



Head and Neck Cancer for the Primary Care Physician: Oral Cavity and Sinonasal Malignancies

Kyle VanKoeveering, MD

Clinical Assistant Professor of Otolaryngology

Department of Otolaryngology

The Ohio State University Wexner Medical Center

MedNet21
Center for Continuing Medical Education

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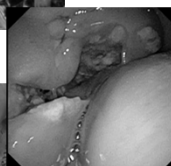
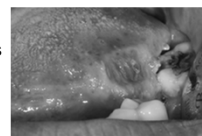
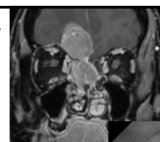
- Biomedical Engineering background
- Research interests in 3D printing and medical device development
- 4 Patents filed/pending
 - Tegmen reconstruction prosthesis, ferroform, trach plug, vent splitter
- KLS Martin supports lab Post Doc
- MakeMedical LLC Cofounder
- Contributions from Partners

Outline

- Basic Statistics
- Subsites
- Sinonasal Malignancies
- Oropharynx Malignancies
- Oral Cavity Malignancies

Head and Neck Cancer

- 7th most common Cancer
- 70:30 M:F
- Mucosal and Non-Mucosal Origins
- Major Risk Factors:
 - Tobacco
 - Alcohol
 - Human Papilloma Virus



Choi AK, Ali R, Dharkar R, Chauhan AK, Kaulhal V. Major Risk Factors in Head and Neck Cancer: A Retrospective Analysis of 12-Year Experiences. *World J Oncol*. 2018;9(3):80-84. doi: 10.14740/wjon1104a
 ASCO Cancer Net statistics: <https://www.cancer.net/understanding/head-and-neck-cancer/statistics>

Treatment takes a Village

- High morbidity
- Multi-modal treatment
- Rehabilitation
 - Speech
 - Swallowing
 - Mastication
 - Cosmesis/Aesthetics
- Oncologic outcome



Subsites of Head and Neck Cancer

Mucosal	Non-Mucosal
Oral Cavity ◇	Skin Cancer
Oropharynx ◇	Salivary Gland Cancer (Parotid, submandibular)
Larynx	Thyroid Cancer
Hypopharynx	Neck (unknown primary)
Nasopharynx	Sarcoma
Sinonasal ◇	

Case 1- The challenge of Sinonasal Malignancies

- 52 y/o woman
- Left sided nasal obstruction
 - Typical case that highlights the complexity of sinonasal disease
- Diagnostic dilemma:
 - 20-30% Allergic rhinosinusitis
 - 70% Deviated Nasal Septum
 - 30 million Americans receive Abx for Sinusitis yearly
- Nasal symptoms comprise up to 20% of non-maintenance PCP visits



Sinonasal Complaints: When to be concerned about Malignancy

- Detailed history for this patient:
 - Progressive unilateral left obstruction
 - Does not alternate
 - Decongestants don't help
 - Occasional Epistaxis
 - No vision changes
 - No numbness
 - No dental complaints

Warning Signs
Unilateral obstruction *
Fixed obstruction *
Epistaxis *
Diplopia
Proptosis
Numbness (V2)
Loose teeth

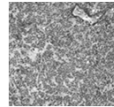
Case 1:

- Detailed PCP exam
 - Red Polyp
- Failed course of Augmentin
- 3 weeks later, referral to local ENT
 - Endoscopic examination confirms polyp
 - Presumed Allergic Polyposis
- Endoscopic Sinus Surgery
 - Ethmoidectomy and Maxillary antrostomy, Septoplasty

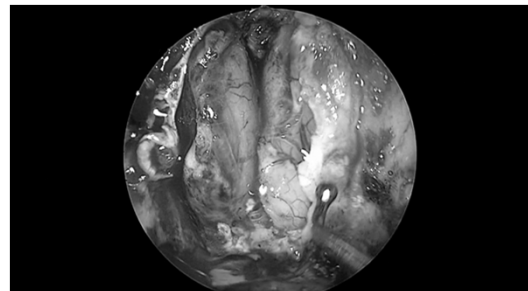
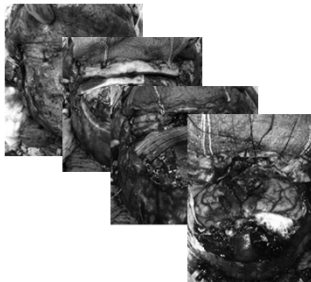


Case 1: Incidental Pathology

- Olfactory Neuroblastoma
 - Rare Neuroectodermal Malignancy
 - ~10% Sinonasal Malignancies
- Nasal Cavity and Paranasal sinuses Harbor more tumor histologic diversity than any other location in the human body
 - WHO Classifies 74 different sinonasal tumor pathologies
 - ~70% malignant

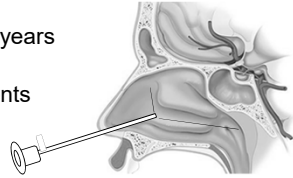


Definitive Treatment for Olfactory Neuroblastoma: Surgical resection



Endoscopic Tumor Resection

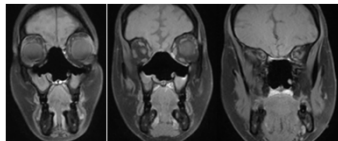
- Developed over the last 20 years
 - Largely Pioneered at OSU
- Reduced morbidity for patients
 - No brain retraction
 - No large bone removal
 - Vascular Reconstruction
- Equivalent Oncologic Outcomes*



Nasoseptal Flap

Case 1: Conclusion

- Prior surgical contamination
- Extended endoscopic resection
 - Skull base/Dura resection, Nasoseptal flap reconstruction
 - Margins negative
- Adjuvant radiation
 - Sinonasal cavity and left neck
- NED 4 years out

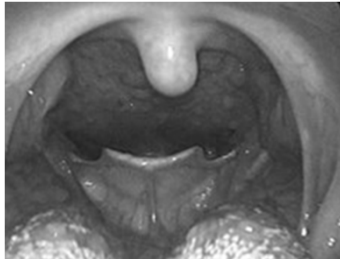


Conclusion: Sinonasal Malignancies

- Very challenging to diagnose
- Key warning signs to distinguish inflammatory sinonasal disease from tumors: Epistaxis, numbness, vision changes
- CT sinus imaging can be a helpful adjunct if suspicious exam
- Diverse tumor pathologies
- Complex multimodal treatment
 - Endoscopic resection reduces morbidity

Switching Gears: Oropharynx Cancer

- Palatine Tonsils *
- Tongue Base *
- Tonsillar Pillars
- Soft Palate



The HPV Era

- Despite declining prevalence of larynx, oral cavity cancer, OPSCC on the rise



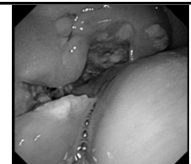
Typical Presentation of HPV-related oropharyngeal cancer

- Patients tend to be **younger**.
- Are more likely to be **males**, **married** and **college-educated**.
- Typically present **without** a significant history of tobacco or alcohol abuse.
- Have **sexual risk factors** for oral or genital HPV exposure.
- Present with **low T** and **high N** stage tumors.
- Usually non-keratinizing, poorly-differentiated, and of basaloid morphology on Histology.

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HPV: The Basics

- ds-DNA virus that infects skin and mucosa
- Low-risk: HPV-6 and 11
- High-risk: HPV-16, 18, 33, 35
 - Associated with oropharyngeal cancers
- Viral oncogenesis: HPV proteins E6 and E7 degrade p53 and retinoblastoma protein, respectively
- Transmission through intimate contact with an infected partner
- In most cases, oral infection clears without intervention within 1 year
- 70-80% US Adult Population



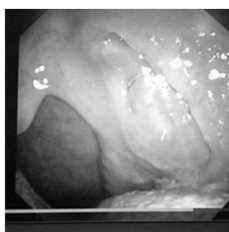
HPV-Related Oropharynx Cancer

- Oropharyngeal SCC (OPSCC) in which HPV DNA is detectable within the tumor
 - NO LONGER ACTIVE INFECTION
 - 20 years after infection cleared
 - Persistent Viral DNA results in increased cellular turnover
- 90% of Oropharynx cancer today

Physical examination

- Firm, 2 cm nodular mass of left tonsil.
 - Does not involve the tongue base/Palate
- No palpable adenopathy
- Biopsy: HPV+ squamous cell carcinoma
- CT Neck and Chest:
 - No regional or distant metastasis

• **T1 N0 M0 HPV+ SCC Left Tonsil**



Treatment Options?

- Early Tonsil Cancer, HPV+, Non-smoker
- Many good options:

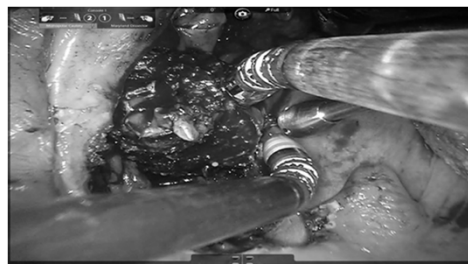
Surgical: Transoral robotic tonsillectomy, selective neck dissection, possible adjuvant tx

- Nonsurgical: Radiation treatment

Multidisciplinary Tumor Board Discussion

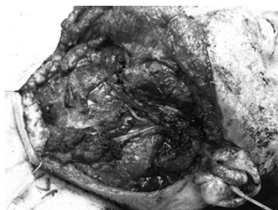
- Head and Neck Surgeons
- Head and Neck Radiation Oncology
- Neuroradiology
- Head and Neck Pathologists

TORS Robotic Resection and Neck Dissection



Case 2 Conclusion

- TORS Margin Negative Resection
- No pathologic adenopathy on final pathology
- No further treatment
- 2 years out, NED...

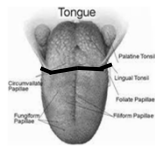


Conclusions: Oropharynx Cancer

- Incidence is on the rise
- HPV has changed the face of OPSCC
- HPV related tumors have much better prognosis
 - ~80% 5 year survival vs. 35% 5 year survival
- Many successful treatment options, multidisciplinary decision making
 - Surgery +/- adjuvant radiation = chemoradiation
- Cystic neck mass in adult: HPV-related OPSCC until proven otherwise
- Vaccination may reduce OPSCC in future generations

Oral Cavity Cancer

- Oral Tongue, Mucosal Lips, Buccal mucosa, Floor of Mouth, Gingiva, Hard Palate
- Risk Factors: Alcohol, Cigarette, Chewing Tobacco
 - ~70:30 M:F

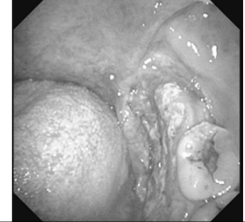


<http://www.aboutcancer.com/tongue.htm>

Case 3: Oral Cavity Cancer

- 59 yo M painful lesion right posterior mandible x 2 months
- Not alleviated by any topical treatments
- 35 py Smoking history

- Leukoplakia
- Palpable nodular firm mass



Lesions in the Oral Cavity

- Common complaint for PCP or Dentist
 - Myriad of Etiologies
- Warning signs:
 - Pain
 - Persistence
 - Palpable
- Low Threshold for biopsy

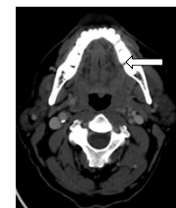


Lesions of the Oral Cavity

Neuroma
Traumatic Fibroma
Mucocoele
Lichen Planus
Glossitis
Aphthous Ulcers
Autoimmune Disease
Dysplasia *
Squamous Cell Carcinoma**

Case 3 Continued

- Dentist biopsies lesion: Squamous Cell Carcinoma
- CT Scan (Neck/Chest): questionable mandibular erosion
 - No sign of regional or distant Metastatic disease



Treatment of Oral Cavity Cancer

- Unlike OP cancer, Surgical resection confers survival advantage
- Margin Negative Surgical Resection
 - Neck Dissection for regional disease, even if N0 on imaging
- These surgeries result in significant functional impairment
 - Speech, Swallowing, Mastication, Aesthetics
- Surgical ablation requires complex reconstructive plan

Case 3 Concluded

- Undergoes left segmental mandibulectomy and resection of floor of mouth and lateral tongue
- Left neck dissection
- Margin Negative, no positive lymph nodes
 - **T3N0**
- Given T3 (10mm DOI) with nerve invasion
 - Adjuvant Radiation
- Reconstructed with Microvascular free flap



Conclusions: Oral Cavity Cancer

- Strongly associated with Tobacco and Alcohol use
- Leukoplakia, Erythroplakia
- Palpable, painful nodular lesion
 - Diverse potential pathologies
 - Low threshold for biopsy
- Definitive surgical resection followed by adjuvant radiation if needed
 - Complex functional reconstructions required with microvascular free flaps



Contemporary Management of Oral Cancer: Mandibular Carcinoma and Reconstruction

Nolan B. Seim, MD
Assistant Professor

Department of Otolaryngology - Head and Neck Surgery
The James Comprehensive Cancer Hospital
The Ohio State University Wexner Medical Center

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None

Topics

- Lesions involving the mandible
- Treatment and surgical resection
- Reconstructive options
- Maximizing form and function

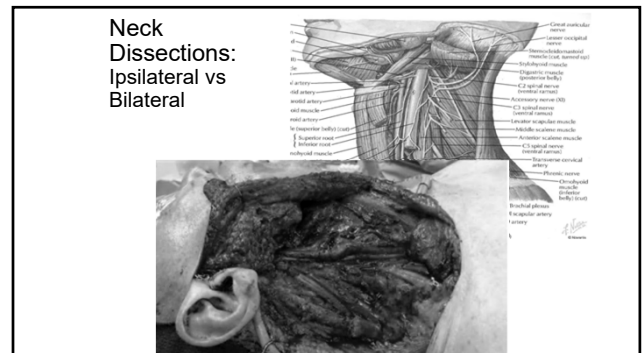
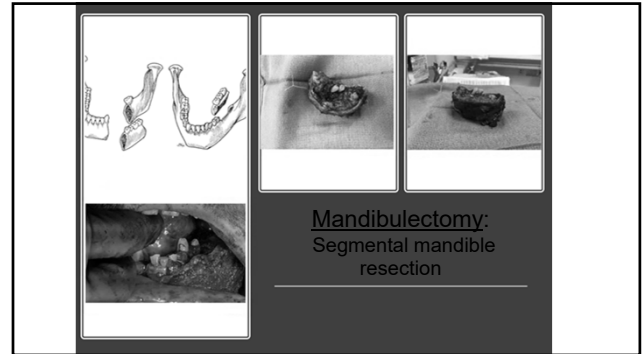
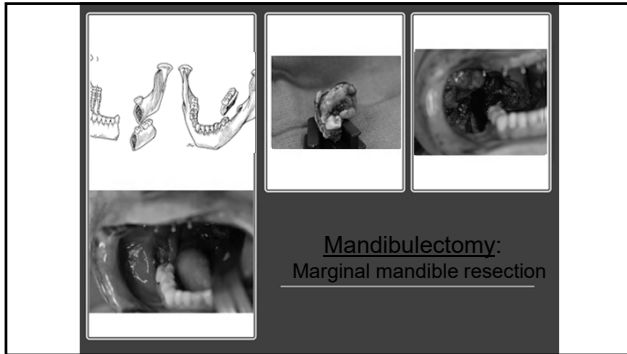


Lesions involving the mandible

- Benign:
 - Ameloblastoma
 - OKC and other dental cysts
 - Ossifying fibroma
 - Fibrous dysplasia
 - Osteoradionecrosis
 - Bisphosphonate-related osteonecrosis
- Malignant:
 - Squamous cell carcinoma (>90%)
 - Osteosarcoma
 - Adenoid cystic, mucoepidermoid carcinoma
 - Hematologic malignancies
 - Metastasis (Renal cell carcinoma)
 - Multiple myeloma

Treatment Options

- Surgery with adjuvant radiation and/or chemoradiation therapy
- Induction chemotherapy followed by surgical intervention with adjuvant therapy
- Upfront chemoradiation therapy
- Palliative/Hospice Care
- All cases presented at Multi-Disciplinary Tumor Board



Reconstruction

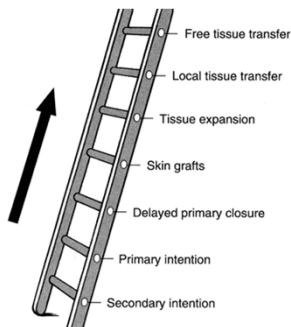
Reconstructive Goals

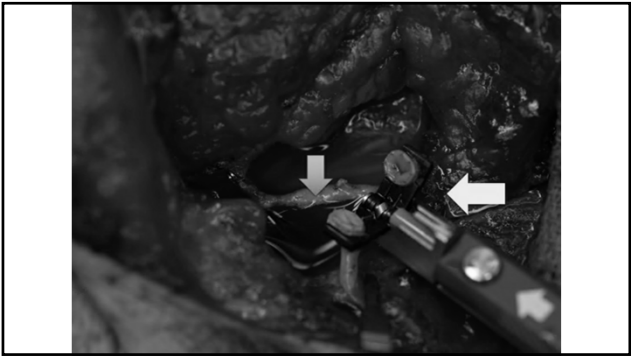
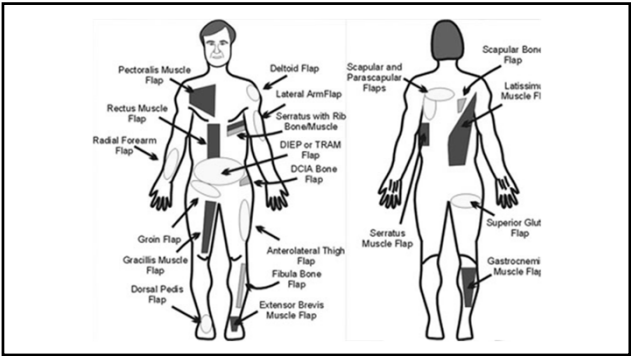
Restoring Form and Function:

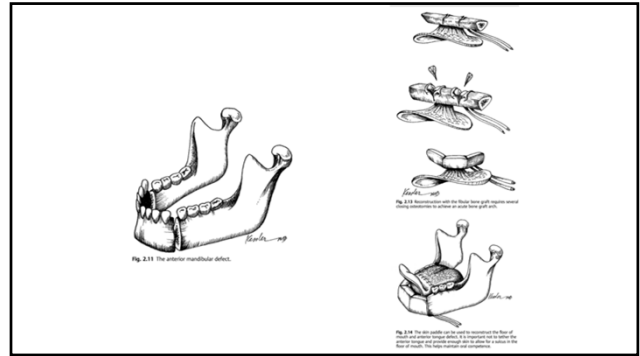
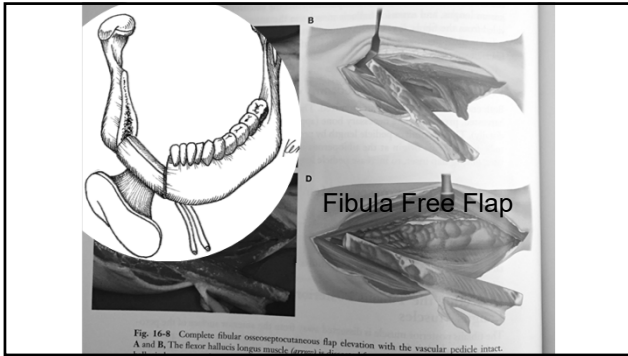
- Maintain dental occlusion
- Enable and maintain bite force
- Prevent plate exposure
- Restore cosmesis
- Improve tolerance of radiation therapy

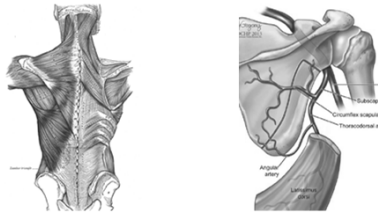
Reconstructive Philosophy

- Have a large "toolbox"
- Plan ahead
- Consider every patient individually
- Consider early and long-term outcomes
- Be creative

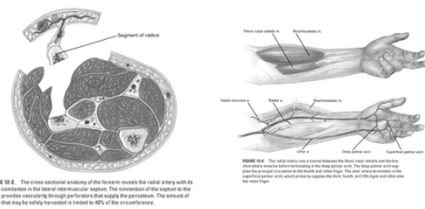
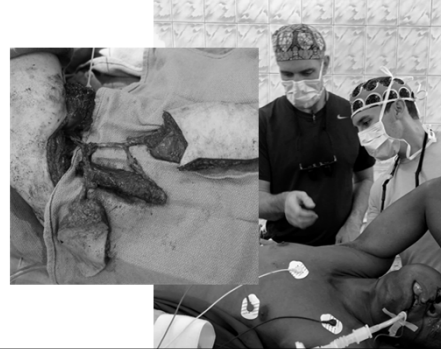




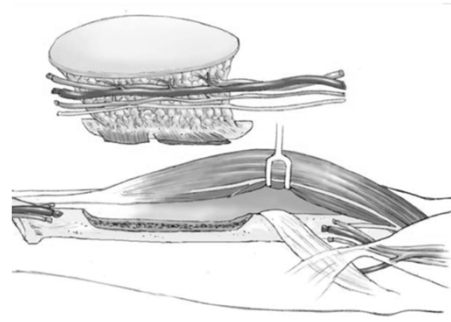


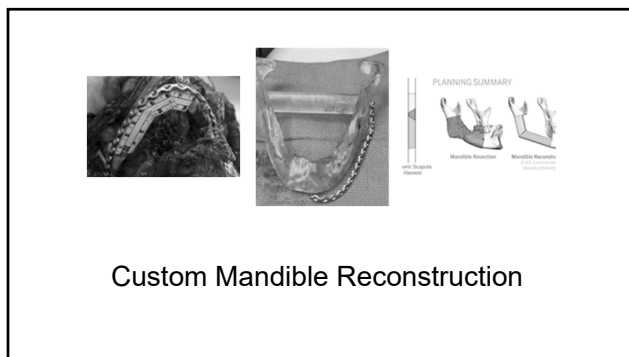
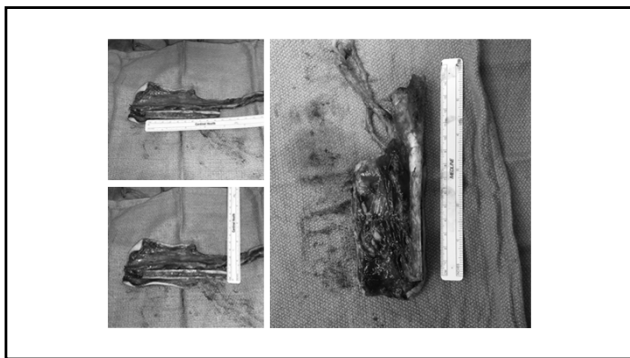


Scapula Free Flap



Osteocutaneous Radial Forearm Flap





Custom Mandible Reconstruction

