

INTRODUCTION

The value of PET/CT in clinical stage IA lung cancer—where nodal and metastatic disease is uncommon—remains uncertain, with no large study focused exclusively on this stage.

Objective: To determine whether preoperative PET/CT is associated with improved 5-year overall survival (OS) and disease-free survival (DFS) after resection of clinical stage IA lung cancer and to evaluate its association with staging-related outcomes.

METHODS

Retrospective single-center cohort study

Patients undergoing pulmonary resection for clinical stage IA lung cancer, 2010-2021 (n=4,422)

No PET/CT

PET/CT

Propensity-score adjustment

- Stabilized IPTW
- 1:1 propensity-score matching (PSM, 980 pairs)

Primary endpoints

: 5-year OS & DFS
Kaplan–Meier,
Cox regression

Intermediate endpoints

: Nodal sampling, pNx,
pN upstaging
Logistic regression

Subgroup analyses

Lesion type (pGGN/PSN vs. solid) · CTR · Tumor size
· Extent of resection · SUVmax

Secondary and sensitivity cohorts analyses

- 1) Prespecified secondary cohort
: Total size ≤2 cm, CTR >0.5, outer 1/3
- 2) Solid-portion sensitivity cohort
: Solid-portion size ≤2 cm, CTR >0.5, outer 1/3

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- Preoperative PET/CT was consistently associated with more thorough intraoperative nodal evaluation, with increased nodal sampling, lower pNx, and greater pN upstaging, but not with improved 5-year OS or DFS after propensity-score adjustment.
- Among patients who underwent PET/CT, higher SUVmax was associated with worse OS and DFS, suggesting that tumor metabolic activity may provide prognostic information beyond PET/CT use itself.

Future Direction for Research

- Evaluate the impact of PET/CT beyond the surgical cohort, including patients in whom PET/CT findings precluded surgery.
- Assess the cost-effectiveness of routine versus selective PET/CT in clinical stage IA lung cancer.

REFERENCES & ACKNOWLEDGEMENTS

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AI was used to assist in the creation of figures for this poster. All scientific content, data analysis, and interpretation were performed independently by the authors.

The authors have no conflicts of interest to disclose.

RESULTS

1. Patient Cohort

4,422 patients undergoing pulmonary resection for clinical stage IA lung cancer (2010–2021)

No PET/CT n=1,053 (23.8%)

PET/CT n=3,369 (76.2%)

2. Overall Survival (OS)

5-year OS

94.0% vs 88.1%

HR for death

0.99 (95% CI, 0.76-1.28), P=0.925

No significant difference after PSM/IPTW (P>0.05)

3. Disease-Free Survival (DFS)

5-year DFS

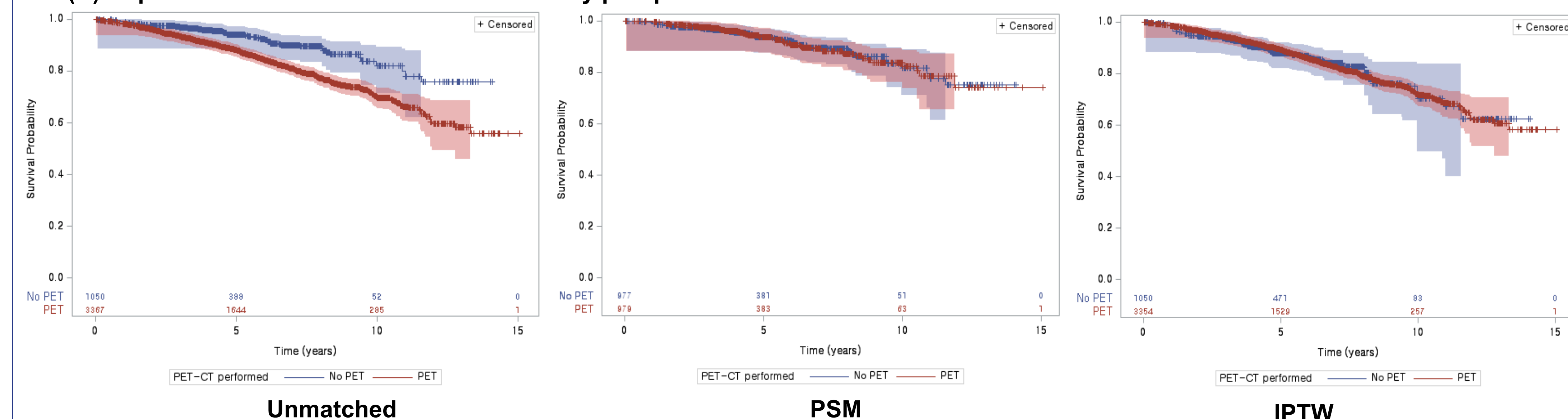
91.8% vs 80.2%

HR for recurrence or death

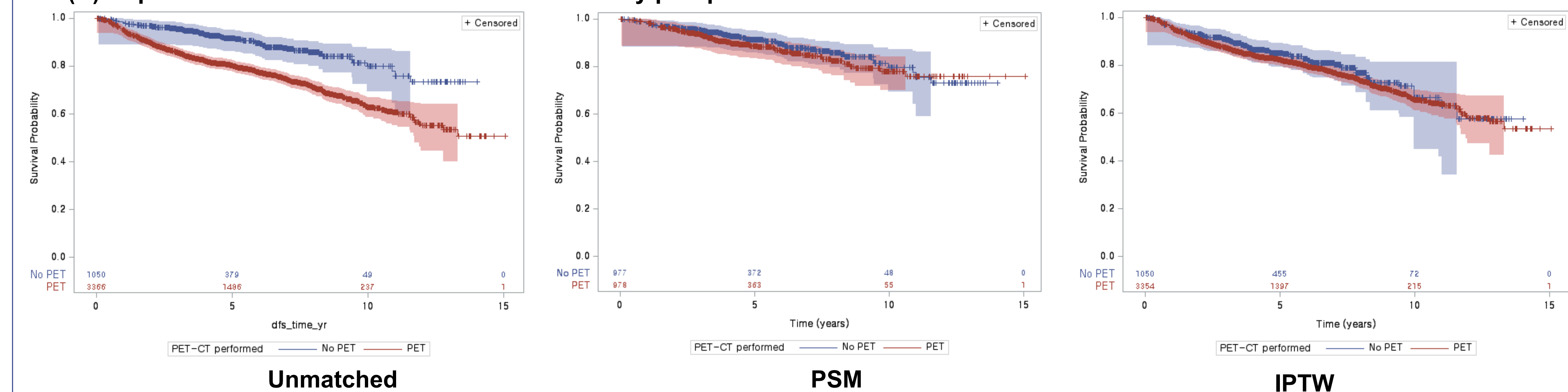
1.29 (95% CI, 1.01-1.59), P=0.041

Attenuated after PSM/IPTW (P>0.05)

(A) Kaplan-Meier curves for overall survival by preoperative PET/CT status



(B) Kaplan-Meier Curve for disease-free survival by preoperative PET/CT status



4. Pathologic Nodal Findings

Nodal sampling

OR 2.6 (95% CI, 2.1-3.3)

All P<0.001

pNx rate

OR 0.4 (95% CI, 0.3-0.5)

Consistent after
PSM/IPTW

pN upstaging

OR 2.1 (95% CI, 1.4-3.2)

5. Subgroup Interaction

Significant interaction between PET/CT and both tumor size and extent of resection with respect to death or recurrence (all P<0.01)
→ higher event risk in the PET/CT group among
- tumor size ≤2 cm
- wedge resection or segmentectomy

6. SUVmax in PET/CT Group

Higher SUVmax predicted worse OS and DFS

HR 1.08 (95% CI, 1.07-1.09) per unit increase,
P<0.001

7. Prespecified Secondary Cohorts

In the prespecified secondary cohort (n=917) and solid-portion sensitivity cohort (n=1,072), 5-year OS and DFS did not differ significantly by PET/CT status in either cohort (all P>0.05)