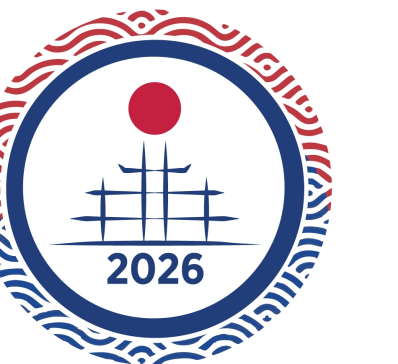




P3.061: Vascular Radiomics for Prognosis and Adjuvant Chemotherapy Benefit in Resected Stage I LUAD: A Multicenter Study



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上海市胸科醫院
上海交通大学醫學院附屬胸科醫院
上海市紅十字胸科醫院
SHANGHAI CHEST HOSPITAL

D. Wang¹, W. Nie¹
¹Shanghai Chest Hospital: Shanghai Jiao Tong University Affiliated Chest Hospital, Shanghai/CN
Correspondence: niewei-1001@sjtu.edu.cn

INTRODUCTION

Background

Prognosis and adjuvant chemotherapy (ACT) benefit vary substantially among patients with resected stage I lung adenocarcinoma (LUAD), while conventional staging provides limited guidance for individualized postoperative management.

Objective

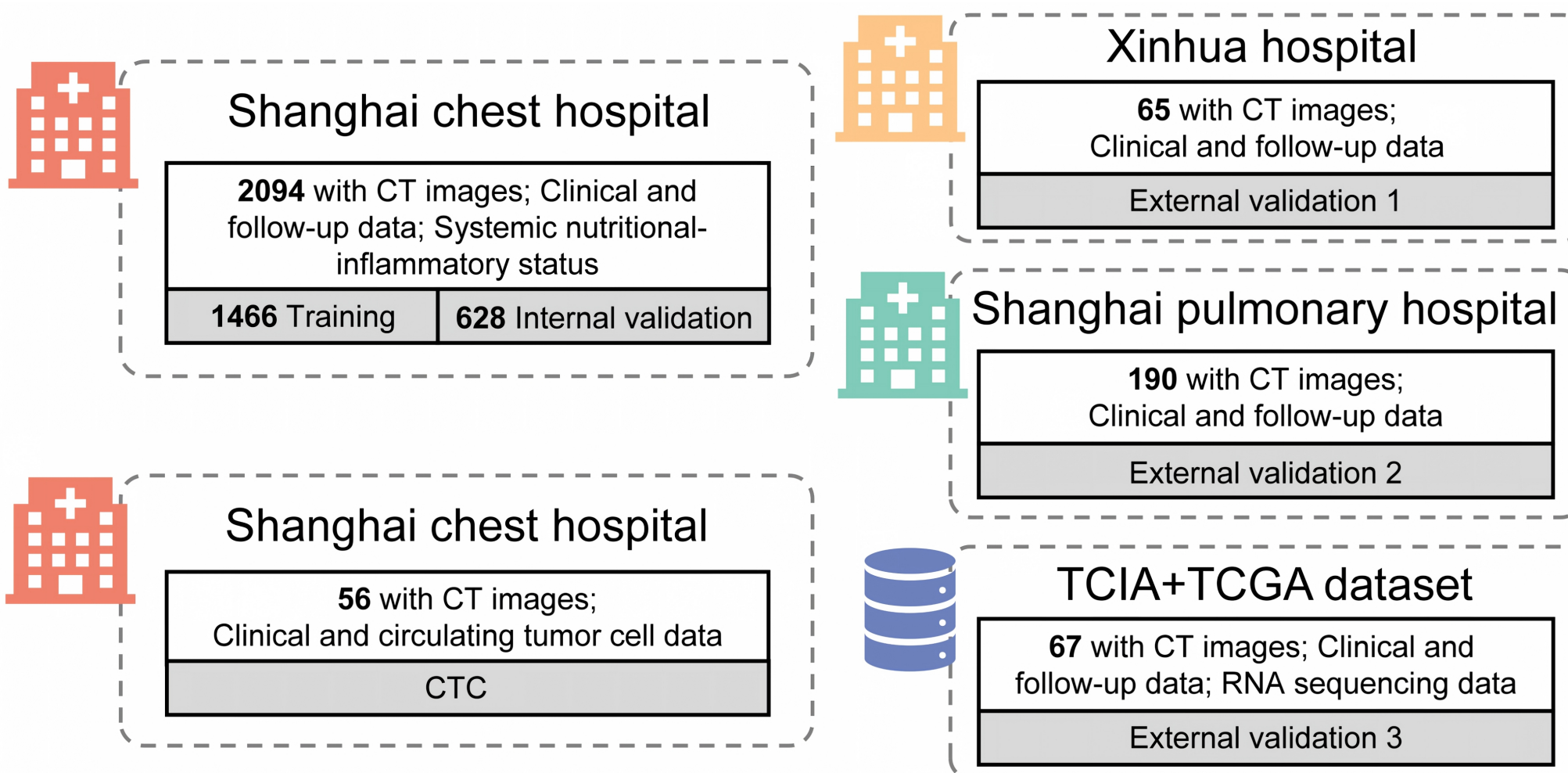
To develop and externally validate a CT-based vascular radiomics signature (VascRad) for prognostic stratification and ACT benefit assessment.

METHODS

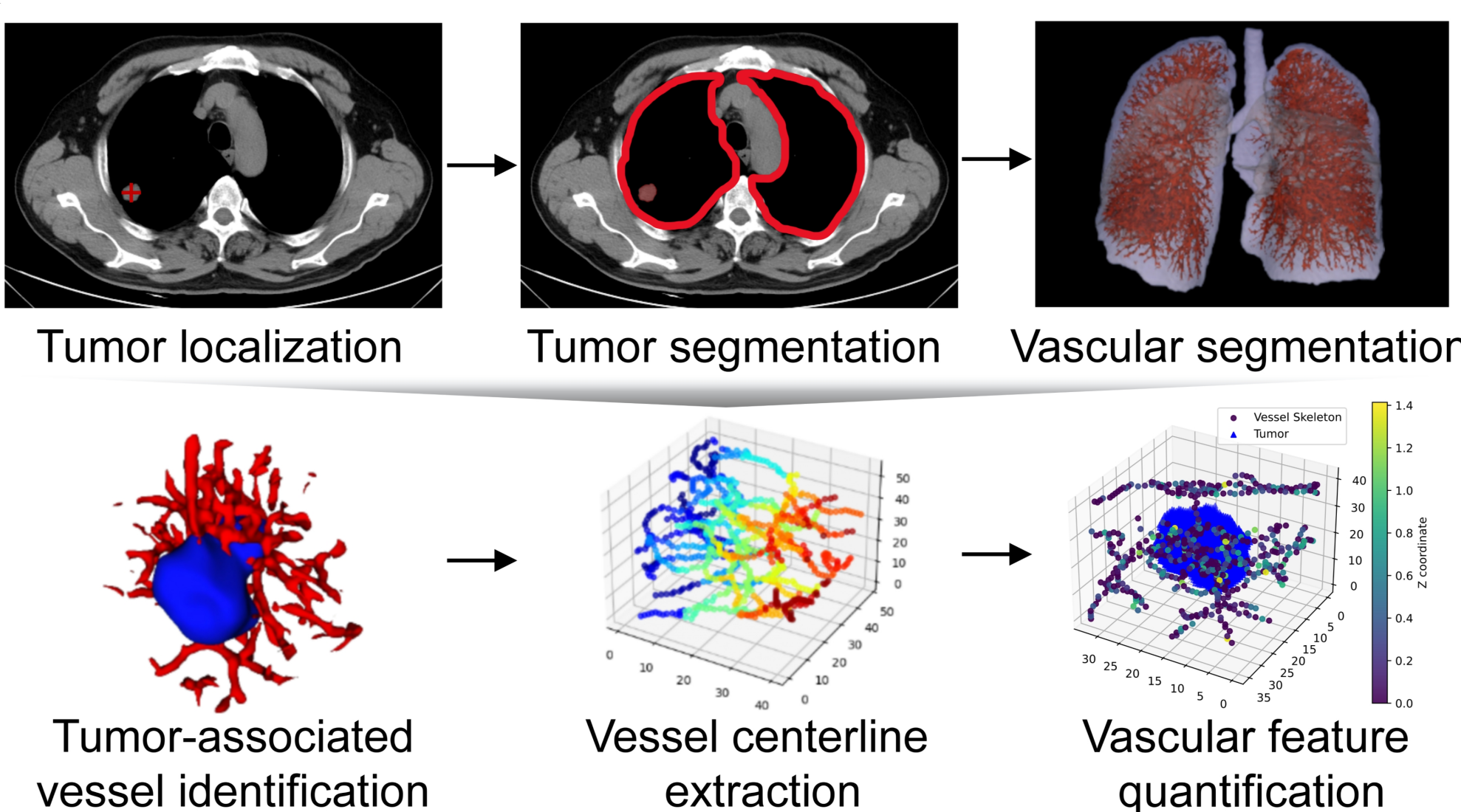
Study Design

Multicenter retrospective study

Cohorts



Vascular Feature Extraction



DISCUSSION AND CONCLUSION

Actionable Take Away Message

- VascRad provided robust prognostic stratification across multiple cohorts of resected stage I LUAD.
- VascRad identified patients with differential benefit from adjuvant chemotherapy, supporting individualized postoperative treatment.
- VascRad was associated with higher CTC burden and tumor growth, invasion, and immune-evasion pathways, supporting its biological relevance.

Future Direction for Research

- Prospective multicenter validation
- Integration with molecular and immune biomarkers
- Evaluation of VascRad-guided ACT decision-making in clinical practice

REFERENCES & ACKNOWLEDGEMENTS

Reference

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- Chae YK, Velcheti V, Zhang K, et al. QVT score, a radiomic biomarker of vascular complexity, enables prognostication and monitoring of NSCLC immunotherapy. J Immunother Cancer. 2026;14(2):e013391.

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RESULTS

Key Findings

- VascRad consistently outperformed ClinScore, RadScore, and Clin+RadScore, achieving 5-year AUCs of 0.822–0.868 across the training and validation cohorts, with favorable decision-curve performance.
- VascRad provided strong prognostic stratification: VascRad-H patients had significantly worse OS and RFS across all cohorts, and ACT benefit differed significantly by VascRad status (interaction $p = 0.025$ for OS; $p < 0.001$ for RFS).
- Integrating VascRad with TNM stage generated the TNMR system, which further separated stage I LUAD into three prognostically distinct groups beyond conventional TNM staging.
- SHAP and biological analyses supported the interpretability of VascRad: higher-risk phenotypes were associated with higher CTC burden and lower PNI/LMR, consistent with more aggressive tumor biology.

