

T4b Sinonasal Cancer: Evaluating Surgical Resection for Improved Survival Outcomes

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Introduction

Sinonasal cancer is often diagnosed at a locally advanced stage. According to NCCN guidelines, T4b sinonasal cancer is considered unresectable. However, recent studies suggest a link between improved overall survival and the inclusion of surgery in treating T4b sinonasal squamous cell carcinoma. This led us to evaluate our institution's experience and the overall survival outcomes in T4b sinonasal cancer patients who received surgical resection as part of treatment versus those who received non-surgical treatment.

Objective

 To determine whether surgical resection as part of treatment improves 2-year overall survival for patients with T4b sinonasal cancer.

Methods and Materials

- Retrospective chart review.
- Single tertiary care academic center.
- ICD 10 codes: C30.0 (Malignant neoplasm of the nasal cavity), C31.0 (maxillary sinus), C31.1 (ethmoidal sinus), C31.2 (frontal sinus), C31.3 (sphenoid sinus), C31.8 (overlapping sites of accessory sinuses), and C31.9 (accessory sinus, unspecified).

Inclusion criteria:

1. 18 years or older
2. Diagnosis of sinonasal cancer of any histological subtype confirmed with a pathology report
3. Pre-treatment disease stage of T4b in their medical record
4. Treatment with curative intent

2 groups:

- Surgical resection as part of treatment
- Non-surgical treatment

Primary endpoint: 2-year overall survival. (Overall survival: time from diagnosis to the date of death or last contact with the patient)

Table 1. Patient and Group characteristics

	Overall	Surgery as part of treatment	Surgery not included as part of treatment	P value*
	N (%)	N (%)	N (%)	
Number of patients	23	12 (52.2%)	11 (47.8%)	
Age at diagnosis, y, mean	64.26 (SD 14.6)	65.1 (SD 15.2)	63.4 (SD 14.7)	0.785
	Range 39-98	Range: 39-98	Range: 46-94	
Age, y				1.0
>=65	11 (47.8%)	6 (50%)	5 (45.5%)	
<65	12 (52.2%)	6 (50%)	6 (54.5%)	
Sex				0.667
Male	16 (69.6%)	9 (75%)	7 (63.6%)	
Female	7 (30.4%)	3 (25%)	4 (36.4%)	
Race				0.371
White	16 (69.6%)	7 (58.3%)	9 (81.8%)	
Other	7 (30.4%)	5 (41.7%)	2 (18.2%)	
Nodal involvement				0.611
N0	16 (69.6%)	10 (83.3%)	6 (54.5%)	
N+	5 (21.7%)	2 (16.7%)	3 (27.3%)	
N unknown	2 (8.7%)	0 (0%)	2 (18.2%)	
Histology				0.795
Squamous cell carcinoma	11 (47.8%)	6 (50%)	5 (45.5%)	
Adenocarcinoma	1 (4.3%)	0 (0%)	1 (9.1%)	
Ameloblastic carcinoma	1 (4.3%)	1 (8.33%)	0 (%)	
Undifferentiated carcinoma	3 (13.0%)	1 (8.33%)	2 (18.2%)	
Neuroendocrine carcinoma	3 (13.0%)	1 (8.33%)	2 (18.2%)	
Olfactory neuroblastoma	1 (4.3%)	1 (8.33%)	0 (%)	
Myoepithelial carcinoma	1 (4.3%)	1 (8.33%)	0 (%)	
Melanoma	2 (8.7%)	1 (8.33%)	1 (9.1%)	
Survival over 24 months				
Yes	13 (56.5%)	10 (83.3%)	3 (27.3%)	0.012
No	10 (43.5%)	2 (16.7%)	8 (72.7%)	

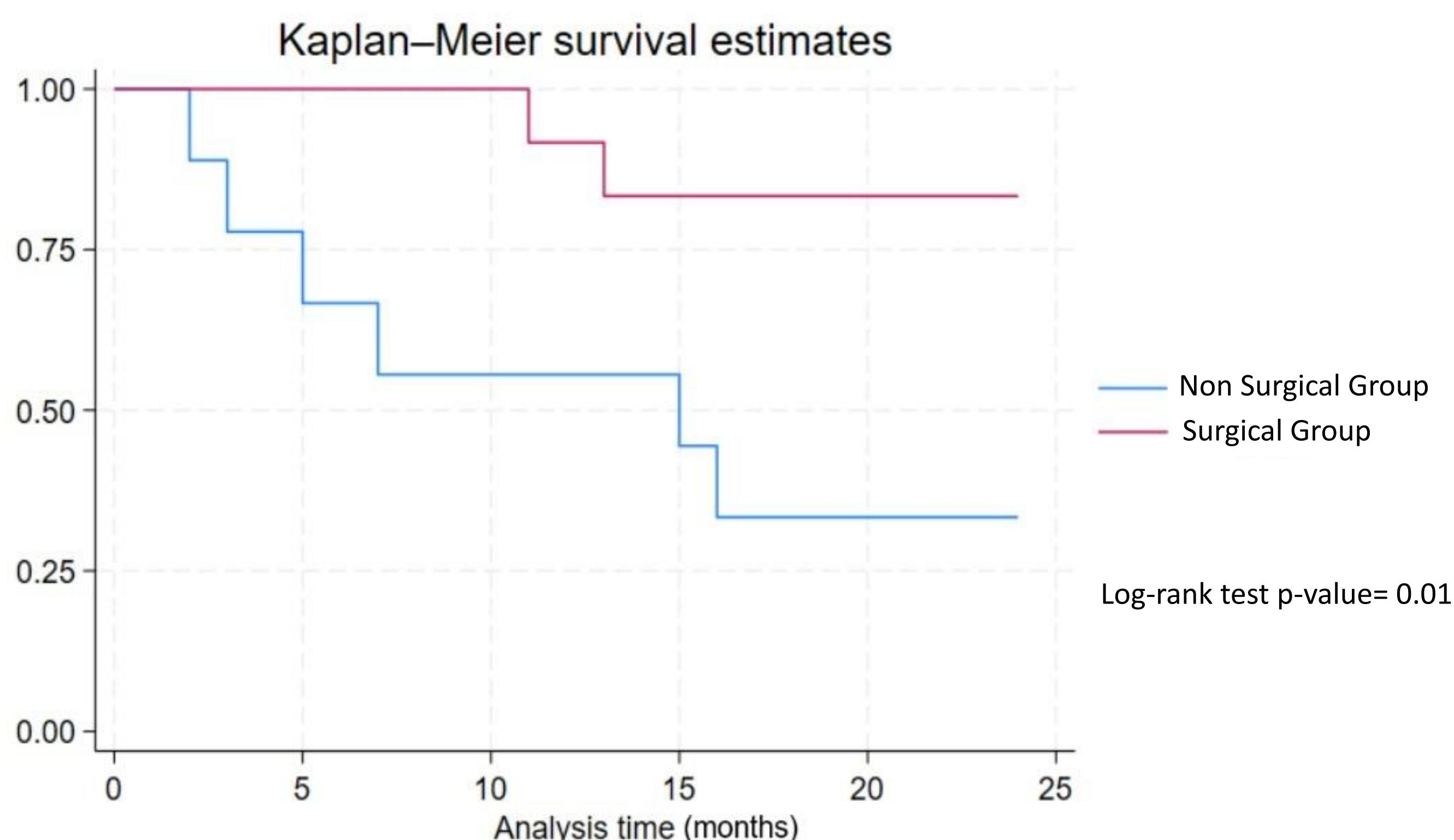
*P values calculated using Fisher's exact test for the categorical variables, and T test for continuous variables

Results

Table 2. Univariable logistic regression for Factors Associated with Survival over 24 months in patients with sinonasal cancer stage T4B

	Odds ratio (95% CI)	p-value
Age (<65 vs ≥65)	0.85 (0.16-4.47)	0.855
Sex (Male vs Female)	2.5 (0.37-16.89)	0.347
Race (Non-white vs White)	0.12 (0.012-1.34)	0.087
Nodal involvement (N0 vs N+)	0.08 (0.07-0.98)	0.048
Surgery as part of treatment (No vs Yes)	13.33 (1.77-100.14)	0.012
Type of Cancer (Squamous cell carcinoma vs Others)	0.85 (0.16-4.47)	0.855

Figure 1. Kaplan-Meier estimate of 2-year overall survival in the surgical and non-surgical groups.



Discussion

- Inclination towards improved outcomes with multimodal treatment algorithms.
- Recent studies challenge the established narrative that patients with advanced locoregional sinonasal cancer are not surgical candidates.
- Retrospective nature with small sample size limits the statistical power of the study and restricts the ability to perform more robust multivariate analyses or examine subgroups for more detailed analysis.
- Future research: Multi-institutional prospective data, explore factors influencing surgical decisions for T4b sinonasal cancer.

Conclusion

Surgical intervention may confer survival benefits for patients diagnosed with T4b sinonasal cancer, challenging the existing guidelines. Given the observed survival benefit, these results advocate for reconsideration of treatment algorithms. Larger-scale research is essential to confirm these outcomes due to the small sample size.

References

Karp JM, Hu KS, Persky M, et al. Including Surgical Resection in the Multimodal Management of Very Locally Advanced Sinonasal Cancer. Otolaryngol - Head Neck Surg (United States). 2022;167(3):494-500. doi:10.1177/01945998211067503
 Wang Z, Zhang J, Yang B, et al. T4b Sinonasal Squamous Cell Carcinoma: Surgery Plus Radiotherapy May Contribute to Prolonged Survival. Laryngoscope. 2023;133(9):2222-2231. doi:10.1002/lary.30545
 Kim J, Hong MH, Kim HR, et al. Neoadjuvant chemotherapy followed by definitive local treatment in locally advanced sinonasal squamous cell carcinoma. Front Oncol. 2024;14(October):1-11. doi:10.3389/fonc.2024.1488066
 Amin MB, Greene FL, Edge SB, et al. The Eighth Edition AJCC Cancer Staging Manual: Continuing to build a bridge from a population-based to a more "personalized" approach to cancer staging. JCA Cancer J Clin. 2017;67(2):93-99. doi:10.3322/caac.21388
 National Comprehensive Cancer Network. Head and neck guidelines. NCCN guidelines version 1.2025. Accessed December 1, 2024. https://www.nccn.org/professionals/physician_gls/pdf/head-and-neck.pdf

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