Kantonsspital St.Gallen

Hals-Nasen-Ohrenklinik

Sommerschule SGORL 2012

Thema: Hals- und Gesichtschirurgie

Tumors of the nasal cavity and paranasal sinuses

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Hals-Nasen-Ohrenklinik
Kantonsspital St. Gallen

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Agenda

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

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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.

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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 advance lesions
  - Nasal cavity often involved
  - Sinonasal tumors

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Histology

- Common:
  - Squamous cell carcinoma
  - Adenocarcinoma
  - Adenoid cystic carcinoma
- Rare:
  - Esthesioneuroblastoma
  - Sinonasal undifferentiated carcinoma (SNUC)
  - Sinonasal neuroendocrine carcinoma (SNEC)
  - Malignant melanoma
  - Lymphoma/extramedullary plasmacytoma
  - Sarcoma
  - Metastatic carcinoma (lung, kidney, breast)

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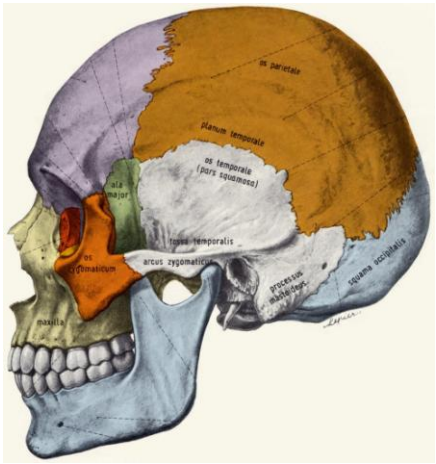
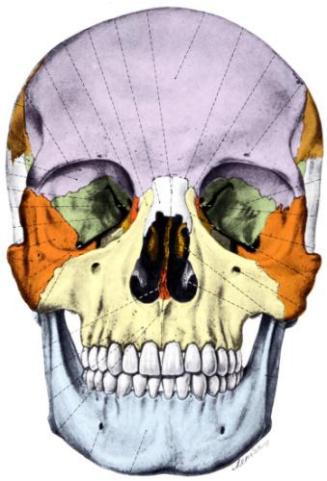
Anatomy





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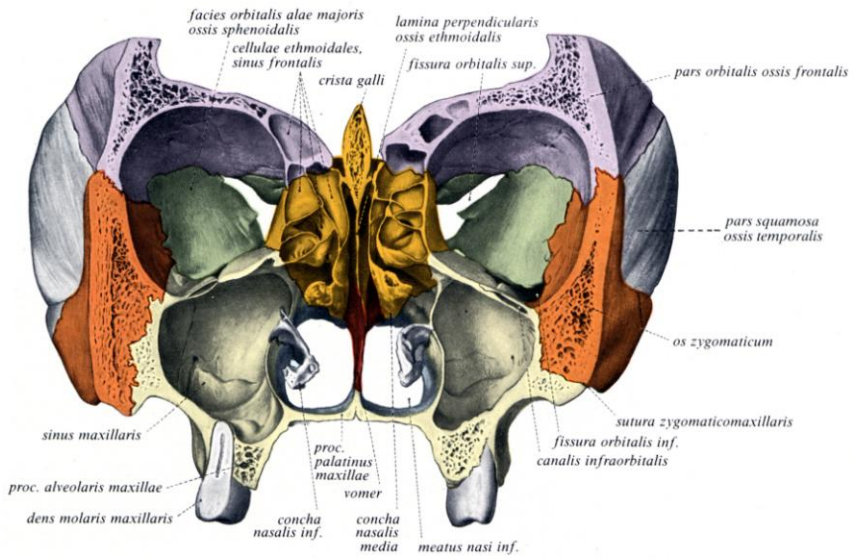

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Presentation

- 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

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Diagnosis and Workup

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

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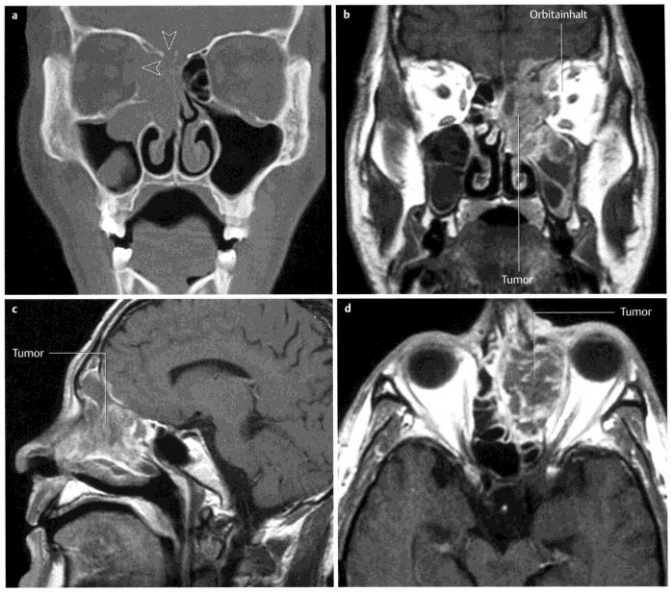

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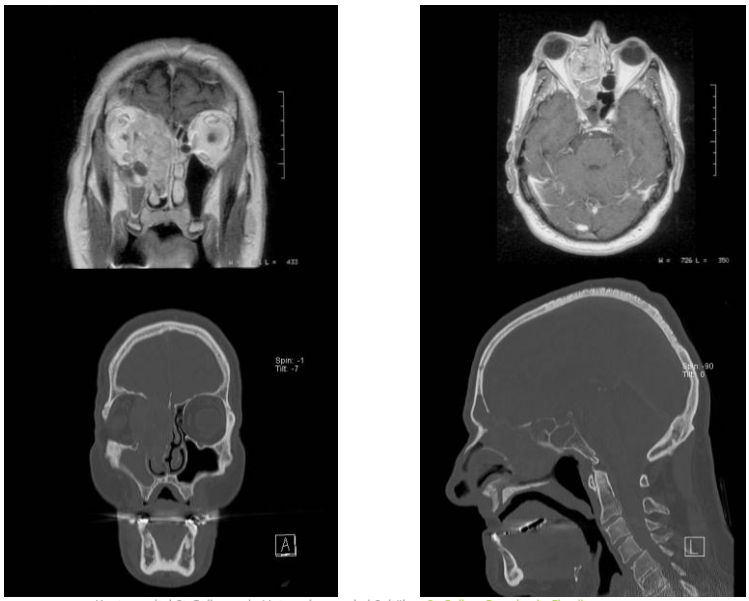
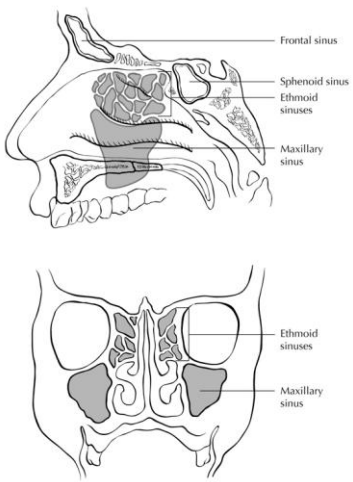


TNM staging



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.

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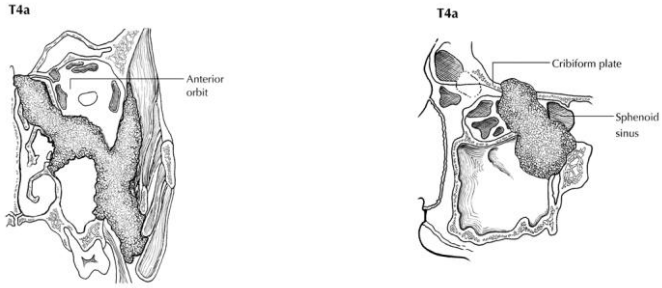

T4a showing tumor invasion of anterior orbital contents. T4a showing tumor invasion of sphenoid sinus and cribriform plate.

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.

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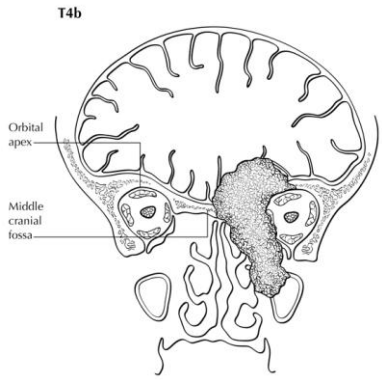

Coronal view of T4b shows tumor invades orbital apex and/or dura, brain or middle cranical fossa.

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.

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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

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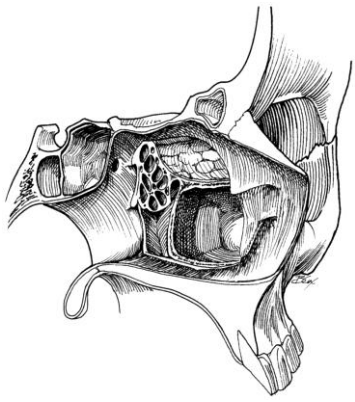
Surgical approach

- Medial maxillectomy with fronto-spheno-ethmoidectomy
  - Limited lesions
    - Nasal cavity
    - Ethmoid sinus
    - Medial wall maxillary sinus
  - Endoscopic approach



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Rhinol Suppl. 2010 Jun 1;(22):1-143.

European position paper on endoscopic management of tumours of the nose, paranasal sinuses and skull base.

Lund VJ, Stammberger H, Nicolai P, Castelnuovo P, Beal T, Beham A, Bernal-Sprekelsen M, Braun H, Cappabianca P, Carrau R, Cavallo L, Clarici G, Draf W, Esposito F, Fernandez-Miranda J, Fokkens W, Gardner P, Gellner V, Hellquist H, Hermann P, Hosemann W, Howard D, Jones N, Jorissen M, Kassam A, Kelly D, Kurschel-Lackner S, Leong S, McLaughlin N, Maroldi R, Minovi A, Mokry M, Onerci M, Ong YK, Prevedello D, Saleh H, Sehti DS, Simmen D, Snyderman C, Solares A, Spittle M, Stamm A, Tomazic P, Trimarchi M, Unger F, Wormald PJ, Zanation A; European Rhinologic Society Advisory Board on Endoscopic Techniques in the Management of Nose, Paranasal Sinus and Skull Base Tumours.

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Abstract

Tumours affecting the nose, paranasal sinuses and adjacent skull base are fortunately rare. However, they pose significant problems of management due their late presentation and juxtaposition to important anatomical structures such eye and brain. The increasing application of endonasal endoscopic techniques to their excision offers potentially similar scales of resection but with reduced morbidity. The present document is intended to be a state-of-the art review for any specialist with an interest in this area 1. to update their knowledge of neoplasia affecting the nose, paranasal sinuses and adjacent skull base; 2. to provide an evidence-based review of the diagnostic methods; 3. to provide an evidence-based review of endoscopic techniques in the context of other available treatments; 4. to propose algorithms for the management of the disease; 5. to propose guidance for outcome measurements for research and encourage prospective collection of data. The importance of a multidisciplinary approach, adherence to oncologic principles with intent to cure and need for long-term follow-up is emphasised.

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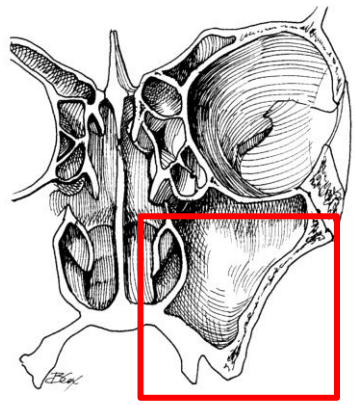
Surgical approach

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



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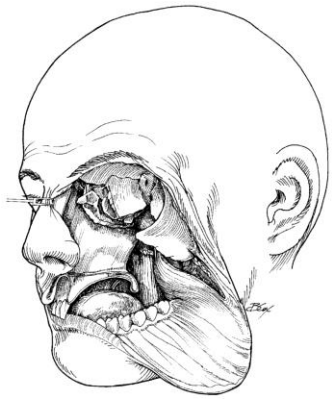
Surgical approach

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



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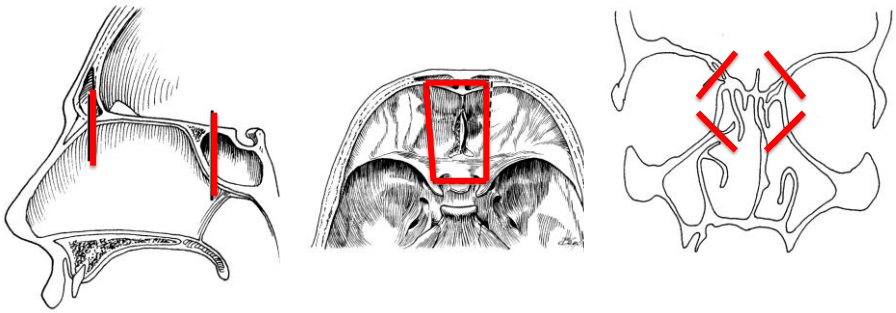
Surgical approach

- Open craniofacial resection
  - Anterior skull base
  - Esthesioneuroblastoma
  - Endoscopic approach in select patients



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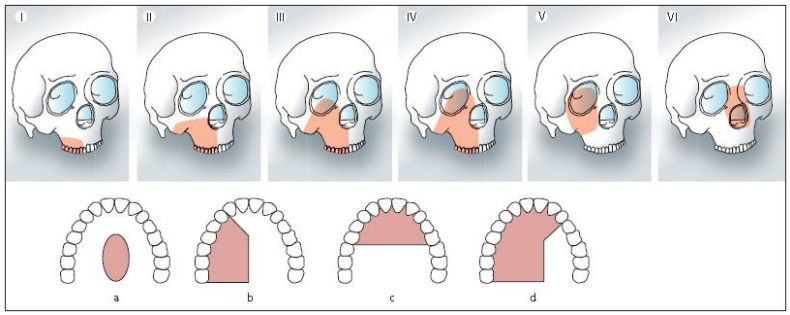
Reconstruction - Classification of defects



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

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	Classification of midface and maxillary defect							Total
	I	II	III	IV	V	VI	Unsure	
Pedicled flaps								
Pedicled flaps (unspecified)[4,5]	..	..	..	..	..	..	22	22
Temporalis, temporoparietal, buccal fat pad[3,6–12]	2	38	30	..	17	..	11	98
Soft-tissue free flaps								
Radial forearm[2–4,9,13–18]	20	67	14	..	1	3	11	116
Rectus abdominus[3–6,9,15,17–25]	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[2,5,14–18,28,29]	2	21	7	5	11	..	15	61
Lateral arm[30]	..	1	..	..	..	..	..	1
Fibula[4,9,15,17,31–36]	4	63	25	..	..	..	2	94
DCIA/internal oblique[2,17,37–40]	2	24	18	12	..	..	..	56
Scapula[4,9,13,15,17,36]	..	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[9,15,17,44,45]	..	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**

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	Classification of midface and maxillary defect						Total
	I	II	III	IV	V	VI	
Pedicled flaps							
Temporalis, temperoparietal	..	..	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)**