



Retrospective Clinical Analysis of Pulmonary Mucinous Tumors With Difficult Intraoperative Frozen Section Diagnosis

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INTRODUCTION

Intraoperative frozen diagnosis of pulmonary mucinous-type tumors poses surgical challenges. To identify features aiding intraoperative differentiation between bronchiolar adenoma (BA) and pulmonary invasive mucinous adenocarcinoma (IMA), and to compare the prognosis of sublobar resection versus lobectomy in patients with IMA with uncertain frozen diagnosis.

METHODS

Design: Retrospective clinical observational study
We retrospectively enrolled 237 patients with intra-operative suspected pulmonary mucinous tumor. Patients were stratified into BA and IMA groups based on final pathology. Clinical and imaging features were compared to build a diagnostic model. Recurrence-free survival was compared between sublobar resection and lobectomy after propensity-score matching.

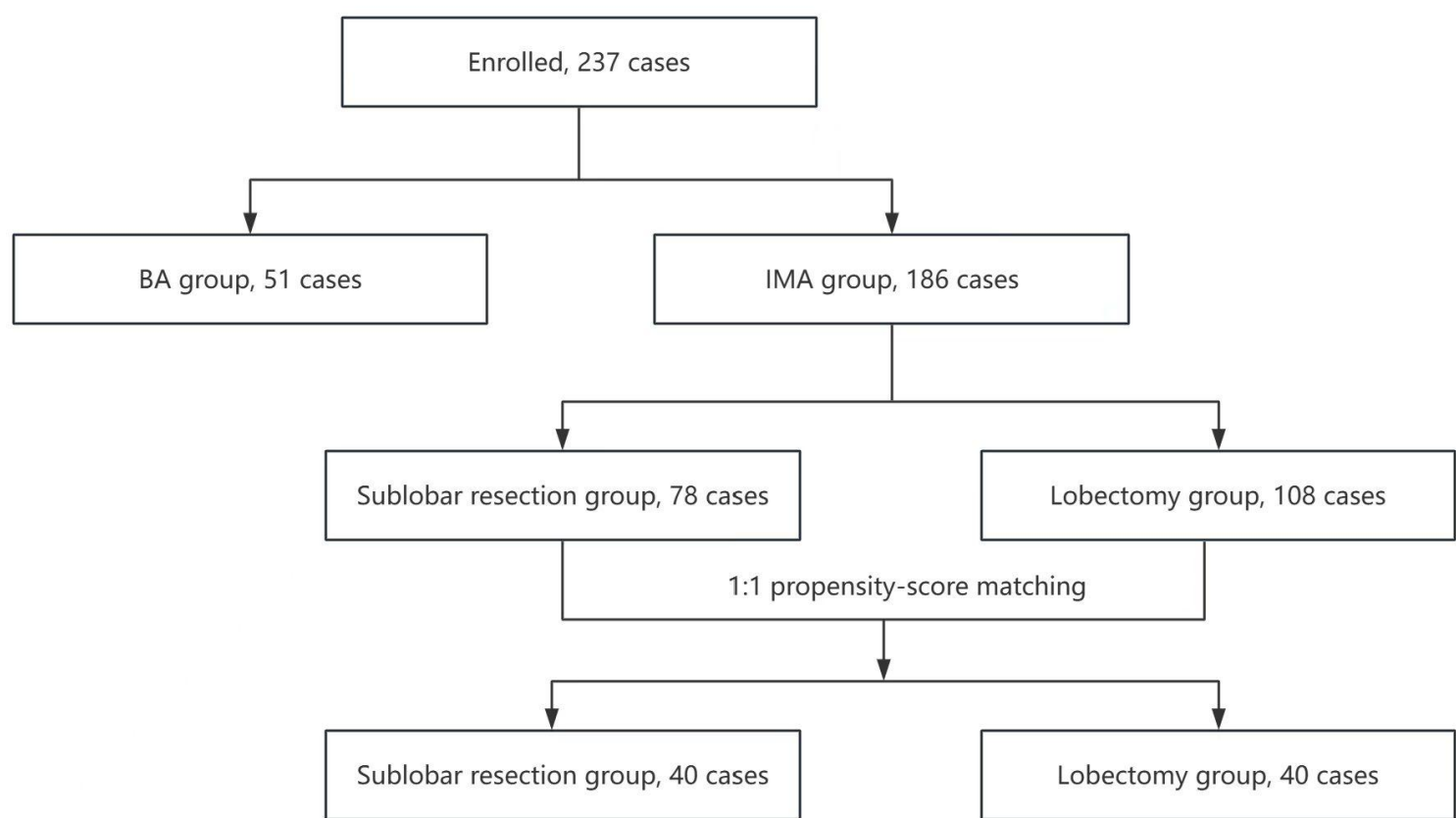


Figure 1: Patient enrollment flowchart

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- When frozen section is inconclusive, CT features (smaller tumor, vacuole sign) suggest BA; lobulation sign favors IMA. For uncertain patients with IMA, sublobar resection with close surveillance yields oncological outcomes comparable to lobectomy.

Future Direction for Research

- Larger prospective multicenter cohorts with molecular biomarkers are required to validate our findings and confirm long-term safety of sublobar resection for IMA subgroups.

REFERENCES & ACKNOWLEDGEMENTS

REFERENCES

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Artificial Intelligence (AI) Use Disclaimer

No artificial intelligence tools were used in the generation of data, analysis, or manuscript drafting for this study. AI was not used in content creation. No AI was applied for statistical analysis, figure illustration and poster layout design. All literature review and result interpretation were finished independently by the authors.

RESULTS

On imaging, BA tumors were significantly smaller, more often round/oval solid nodules, and showed a higher incidence of the "vacuole sign" than IMA. Tumor size, lobulation sign, and vacuole sign were independent predictive factors. The combined diagnostic model yielded an AUC of 0.819. In the matched analysis, no significant difference in cumulative recurrence-free rates was found between sublobar resection and lobectomy for patients with IMA.

Variable	B	SE	Wald	P-value	Odds Ratio	OR (95% CI)
Tumor maximum diameter	0.213	0.066	10.277	0.001	1.238	1.086 ~ 1.410
lobulation sign	1.265	0.415	9.286	0.002	3.544	1.571 ~ 7.998
vacuole sign	1.308	0.415	9.935	0.002	3.699	1.640 ~ 8.344

Figure 2: Multivariate logistic regression results showing independent predictors for differentiating BA from IMA. CI, confidence interval.

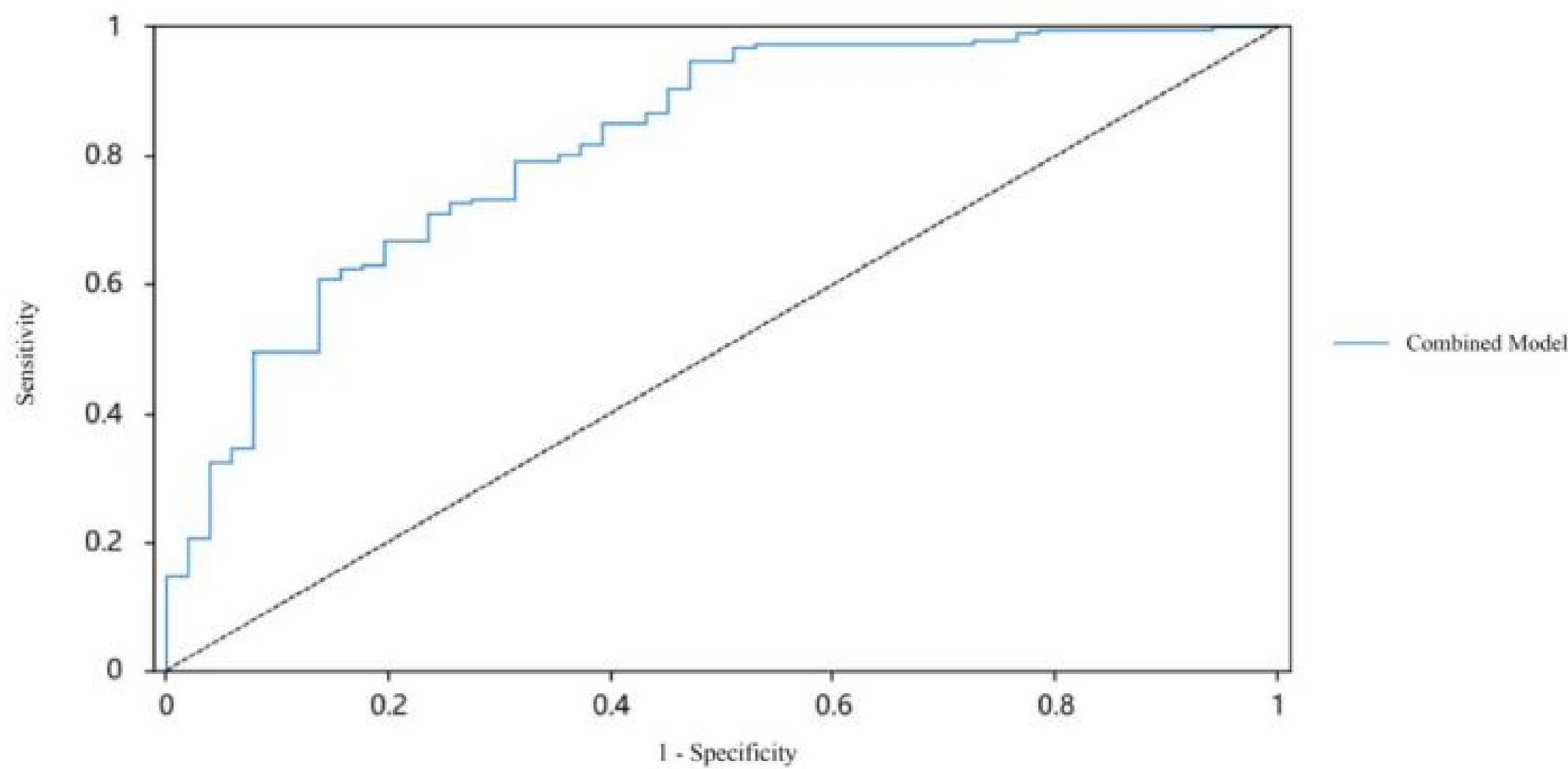


Figure 4: ROC curve of the combined prediction model for differentiating BA from IMA. AUC, area under the curve.

Variable	AUC(95%CI)	SE	P-value
Combined prediction	0.819 (0.751~0.886)	0.034	<0.0001
Tumor maximum diameter	0.761 (0.690~0.831)	0.036	<0.0001
lobulation sign	0.685 (0.604~0.767)	0.042	<0.0001
vacuole sign	0.625 (0.534~0.716)	0.046	0.006

Figure 3: Diagnostic performance of individual and combined predictive factors for differentiating BA from IMA. AUC, area under the curve; CI, confidence interval; SE, standard error.

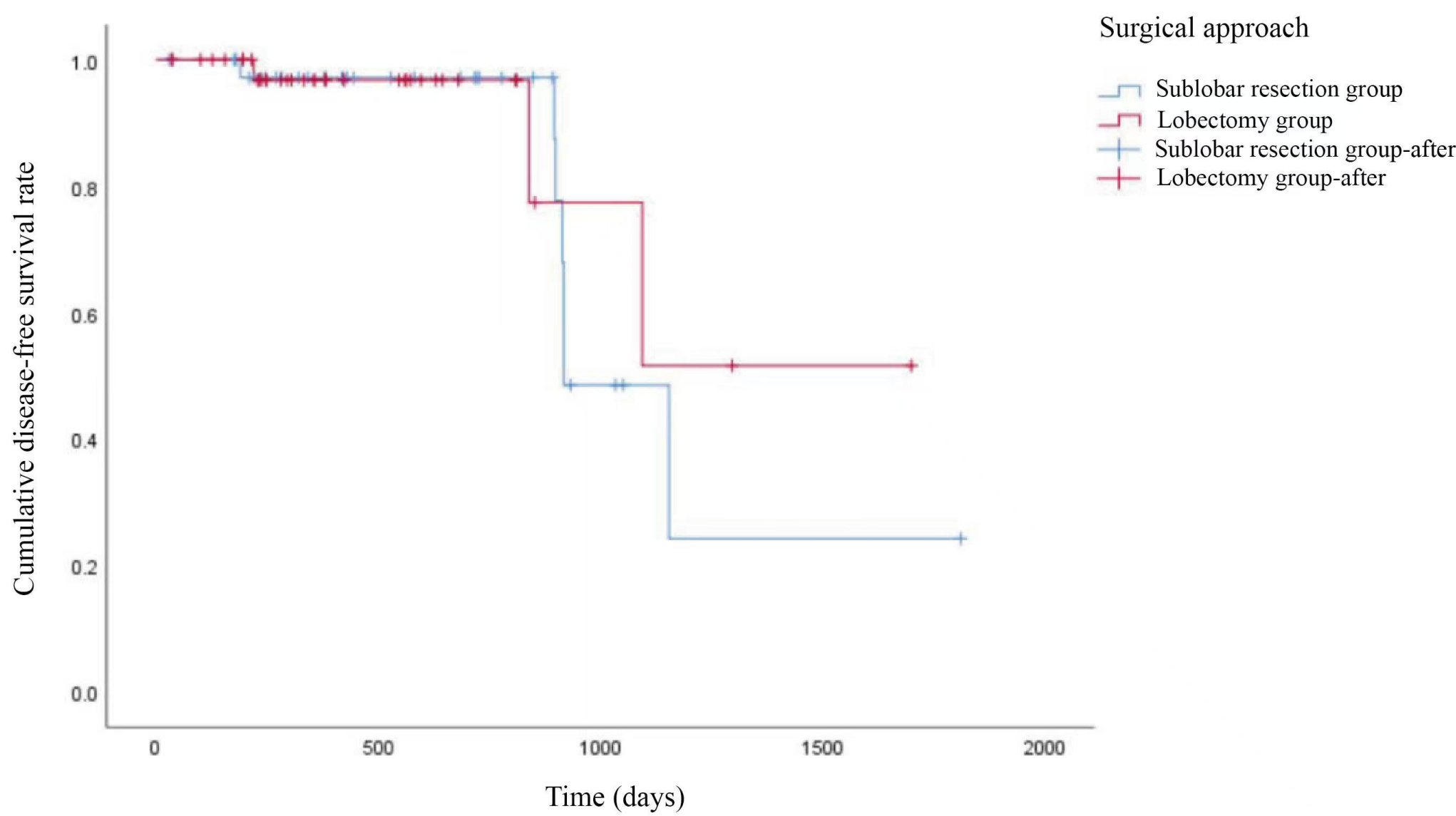


Figure 5: Kaplan-Meier curves of recurrence-free survival for patients with IMA after 1:1 propensity-score matching, comparing sublobar resection versus lobectomy.