

EP04.10: Early Resection in Patients with Ground-Glass-Predominant Nodules Leads to Better Overall and Disease-Free Survival.

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IASLC 2026 World
Conference on Lung Cancer
SEPTEMBER 12 - 15, 2026
SEOUL, REPUBLIC OF KOREA

INTRODUCTION

Background:

- Ground-glass opacities (GGOs) are increasingly detected with widespread CT screening.
- Although GGO-containing lesions are generally considered indolent, the prognostic impact of an increasing solid component remains incompletely defined.

Purpose:

- To evaluate 10-year Overall Survival (OS) and Disease-Free Survival (DFS) based on CT morphology in resected primary lung nodules.
- To establish clinical thresholds for intervention and optimize surveillance strategies for incidental pulmonary nodules.

METHODS

Design: Retrospective cohort review of an institutional thoracic surgery database.

Patient Cohort (n = 686):

- Patients with primary lung cancer who underwent surgical resection
- Inclusion Categories:** Pure GGO (n = 109), GGO-predominant (n = 127), and Solid-predominant (n = 450)
- Exclusion Criteria:** Pure solid and unspecified nodules

Statistical analysis

- Baseline demographics (age, gender, ethnicity, BMI, comorbidities) compared via Chi-square tests.
- OS and DFS up to 10 years analyzed using Chi-square tests ($p \leq 0.05$ defined as statistically significant).
- Binary logistic regression performed for disease stage association (Odds Ratios).

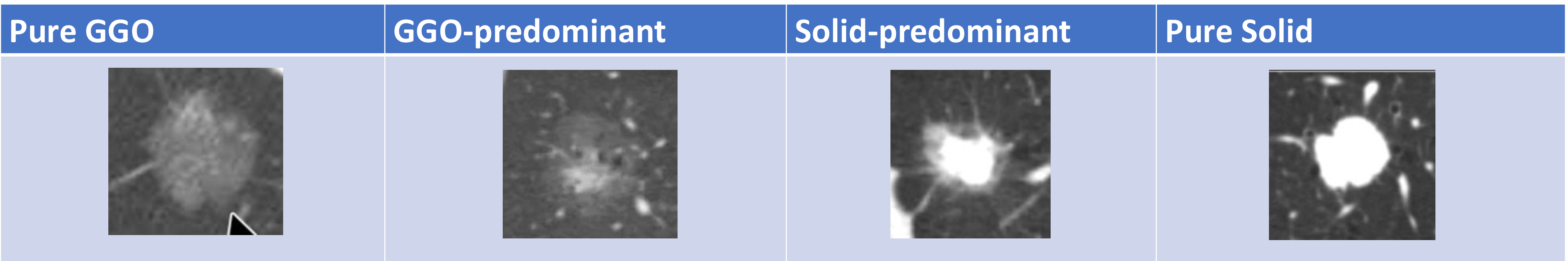
RESULTS

Baseline Demographics

Cohort Breakdown:

Morphologic group	n	%
Pure GGO	109	15.9
GGO-predominant	127	18.5
Solid-predominant	450	65.6
Total	686	100

- Baseline characteristics:** No significant differences were observed in age, BMI, or baseline comorbidities across morphological groups. Male sex was more prevalent in the solid-predominant group (54.7% vs 45.3%, $p=0.006$).
- Radiographic Spectrum of Pulmonary Nodules** (Source: radiopaedia)
 - A predominantly ground-glass nodule (part-solid nodule) is radiologically quantified when its solid (consolidation) component accounts for **50% or less** (typically a consolidation-to-tumor ratio or CTR ≤ 0.5) of the overall maximum diameter of the lesion.



Outcome	Timepoint	GGO + GGO-Predominant	Solid-predominant	p-value
Overall survival (OS)	Year 1	98.8% (168/170)	95.2% (277/291)	0.040
	Year 2	97.6% (122/125)	89.7% (182/203)	0.007
	Year 3	94.0% (94/100)	82.4% (131/159)	0.007
	Year 4	92.7% (76/82)	75.7% (103/136)	0.002
	Year 5	85.3% (58/68)	68.9% (91/132)	0.009
Disease free survival (DFS)	Year 1	97.6% (166/170)	94.5% (275/291)	0.110
	Year 2	94.4% (118/125)	87.7% (179/204)	0.048
	Year 3	90.0% (90/100)	77.5% (124/160)	0.010
	Year 4	86.6% (71/82)	68.6% (94/137)	0.003
	Year 5	81.0% (51/63)	58.1% (72/124)	0.002

DISCUSSION AND CONCLUSION

Actionable Take Away Message

- Favourable GGO Outcomes:** Pure GGO and GGO-predominant lesions demonstrate **nearly identical, superior long-term post-resection survival** ($p > 0.05$ across all time points).
- Critical Prognostic Threshold:** Solid-predominant nodules carry significantly worse 5-year OS (**32.0% vs. 85.7%**, $p = 0.009$) and 5-year DFS (**58.1% vs. 81.0%**, $p = 0.002$).
- Early Stage Correlation:** GGO and GGO-predominant nodules are strongly associated with **Stage IA disease** (OR 4.52, 95% CI 2.64–7.75, $p < 0.001$)
- Clinical Bottom Line:** While pure GGOs can be safely monitored, the emergence or expansion of a **solid component represents a crucial threshold requiring timely surgical intervention**.

Future Direction for Research

- Development of standardized CT surveillance protocols incorporating volumetric solid-component expansion rate.
- Defining optimal surgical timing before nodules transition into solid predominance to preserve lung parenchyma and maximize survival.