



EP05.04 IMPACT OF MULTIDISCIPLINARY APPROACH IN ACCURACY OF PREOPERATIVE PET/CT IN PREDICTING PATHOLOGIC STAGE IN RESECTED-NSCLC



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INTRODUCTION

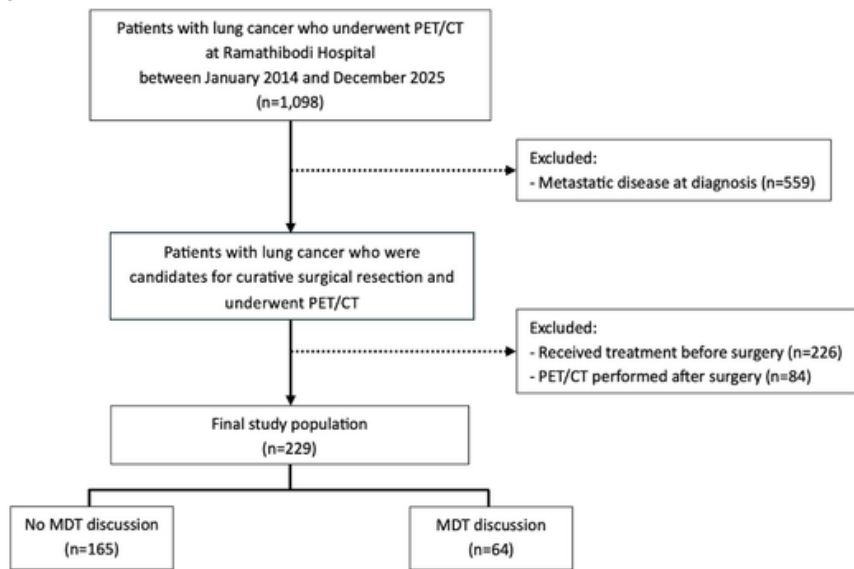
METHODS

Study Design: A retrospective single-center study

Population:

- Patients with resected stage I–III NSCLC (AJCC 8th edition) whom had preoperative–PET/CT evaluation before surgery.
- Diagnosed in Ramathibodi hospital between 2014 – 2025.

Figure 1. Patient selection flowchart



Statistical analysis

- Continuous and categorical variables were compared using appropriate parametric or non-parametric tests.
- Agreement between clinical and pathological staging was assessed using Cohen's kappa coefficient.
- Diagnostic performance was evaluated using sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and area under the receiver operating characteristic curve (AUC).
- A two-sided $p < 0.05$ was considered statistically significant.

Figure 2. Cohen's kappa coefficient

Kappa value	Level of agreement	% of data that are reliable
0.00–0.20	None	0–4%
0.21–0.39	Minimal	4–15%
0.41–0.59	Weak	15–35%
0.61–0.79	Moderate	35–63%
0.81–0.9	Strong	64–81%
>0.9	Almost perfect	82–100%

Accurate preoperative staging is essential for selecting appropriate treatment in patients with resectable NSCLC. Although 18F–FDG PET/CT is a standard imaging modality for clinical staging, discrepancies between clinical and pathological stage remain common, particularly for nodal staging. Multidisciplinary team (MDT) discussion has potential to improve staging accuracy by integrating radiologic, pathologic, surgical, and oncologic expertise before treatment decisions. This study evaluated the accuracy of PET/CT in predicting pathological–stage in resectable–NSCLC.

RESULTS

Table 1. Baseline characteristics

Characteristic	All patients N=229	No MDT N=165	MDT N=64	P-value
Age, years (mean ± SD)	67.23 ± 9.63	65.82 ± 9.12	70.87 ± 10.01	<0.001
Sex, n (%)				
Male	87 (38.0)	61 (37.0)	26 (40.6)	0.609
Female	142 (62.0)	104 (63.0)	38 (59.4)	
Smoking status, n (%)				
Never	163 (71.2)	119 (72.1)	44 (68.8)	0.613
Former/current	66 (28.8)	46 (27.9)	20 (31.3)	
Underlying disease, n (%)				
Diabetes mellitus	48 (21.0)	31 (18.8)	17 (26.6)	0.195
Treated pulmonary tuberculosis	9 (3.9)	6 (3.6)	3 (4.7)	0.712
COPD	12 (5.2)	9 (5.5)	3 (4.7)	1.000
Clinical stage, n (%)				
I	172 (75.1)	128 (77.6)	44 (68.8)	0.157
IIA	23 (10.0)	18 (10.9)	5 (7.8)	
IIB	14 (6.1)	9 (5.5)	5 (7.8)	
IIIA	13 (5.7)	6 (3.6)	7 (10.9)	
IIIB	7 (3.1)	4 (2.4)	3 (4.7)	
IIIC	0	0	0	
Clinical T stage, n (%)				
T1	134 (58.5)	99 (60.0)	35 (54.7)	0.032
T2	78 (34.1)	59 (35.8)	19 (29.7)	
T3	14 (6.1)	6 (3.6)	8 (12.5)	
T4	3 (1.3)	1 (0.6)	2 (3.1)	
Clinical N stage, n (%)				
N0	195 (85.2)	145 (87.9)	50 (78.1)	0.153
N1	19 (8.3)	10 (6.1)	9 (14.1)	
N2	14 (6.1)	9 (5.5)	5 (7.8)	
N3	1 (0.4)	1 (0.6)	0	
Pathological stage, n (%)				
I	167 (72.9)	125 (75.8)	42 (65.6)	0.167
IIA	17 (7.4)	9 (5.5)	8 (12.5)	
IIB	26 (11.4)	19 (11.5)	7 (10.9)	
IIIA	14 (6.1)	10 (6.1)	4 (6.3)	
IIIB	4 (1.8)	2 (1.2)	2 (3.1)	
IIIC	1 (0.4)	0	1 (1.6)	
Pathological T stage, n (%)				
T1	127 (55.5)	93 (56.3)	34 (53.1)	0.755
T2	83 (36.2)	62 (37.6)	21 (32.8)	
T3	17 (7.4)	9 (5.5)	8 (12.5)	
T4	2 (0.9)	1 (0.6)	1 (1.6)	
Pathological N stage, n (%)				
N0	193 (84.3)	140 (84.9)	53 (82.8)	0.755
N1	17 (7.4)	11 (6.7)	6 (9.4)	
N2	19 (8.3)	14 (8.5)	5 (7.8)	
N3	0	0	0	
Histology, n (%)				
Adenocarcinoma	218 (95.2)	159 (95.8)	60 (93.8)	0.735
T SUVmax n (%)				
≤ 2.5	62 (27)	43 (26.1)	19 (26.7)	0.579
> 2.5	167 (72.9)	122 (73.9)	45 (70.3)	
N SUVmax, n (%)				
≤ 2.5	120 (52.4)	91 (55.5)	29 (45.3)	0.167
> 2.5	109 (47.6)	74 (44.8)	35 (54.7)	
Time from diagnosis to PET/CT, days (median [IQR])	30 (18, 45)	26 (16, 40)	39 (26, 55)	<0.001
Time from PET/CT to surgery, days (median [IQR])	42 (23, 70)	37 (21, 66)	51 (26, 77)	0.026
Underwent EBUS-TBNA, n (%)	24 (10.5)	13 (7.9)	11 (17.2)	0.039
Type of surgery, n (%)				
Lobectomy	196 (85.6)	145 (87.9)	51 (79.7)	0.196
Segmentectomy	29 (12.7)	18 (10.9)	11 (17.2)	
Wedge resection	4 (1.8)	2 (1.2)	2 (3.1)	



- The final study population consisted of 229 patients (Table1)**
- Categorized into two groups based MDT discussion:
 - 165 (72%) without MDT
 - 64 (28%) with MDT
- The mean age was 67 years; 62% were female and 71.2% were never–smokers.
- Primary T and N SUVmax >2.5 were observed in 72.9% and 47.6% of patients.
- The median PET/CT–to–surgery interval was 42 days.
- Most patients had stage I disease (75.1% clinically and 72.9% pathologically).



Clinical–pathological agreement

Clinical–pathological	Overall agreement	Kappa
Stage	74.7%	0.42
T stage	79.0%	0.62
N stage	84.3%	0.42

The highest concordance for NO disease 91.8% and lower concordance for N1 31.6% and N2 57.1%



Diagnostic Performance of PET/CT for Nodal Staging

	Sensitivity (%)	Specificity (%)	AUC	PPV (%)	NPV (%)
Overall (95% CI)	55.6% (38.1–72.1)	92.7% (88.1–96.0)	0.742 (0.657–0.826)	58.8% (40.7–75.4)	91.8% (87.0–95.2)
Subgroup analysis					
Diabetes mellitus (DM)					
Yes	42.9%	87.8%	0.653	37.5%	90.0%
No	58.6%	94.1%	0.763	65.4%	92.3%
P-values	0.453	0.364	0.336	0.161	0.636
Nodal SUVmax					
≤2.5	41.2%	95.1%	0.682	58.3%	90.7%
>2.5	68.4%	89.9%	0.792	59.1%	93.0%
P-values	0.101	0.167	0.193	0.963	0.563
MDT Discussion					
Yes	90.0%	92.5%	0.917	71.4%	98.0%
No	40.0%	92.9%	0.664	50.0%	89.7%
P-values	0.0046	0.929	0.0004	0.212	0.065

- PET/CT showed 55.6% sensitivity and 92.7% specificity for nodal staging, with PPV and NPV of 58.8% and 91.8%, respectively. Sensitivity was lower in patients with DM (42.9% vs. 58.6%) and higher with nodal SUVmax >2.5 (68.4% vs. 41.2%).
- MDT discussion significantly improved nodal staging sensitivity (90% vs. 40%, $p = 0.0046$), while specificity remained comparable, with favorable trends in PPV and NPV.

DISCUSSION

- Preoperative 18F–FDG PET/CT demonstrated high specificity but limited sensitivity for nodal staging in resectable NSCLC.
- MDT discussion was associated with markedly improved nodal staging sensitivity without compromising specificity, suggesting enhanced detection of true nodal involvement. This benefit may result from integrating metabolic imaging with clinical and radiological information.
- These findings support incorporating MDT assessment into preoperative staging, together with selective invasive nodal staging, to improve staging accuracy and optimize treatment planning.

CONCLUSION

Preoperative PET/CT evaluation is reasonable diagnostic–tool for early–stage lung cancer with high agreement between clinical and pathological staging and high–specificity but limited in sensitivity to predict nodal–stage. Our study showed that MDT discussion improved concordance of clinical and pathological staging and significantly enhanced sensitivity and PPV in nodal–staging of PET/CT.

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