

Sinonasal Cancer: a 7-year experience at a single institution including surgical management of advanced cancer stages

Beth Israel Lahey Health
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Medical Center



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Introduction

Sinonasal cancer is a rare and aggressive malignancy. Early diagnosis is challenging, frequently going undetected until it reaches a locally advanced stage. These tumors account for approximately 5% of all head and neck cancers and are histologically diverse, with squamous cell carcinoma being the most common type. Treatment typically involves surgical resection, often combined with adjuvant therapy. However, due to the proximity of these tumors to vital structures, achieving complete resection is challenging. Given the rarity and complexity of this disease, there is a need for ongoing characterization of this pathology, treatment approaches and clinical outcomes.

Objective: To describe our experience with patients diagnosed with sinonasal cancer, detailing their stage at diagnosis, tumor characteristics, treatment approaches and outcomes.

Methods and Materials

Exempt by the Institutional Review Board at Beth Israel Deaconess Medical Center.

We conducted a retrospective chart review. Patients were identified by using the ICD 10 codes: C30.0, C31.0, C31.1, C31.2, C31.3, C31.8, C31.9. We included the medical records of 67 patients with sinonasal cancer diagnosed between October 2017 and February 2024 at Beth Israel Deaconess Medical Center, a tertiary care center.

Collected data included demographic information, tumor characteristics, treatment and survival outcomes.

Results

A total of 67 patients were included. Forty-seven (70.1%) were male, 49 (73.1%) were white, 88% non-Hispanic, and 46.3% never smokers. Half of the tumors primary site were the sinuses (50.8%), being the maxillary sinus the most frequent origin (44.1%).

Squamous cell carcinoma was the most common type of histology (52.2%), followed by adenocarcinoma and undifferentiated carcinoma (9% each).

Staging of the tumor at diagnosis was a Stage IV in 64.2% of the cases, being IVb the most frequent subgroup (55.8%)

The majority of patients had surgery as part of their treatment (76.1%), most commonly with adjuvant therapy

A 77.4% of patients were alive at the last recorded follow up, with 61.2% of patients having no evidence of disease.

Table 1. Patient's characteristics

Variable						Total
Age (years)	Mean 62.82	SD 12.34	Range 28-94			67
Gender	Female 20 (29.9%)	Male 47 (70.1%)				67
Race	White 49 (73.1%)	Black 7 (10.5%)	Other 2 (3%)	Unknown 9 (13.4%)		67
Hispanic	Yes 2 (3%)	No 59 (88%)	Unknown 6 (9%)			67
Marital Status	Married 19 (51.4%)	Single 9 (24.3%)	Other 5 (13.5%)			37
Smoking status	Current 5 (12.20%)	Former 17 (41.46%)	Never 19 (46.34%)			41
BMI (Kg/m2)	Mean 26.36	SD 5.1	Range 17.6- 41.12			40
Tumor primary site	Sinus 34 (50.8%)	Nasal cavity 23 (34.3%)	Sinonasal 10 (14.9%)			67
Ethmoid	6 (17.7%)					
Frontal	2 (5.9%)					
Maxillary	15 (44.1%)					
Sphenoid	3 (8.8%)					
NA	8 (23.5%)					
Histological diagnosis	Squamous cell carcinoma 35 (52.2%)	Adenocarcinoma 6 (9%)	Undifferentiated carcinoma 6 (9%)	Melanoma 4 (6%)	Neurogenic tumors 7 (10.5%)	Other 9 (13.3%)
Cancer Staging at diagnosis	Stage I 7 (10.5%)	Stage II 8 (11.9%)	Stage III 9 (13.4%)	Stage IV 43 (64.2%)		
				IVa 17 (39.5%)		
				IVb 24 (55.8%)		
				IVc 2 (4.7%)		

Table 2. Overall treatment and outcomes

Variable	Total					
Initial treatment	Surgery + radiation 22 (32.8%)	Surgery + chemoradiation 21 (31.3%)	Chemoradiation 10 (14.9%)	Surgery 8 (11.9%)	Palliative / Other 6 (9%)	67
Type of surgery	Open 33 (49.2%)	Endoscopic 34 (50.8%)	67			
Recurrence	Yes	No	67			
	11 (16.4%)	56 (83.6%)				
No evidence of disease at last follow-up	Yes	No	62			
	38 (61.29%)	24 (38.71%)				
Deceased	Yes	No	62			
	14 (22.9%)	48 (77.4%)				
Recurrence	Yes	No	67			
	11 (16%)	56 (84%)				
Follow-up (months)	Median 30	IQR 8-48	62			
	35.5	12-60				
Survival over 36 months	Stage I 7 (100%)	Stage II 7 (87.5%)	Stage III 8 (88.9%)	Stage IVa 15 (88.2%)	Stage IVb 10 (50%)	Stage IVc 0

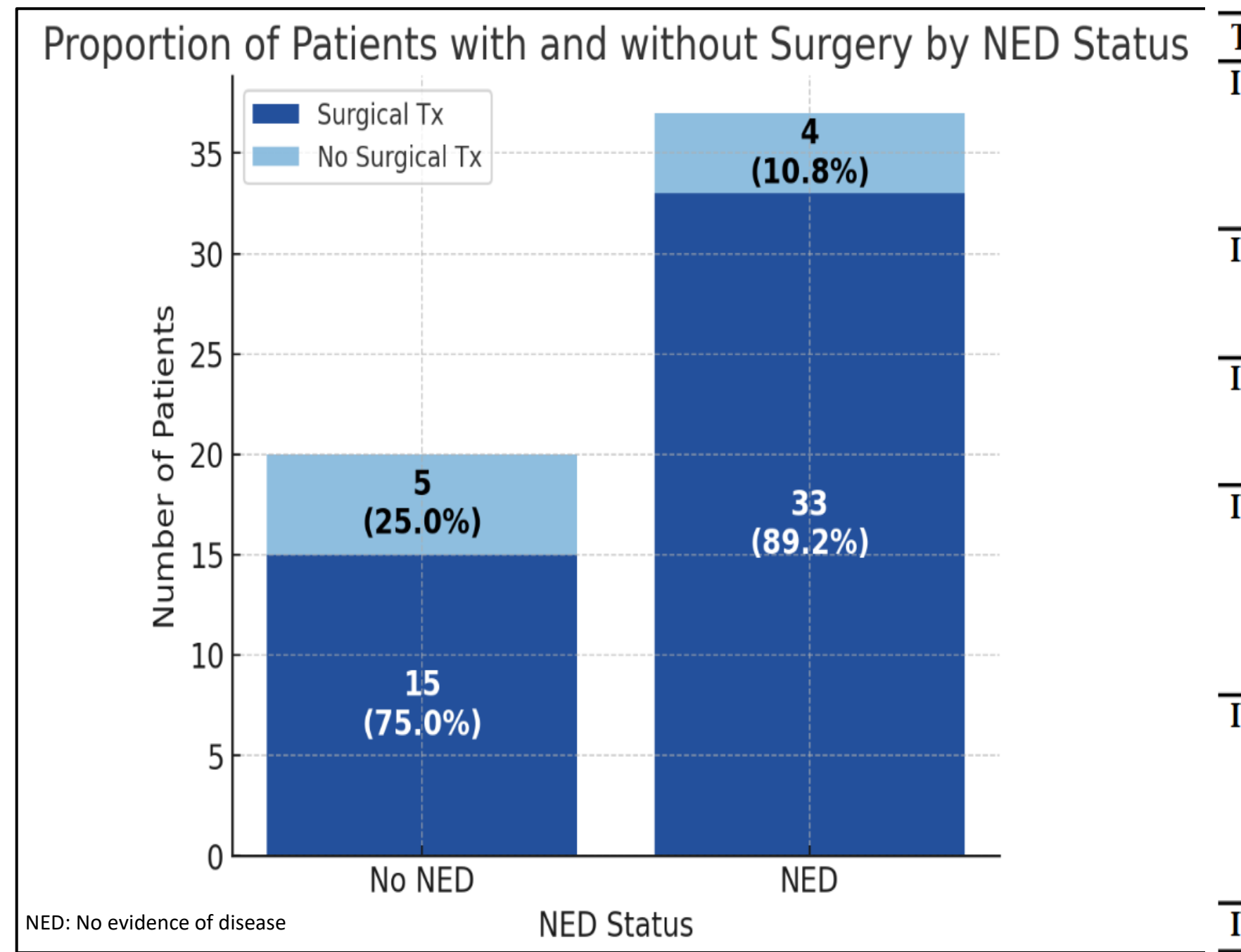
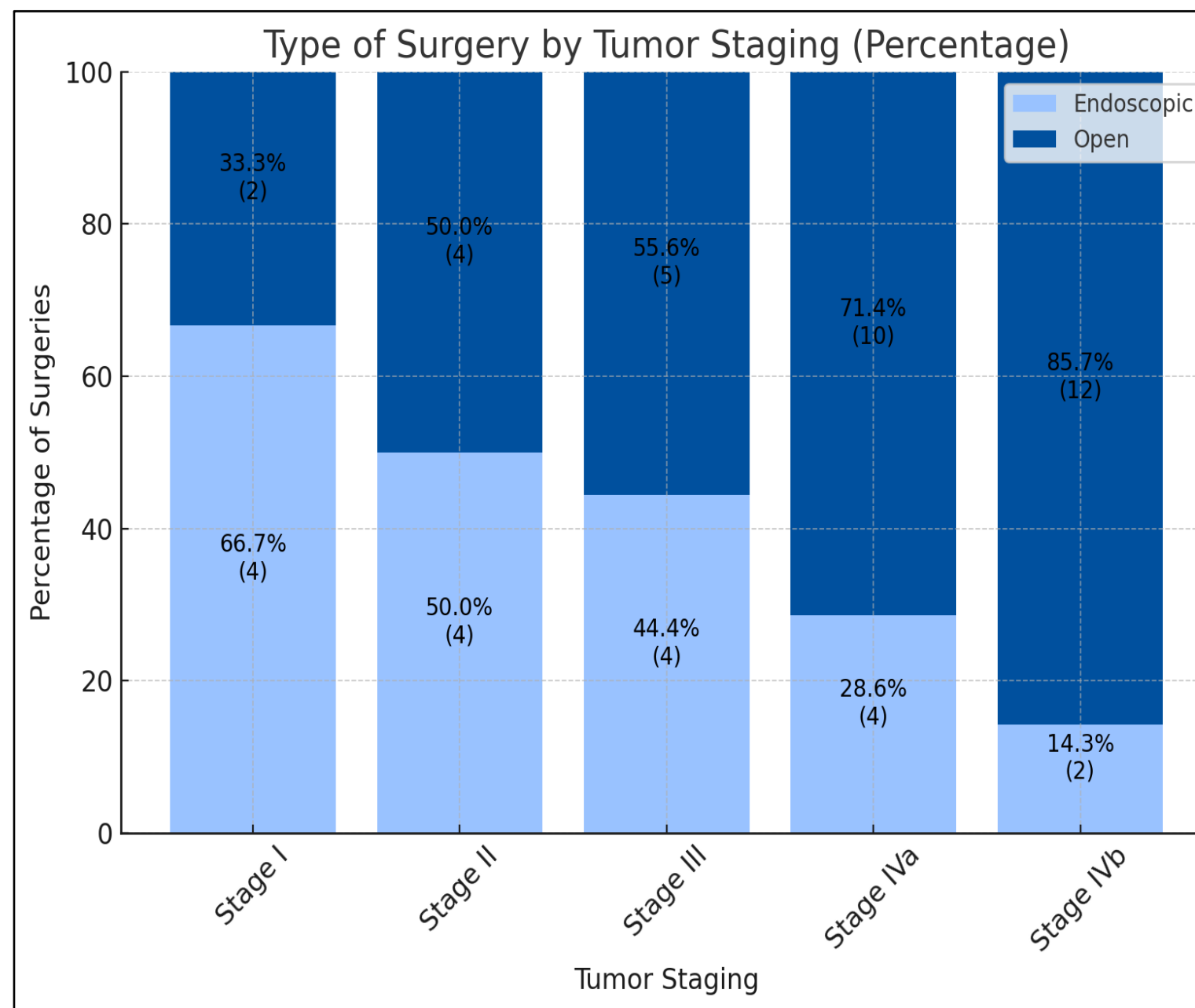
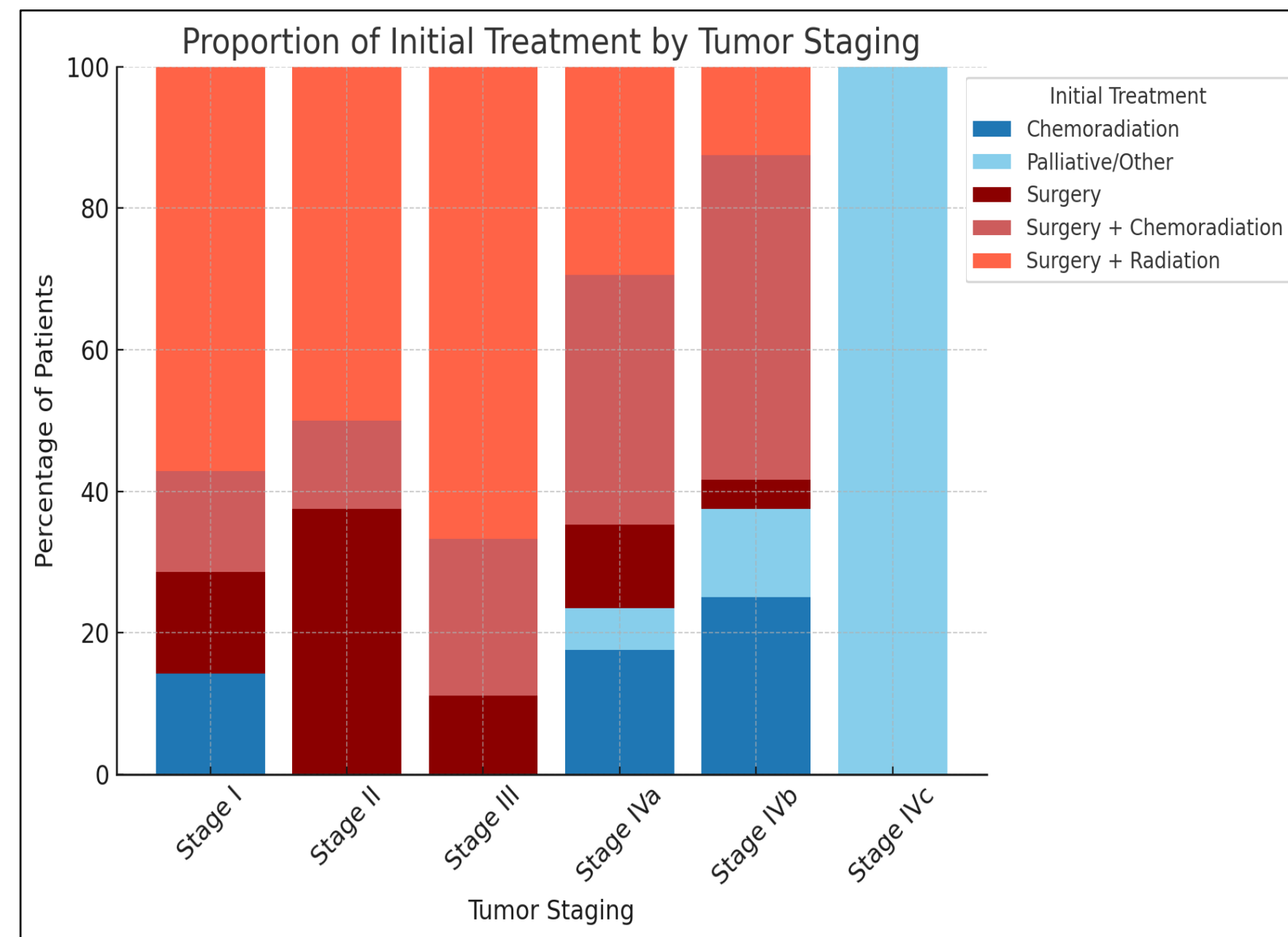
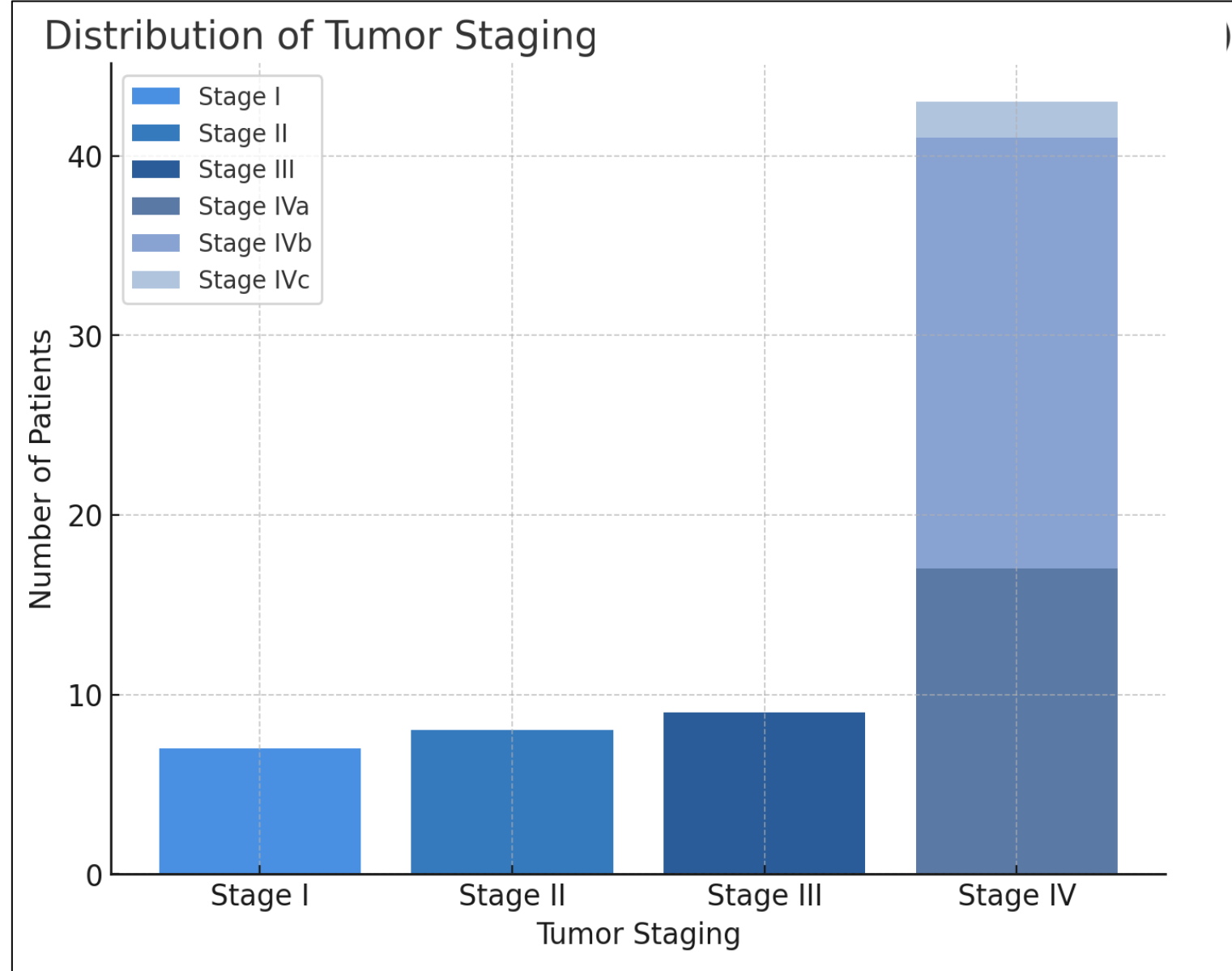
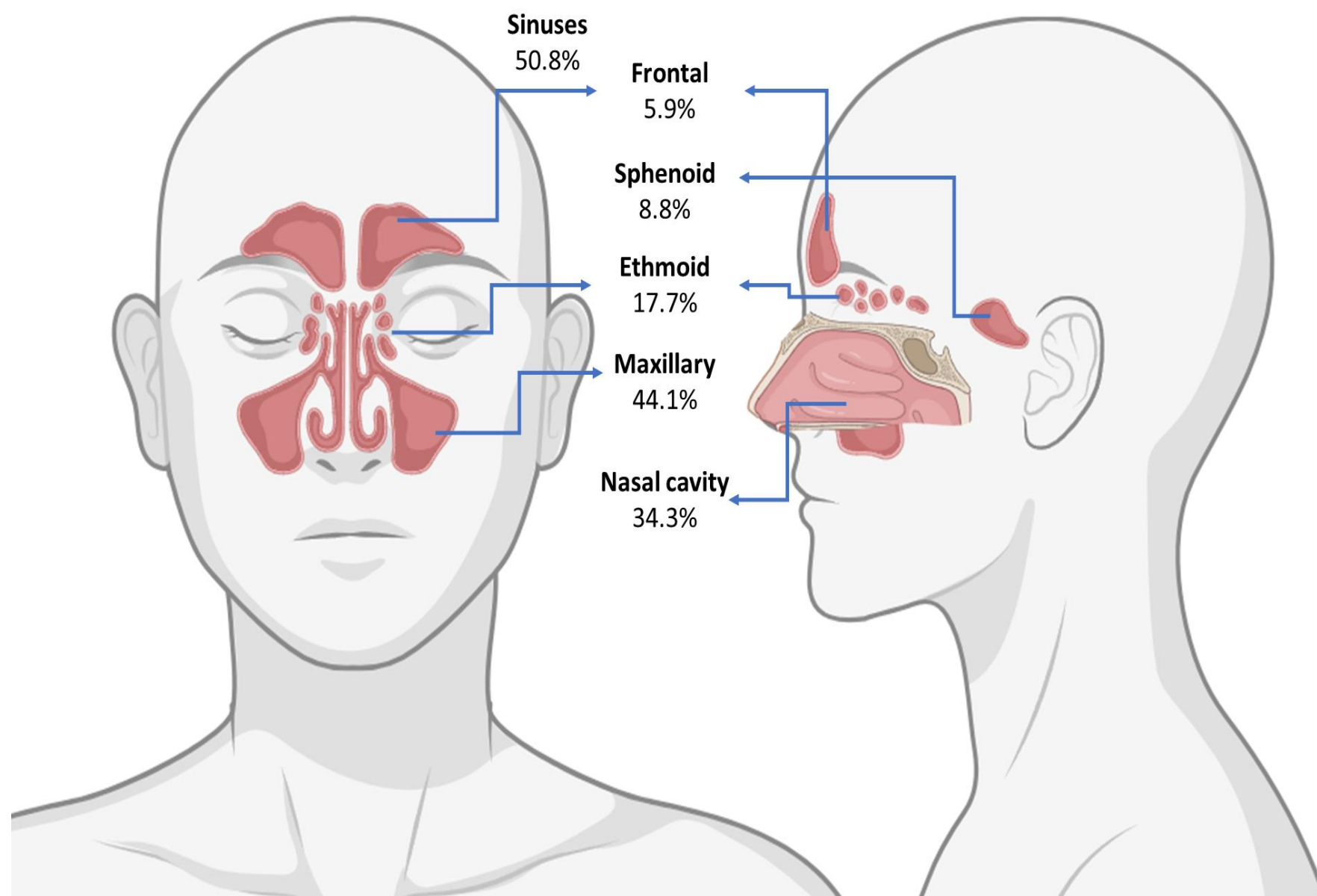


Table 3. Treatment and outcomes according to Staging

T Staging	Initial treatment	Last outcome status
I	Surgery + radiation	4 Recurrence 1, NED 3
	Surgery + chemoradiation	1 NED 1
	Surgery	1 NED 1
	Chemoradiation	1 Metastasis 1
II	Surgery + radiation	4 NED 3, Metastasis 1
	Surgery + chemoradiation	1 NED 1
	Surgery	3 NED 3
III	Surgery + radiation	6 NED 5, Metastasis 1
	Surgery + chemoradiation	2 NED 2
	Surgery	1 NED 1
IVa	Surgery + radiation	5 Deceased 2, NED 3
	Surgery + chemoradiation	6 NED 4, Metastasis 1
	Surgery	2 Recurrence 1, NED 1
	Chemoradiation	3 NED 3
	Palliative / Other	1 Metastasis 1
IVb	Surgery + radiation	3 Deceased 2, NED 1
	Surgery + chemoradiation	11 Deceased 4, NED 5, Lost to follow up 2
	Surgery	1 Lost to follow up
	Chemoradiation	6 Deceased 4, NED 1, Lost to follow up 1
	Palliative / Other	3 Deceased 1, Lost to follow up 2
IVc	Palliative/ Other	2 Deceased 2

Discussion

Our findings align with previous results in literature, with a male predominance, squamous cell carcinoma being the most common type followed by adenocarcinoma, and most patients being diagnosed at Stage IV.

The majority of tumor originated from the sinuses, which defers from other studies. However, there were 14 patients that did not specified the origin of the tumor.

The percentage of endoscopic approaches tended to decrease with higher tumor staging, likely due to case complexity.

Surgery as part of treatment was predominant even in T4b cases, with surgery combined with adjuvant therapy being the preferred modality.

A higher percentage of patients achieved NED when surgery was included in their treatment. Even with NCCN guidelines suggesting not to perform surgery in T4b cases, patients tend to have better outcomes when including it as part of treatment.

Conclusions

The treatment of sinonasal cancer is challenging, mainly due to its late detection and the difficulty in achieving complete resection. Despite aggressive treatment combining surgery and adjuvant therapies, recurrence and metastasis remain significant issues. However, more than half of our patients treated with curative intent showed no evidence of disease at their last follow-up. We believe surgery should be part of the initial treatment even for advanced stages. Continued advancements in early diagnosis and targeted therapies are crucial to improving outcomes for these patients.

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References

Thawani R, Kim MS, Arastu A, et al. The contemporary management of cancers of the sinonasal tract in adults. *CA Cancer J Clin.* 2023;73(1):72-112. doi:10.3322/caac.21752
Michel J, Fakhry N, Mancini J, et al. Sinonasal squamous cell carcinomas: Clinical outcomes and predictive factors. *Int J Oral Maxillofac Surg.* 2014;43(1):1-6. doi:10.1016/j.ijom.2013.07.741
Homma A, et al. Management for squamous cell carcinoma of the nasal cavity and ethmoid sinus: A single institution experience. *Auris Nasus Larynx* (2015), <http://dx.doi.org/10.1016/j.anl.2015.02.004>
López, F., Lund, V.J., Suárez, C. *et al.* The Impact of Histologic Phenotype in the Treatment of Sinonasal Cancer. *Adv Ther* **34**, 2181–2198 (2017). <https://doi.org/10.1007/s12325-017-0605-9>