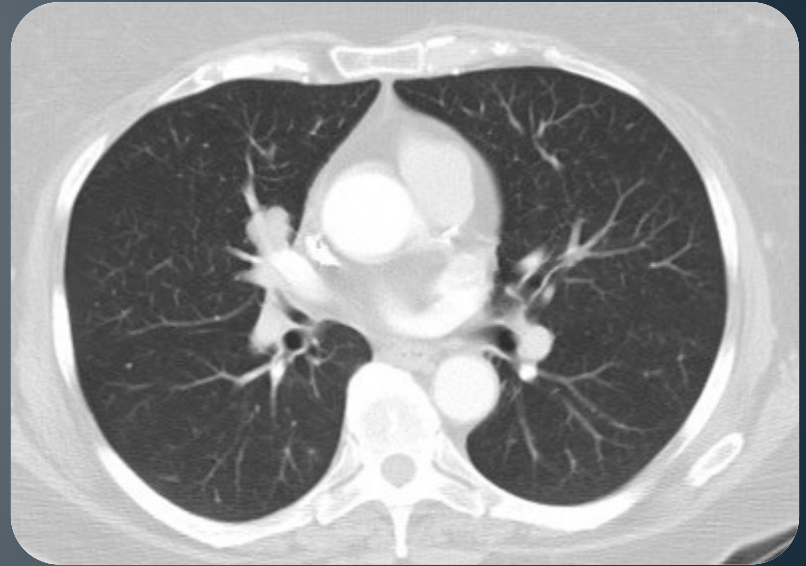
CT chest with contrast,
including liver and adrenals

- Size, location of mass(es)
- Lymphadenopathy
- Assessment of metastatic disease
- Co-existing lung disease
- Atelectasis/post-obstructive pneumonitis



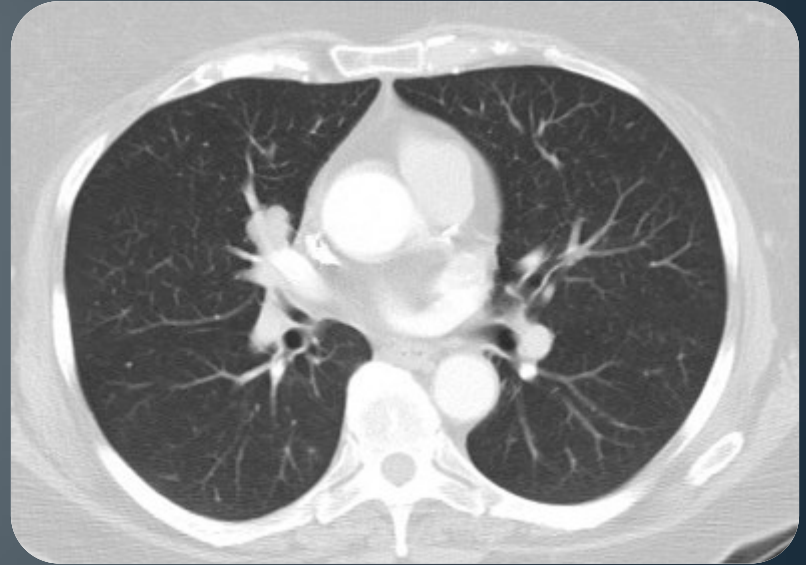
Initial Diagnostic Imaging

- CT is usually done before we receive the referral
- We will arrange urgent CTs if initial CT has not yet been obtained



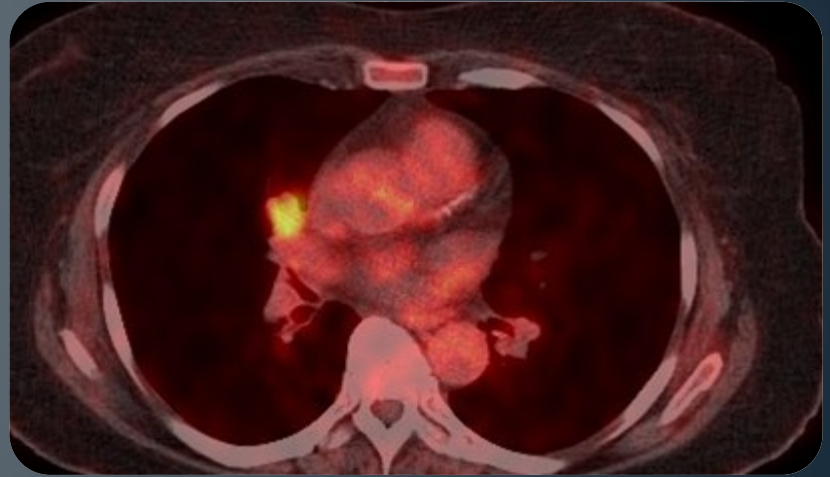
Initial Diagnostic Imaging

- CT correlated with H&P
- Is the patient likely to have lung cancer?
- What is the initial clinical or radiographic stage?
- What is the optimal biopsy site and technique?



Initial Diagnostic Imaging

- PET used extensively for:
 - Clinical staging
 - Diagnostic planning
 - Treatment planning
- Waits ~ 2-5 weeks
- We usually order for larger clinical Stage I, any clinical Stage II, and non-bulky clinical Stage III



Initial Diagnostic Imaging

- NCCN guidelines recommend PET for all potentially resectable NSCLC, Stage IA to IIIA
- PET may reduce the rate of unnecessary surgical resection

Stage IA (peripheral T1ab, N0)	→	<ul style="list-style-type: none">• PFTs (if not previously done)• Bronchoscopy (intraoperative preferred)• Consider pathologic mediastinal lymph node evaluation^{h,i}• FDG PET/CT scan^j (if not previously done)
Stage IB (peripheral T2a, N0)		<ul style="list-style-type: none">• PFTs (if not previously done)• Bronchoscopy
Stage I (central T1ab–T2a, N0)		<ul style="list-style-type: none">• Pathologic mediastinal lymph node evaluation^h
Stage II (T1ab–2ab, N1; T2b, N0)		<ul style="list-style-type: none">• FDG PET/CT scan^j (if not previously done)
Stage IIB (T3, N0) ^e		<ul style="list-style-type: none">• Brain MRI with contrast (Stage II, IIIA)
Stage IIIA (T3, N1)		<ul style="list-style-type: none">• Brain MRI with contrast (Stage IB [optional])

Tissue Biopsy of the Lung Tumor

Bronchoscopy

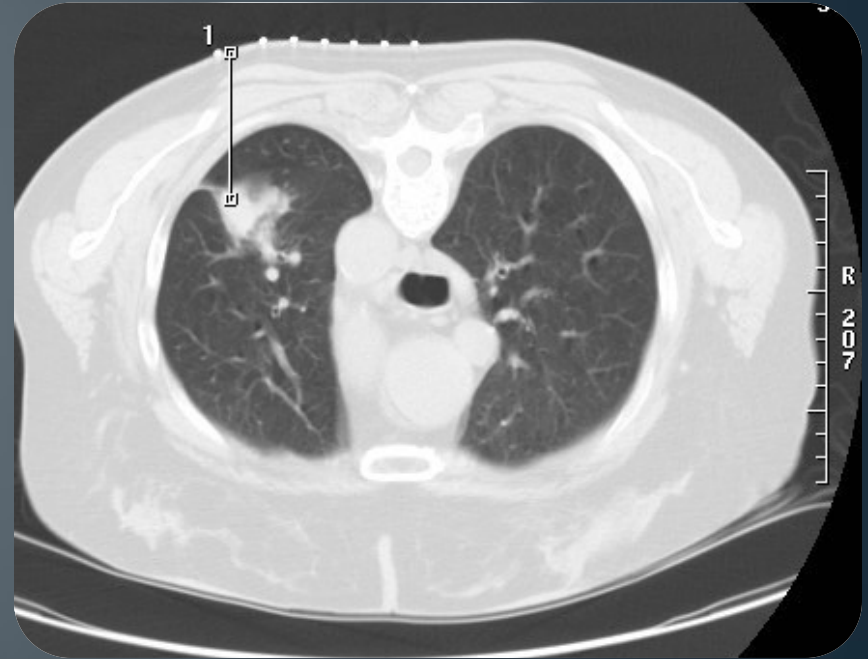
- Central/hilar tumors with endobronchial component
- Lavage, cytology brush, biopsy



Tissue Biopsy of the Lung Tumor

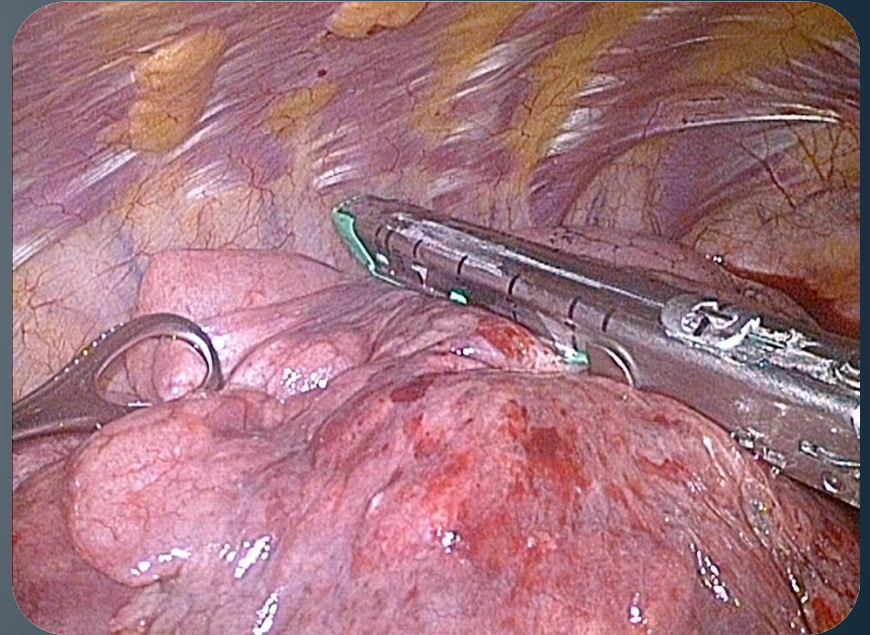
CT guided biopsy

- Best for large peripheral tumors
- Accuracy <60% for lesions <1.5cm
- 10-20% risk of pneumothorax
- Especially useful if considering alternate diagnosis (e.g. TB, lymphoma)
- Non-diagnostic result does not rule out cancer



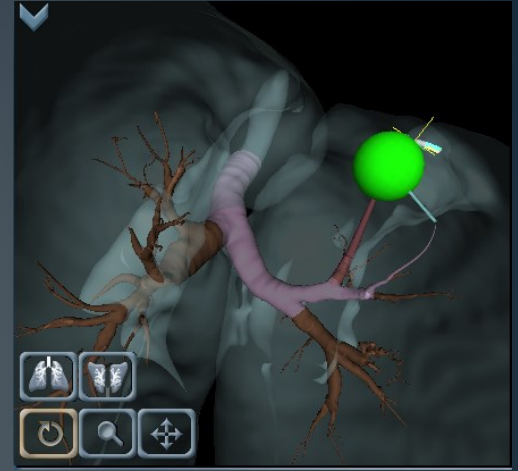
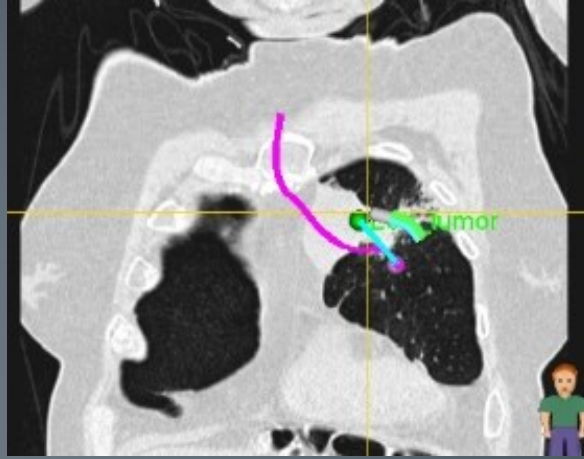
VATS Wedge Resection of the Lung Tumor

- “Patients with a strong clinical suspicion of Stage I or II lung cancer...do not require a biopsy before surgery”
 - Good operative candidate
 - Peripheral T1 or T2 tumor
 - Negative staging investigations



Navigational Bronchoscopy

Newer modality for
biopsy of deep lung
nodules



Invasive Mediastinal Staging

- PET-positive mediastinal disease
 - PET-avid N2 nodes
 - above borderline uptake > mediastinal blood pool on PET, SUV~3.5)
- PET-avid N1 node
- N2 nodes > 1cm by short axis diameter on CT
- Central tumors
- Tumors > 3cm (particularly adenocarcinoma with high FDG uptake)
- ? Low PET FDG uptake in primary tumor

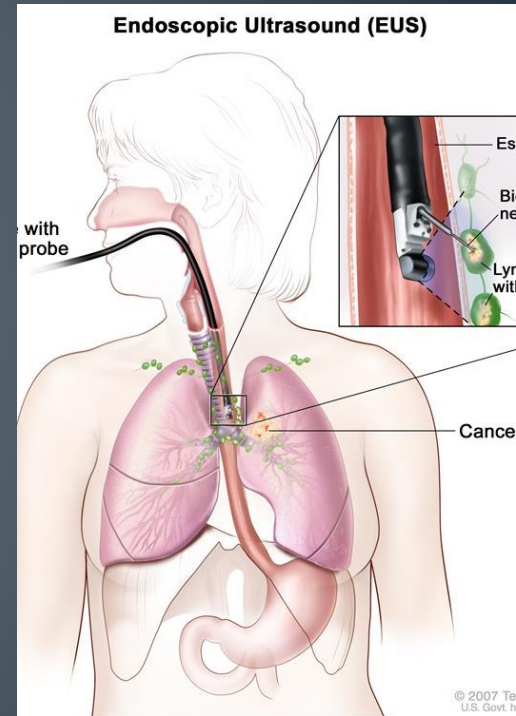
Invasive Mediastinal Staging

- NCCN guidelines recommend invasive mediastinal staging for all potentially resectable NSCLC

Stage IA (peripheral T1ab, N0)	<ul style="list-style-type: none">• PFTs (if not previously done)• Bronchoscopy (intraoperative preferred)• Consider pathologic mediastinal lymph node evaluation^{h,i}• FDG PET/CT scan^j (if not previously done)
Stage IB (peripheral T2a, N0)	<ul style="list-style-type: none">• PFTs (if not previously done)• Bronchoscopy• Pathologic mediastinal lymph node evaluation^h• FDG PET/CT scan^j (if not previously done)• Brain MRI with contrast (Stage II, IIIA) (Stage IB [optional])
Stage I (central T1ab–T2a, N0)	
Stage II (T1ab–2ab, N1; T2b, N0)	
Stage IIB (T3, N0) ^e Stage IIIA (T3, N1)	

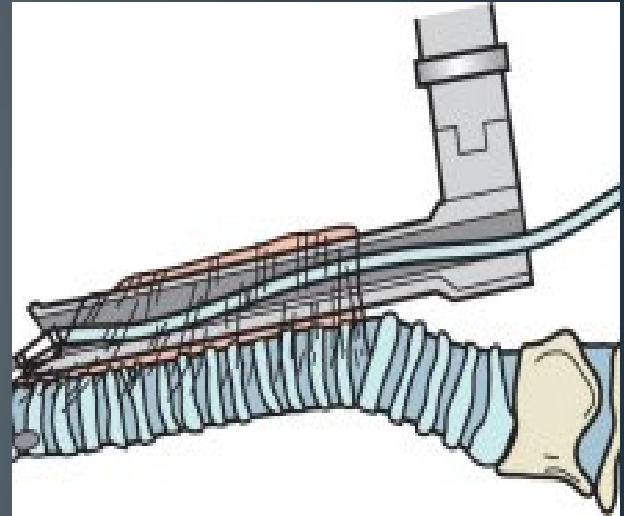
Invasive Mediastinal Staging

- Endobronchial ultrasound is now the mainstay of invasive mediastinal staging
 - Biopsies of 2R&L, 3, 4R&L, 7, 10 nodes
- Esophageal ultrasound
 - Biopsies of 9, 10 nodes



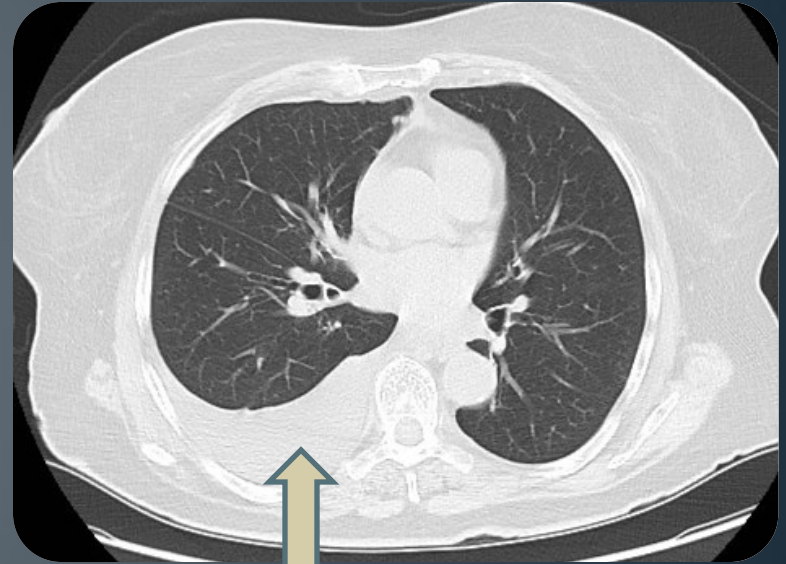
Invasive Mediastinal Staging

- Mediastinoscopy now more commonly used for
 - Non-diagnostic EBUS
 - Insufficient specimen for histologic subtyping or tumor markers
 - Suspected lymphomas



Other Surgical Biopsies

- Scalene or cervical node biopsies
- Thoracoscopic wedge resection
- Thoracoscopic lymph node biopsy
- Thoracoscopy for malignant pleural effusion



Right pleural effusion

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Initial Treatment Decisions

Operability and Resectability

- Operability
 - Can the patient tolerate the operation?
 - PFTs, cardiac assessment
- Resectability
 - Can the tumor be safely removed?



Thoracic Case Conference

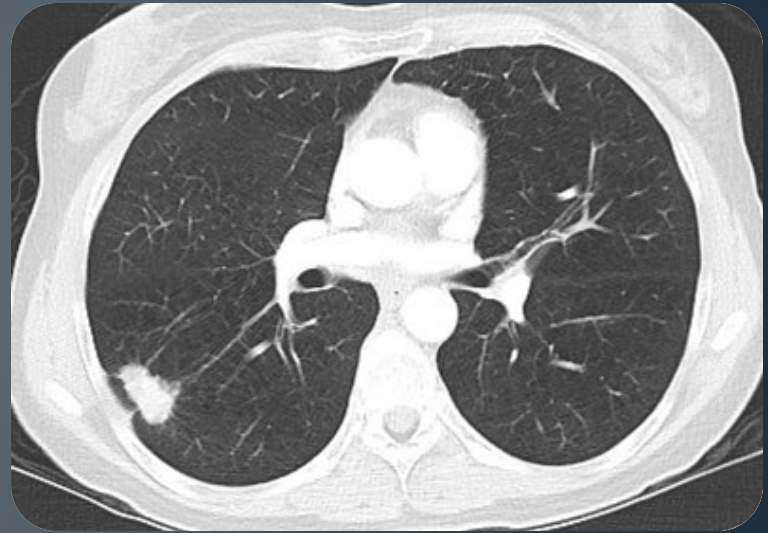
- All operative cases booked for the upcoming week(s) are discussed
- Thoracic surgeons, residents, step-down unit anesthetist in attendance
- We discuss
 - Staging and work-up
 - Decision-making
 - Operative plan
 - Intra- and post-operative support
- Difficult cases are discussed well in advance

Early Stage NSCLC

Anatomic pulmonary resection is recommended for the majority of patients with Stage I & II NSCLC

- Lobectomy
- Bilobectomy
- Pneumonectomy

Patients with early NSCLC who are not operable are assessed for SBRT

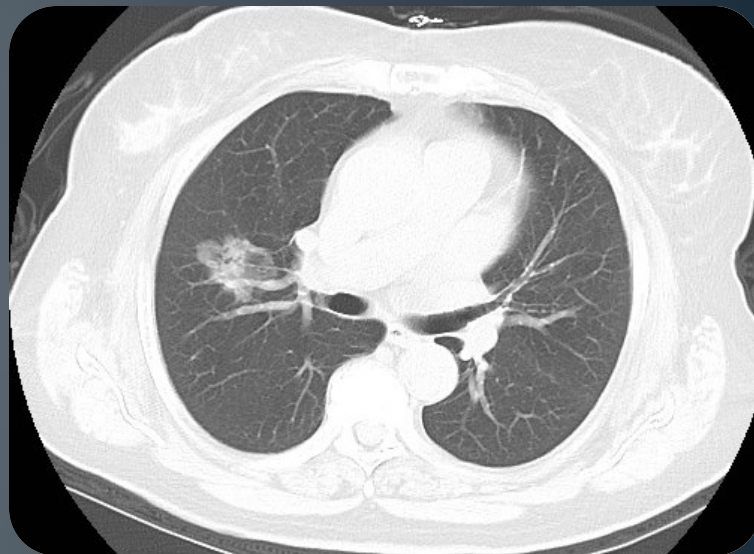


Early Stage NSCLC

Segmentectomy or wedge resection is appropriate in selected patients

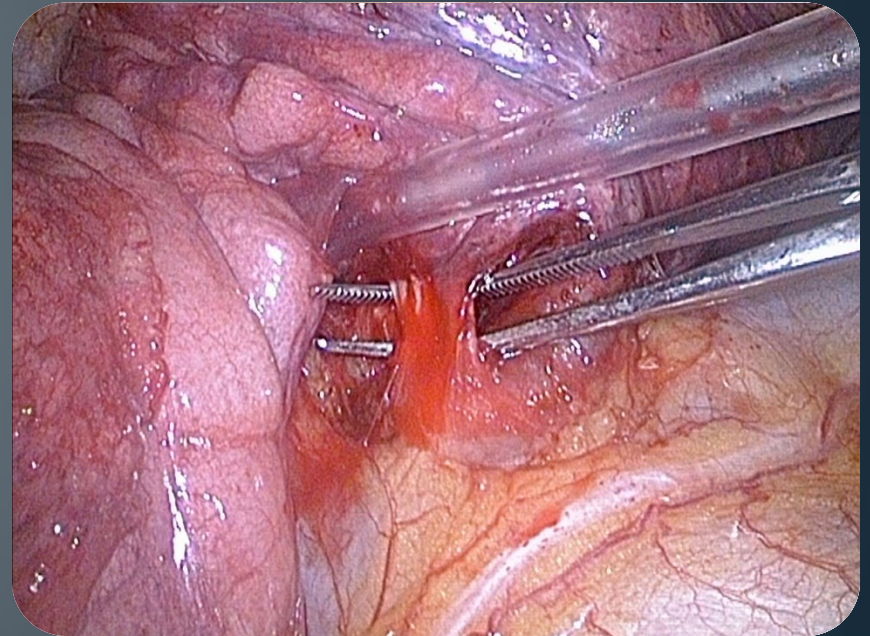
- Pure adenocarcinoma-in-situ
- SPN with $\geq 50\%$ ground glass appearance on CT
- Radiologic surveillance confirms long doubling time (≥ 400 days)

Randomized trial data pending



Early Stage NSCLC

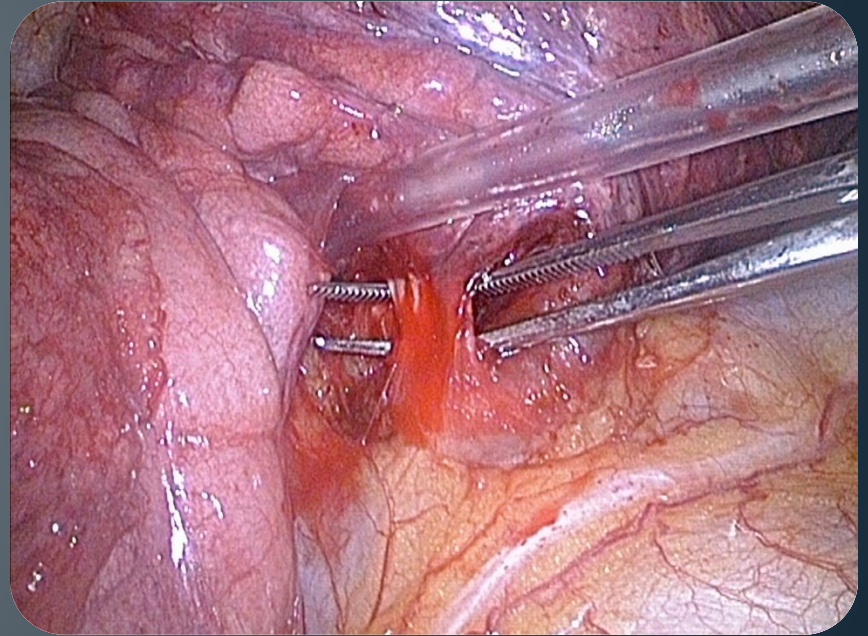
Thoracoscopic surgery should be strongly considered for patients without anatomic or physiologic contraindications



Early Stage NSCLC

In experienced centers, VATS lobectomy improves early outcomes

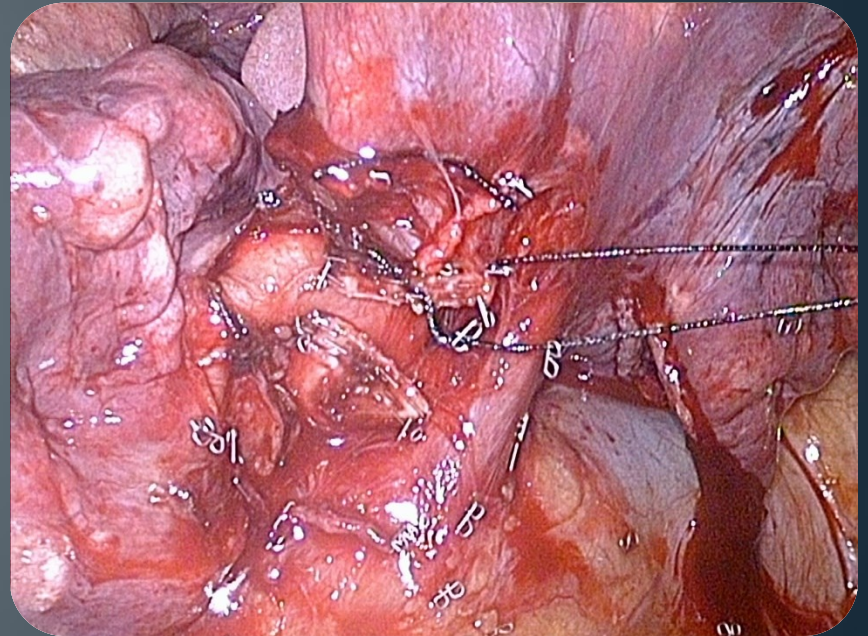
- Decreased pain
- Shorter length of stay
- More rapid return to function
- Fewer complications



Early Stage NSCLC

For clinical Stage I and Stage II (small hilar nodes), our usual surgical treatment is thoracoscopic lobectomy

- Since 2007, 80-90% of lobectomies done at HSC are minimally invasive
- Conversion to thoracotomy rate < 5%



Upcoming Priorities

- Improving thoracic endoscopy resources and introducing new technologies
- Adoption of upcoming AJCC staging revision into assessment and treatment





Thank you