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Role of Surgery in Stage IVA Thymic Epithelial Tumors: Evidence From the Italian TYME Multicenter Cohort

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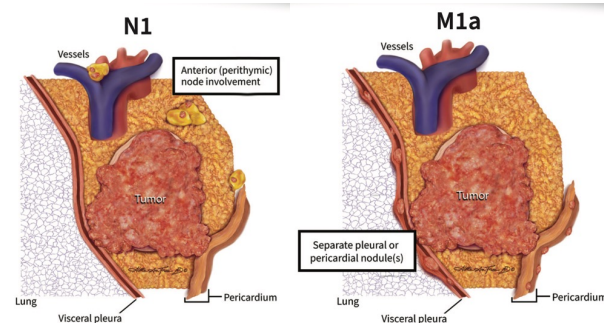
Science Without Boundaries: **Uniting the World Against Thoracic Cancer**

Disclosure

- Nothing to disclose

Introduction

- TNM stage IVA thymic epithelial tumors (TETs) are rare and pose significant challenges due to limited and heterogeneous data
- A major difficulty in managing stage IVA disease is the lack of clarity on the optimal treatment approach, particularly concerning the role of surgery, which remains controversial



Thymic Epithelial Tumor Stage Groups – 9th Edition

Stage	T category	N category	M category
I	T1a-b	N0	M0
II	T2	N0	M0
IIIA	T3	N0	M0
IIIB	T4	N0	M0
IVA	T any T any	N1 N0, N1	M0 M1a
IVB	T any T any	N2 N any	M0, M1a M1b

Aim

Evaluate oncological outcomes of a consecutive cohort of surgically treated patients with stage IVA TETs

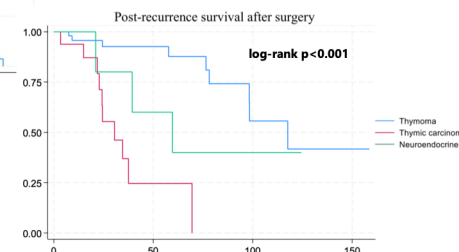
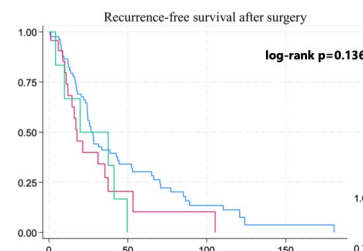
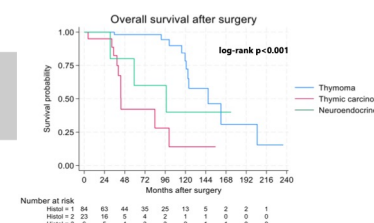
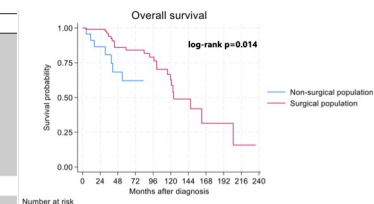
Methods

- ❖ Patients with pathological confirmed stage IVA TETs treated at multiple institutions from the ThYmic MalignanciEs (TYME) Italian Network from 2017 to 2025 were retrospectively analyzed
- ❖ Overall survival (OS), recurrence-free survival (RFS), and post-recurrence survival (PRS) were estimated using the Kaplan-Meier method and compared with the log-rank test
- ❖ Cox proportional hazards models were used for univariable and multivariable analyses
- ❖ Recurrent events were analyzed using an Andersen-Gill model with robust standard errors

Results

- Among 138 patients, 113 underwent surgical resection, reaching a significantly better OS compared to those who did not (log-rank $p=0.014$)
- Histology was strongly associated with OS ($p<0.001$): thymic carcinoma showed significantly worse survival compared with thymoma (HR 6.43, 95%CI 2.51-16.50; $p<0.001$)
- RFS did not differ significantly across histological groups ($p=0.136$), and histology was not independently associated with recurrence risk
- Recurrent event analysis confirmed no significant association between histology and overall recurrence hazard
- In contrast, PRS differed markedly by histology ($p<0.001$), with thymic carcinoma associated with higher risk of death (HR 8.99, 95%CI 2.91-27.78; $p<0.001$)
- Stratification by resection status showed a gradient in survival outcomes, with improved OS observed in patients undergoing complete resection (R0) compared with R1/R2 resections; however, interpretation is limited by potential selection bias and collinearity with histology
- Exploratory analyses within thymoma subtypes suggested heterogeneity in outcomes, although limited events precluded definitive conclusions

Variable	Value N=113
Histology, n (%)	
Thymoma AB	4 (4)
Thymoma B1	20 (17)
Thymoma B1-B2	8 (7)
Thymoma B2	23 (20)
Thymoma B2-B3	10 (9)
Thymoma B3	17 (16)
Thymoma NOS	2 (2)
Neuroendocrine	6 (5)
Carcinoma	23 (20)
Neoadjuvant chemo, yes (%)	50 (44)
Adjuvant radio, yes (%)	47 (42)
Resection, n (%)	
R0	81 (72)
R1	18 (16)
R2	14 (12)
Type of resection, n (%)	
Thymo-pneumonectomy	11 (10)
Thymo-pleuro-pneumonectomy	4 (4)
Thymo-pleurectomy	11 (10)
Thymo-pleural implants resection	45 (40)
Thymo-pleural implants-lung resection	42 (36)
1 st surgery approach, n (%)	
Hemi-clamshell	22 (20)
Clamshell	4 (4)
Sternotomy	42 (36)
Mini-invasive VATS/RATS	9 (8)
Thoracotomy	36 (32)

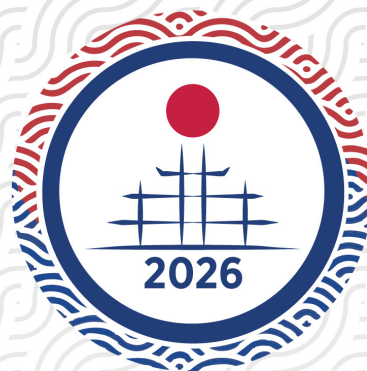


Conclusions

- ✓ **Surgery** is feasible and **may provide prolonged survival** in selected patients with stage IVA TETs within a multimodal strategy
- ✓ **Histology is a key determinant of OS**, primarily **driven by differences in PRS** rather than recurrence risk
- ✓ **Completeness of resection and thymoma subtype may further influence outcomes**, highlighting the biological and clinical heterogeneity of this disease

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Thank You.

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