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

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MedNet21
Center for Continuing Medical Education

The Ohio State University
Wexner Medical Center

Disclosures

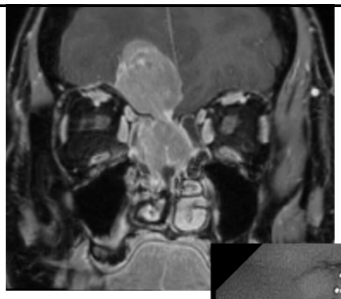
- Biomedical Engineering background
- Research interests in 3D printing and medical device development
- 4 Patents filed/pending
  - Tegmen reconstruction prosthesis, ferroform, trach plug, vent splitter
- KLS Martin supports lab Post Doc
- MakeMedical LLC Cofounder
- Contributions from Partners

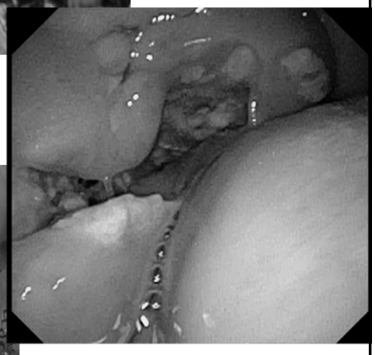
Outline

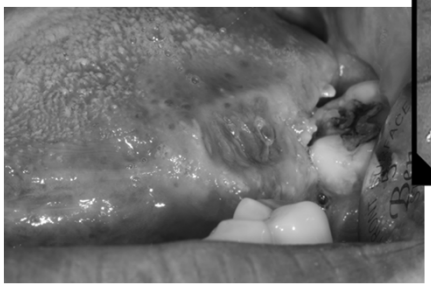
- Basic Statistics
- Subsites
- Sinonasal Malignancies
- Oropharynx Malignancies
- Oral Cavity Malignancies

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







Dhull AK, Atri R, Dhankhar R, Chauhan AK, Kaushal 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/wjon1104w
ASCO Cancer.Net statistics: https://www.cancer.net/cancer-types/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

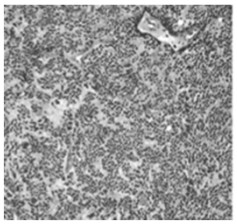
Warning Signs
Unilateral obstruction *
Fixed obstruction *
Epistaxis *
Diplopia
Proptosis
Numbness (V2)
Loose teeth

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

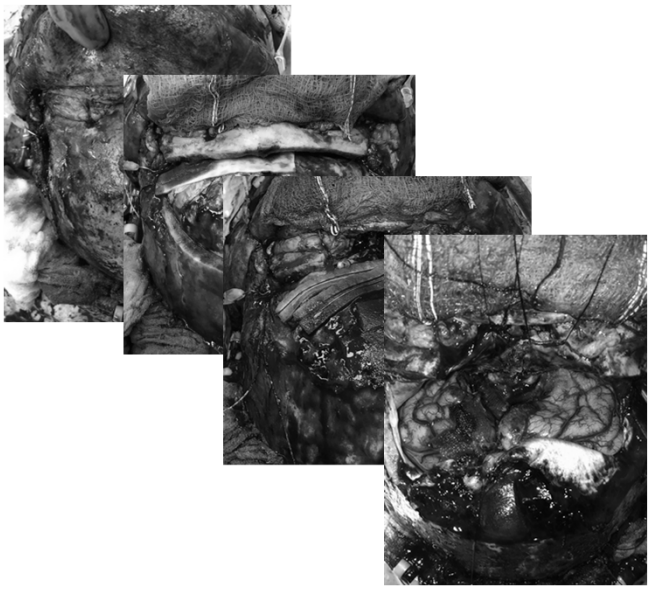
Case 1: Incidental Pathology

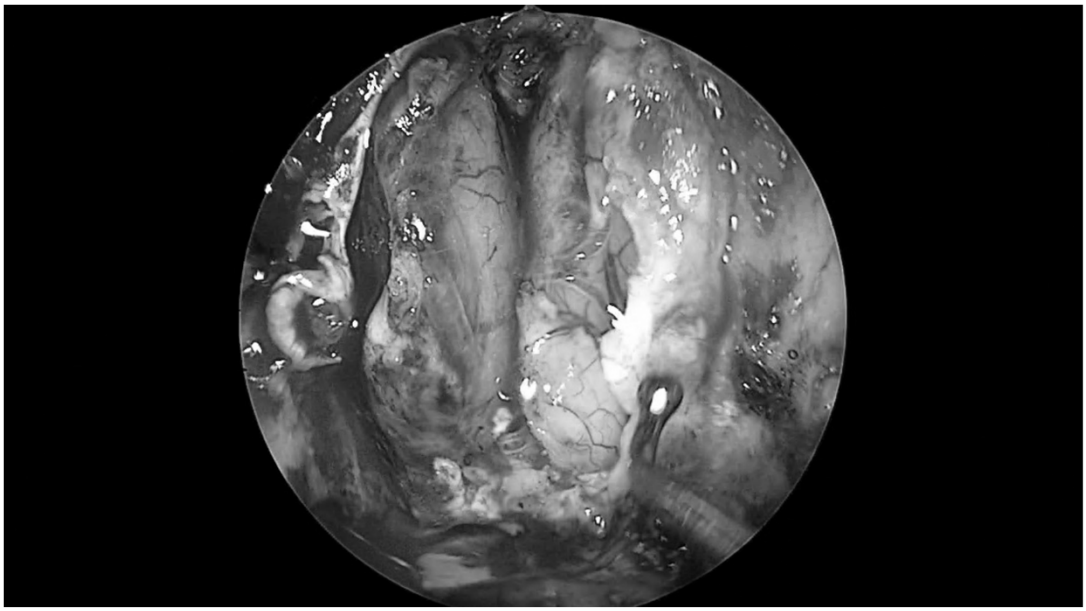
- Olfactory Neuroblastoma
  - Rare Neuroectodermal Malignancy
  - ~10% Sinonasal Malignancies



- 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

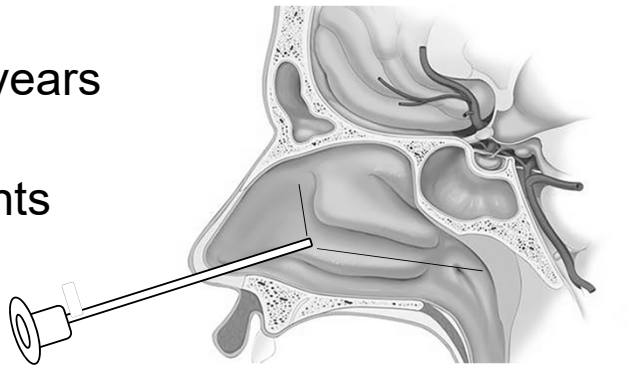
Definitive Treatment for Olfactory Neuroblastoma: Surgical resection





Endoscopic Tumor Resection

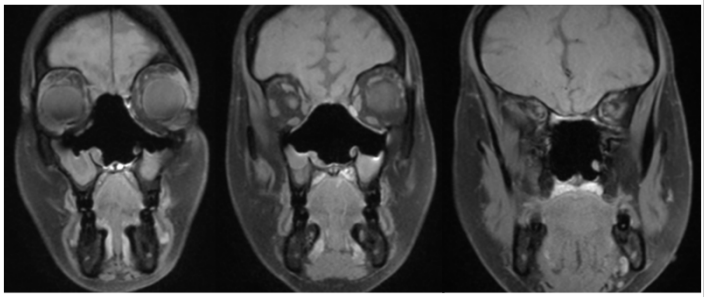
- Developed over the last 20 years
  - Largely Pioneered at OSU
- Reduced morbidity for patients
  - No brain retraction
  - No large bone removal
  - Vascular Reconstruction
- Equivalent Oncologic Outcomes*



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

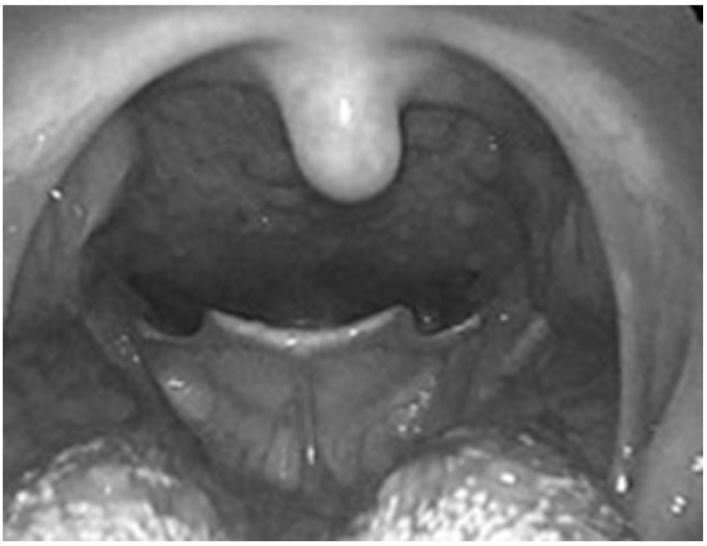


Conclusion: Sinonasal Malignancies

- 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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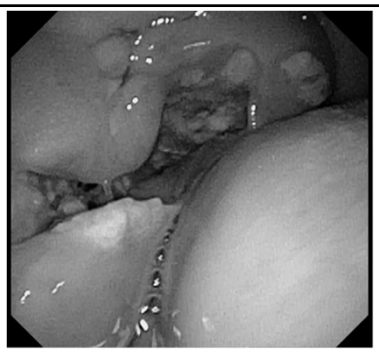
HPV: The Basics



- 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

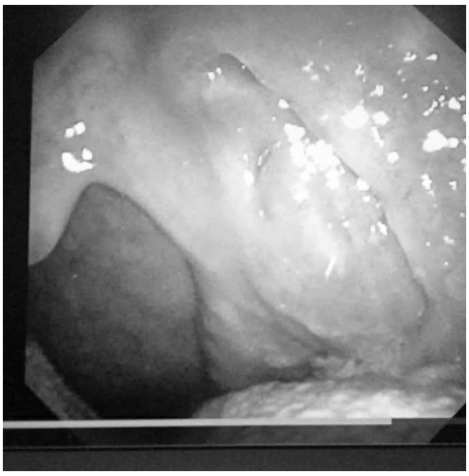
HPV-Related Oropharynx Cancer

- 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

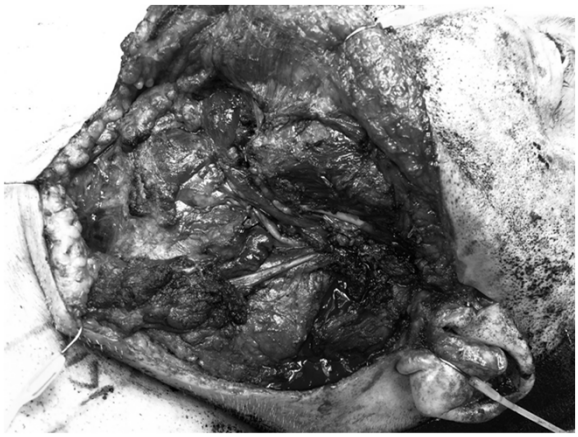
Multidisciplinary Tumor Board Discussion

- 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…

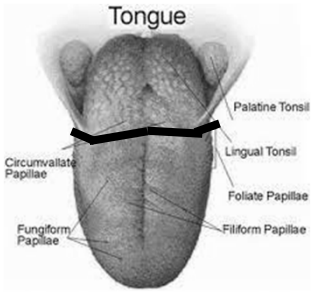


Conclusions: Oropharynx Cancer

- 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

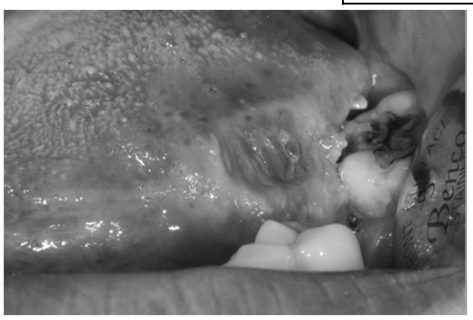
Case 3: Oral Cavity Cancer

- 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
Mucocele
Lichen Planus
Glossitis
Apthous 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

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Disclosures

None

Topics

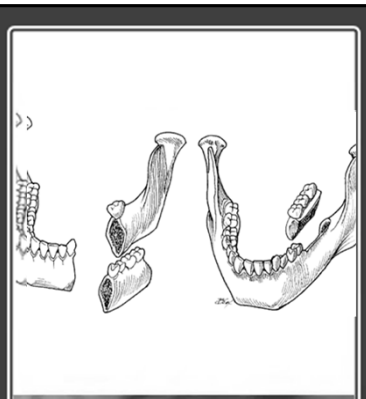
- Lesions involving the mandible
- Treatment and surgical resection
- Reconstructive options
- Maximizing form and function

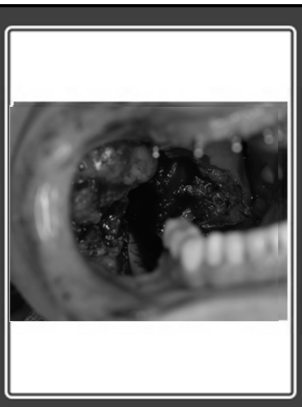
Lesions involving the mandible

- 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

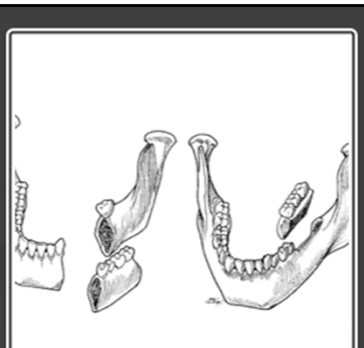
Treatment Options

- **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





Mandibulectomy:
Marginal mandible resection



Mandibulectomy:
Segmental mandible resection

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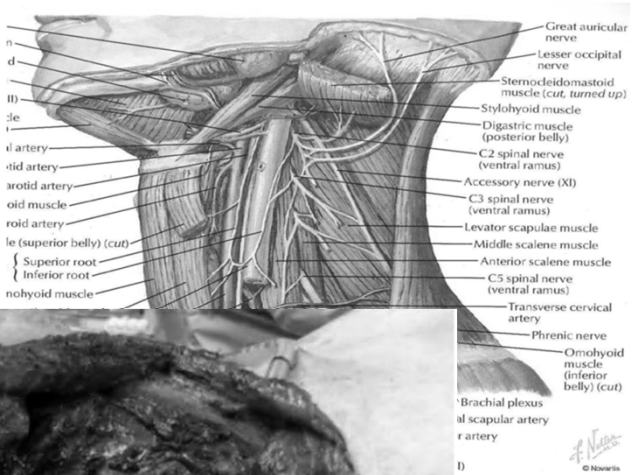
Neck Dissections:
Ipsilateral vs Bilateral



Reconstruction

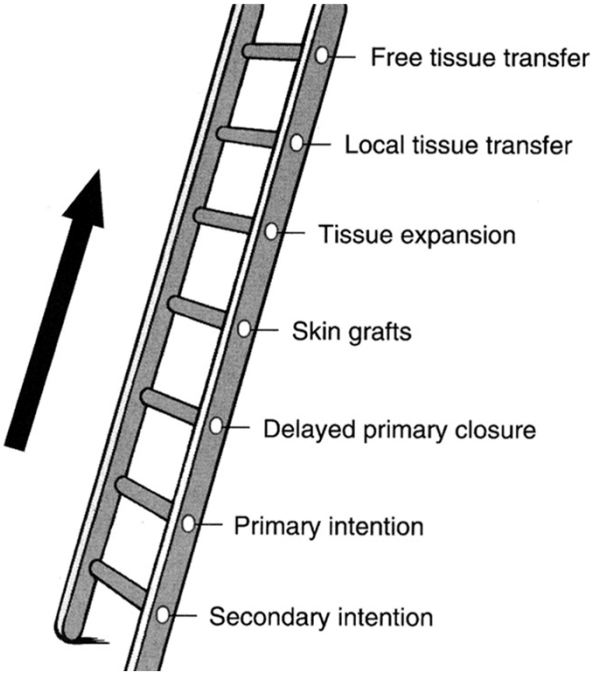
Reconstructive Goals

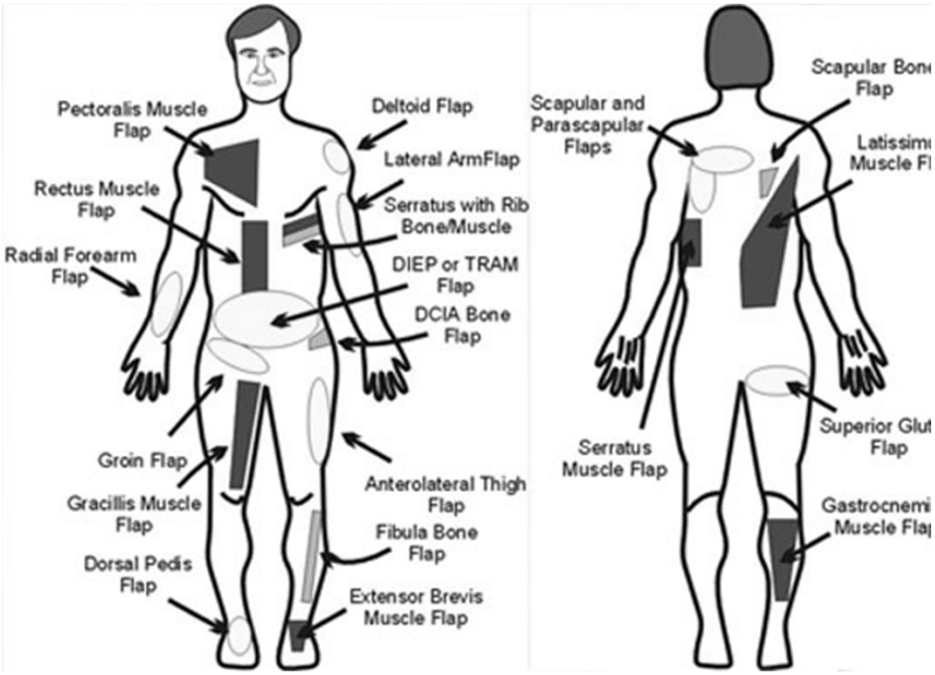
<u>Restoring Form and Function</u>:

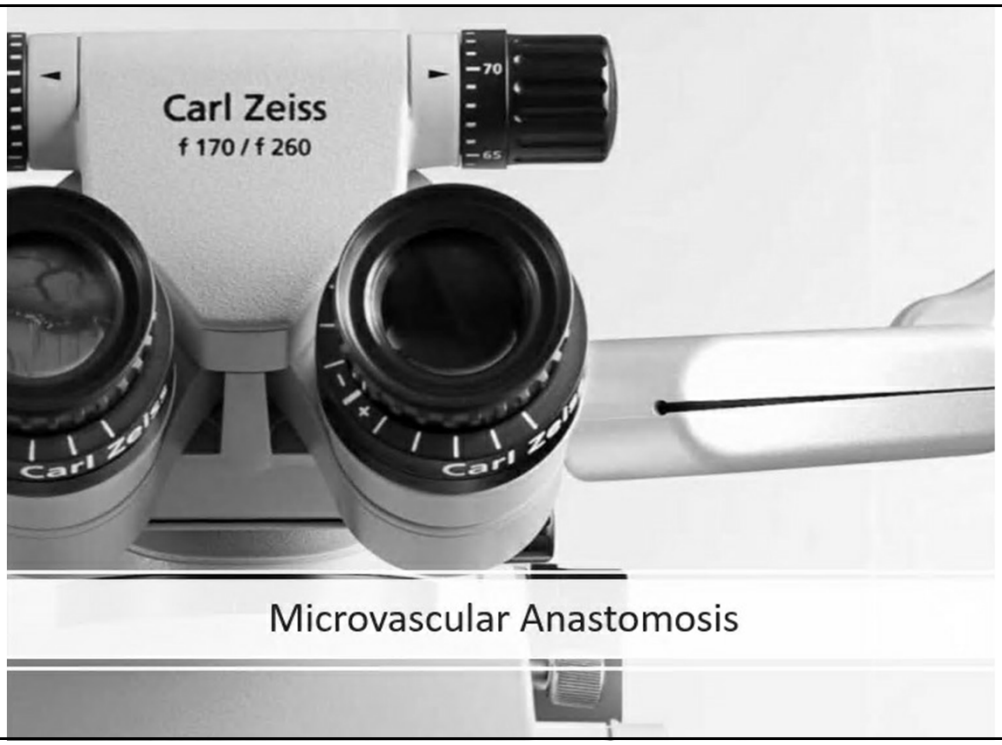
- Maintain dental occlusion
- Enable and maintain bite force
- Prevent plate exposure
- Restore cosmesis
- Improve tolerance of radiation therapy

Reconstructive Philosophy

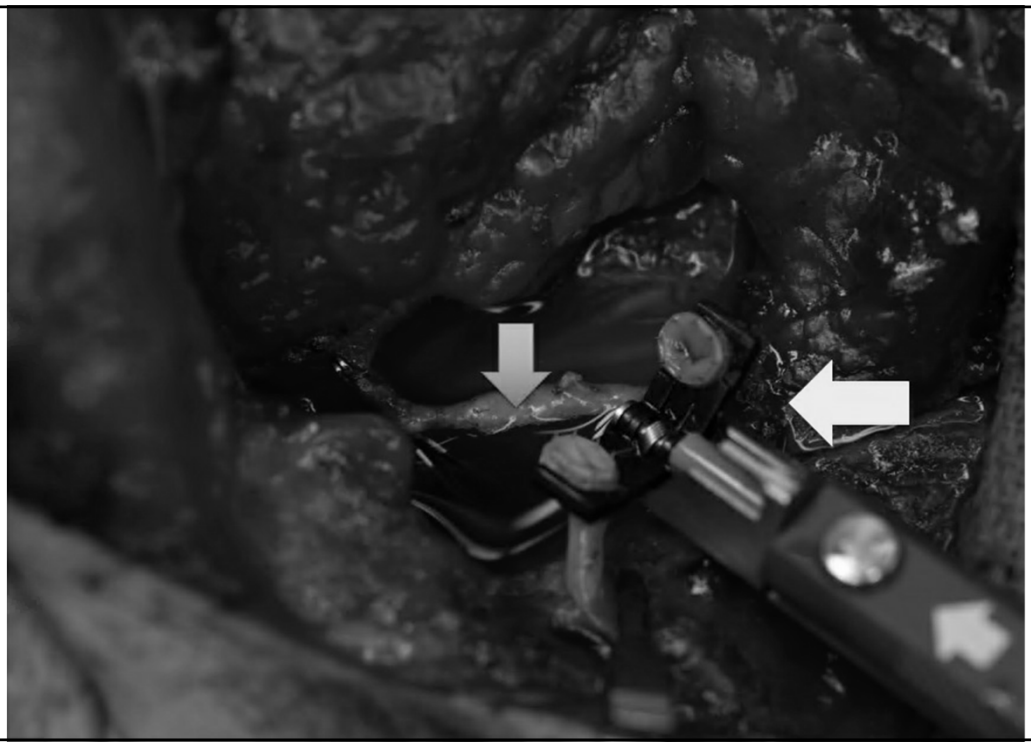
- Have a large “toolbox”
- Plan ahead
- Consider every patient individually
- Consider early and long-term outcomes
- Be creative







Microvascular Anastomosis



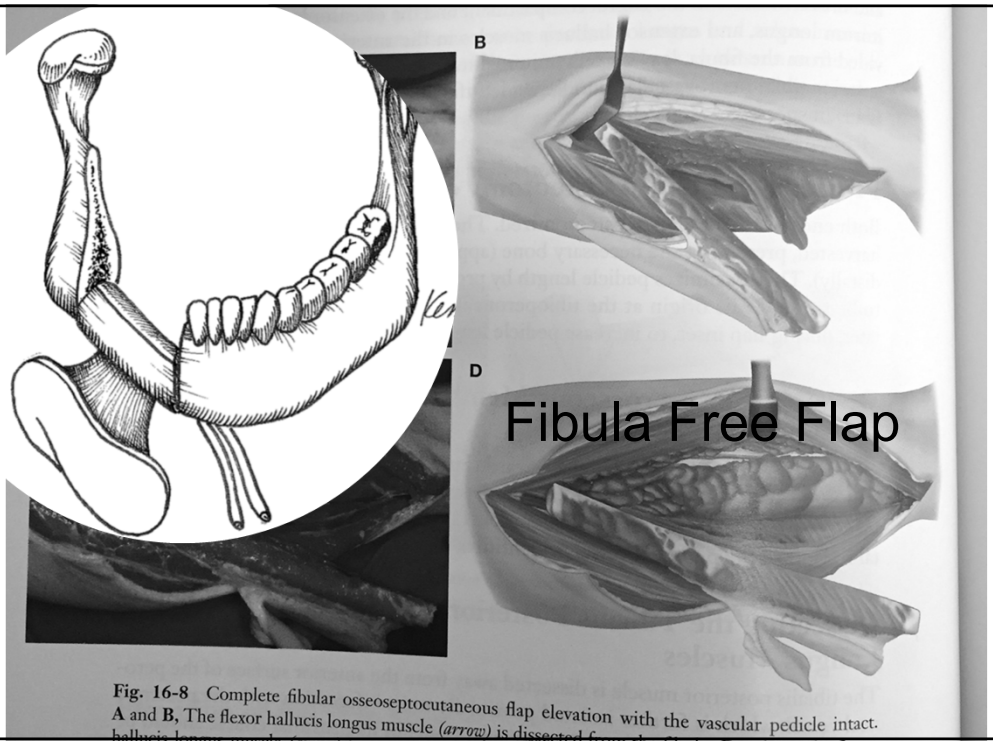


Fig. 16-8 Complete fibular osseoseptocutaneous flap elevation with the vascular pedicle intact. **A** and **B,** The flexor hallucis longus muscle *(arrow)* is dissected

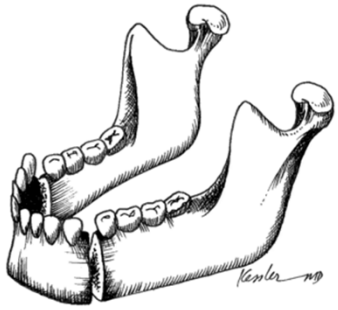


Fig. 2.11 The anterior mandibular defect.

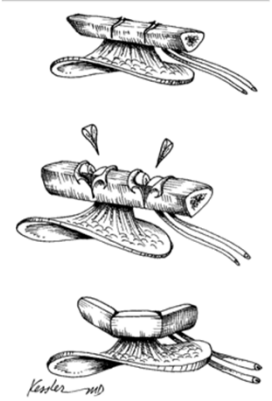


Fig. 2.13 Reconstruction with the fibular bone graft requires several closing osteotomies to achieve an acute bone graft arch.

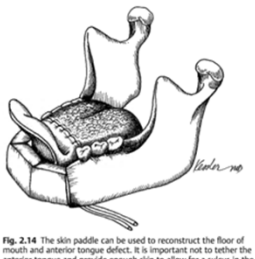


Fig. 2.14 The skin paddle can be used to reconstruct the floor of mouth and anterior tongue defect. It is important not to tether the anterior tongue and provide enough skin to allow for a sulcus in the floor of mouth. This helps maintain oral competence.

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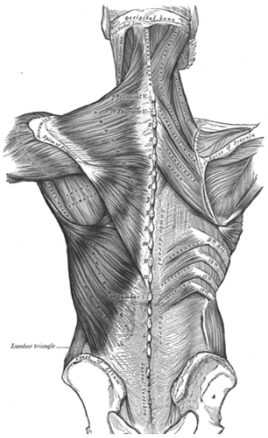
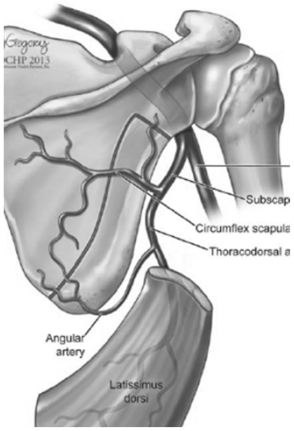




Scapula Free Flap

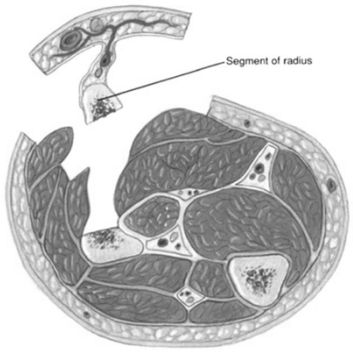


FIGURE 12-2. The cross-sectional anatomy of the forearm reveals the radial artery with its venae comitantes in the lateral intermuscular septum. The connection of the septum to the radius provides vascularity through perforators that supply the periosteum. The amount of radius that may be safely harvested is limited to 40% of the circumference.

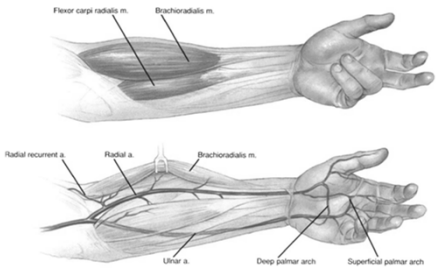
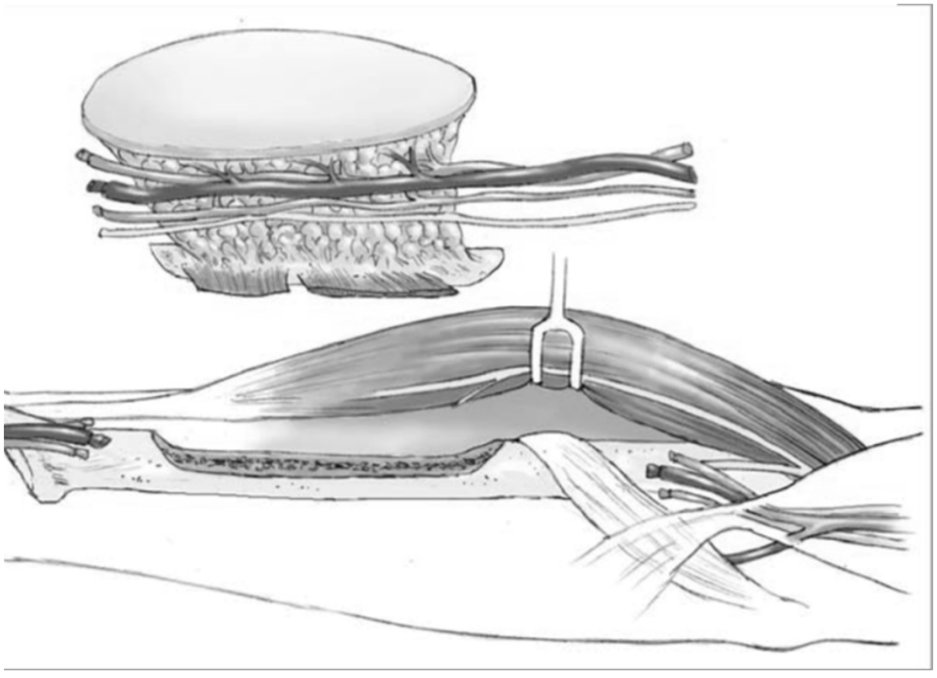
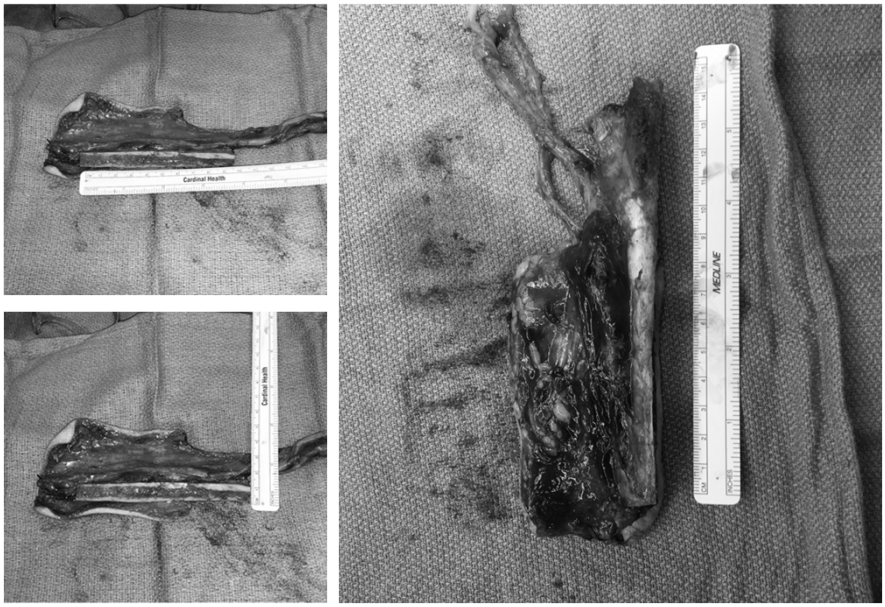
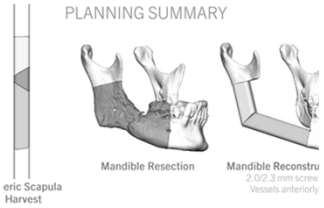


FIGURE 12-4. The radial artery runs a course between the flexor carpi radialis and the brachioradialis muscles before terminating in the deep palmar arch. The deep palmar arch supplies the principal circulation to the thumb and index finger. The ulnar artery terminates in the superficial palmar arch, which primarily supplies the third, fourth, and fifth digits and often also the index finger.

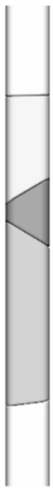
Osteocutaneous Radial Forearm Flap




Cardinal Health
Cardinal Health
MEDLINE

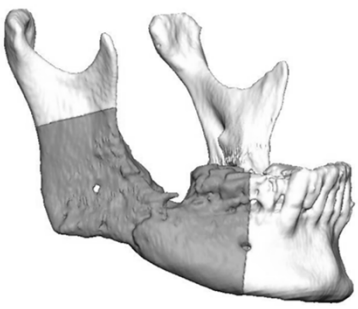


Custom Mandible Reconstruction

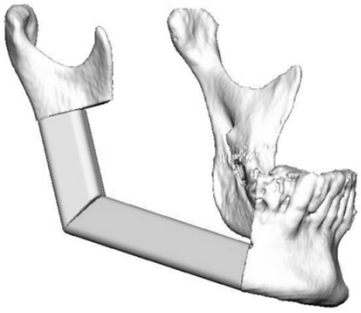


eric Scapula
Harvest

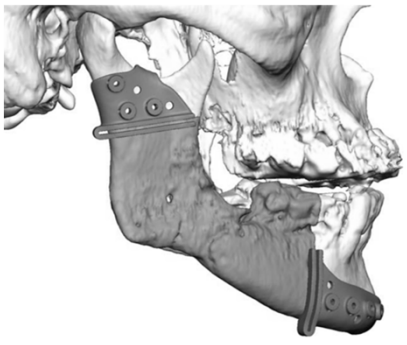
PLANNING SUMMARY

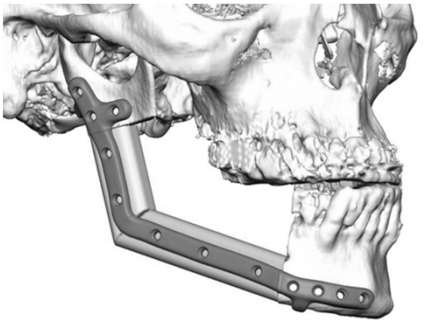


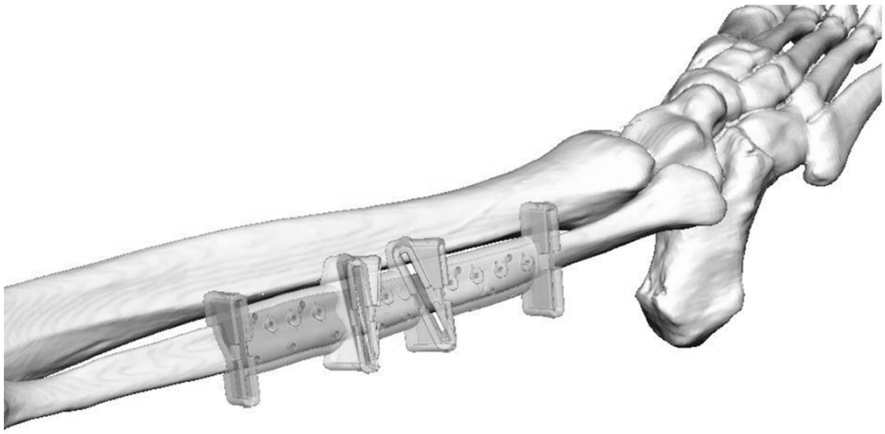
Mandible Resection

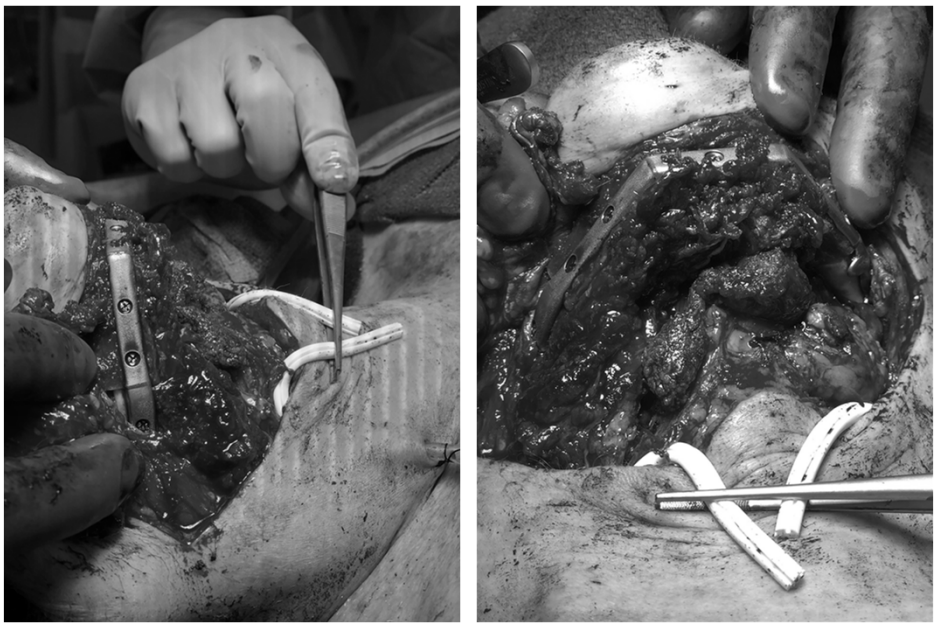


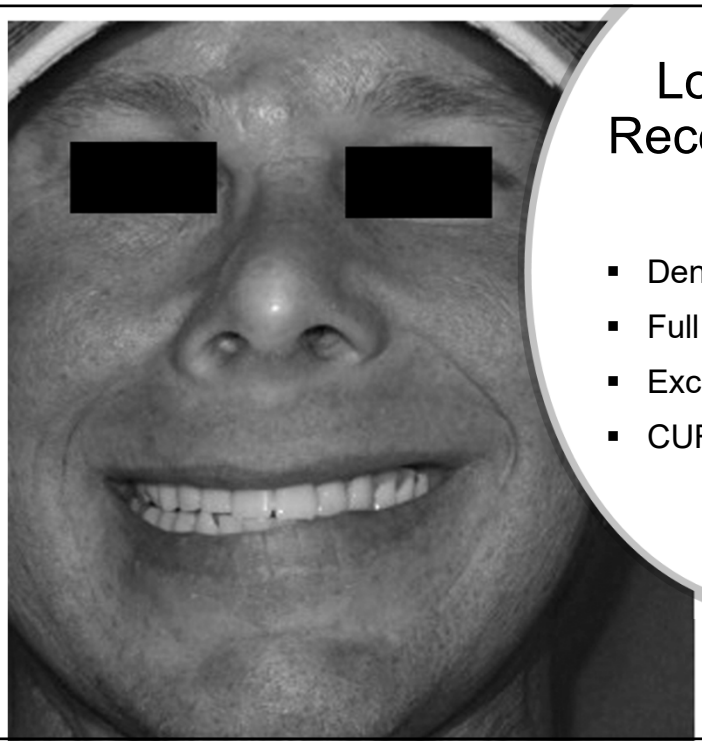
Mandible Reconstruction
2.0/2.3 mm screws
Vessels anteriorly











Long Term Reconstructive Goals

- Dental rehabilitation
- Full oral diet in public
- Excellent cosmesis
- CURE!!