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Preoperative Tracheostomy is Associated with Local Recurrence in Total Laryngectomy Patients

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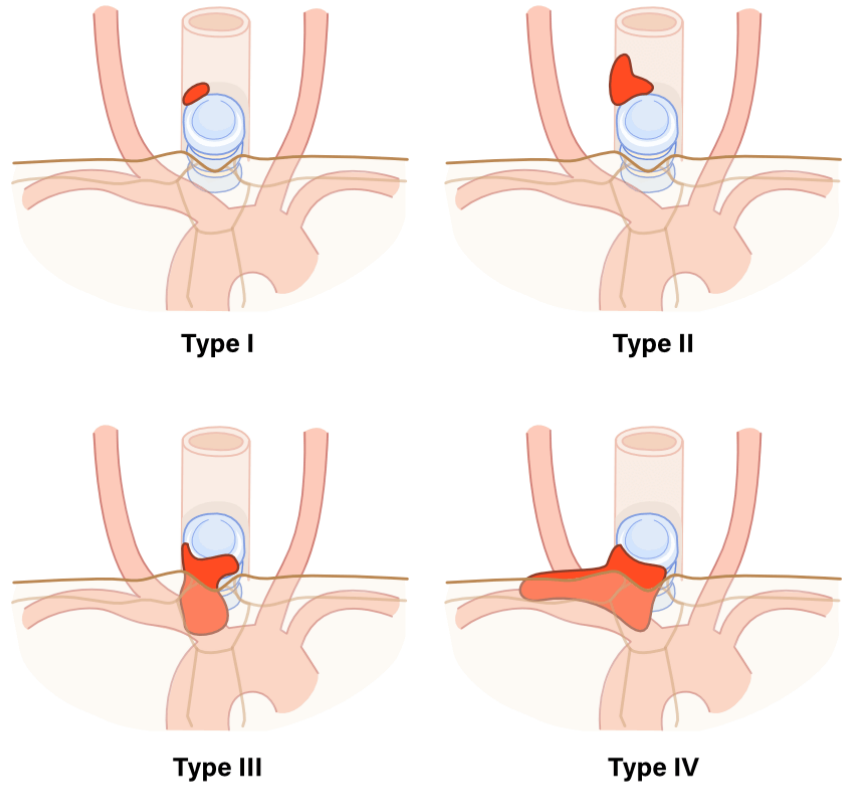
Introduction

- Preoperative tracheostomy for laryngeal squamous cell carcinoma (SCC) has been hypothesized to predispose patients to stomal recurrence and local disease spread.
- Local recurrence after total laryngectomy (TL) is uncommon (incidence between 3-7%) and has limited curative options.



Objectives

Determine whether preoperative tracheostomy is associated with overall survival (OS), disease-free survival (DFS), and local recurrence-free survival (LRFS) in total laryngectomy patients while adjusting for key clinicopathologic covariates.

Methods

- Single-institutional retrospective **Inclusion criteria:** patients who underwent primary or salvage TL for oncologic treatment of squamous cell carcinoma
- Demographic, clinical, pathologic, and survival data were collected
- Kaplan-Meier survival estimates and Cox proportional hazards regression were performed
- **Covariates:** age, pathologic T and N stage, prior radiation, lymphovascular invasion, perineural invasion, adjuvant radiation, and adjuvant chemotherapy

Patient Characteristics

	Pre-operative Trach (n = 311, 39.5%)	No Pre-operative Trach (n = 476, 60.5%)	*P-value*
Age (mean, IQR)	**61 (54-68)**	**63 (56-70)**	**0.008**
Male Sex	260 (84)	380 (80)	0.218
Prior Radiation	**163 (52)**	**352 (74)**	**0.001**
Prior Chemotherapy	**107 (34)**	**209 (44)**	**0.010**
Glottic subsite	**189 (61)**	254 (53)	**0.048**
Pathologic T4 Stage	**154 (50)**	**104 (22)**	**0.001**
Pathologic N+ Stage	**109 (35)**	**134 (28)**	**0.049**
LVI	70 (23)	104 (22)	0.897
PNI	123 (40)	180 (38)	0.679
ENE	**66 (21)**	**76 (16)**	**0.075**
Positive Margins	**45 (14)**	**23 (5)**	**0.001**

Time between (median, months)	Pre-operative Trach (n = 311, 39.5%)	No Pre-operative Trach (n = 476, 60.5%)
Trach and Surgery (days, IQR)	59 (33-176)	--
Surgery and Recurrence	12 (5-40)	25 (8-74)
Surgery to Follow-Up	19 (8-49)	29 (11-76)

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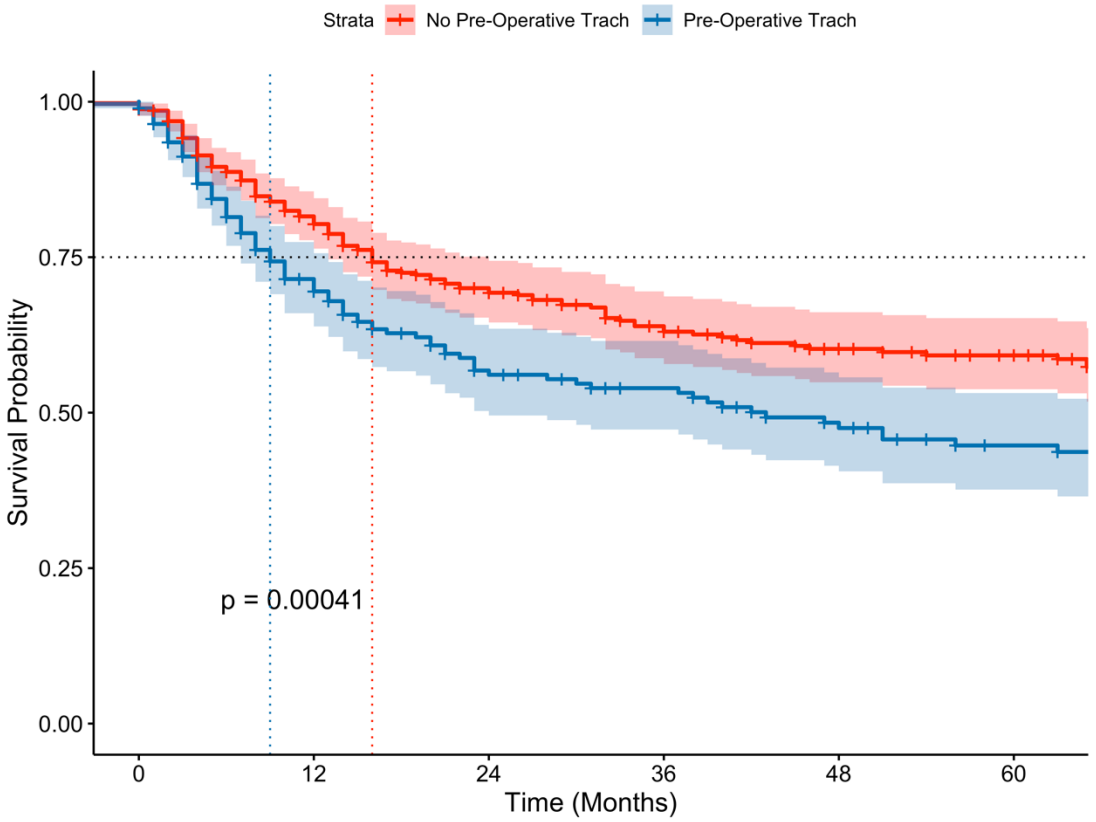
Recurrence Outcomes

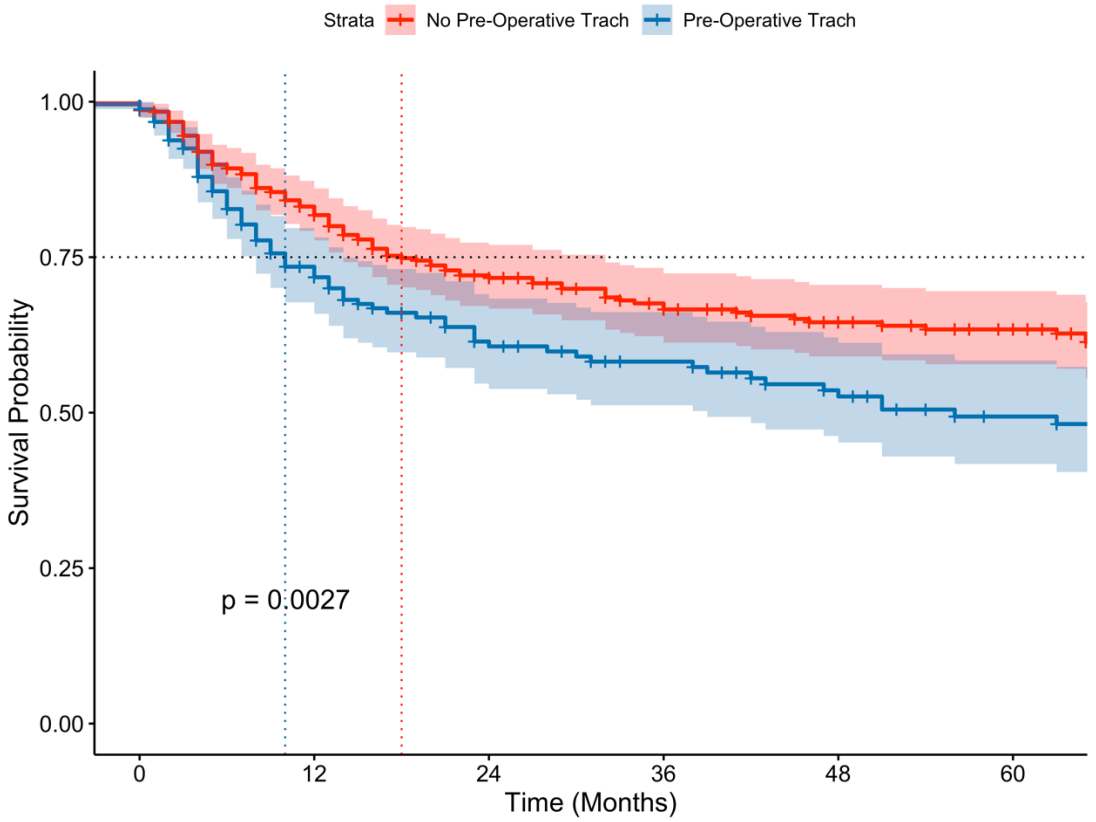
	Pre-Operative Trach	No Trach
Local	56 (18)	75 (16)
Nodal	16 (5)	18 (4)
Distant	41 (13)	54 (11)

Pre-Operative Trach Is Associated with Worse DFS and LRFS

Disease-Free Survival

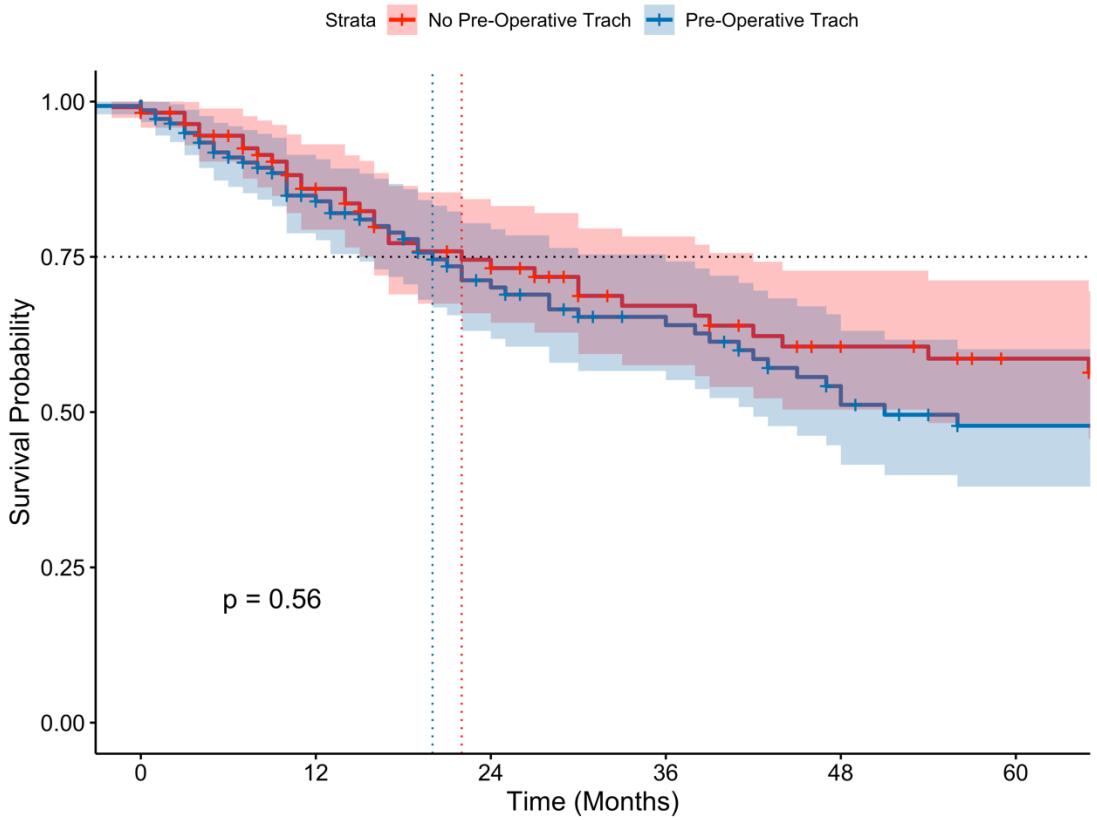


Local Recurrence-Free Survival

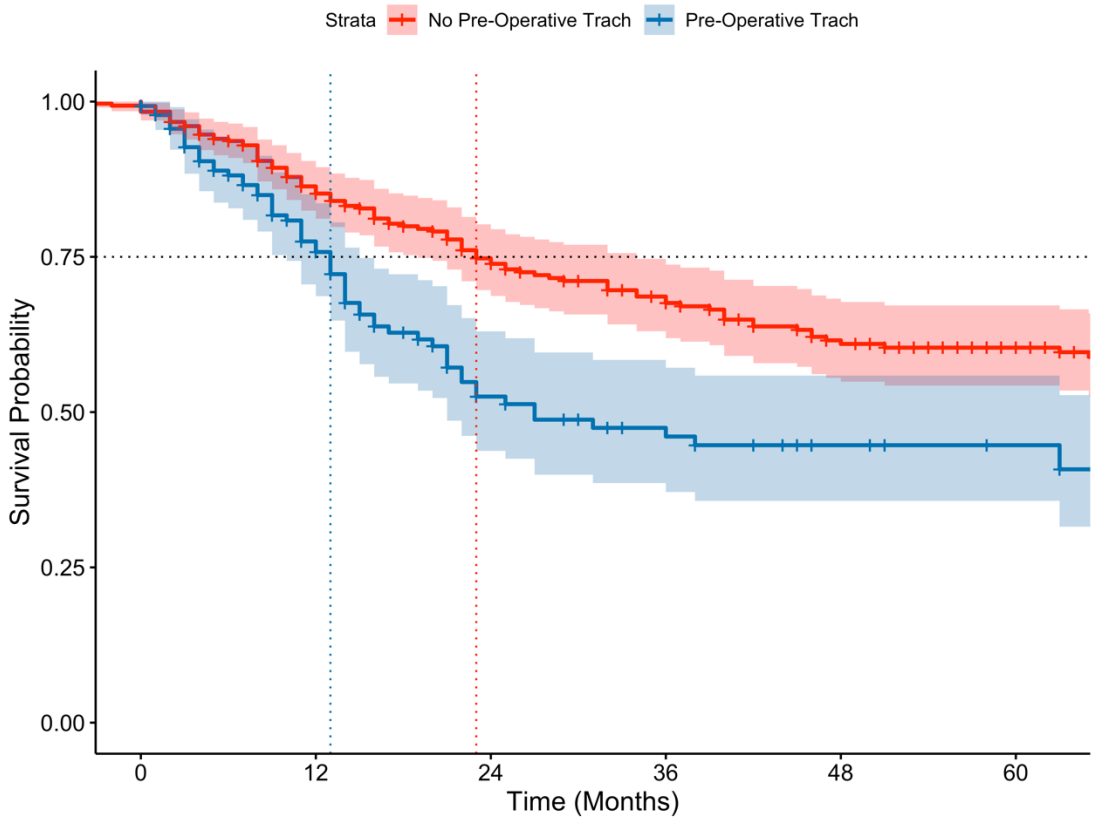


OS Differences Between Trach Cohorts Are Preserved in the Salvage Laryngectomy Setting

Primary Laryngectomy

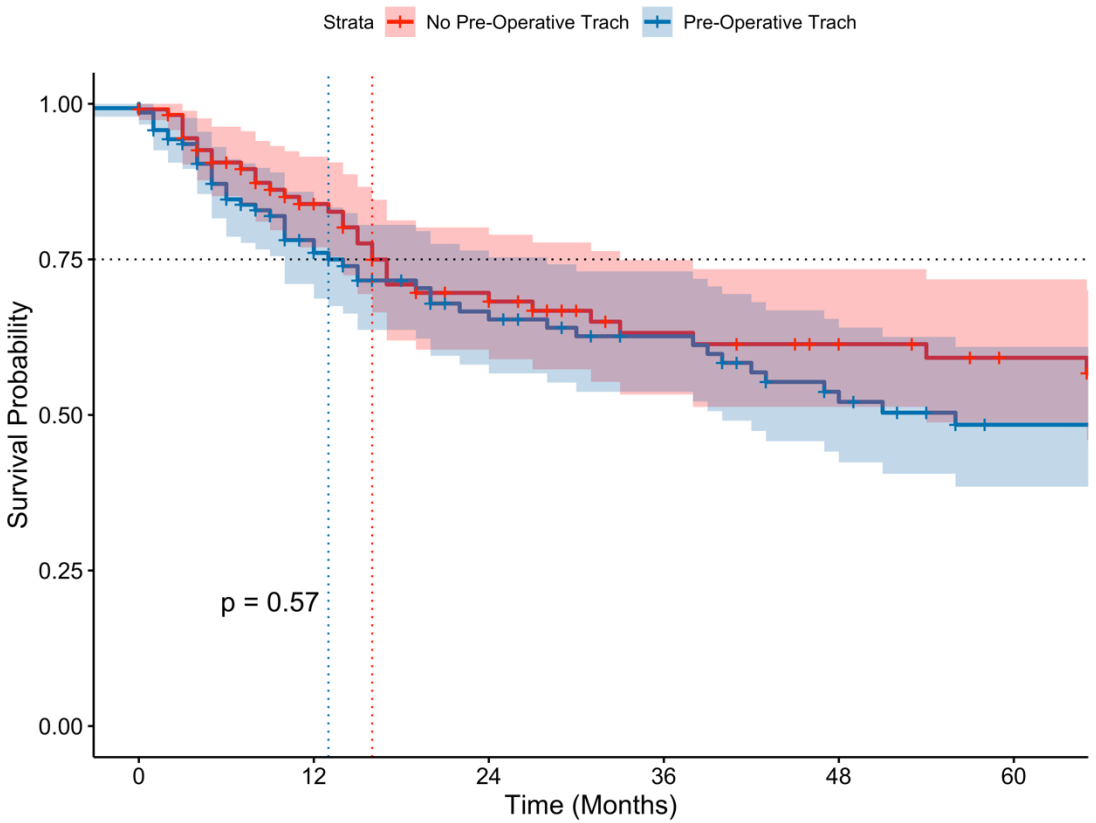


Salvage Laryngectomy

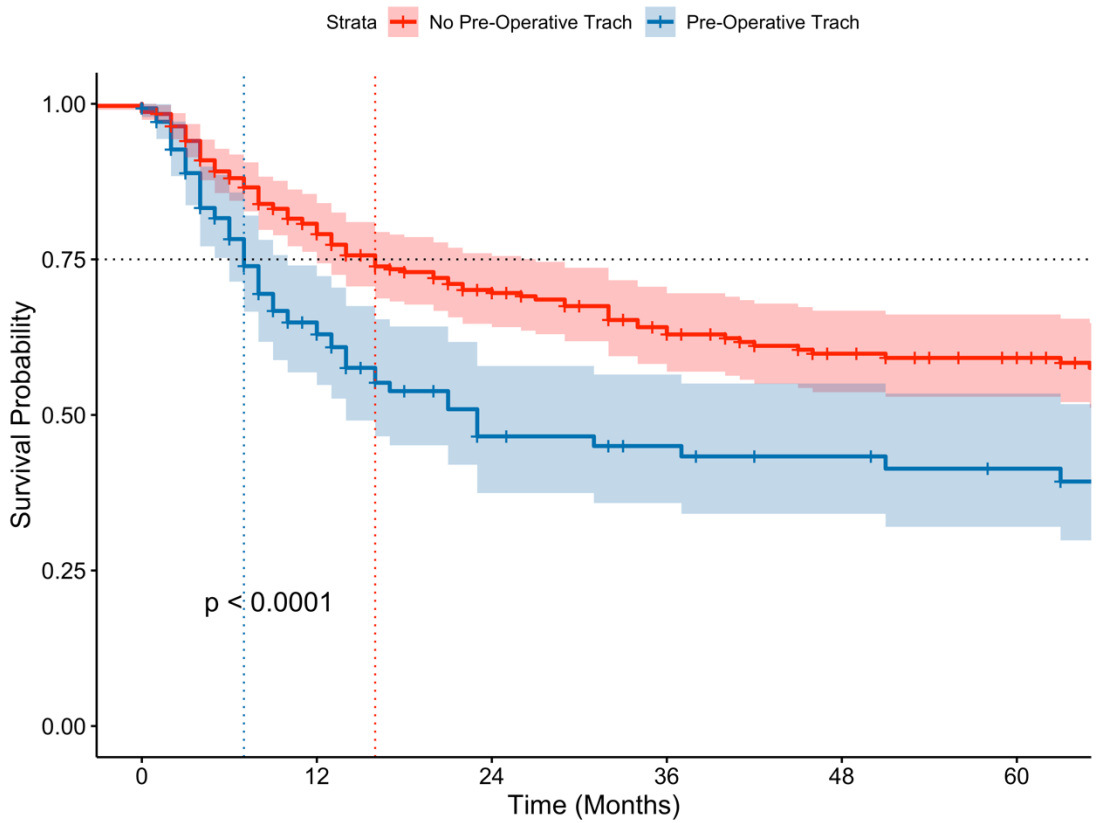


Disease-Free Survival

Primary Laryngectomy

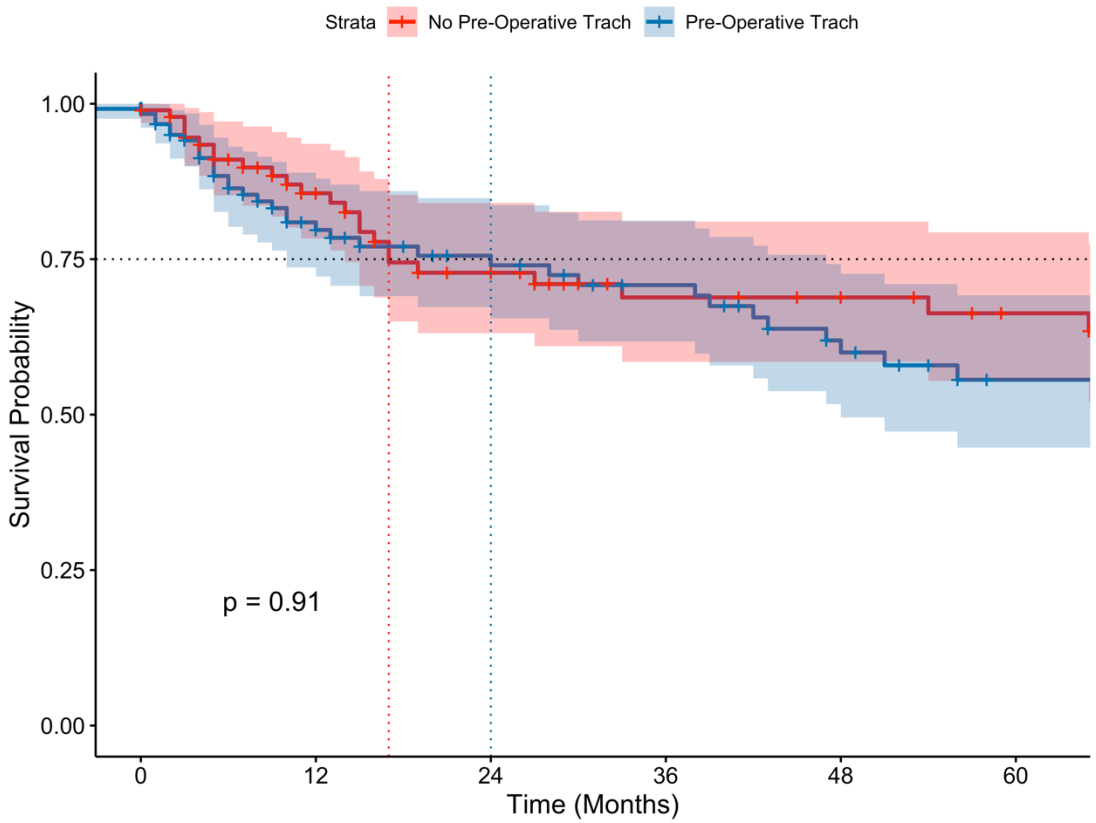


Salvage Laryngectomy

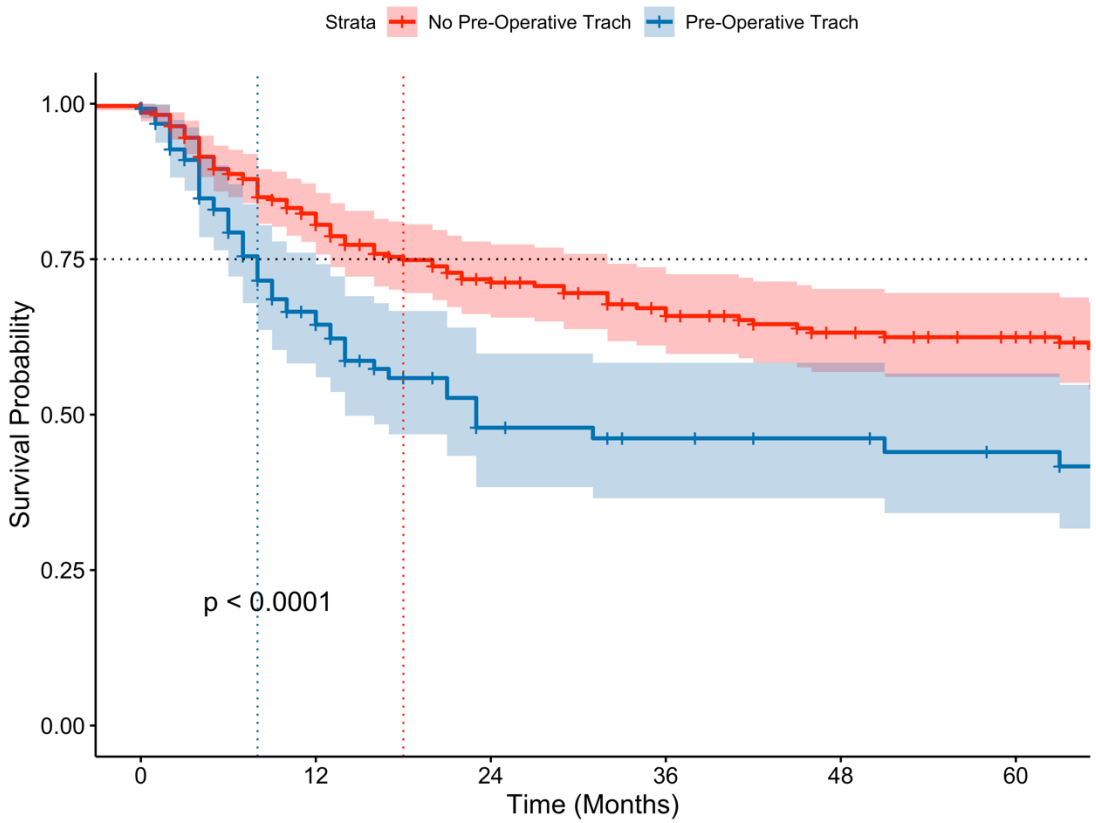


Local Recurrence-Free Survival

Primary Laryngectomy



Salvage Laryngectomy



Multivariate Cox Proportional Hazards: LRFS for Primary vs. Salvage TL

	Primary Laryngectomy			Salvage Laryngectomy		
Variable	***HR***	***95% CI***	***P Value***	***HR***	***95% CI***	***P Value***
Age	1.01	0.98-1.05	0.50	**1.03**	**1-1.06**	**0.05**
pT4 (vs pT1-pT3)	1.57	0.44-5.56	0.48	**1.16**	**0.62-2.18**	**0.023**
pN1-pN3 (vs pN0)	2.90	0.87-9.65	0.08	1.87	0.84-4.18	0.150
LVI	0.74	0.37-1.46	0.38	**2.04**	**1.18-3.54**	**0.002**
PNI	**2.09**	**0.99-4.44**	**0.054**	0.66	0.38-1.14	0.14
ENE	1.80	0.78-4.18	0.17	0.81	0.22-1.14	0.075
Adjuvant Radiation	0.57	0.24-1.39	0.22	0.81	0.23-2.82	0.74
Pre-operative Trach	1.21	0.62-2.38	0.57	**1.76**	**1.04-2.99**	**0.035**

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Conclusions

- Salvage total laryngectomy patients with preoperative tracheostomy have poorer overall survival, disease-free survival, and local recurrence-free survival.
- The association persists even after adjustment for tumor stage, prior radiation, and other pathologic factors, suggesting a potential biological or field effect related to tumor seeding or altered regional spread.

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- The association persists even after adjustment for tumor stage, prior radiation, and other pathologic factors, suggesting a potential biological or field effect related to tumor seeding or altered regional spread.

Future Directions

- Need multi-institutional cohort studies to validate study findings
- Refine risk stratification by trach timing (emergent vs. elective), duration, and subglottic extension to determine if tracheostomy itself is a causal factor or simply a surrogate marker for advanced disease

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Thank you!

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