

Sommerschule SGORL 2017

Thema: Hals- und Gesichtschirurgie

**Tumors of the nasal cavity and
paranasal sinuses**

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Agenda

- Introduction
- Anatomy
- Staging
- Classification
- Treatment of the primary tumor
- Treatment of the neck
- Indications for (chemo)radiation

Suggested reading

- Lund VJ et al. European position paper on endoscopic management of tumours of the nose, paranasal sinuses and skull base. Rhinol Suppl. 2010;22:1-143.
- Genden EM et al. Iliac crest internal oblique osteomusculocutaneous free flap reconstruction of the postablative palatomaxillary defect. Arch Otolaryngol Head Neck Surg 2001;127:854-61.
- Futran ND et al. Midface Reconstruction with the fibula free flap. Arch Otolaryngol Head Neck Surg 2002;128:161-6.
- Brown JS et al. Reconstruction of the maxilla and midface: introducing a new classification. Lancet Oncol 2010; 11: 1001–08.
- Bridge JA et al. The Small Round Blue Cell Tumors of the Sinonasal Area. Head and Neck Pathol (2010) 4:84–93.
- Robbins KT et al. Contemporary management of sinonasal cancer. Head Neck 33: 1352–1365, 2011.

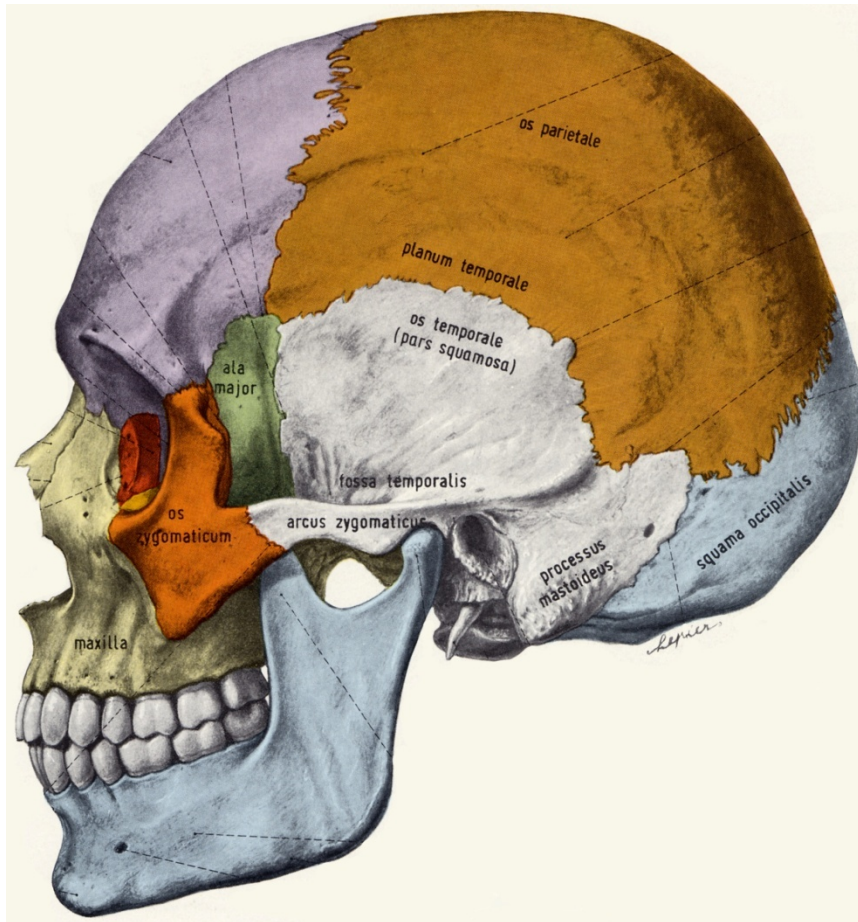
Introduction

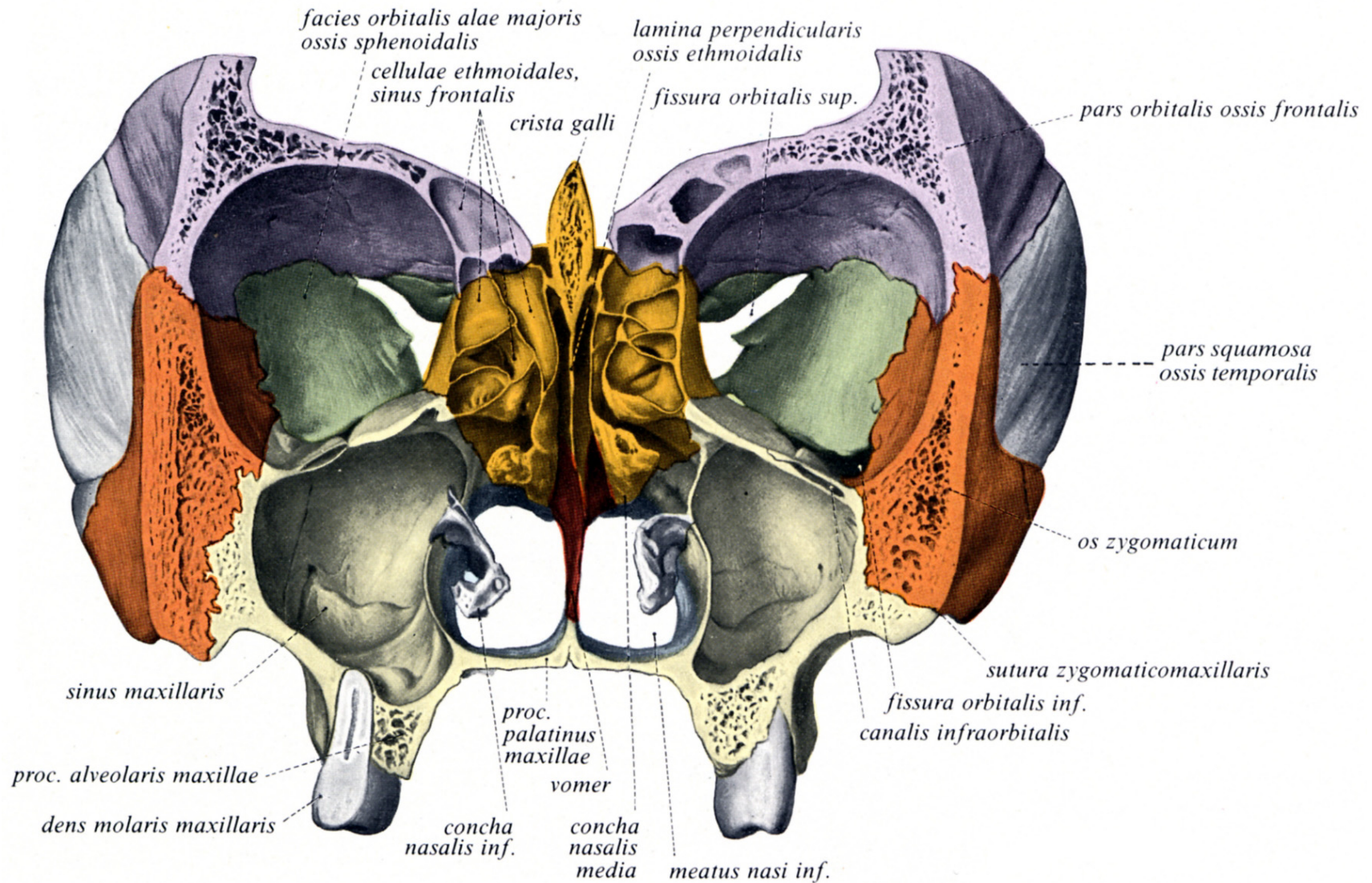
- uncommon tumors
- elderly population (5th/6th decade)
- male : female approx. 2 : 1
- Great variety of histologies
- Present mostly in advanced stages
- Management controversial due to lack of studies
- Site of origin: maxillary > ethmoid > sphenoid sinus
 - Site of origin not to identify in advanced lesions
 - Nasal cavity often involved
 - Sinonasal tumors

Histology

- Common:
 - Squamous cell carcinoma
 - Adenocarcinoma
 - Adenoid cystic carcinoma
- Rare:
 - Esthesioneuroblastoma
 - Sinonasal undifferentiated carcinoma (SNUC)
 - NUT-rearranged carcinoma, Human papillomavirus (HPV)-related adenoid cystic-like carcinoma, adamantinoma-like Ewing sarcoma, SMARCB1 (INI-1)-deficient Sinonasal Carcinoma
 - Sinonasal neuroendocrine carcinoma (SNEC)
 - Sinonasal Small Cell carcinoma
 - Malignant melanoma
 - Lymphoma/extramedullary plasmacytoma
 - Sarcoma
 - Metastatic carcinoma (lung, kidney, breast)

Anatomy





Presentation

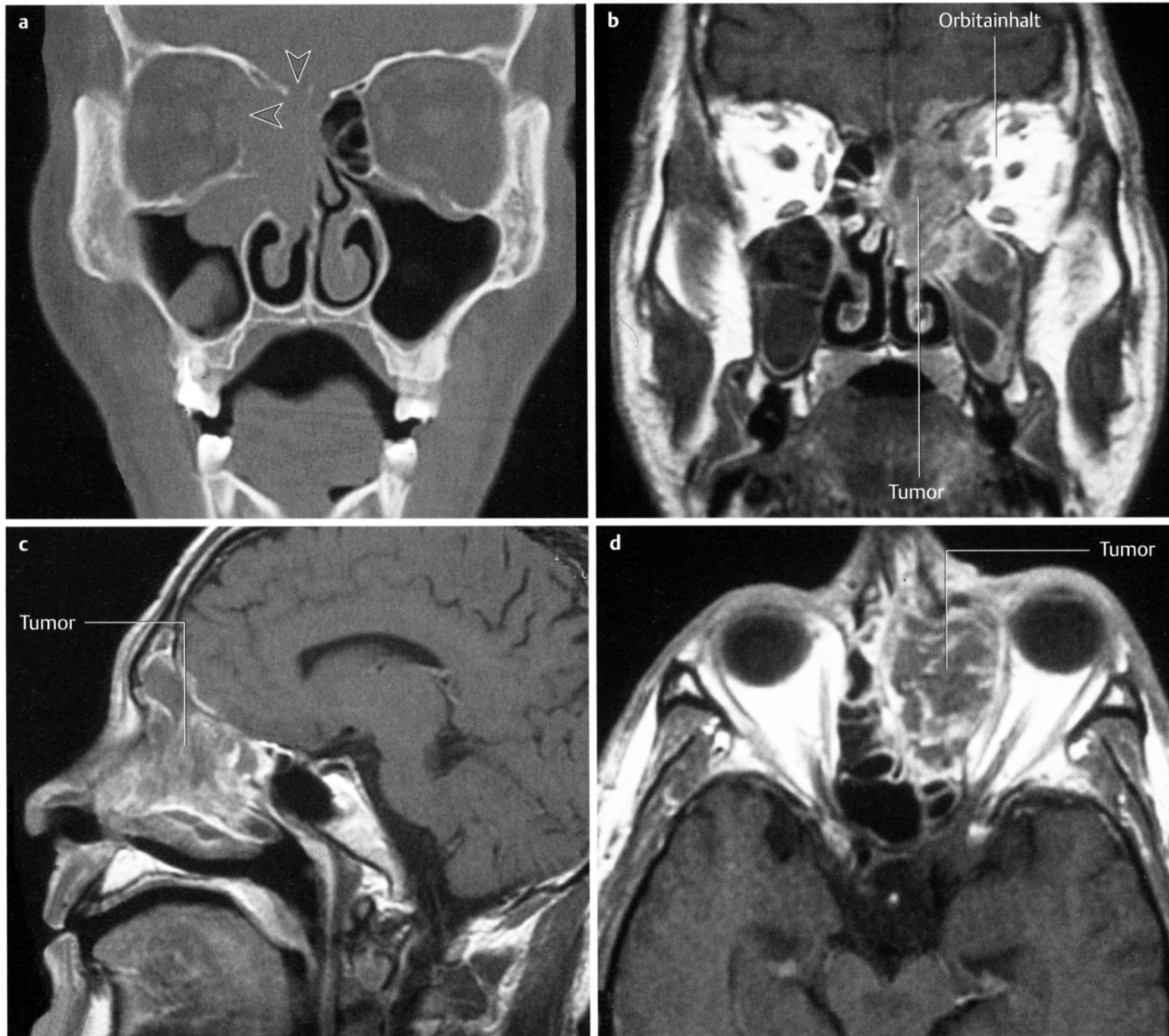
- Unspecific or no symptoms
- Nasal obstruction – unilateral !
- Rhinorrhea – epistaxis
- Pain
- Facial swelling
- Diplopia

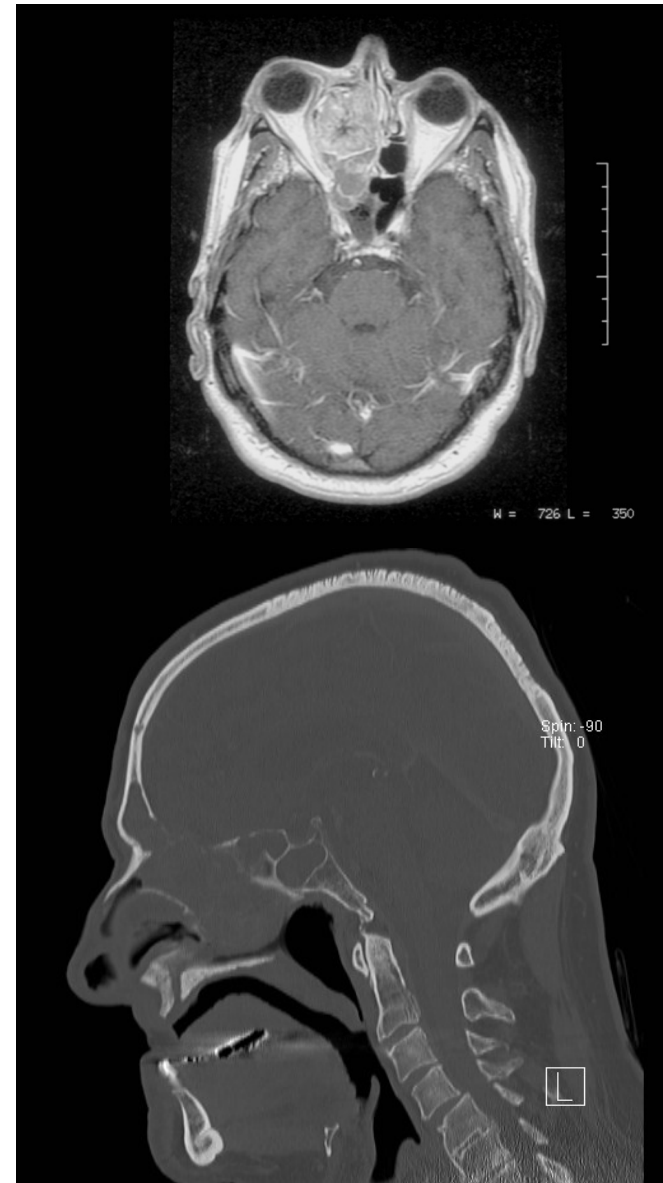
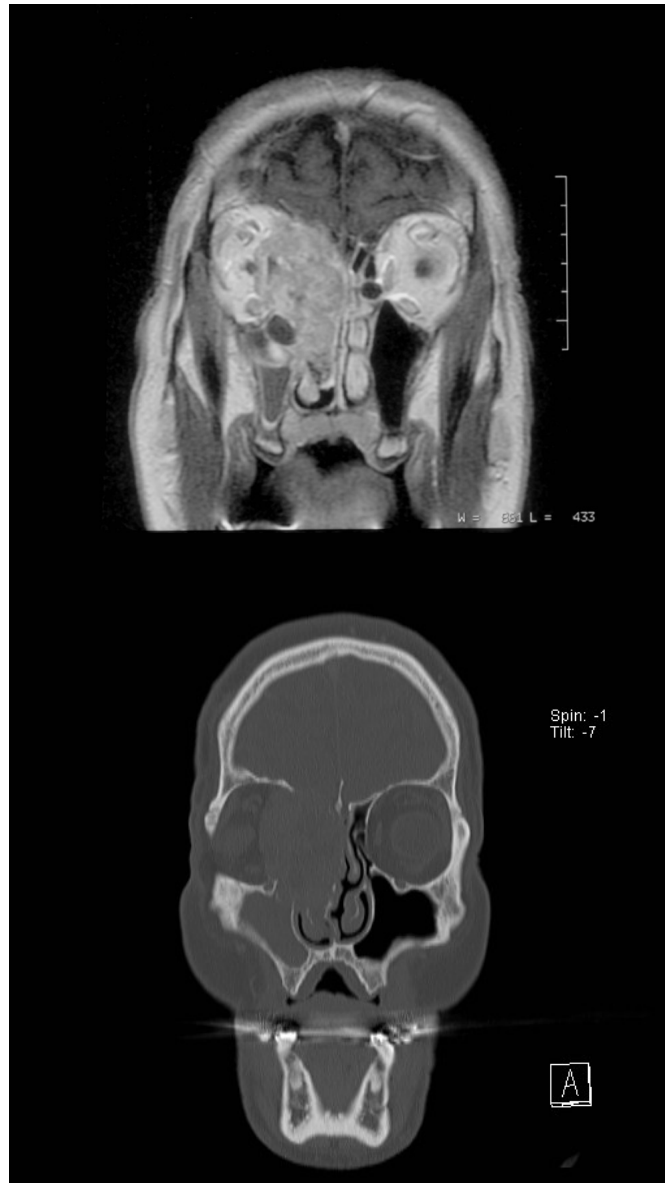
Risk factors

- Adenocarcinoma as an occupational risk in woodworkers
- Smoking increases risk for squamous cell carcinoma
- Radiation is a risk for sarcomas

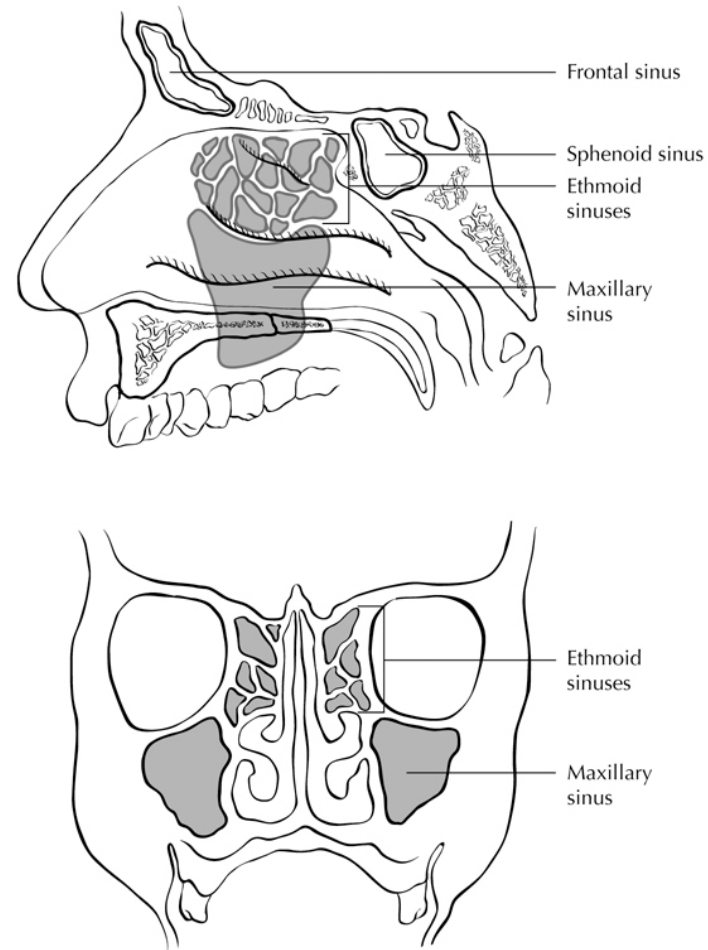
Diagnosis and Workup

- Nasal endoscopy
- Imaging: CT and MRI
- Biopsy (after imaging ! Vascular tumor/encephalocele)
- Ultrasound with FNAC of the neck
- Multidisciplinary tumor board





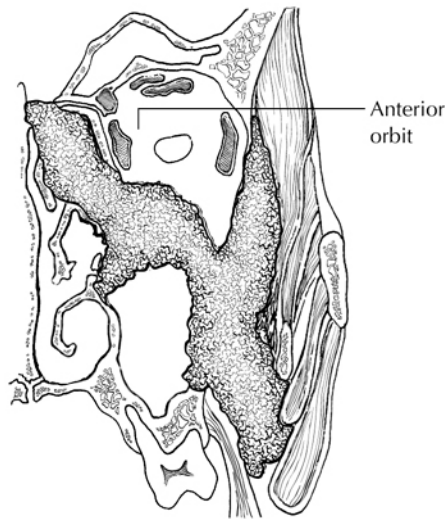
TNM staging



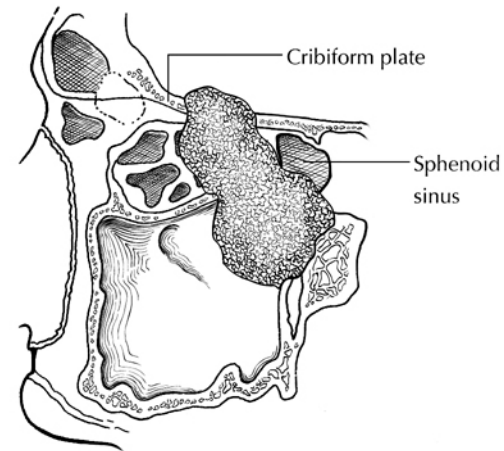
Sites of origin of tumors of the paranasal sinuses.

Credit line: Nasal Cavity and Paranasal Sinuses. In: Greene, F.L., Compton, C.C., Fritz, A.G., et al., editors. AJCC Cancer Staging Atlas. New York: Springer, 2006: 53-60. ©American Joint Committee on Cancer.

T4a

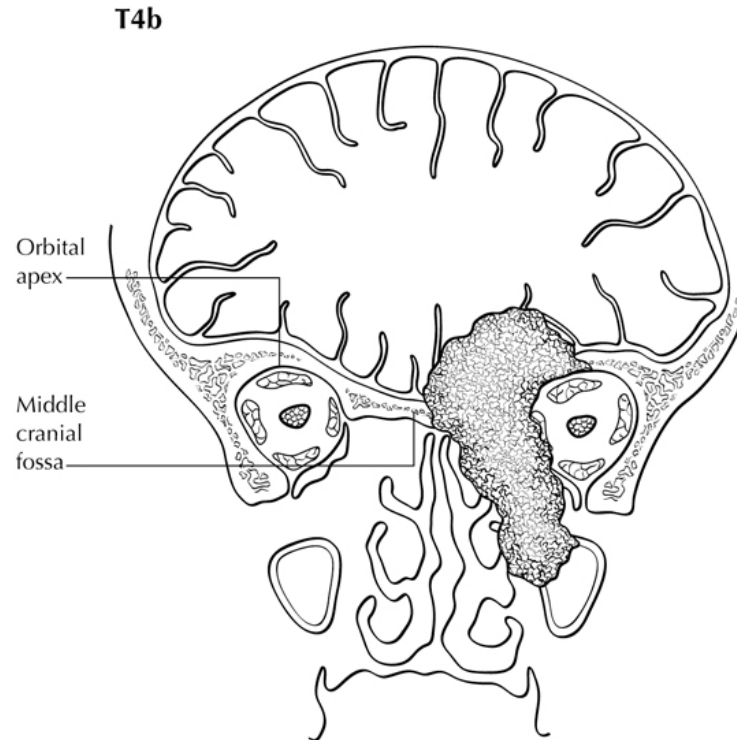


T4a



T4a showing tumor invasion of anterior orbital contents. T4a showing tumor invasion of sphenoid sinus and cribriform plate.

Credit line: Nasal Cavity and Paranasal Sinuses. In: Greene, F.L., Compton, C.C., Fritz, A.G., et al., editors. AJCC Cancer Staging Atlas. New York: Springer, 2006: 53-60. ©American Joint Committee on Cancer.



Coronal view of T4b shows tumor invades orbital apex and/or dura, brain or middle cranial fossa.

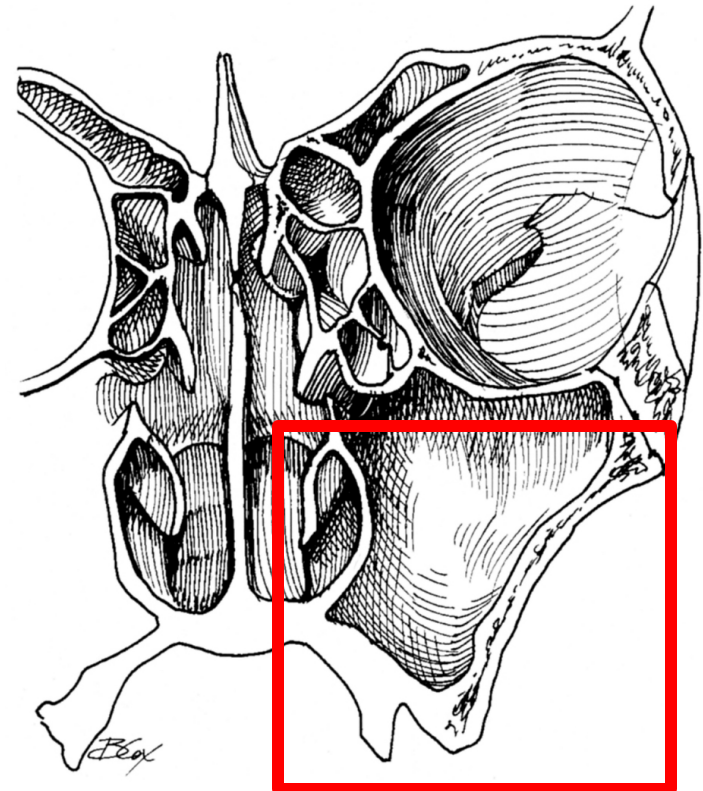
Credit line: Nasal Cavity and Paranasal Sinuses. In: Greene, F.L., Compton, C.C., Fritz, A.G., et al., editors. AJCC Cancer Staging Atlas. New York: Springer, 2006: 53-60. ©American Joint Committee on Cancer.

Treatment

- Principle: Surgery + adjuvant radiotherapy
- No elective neck dissection in cN0
- Surgery alone in select patients with limited disease
 - Stage I/II
- Primary radiotherapy in unresectable tumors
 - Invasion of the frontal lobe
 - Invasion of the prevertebral fascia
 - Bilateral optic nerve involvement
 - Invasion of the cavernous sinus

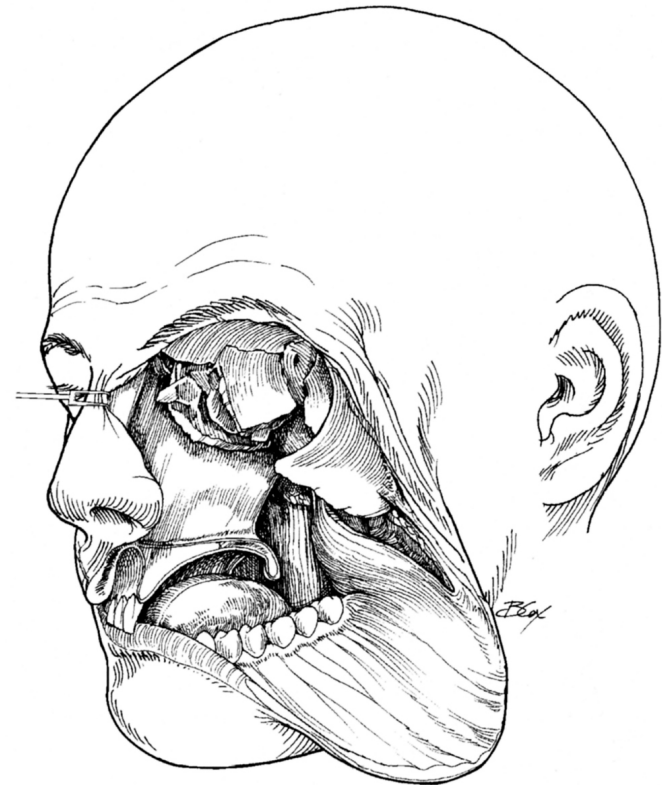
Open surgical approach

- Infrastructure maxillectomy
 - Removal of hard palate/alveolar ridge
 - Preservation of orbital floor



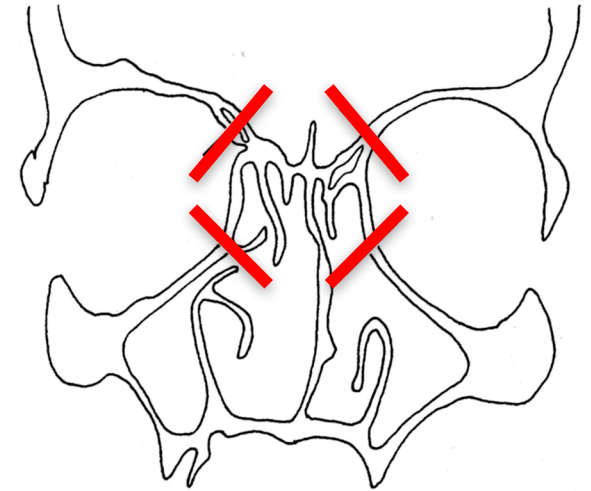
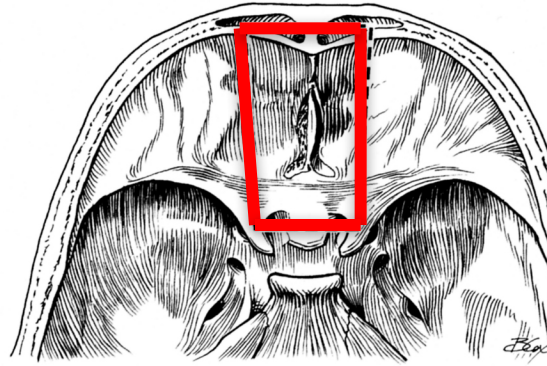
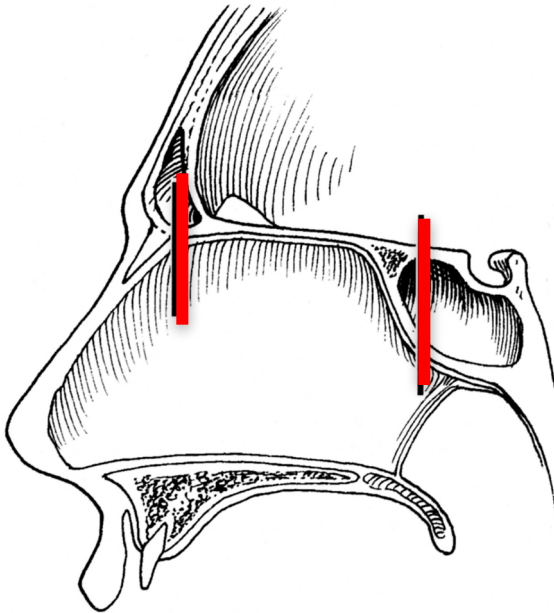
Surgical approach

- Total maxillectomy
 - Removal of hard palate/alveolar ridge
 - removal of orbital floor
 - +/- orbital exenteration

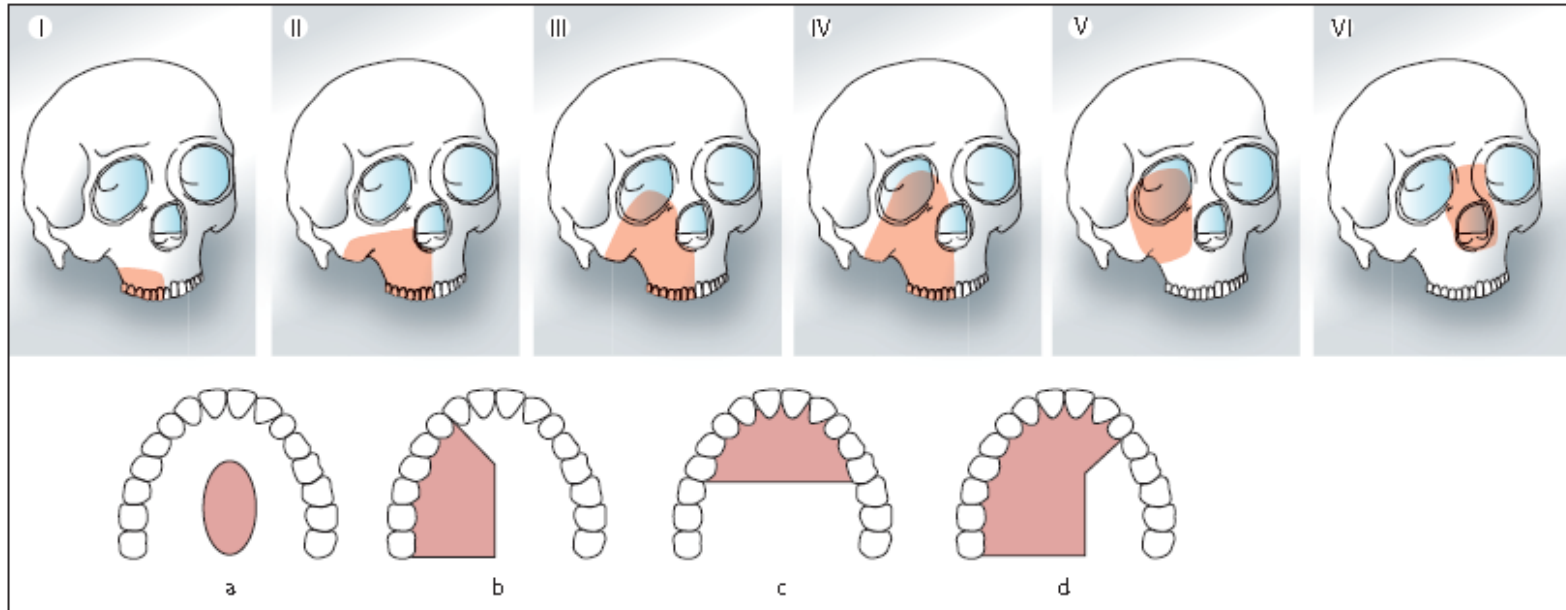


Surgical approach

- Open craniofacial resection
 - Anterior skull base



Reconstruction - Classification of defects



Brown JS et al. Reconstruction of the maxilla and midface: introducing a new classification. Lancet Oncol 2010; 11: 1001–08.

	Classification of midface and maxillary defect							Total
	I	II	III	IV	V	VI	Unsure	
Pedicled flaps								
Pedicled flaps (unspecified) ⁴⁵	..	..	..	..	..	..	22	22
Temporalis, temporoparietal, buccal fat pad ^{3,6-12}	2	38	30	..	17	..	11	98
Soft-tissue free flaps								
Radial forearm ^{2,6,9,13-18}	20	67	14	..	1	3	11	116
Rectus abdominus ^{3,6,9,15,18-25}	1	14	65	53	16		45	175
Latissimus dorsi ^{4,5,13,15,17,26,27}	..	2	3	13	2	..	2	22
Anterolateral thigh ²⁴	..	..	3	..	..	..	..	3
Hard-tissue or composite free flaps								
Radial forearm ^{2,3,5,14-18,28,29}	2	21	7	5	11	..	15	61
Lateral arm ³⁰	..	1	..	..	..	..	..	1
Fibula ^{4,3,15,17,31-36}	4	63	25	..	..	..	2	94
DCIA/internal oblique ^{2,17,37-40}	2	24	18	12	..	..	..	56
Scapula ^{4,3,13,15,17,26}	..	8	12	6	6	..	3	35
TDAA/serratus anterior ^{41,42}	1	11	1	1	..	..	..	14
TDAA/teres major ⁴³	..	6	8	..	..	..	..	14
TDAA/latissimus dorsi ^{3,15,26,44,45}	..	2	1	28	..	..	7	24
Combined flaps ⁴⁶	..	..	..	1	..	..	..	1

DCIA=deep circumflex iliac artery (supplies the iliac crest). TDAA=thoracodorsal angular artery (supplies the scapula tip).

Table 1: Summary of published methods of reconstruction from 1998 to 2009, in number of reported cases

	Classification of midface and maxillary defect						Total
	I	II	III	IV	V	VI	
Pedicled flaps							
Temporalis, temporoparietal	1*	..	3	..	4
Soft-tissue free flaps							
Radial	8	29	..	..	4	..	41
Rectus abdominis	1	1	..	2
Latissimus dorsi	6	..	..	6
Anterolateral thigh	..	3	..	..	2	..	5
Hard-tissue or composite free flaps							
Radial	..	14	4	4	1	5	28
Fibula	..	3	..	..	..	..	3
DCIA/internal oblique	..	19	15	17	..	..	51
TDAA/latissimus dorsi	6	..	1	7
Total	8	68	20	34	11	6	147

DCIA=deep circumflex iliac artery (supplies the iliac crest). TDAA=thoracodorsal angular artery (supplies the scapula tip). * The one class III case treated with a temporoparietal flap was an 11-year-old patient who needed restoration of the orbit and obturation, with a view to complete reconstruction on completion of growth.

Table 2: Summary of reconstructed midface and maxillary defects at the Regional Maxillofacial Unit in Liverpool, UK, since 1992 (number of cases according to method of repair)