

Abstract

- Sinonasal malignancies with laryngeal metastases are rare
- We present four patients with sinonasal malignancies with intraluminal subglottic and tracheal metastases.
- Sinonasal malignancies with laryngeal metastases have significant morbidity and mortality.

Introduction

- Sinonasal malignancies account for 3-5% of all head and neck cancers [1].
- Tumor staging, including the status of regional and distant metastasis, is essential in establishing a diagnosis, determining prognosis, and formulating treatment options to ensure the best oncologic outcomes possible [1].
- The most common sites of distant metastasis for sinonasal tumors are the lung, brain, bone, and liver [2].
- We report the first case series of sinonasal malignancies with metastases to the subglottis and trachea

Case 1: Esthesioneuroblastoma (ENB)

A 62-year-old female presented with right-sided nasal obstruction and epistaxis. An MRI Face demonstrated a 4 cm right nasal cavity mass extending from the cribriform plate to the middle turbinate (Figure 1A). She underwent endoscopic resection of the tumor with nasoseptal flap reconstruction in July of 2019. Pathology confirmed high-grade ENB. She completed 6 weeks of adjuvant chemoradiation in September and was disease free after her first surveillance imaging. In June of 2023, she endorsed progressive orthopnea. An MRI showed no evidence of locoregional recurrence; however, a 1.3 cm exophytic mass was noted in the subglottis (Figure 1B). Biopsy confirmed ENB. This site received six weeks of chemoradiation until October 2023. In December, neither her CT scan nor in-office flexible laryngoscopy revealed any evidence of disease (Figure 1C). She continues to remain disease-free.

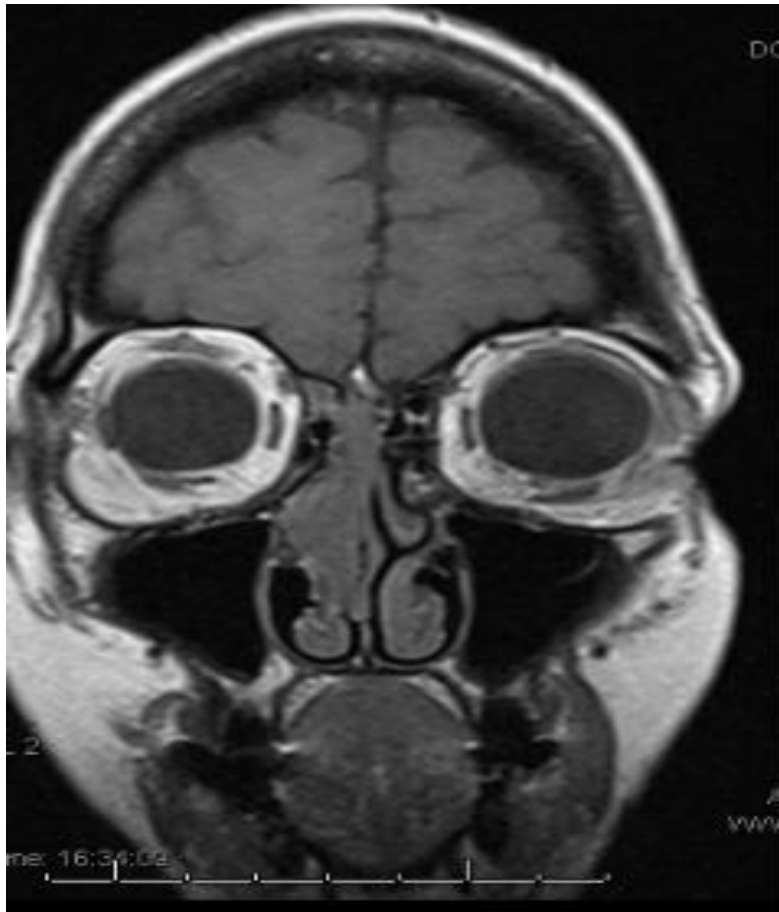


Figure 1A: An MRI Face demonstrated a 4 cm right nasal cavity mass extending from the cribriform plate to the middle turbinate

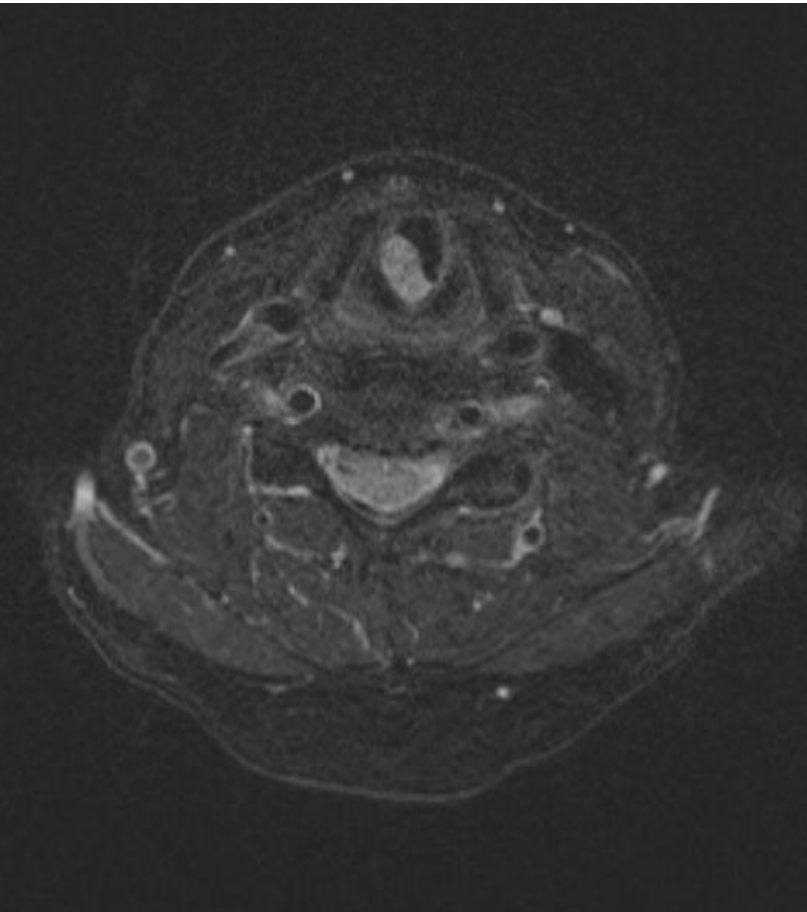


Figure 1B: MRI Face on 06/2023 demonstrated a focal nodularity at the right subglottic larynx



Figure 1C: CT neck 12/2023 showing no evidence of disease in the treated subglottis.

Case 2: Sinonasal Undifferentiated Carcinoma

A 33-year-old female presented with a blocked right tear duct. MRI demonstrated a right maxillary sinus mass. She underwent endoscopic resection, medial maxillectomy, DCR, with adjuvant chemoradiation in 2015 (Figure 2A). Final pathology confirmed sinonasal undifferentiated carcinoma. Her disease recurred twice, requiring endoscopic resection in April 2019 and August 2019. A metastatic site in the left trachea was also noted, treated with chemotherapy and SBRT (Figure 2B). She was on maintenance chemotherapy, but after stopping this regimen in November of 2020, she developed an additional site of recurrence in the left subglottis (Figure 2C). She underwent a total laryngectomy, left thyroid lobectomy, and bilateral neck dissection in December of 2020 with post-operative radiation. She had biopsy-proven recurrence in the right ethmoid sinus in May 2021, and she was enrolled in a phase I clinical trial in which she received immunotherapy. She unfortunately passed in September 2021.



Figure 2A: MRI Face in 2015 with postsurgical changes in the right maxillary sinus, now with enhancement in the left maxillary and ethmoid sinuses

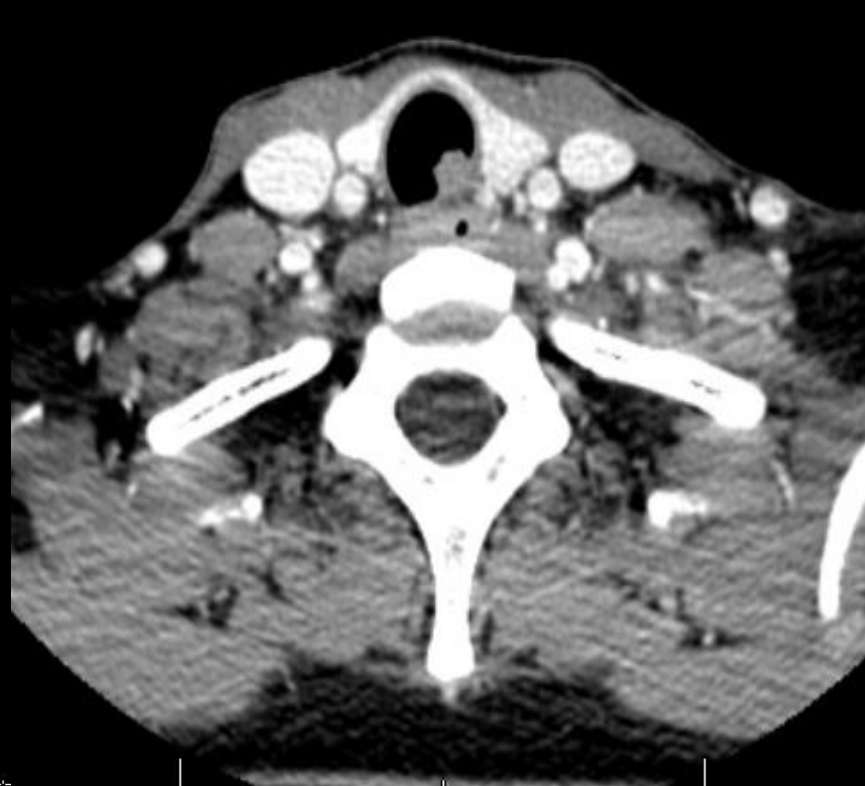


Figure 2B: CT neck 08/2019 showing a 0.7 cm exophytic left tracheal mass

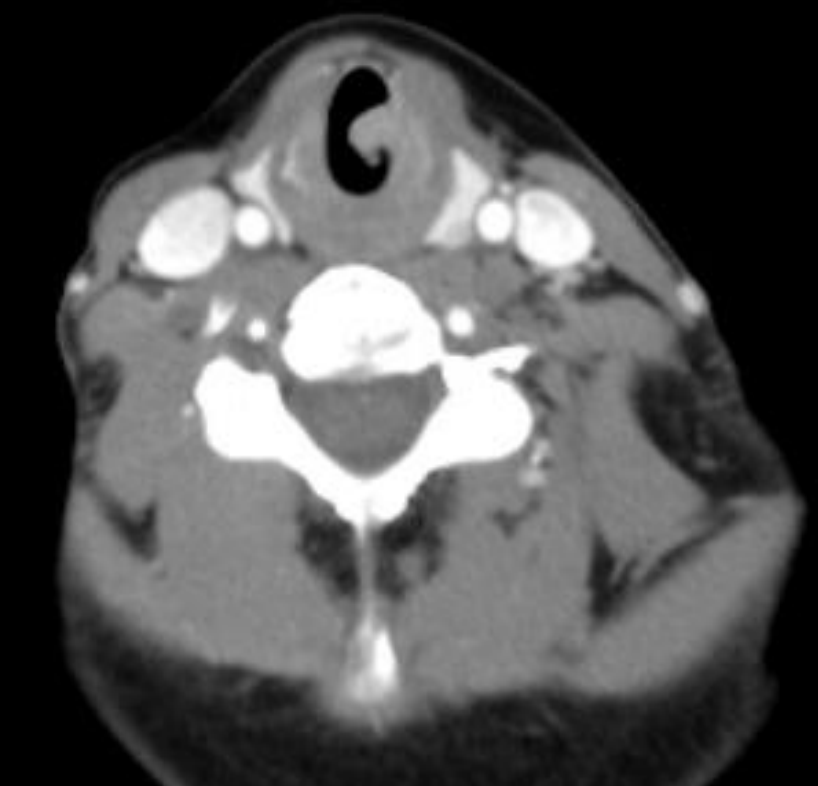


Figure 2C: CT neck 11/2020, demonstrating a 0.8 cm polypoid mass along the left side of the subglottis

Case 3: Inverted Papilloma-SCC

A 46-year-old-male initially presented to an outside hospital with recurrent epistaxis. CT scan revealed a left maxillary sinus mass (Figure 3A). Biopsy proven inverted papilloma was endoscopically resected in 2018, followed by adjuvant radiation therapy given a focus suspicious for squamous cell carcinoma. The tumor was noted to be attached to the left lateral nasal wall. Locoregional recurrence was treated with a left total maxillectomy, left neck dissection, and chimeric anterolateral thigh free flap reconstruction in July of 2020, followed by adjuvant radiation therapy. In November of 2020, a subglottic mass was noted on surveillance imaging. Biopsy demonstrated invasive squamous cell carcinoma of similar pathology to the maxillary sinus lesion. He was enrolled in a immunotherapy trial. As of his most recent surveillance PET scan in February 2024, this patient has remained disease free for over one year.



Figure 3A: CT Max/Fac 08/2018 showed a 5.6 cm tumor in the left maxillary sinus with extension to the skull base, nasal floor, and nasopharynx

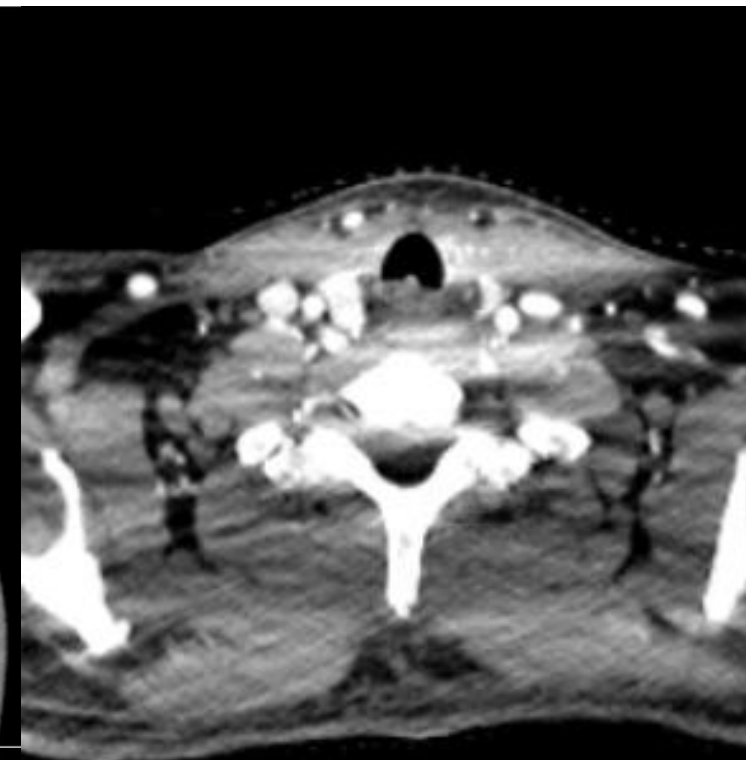


Figure 3B: CT neck 07/2020 demonstrated an isodense posterior subglottic mass.

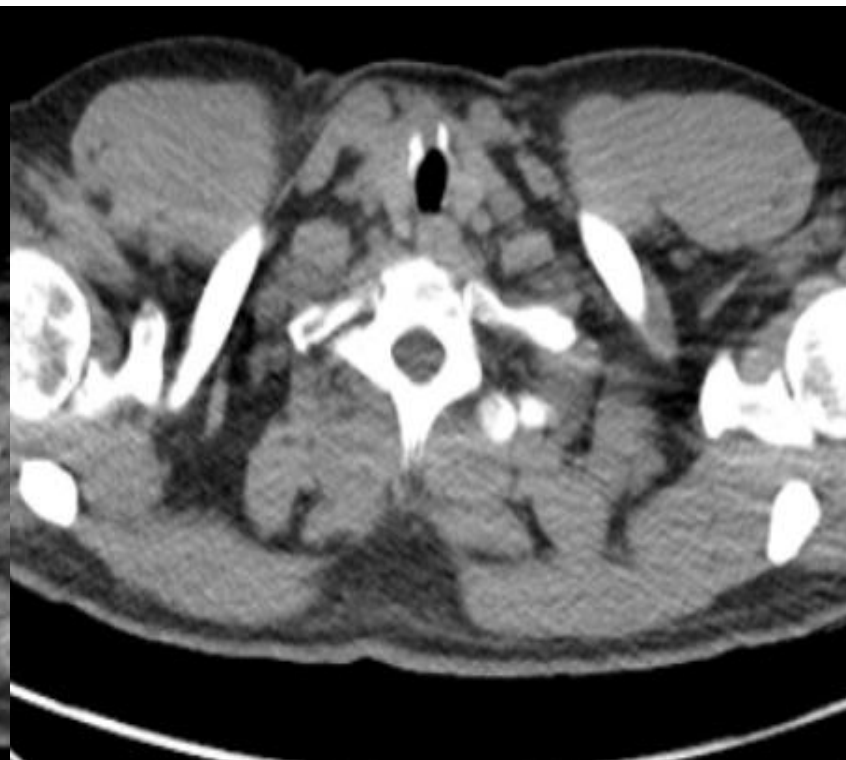


Figure 3C: PETCT 02/2024 demonstrated no evidence of disease in the subglottis after immunotherapy

Case 4: Sinonasal Undifferentiated Carcinoma

A 54-year-old female had T4N0M0 sinonasal undifferentiated carcinoma diagnosed in 2000. The tumor was endoscopically resected and treated with adjuvant chemoradiotherapy, completed January of 2001 (Figure 4A). In November of 2002, she presented with wheezing. CT scan revealed a mass in the subglottic larynx (Figure 4B). She underwent a biopsy and tracheostomy tube placement. Final pathology confirmed sinonasal undifferentiated carcinoma. She was treated with chemotherapy (3 cycles of cisplatin and etoposide), but due to persistent disease seen in January of 2023, she also received radiation, completed in March of 2003. Subsequently, she was decannulated and demonstrated no evidence of disease on surveillance imaging until 2011 when she was lost to follow-up.

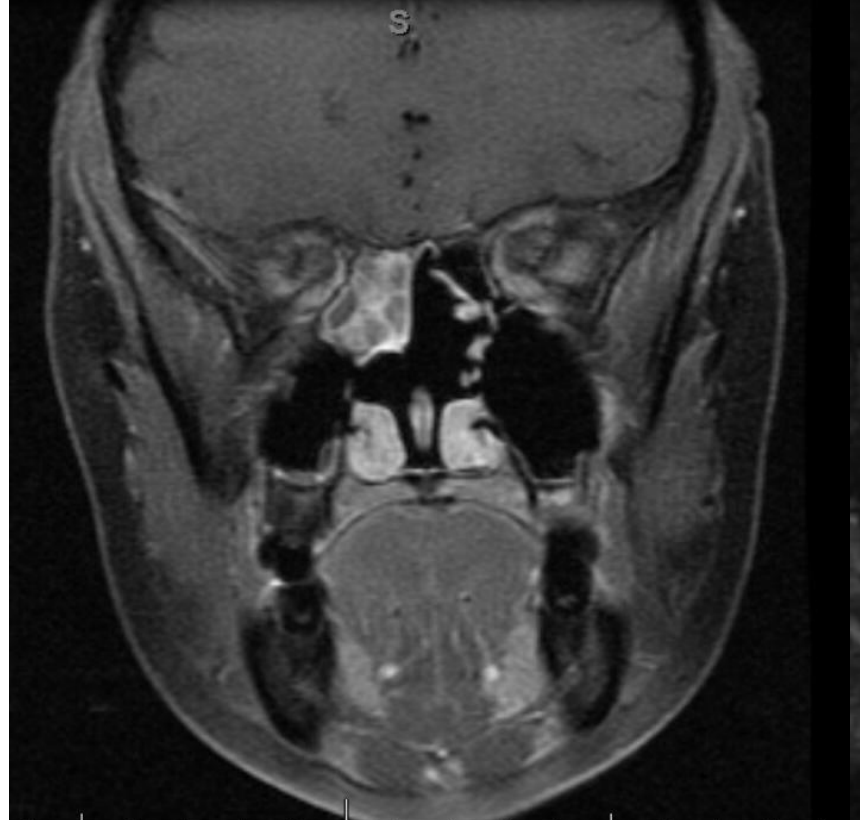


Figure 4A: MRI Face 11/2020 demonstrated postoperative changes with a mid-nasoethmoid defect after tumor resection

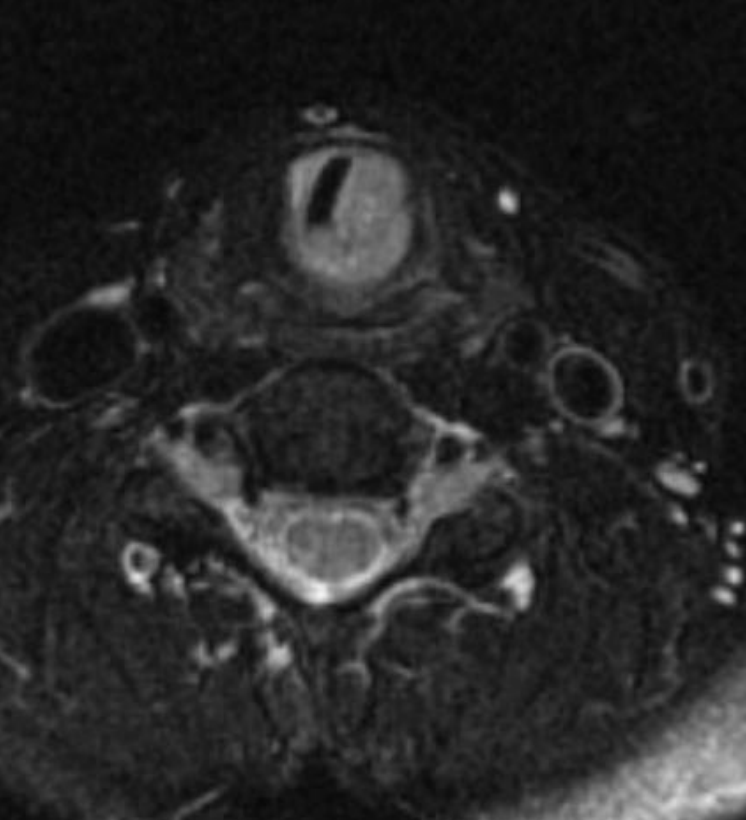


Figure 4B: MRI Face 11/2022 demonstrated a new left sided subglottic tumor without lymphadenopathy

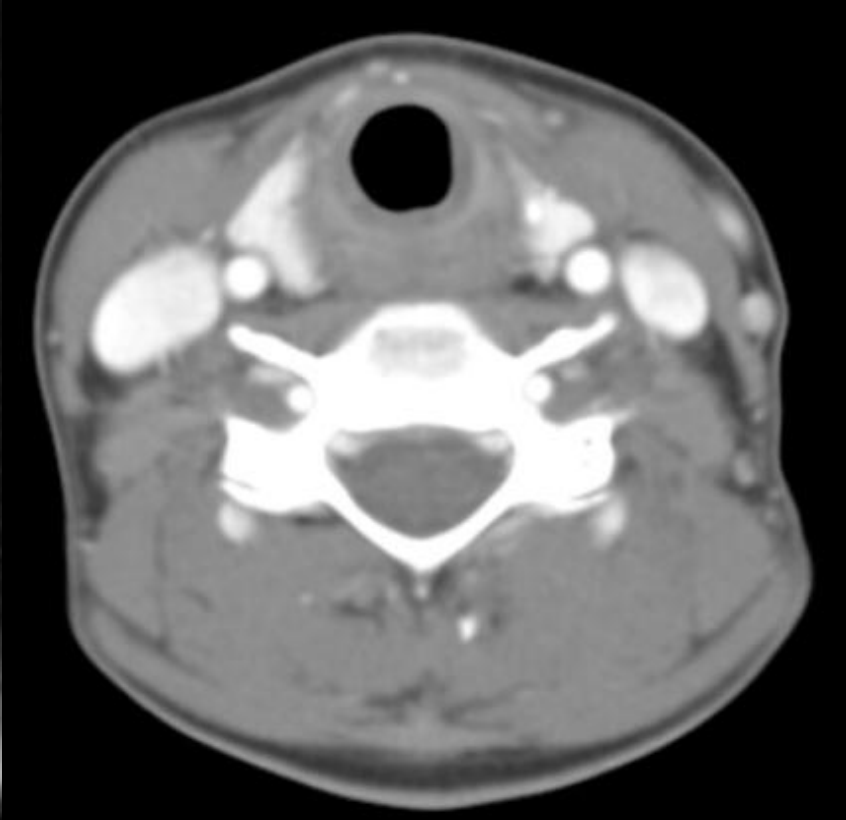


Figure 4C: CT Neck 09/2023 showed no evidence of the prior glottic lesion

Discussion

- Overall 5-year survival is very poor amongst patients with advanced sinonasal malignancies [3-6].
- Lymph node and distant metastasis portend a poor prognosis [1].
- Route of metastasis is thought be direct seeding or hematogenous [7]
- With the advancement of multimodal therapies, it is possible to address advanced diseases.

Conclusions

- ENB, IP-SCC, and SNUC are aggressive sinonasal malignancies with high rates of locoregional recurrence and distant metastasis
- Although there have been previous reports of metastasis to the trachea for ENB,[8, 9] metastasis to the endoluminal larynx has not been reported amongst other sinonasal malignancies.
- Knowledge of this metastatic site better informs patient counselling and physician post-treat surveillance.

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