

AN OVERVIEW OF HEAD AND NECK CANCER WORKUP: FROM BIOPSY TO SURGERY

HAMAD ALHARBI



Oral and
Maxillofacial
Surgery

THE FOLLOWING POTENTIAL CONFLICT OF INTEREST RELATIONSHIPS ARE GERMANE TO MY PRESENTATION.

EQUIPMENT: NONE

SPEAKERS BUREAU: NONE

STOCK SHAREHOLDER: NONE

GRANT/RESEARCH SUPPORT: NONE

CONSULTANT: NONE

STATUS OF FDA DEVICES USED FOR THE MATERIAL BEING PRESENTED

NA/NON-CLINICAL


STATUS OF OFF-LABEL USE OF DEVICES, DRUGS OR OTHER MATERIALS THAT CONSTITUTE THE SUBJECT OF THIS PRESENTATION

NA/NON-CLINICAL





OUTLINE



Epidemiology of Oral Cancer	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries

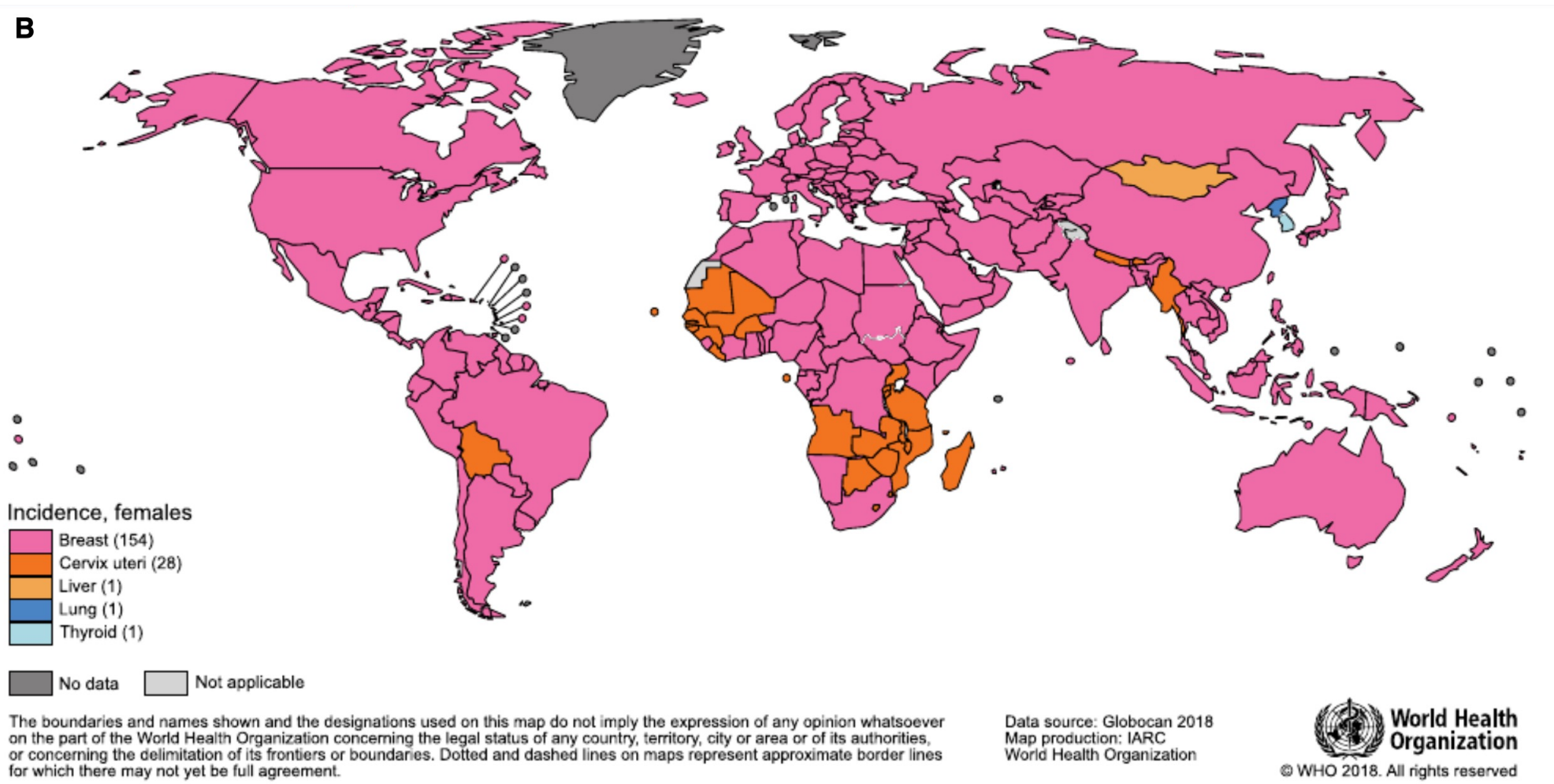
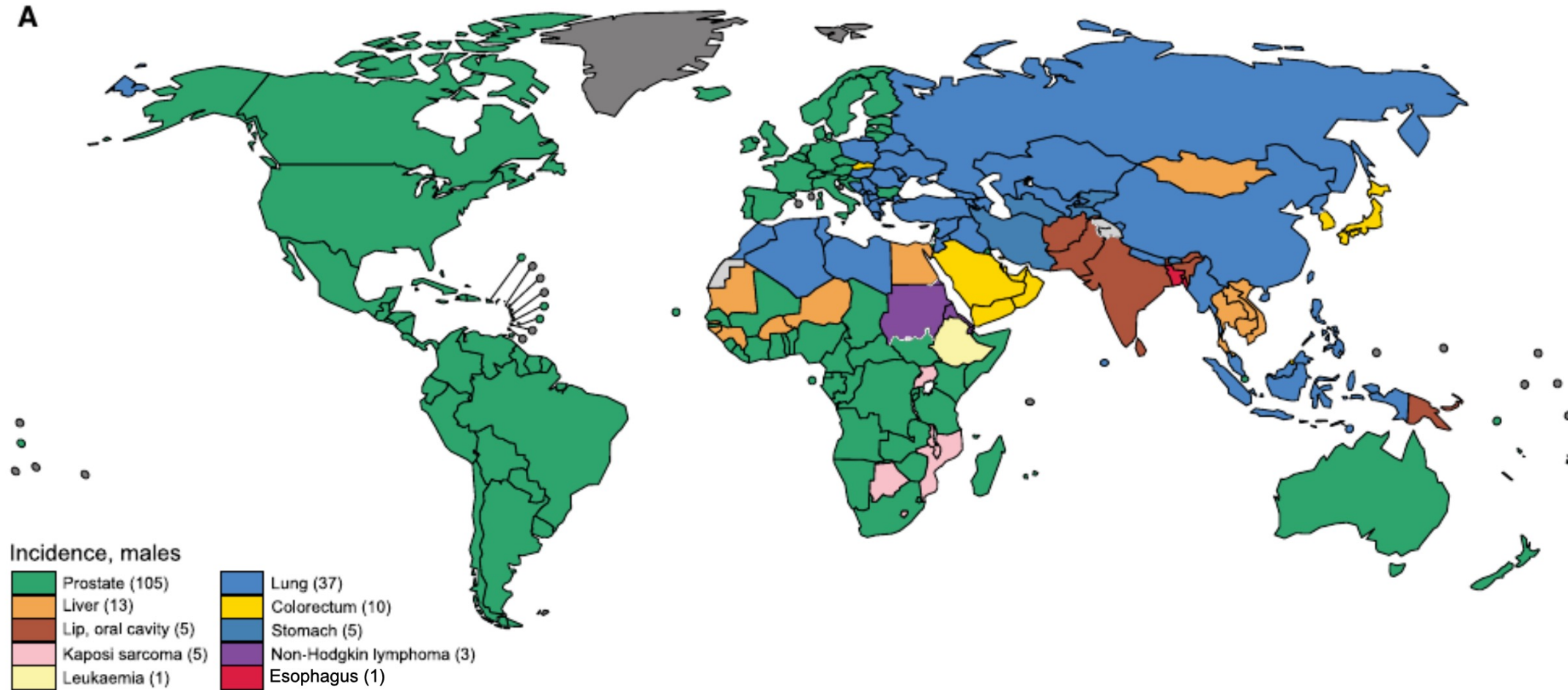


FIGURE 5. Global Maps Presenting the Most Common Type of Cancer Incidence in 2018 in Each Country Among (A) Men and (B) Women. The numbers of countries represented in each ranking group are included in the legend. Source: GLOBOCAN 2018.

A



S E E R



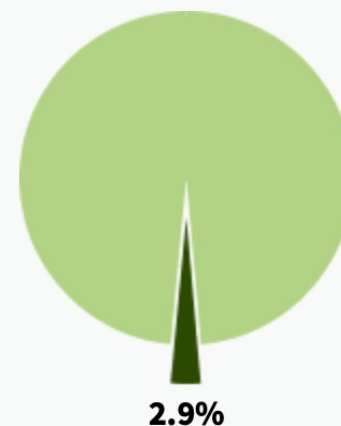
NATIONAL CANCER INSTITUTE

Surveillance, Epidemiology, and End Results Program

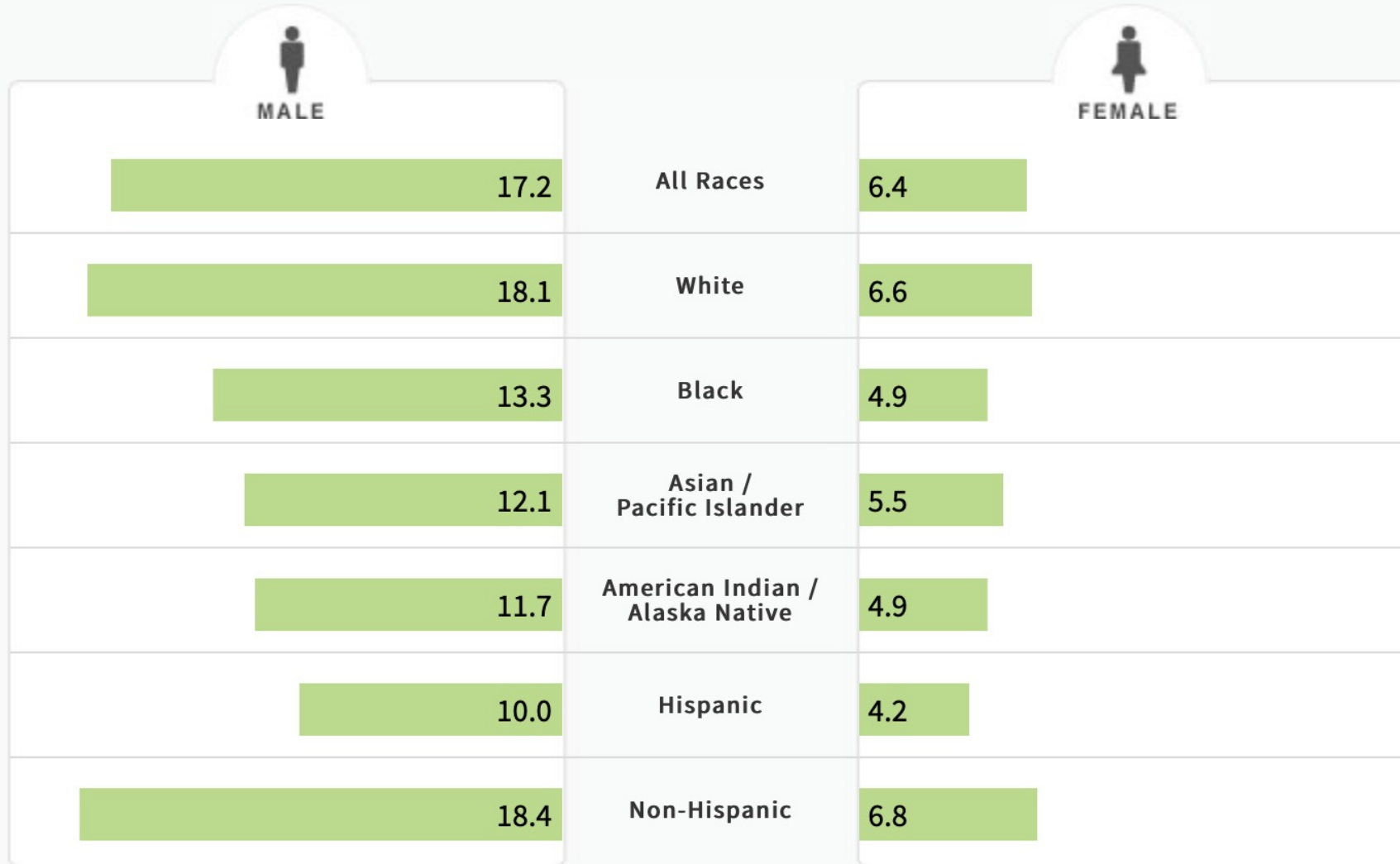


Common Types of Cancer	Estimated New Cases 2020	Estimated Deaths 2020
1. Breast Cancer (Female)	276,480	42,170
2. Lung and Bronchus Cancer	228,820	135,720
3. Prostate Cancer	191,930	33,330
4. Colorectal Cancer	147,950	53,200
5. Melanoma of the Skin	100,350	6,850
6. Bladder Cancer	81,400	17,980
7. Non-Hodgkin Lymphoma	77,240	19,940
8. Kidney and Renal Pelvis Cancer	73,750	14,830
9. Uterine Cancer	65,620	12,590
10. Leukemia	60,530	23,100
-	-	-
Oral Cavity and Pharynx Cancer	53,260	10,750

Oral cavity and pharynx cancer represents 2.9% of all new cancer cases in the U.S.



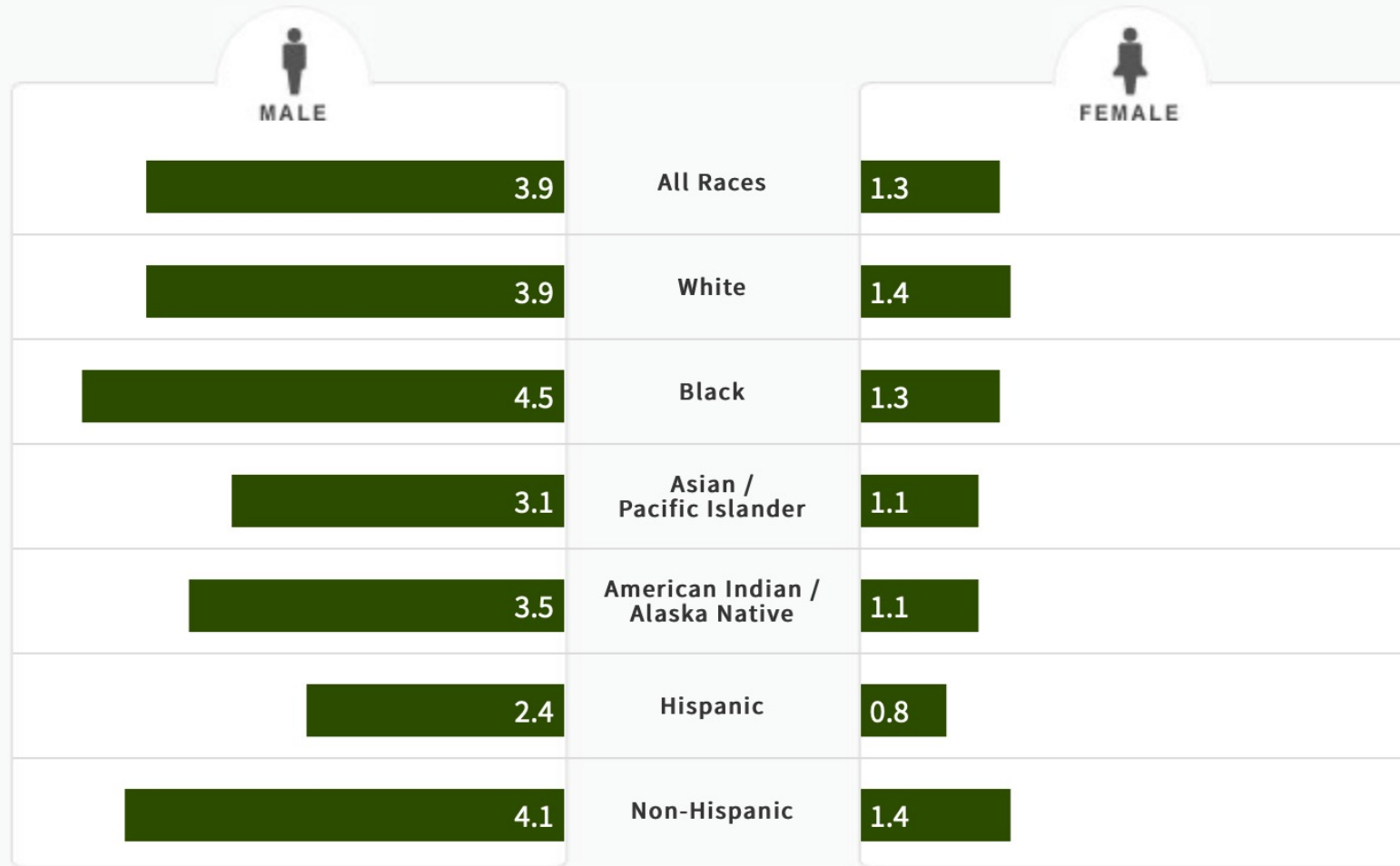
Rate of New Cases per 100,000 Persons by Race/Ethnicity & Sex: Oral Cavity and Pharynx Cancer



SEER 21 2013–2017, Age-Adjusted



Death Rate per 100,000 Persons by Race/Ethnicity & Sex: Oral Cavity and Pharynx Cancer



U.S. 2013–2017, Age-Adjusted



OUTLINE

Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

Tobacco

Alcohol

Chronic irritation

Immunosuppression

Genetic conditions

Viruses (HSV-1, HPV
-2,11,16)

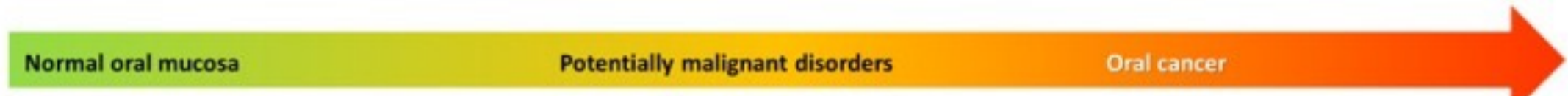
Dietary factors

RISK FACTORS FOR ORAL CANCER



OUTLINE

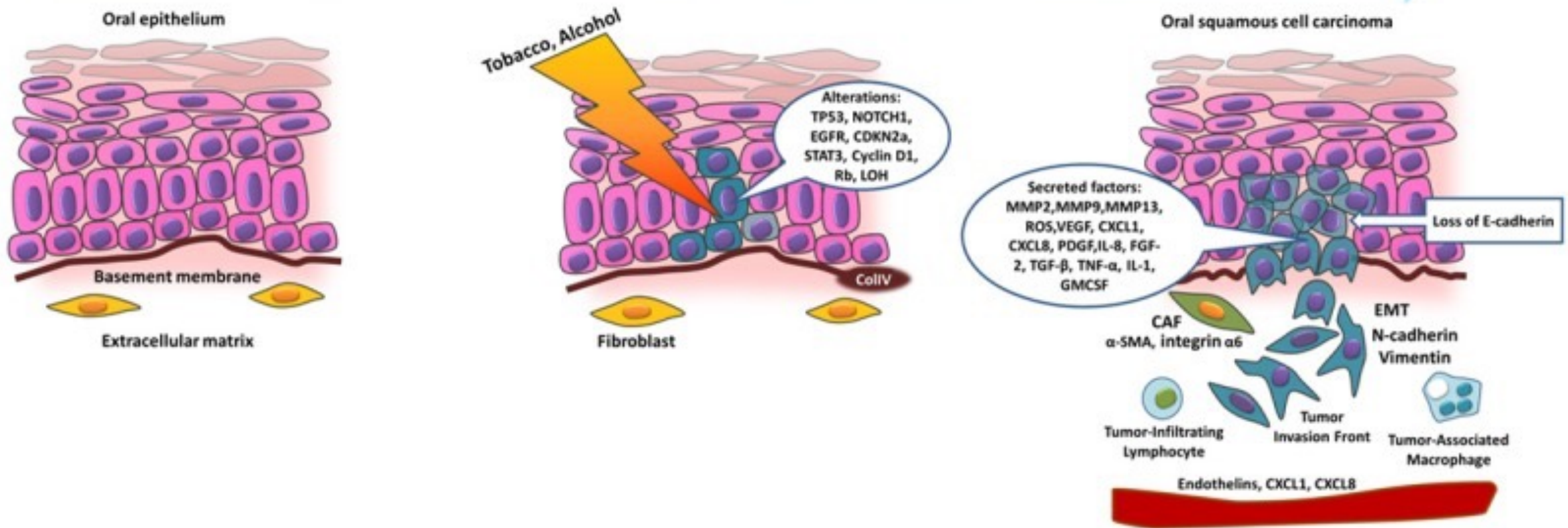
Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	



Homeostasis Hyperplasia Mild Dysplasia Moderate Dysplasia Severe Dysplasia CIS Invasive carcinoma



Normal keratinocytes Genetic instability or Aneuploidy Adaptive advantages Invasion



OUTLINE

Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

Pain

Neck Mass

Trismus

Loose teeth

Ulceration

Leukoplakia

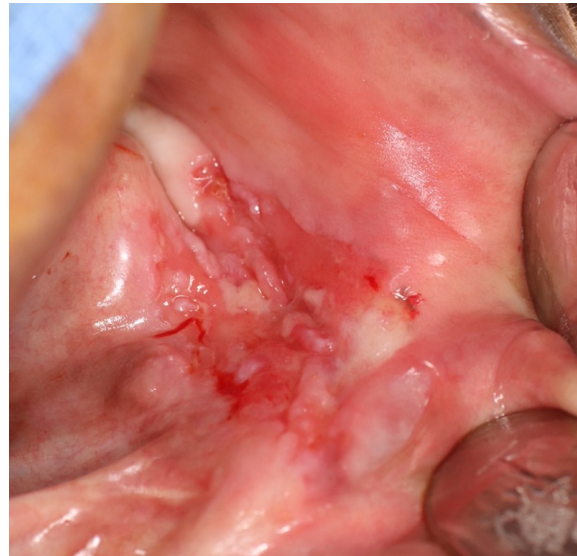
Erythroleukoplakia

Erythroplakia

SIGN AND SYMPTOMS



CLINICAL PICTURES



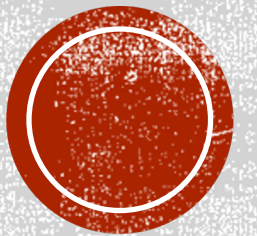


OUTLINE

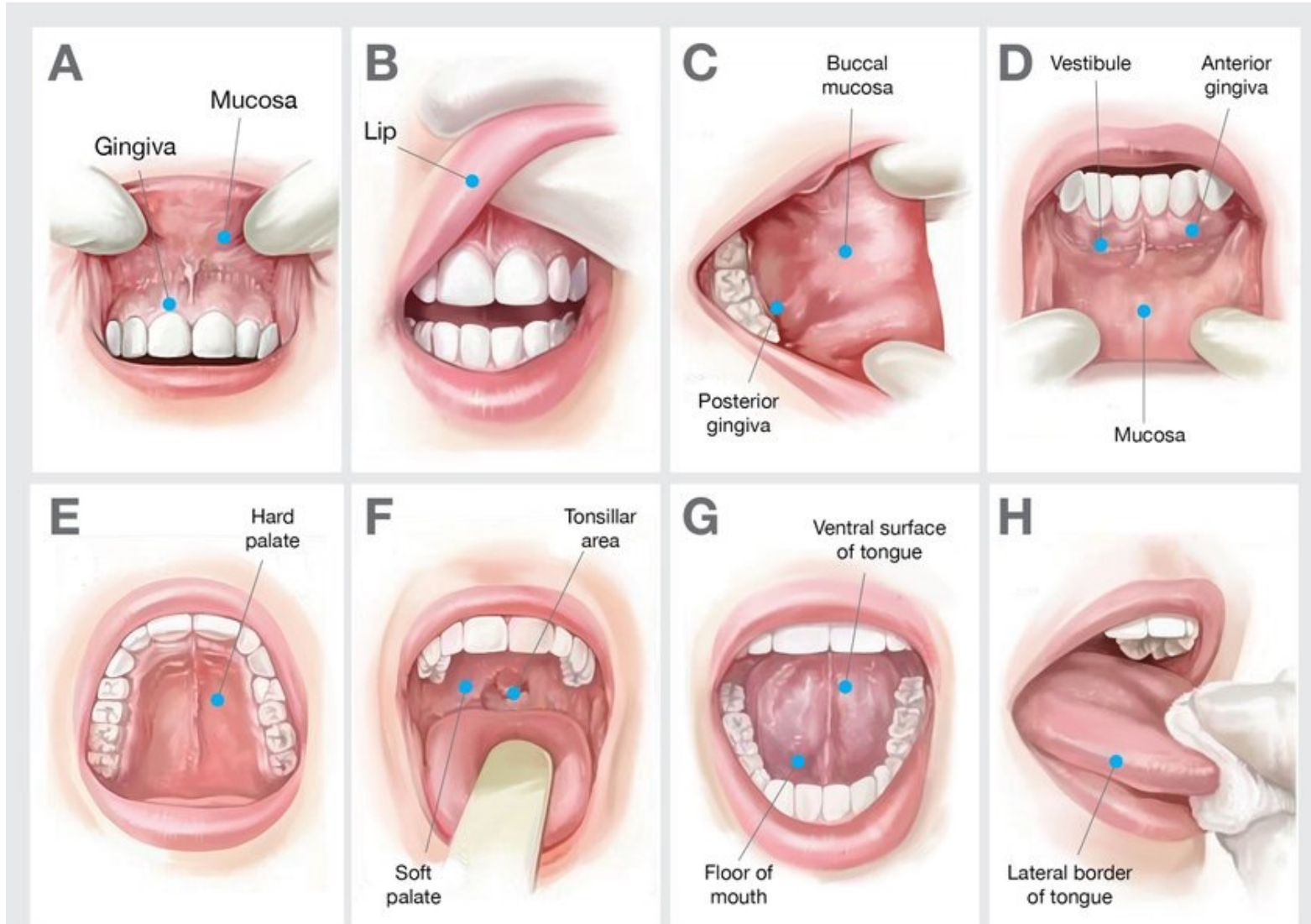
Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	



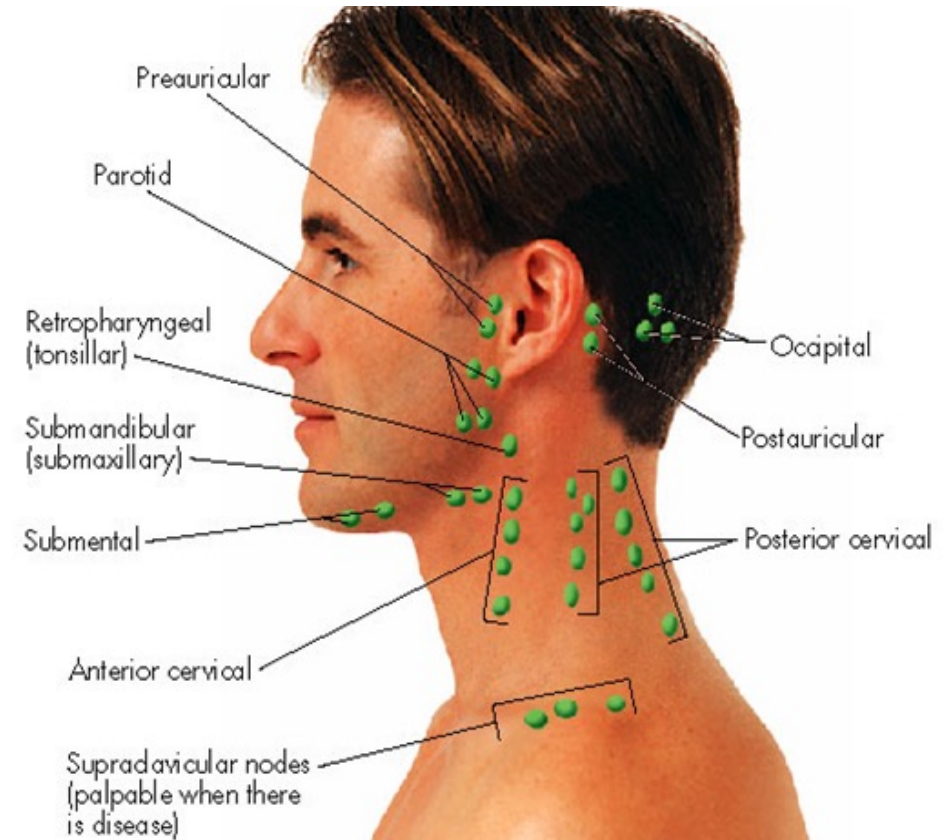
PHYSICAL EXAMINATION



ORAL EXAMINATION



NECK EXAMINATION

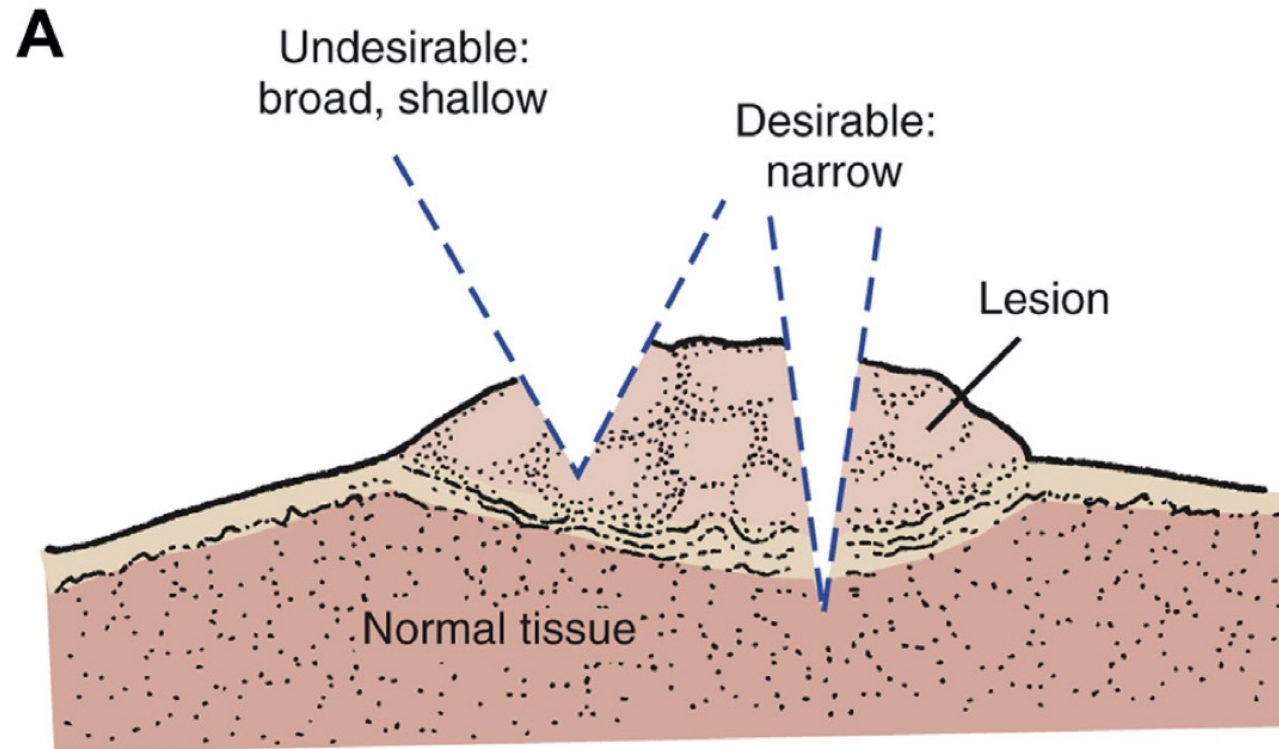


OUTLINE

Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

BIOPSY

Incisional vs excisional



OUTLINE

Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

CBC

CMP with LFT – to r/o liver metastasis

Coags (PT/INR, PTT)

Patient specific studies

Albumin/ Prealbumin

LAB WORK



Panorex/ I-CAT (Bony involvement
and dental evaluation)

CT maxillofacial and neck with IV
contrast

Chest X-ray / Chest CT scan with
and without contrast

MRI

PET/ CT scan

IMAGING

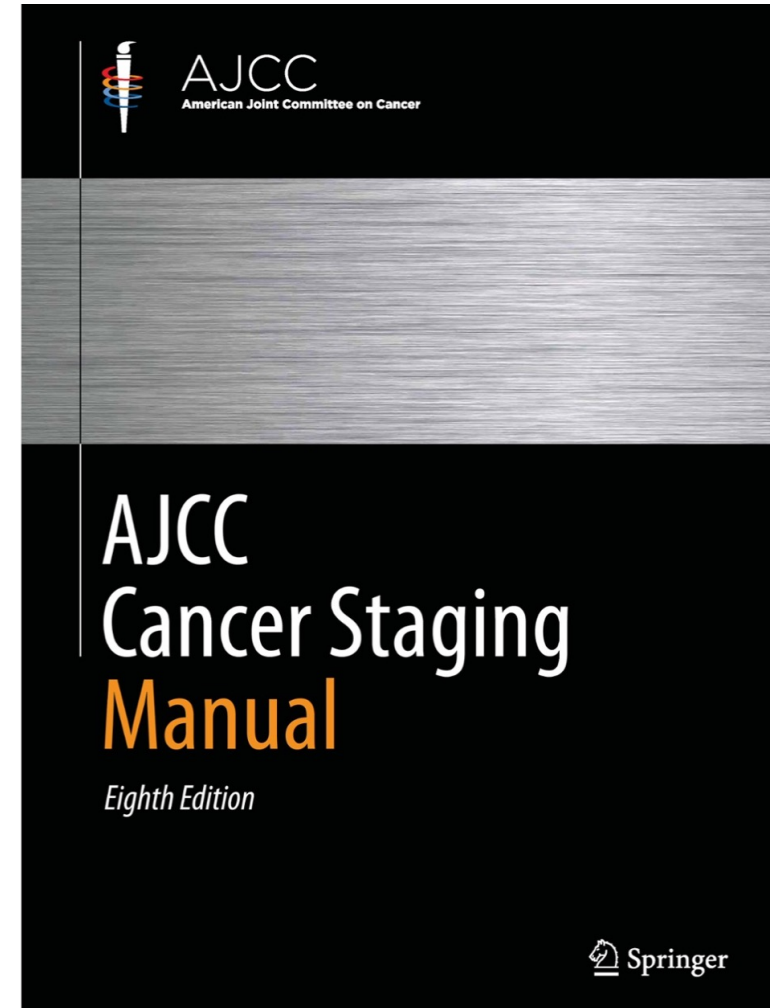


OUTLINE

Epidemiology	
Risk factors	
Oral Carcinogenesis	
Clinical Presentation	
Physical Examination	
Biopsy	
Lab Work and Imaging	
Staging of oral cavity cancer	
Treatment Modalities	
Clinical Cases	

THE AMERICAN JOINT COMMITTEE ON CANCER (AJCC)

T	N	M
Tumor	Lymph node	Metastasis



T (SIZE OF PRIMARY TUMOR)

✓	T Category	T Criteria
	TX	Primary tumor cannot be assessed
	Tis	Carcinoma <i>in situ</i>
	T1	Tumor ≤ 2 cm with depth of invasion (DOI)* ≤ 5 mm
	T2	Tumor ≤ 2 cm with DOI* > 5 mm or tumor > 2 cm and ≤ 4 cm with DOI* ≤ 10 mm
	T3	Tumor > 2 cm and ≤ 4 cm with DOI* > 10 mm or tumor > 4 cm with DOI* ≤ 10 mm
	T4	Moderately advanced or very advanced local disease
	T4a	Moderately advanced local disease Tumor > 4 cm <u>with</u> DOI* > 10 mm or tumor invades adjacent structures only (e.g., through cortical bone of the mandible or maxilla or involves the maxillary sinus or skin of the face) Note: Superficial erosion of bone/tooth socket (alone) by a gingival primary is not sufficient to classify a tumor as T4.
	T4b	Very advanced local disease Tumor invades masticator space, pterygoid plates, or skull base and/or encases the internal carotid artery
*DOI is depth of invasion and not tumor thickness.		



N (LYMPH NODE)

✓	<i>cN Category</i>	<i>cN Criteria</i>
	NX	Regional lymph nodes cannot be assessed
	N0	No regional lymph node metastasis
	N1	Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension ENE(-)
	N2	Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
	N2a	Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension, and ENE(-)
	N2b	Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension, and ENE(-)
	N2c	Metastases in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
	N3	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or metastasis in any node(s) and clinically overt ENE(+)
	N3a	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
	N3b	Metastasis in any node(s) and clinically overt ENE(+)
<p><i>Note:</i> A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the cricoid (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).</p>		



M (DISTANT METASTASIS)

✓	<i>M Category</i>	<i>M Criteria</i>
	cM0	No distant metastasis
	cM1	Distant metastasis
	pM1	Distant metastasis, microscopically confirmed



STAGING

✓	<i>When T is...</i>	<i>And N is...</i>	<i>And M is...</i>	<i>Then the stage group is...</i>
	Tis	N0	M0	0
	T1	N0	M0	I
	T2	N0	M0	II
	T3	N0	M0	III
	T1,T2,T3	N1	M0	III
	T4a	N0,N1	M0	IVA
	T1,T2,T3,T4a	N2	M0	IVA
	Any T	N3	M0	IVB
	T4b	Any N	M0	IVB
	Any T	Any N	M1	IVC



OUTLINE

Epidemiology

Risk factors

Oral Carcinogenesis

Clinical Presentation

Physical Examination

Biopsy

Lab Work and Imaging

Staging of oral cavity cancer

Treatment Modalities

- Surgical Management
- Non-Surgical management

Clinical Cases

TUMOR BOARD



- Head and neck surgeons
- Radiation oncologist
- Medical oncologist
- Pathologist
- Maxillofacial prosthodontics
- Social worker



FACTORS AFFECTING TREATMENT OPTIONS

- Tumor Factors:

Site, size, location, nodal status, depth of invasion

- Patient factors

Comorbidities, Functional status, age, goals of care, life-style, home support

- Care team factor

Institutional factors, Surgeon factors , Operation room factors,



TREATMENT CONSIDERATION

Early stage:

- Single modality therapy

Advanced stage

- Surgery with adjuvant radiotherapy
- Surgery with adjuvant chemoradiation
- Neoadjuvant chemo or radiation followed by surgery



NCCN

National Comprehensive
Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Head and Neck Cancers

Version 1.2020 — February 12, 2020

[NCCN Guidelines for Patients®](#)

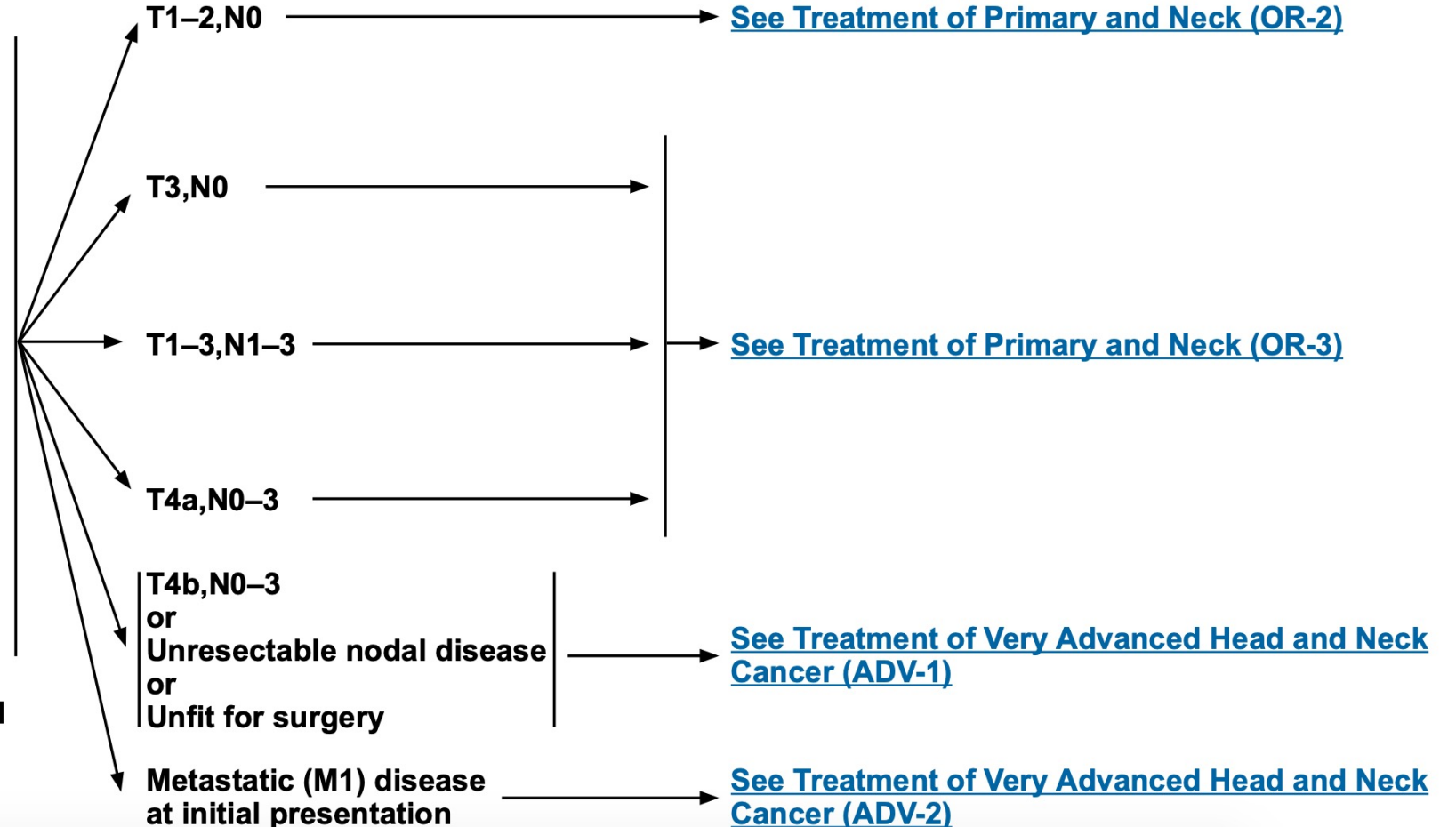


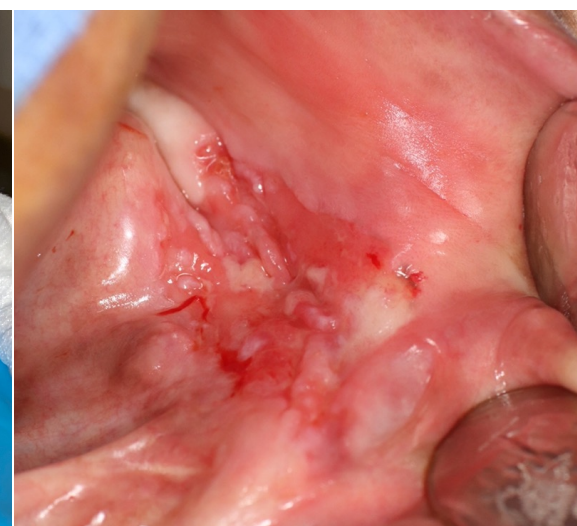
Buccal mucosa, floor of mouth, anterior tongue, alveolar ridge, retromolar trigone, hard palate

WORKUP

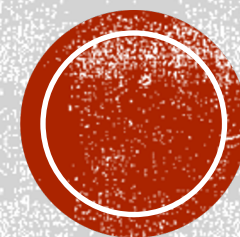
- H&P^{a,b} including a complete head and neck exam; mirror and fiberoptic examination as clinically indicated
- Biopsy^c
- As clinically indicated:
 - ▶ Chest CT (with or without contrast)^d
 - ▶ CT with contrast and/or MRI with contrast of primary and neck
 - ▶ Consider FDG PET/CT^{d,e}
 - ▶ Examination under anesthesia (EUA) with endoscopy
 - ▶ Preanesthesia studies
 - ▶ Dental/prosthetic evaluation,^f including Panorex or dental CT without contrast^d
 - ▶ Nutrition, speech and swallowing evaluation/therapy^g
 - ▶ Smoking cessation counseling^a
 - ▶ Fertility/reproductive counseling^h
- Multidisciplinary consultation as indicated

CLINICAL STAGING





CASES



CASE PRESENTATION

- 48 y/o male patient, presented with a pain in the right posterior mandible and trismus for 2 months.
- Patient presented to a dentist, who removed tooth # 32. patient continued to have the same symptoms.
- Went back to the same dentist who removed tooth # 31
- After one month patient presented to us with worsening pain and trismus.



STEP 1

Clinical examination:

- Unremarkable neck examination

STEP 2 - INCISIONAL BIOPSY

Incisional biopsy:

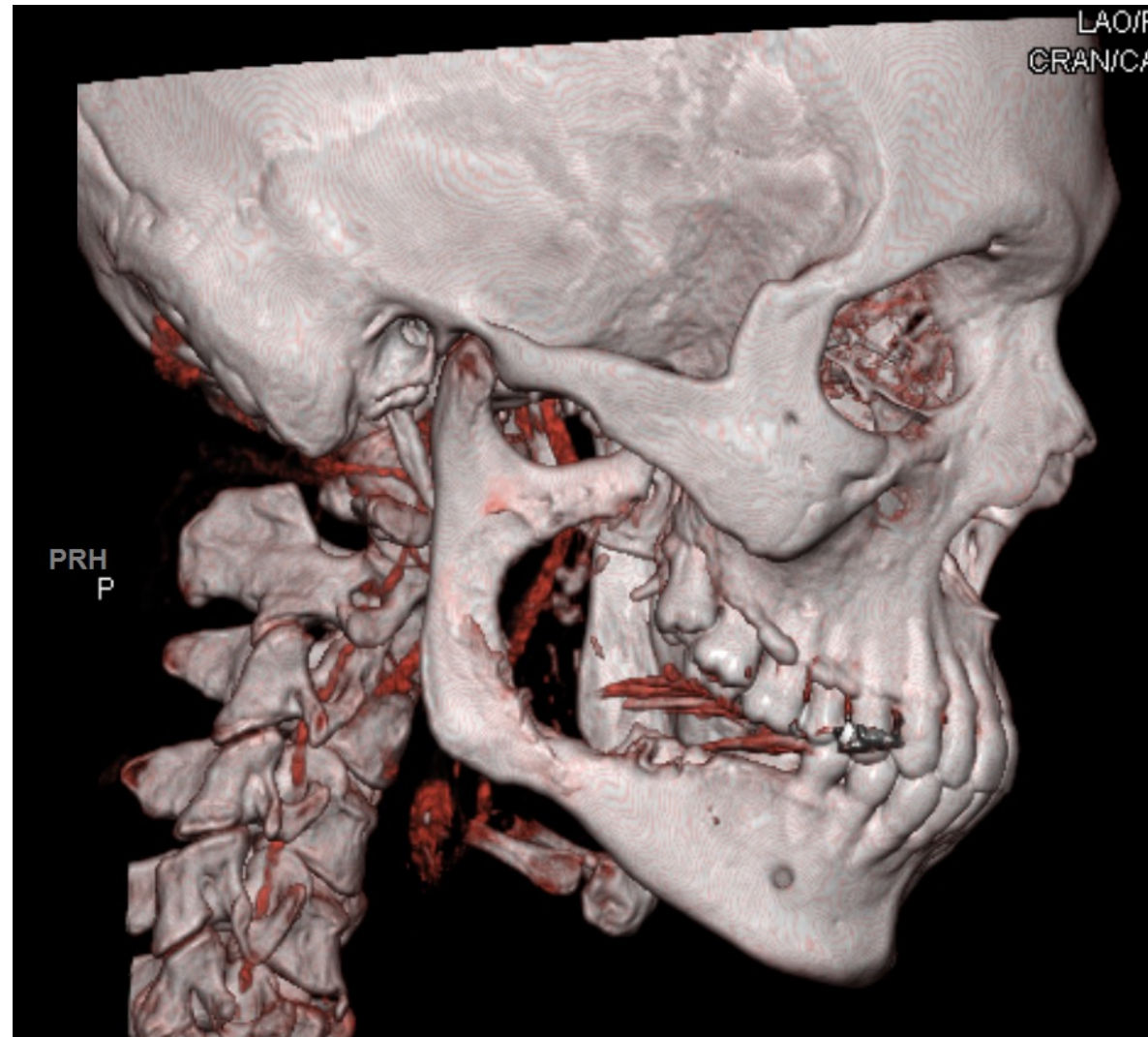
Moderately differentiated Invasive squamous cell carcinoma



STEP 3

- Labs (CBC, BMP, PT/INR, PTT) —————> Unremarkable
- Chest CT scan with IV contrast —————> Unremarkable
- Head and neck CT scan with IV contrast —————> advanced disease





CT Facial w/ Contrast
Series Coronal Coronal 1.000
1.00 mm
Image #97/189
4/22/2020
10:20:15

Jackson Memorial Hosp
KING, JOHNNY, EARL
MRN: 5249883
DOB 10/31/1969, Age 050Y, M
CT-20-0042171
4/22/2020
10:20:15



mAs 100
KVP 120
Exp Time 500
mA 200
Slice Location 16.85
Series #7
www.hwl 2000/300

CT Facial w/ Contrast
Series 2.0
2.00 mm
Image #44/92
4/22/2020
10:20:15

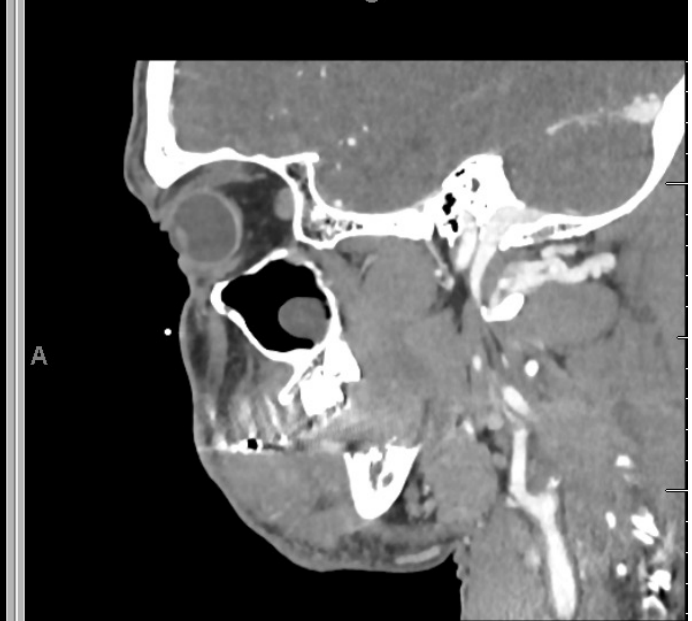
Jackson Memorial Hosp
KING, JOHNNY, EARL
MRN: 5249883
DOB 10/31/1969, Age 050Y, M
CT-20-0042171
4/22/2020
10:20:15



mAs 100
KVP 120
Exp Time 500
mA 200
Slice Location 86
Series #12
www.hwl 230/40

CT Facial w/ Contrast
Series Sagittal Sagittal 1.000
1.00 mm
Image #110/157
4/22/2020
10:20:15

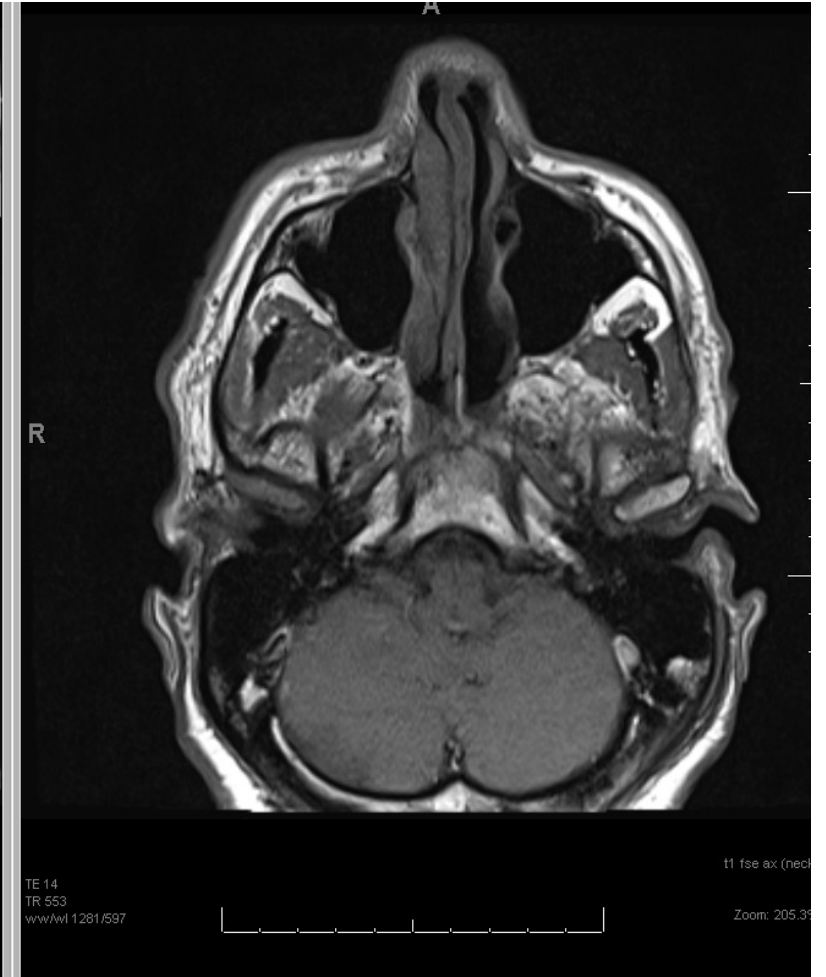
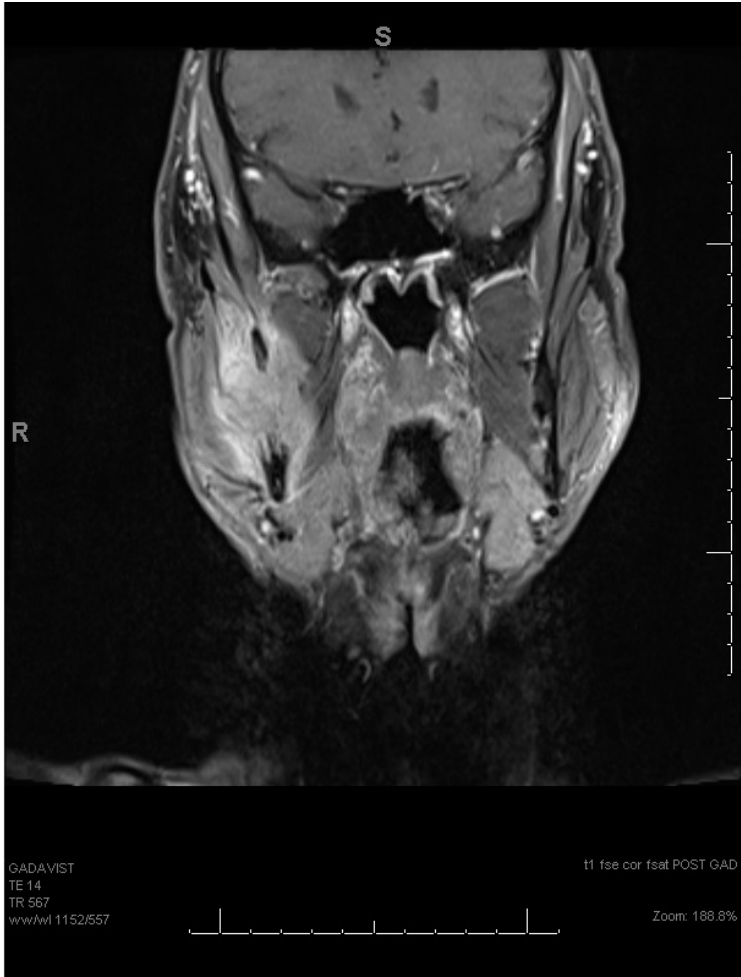
Jackson Memorial Hosp
KING, JOHNNY, EARL
MRN: 5249883
DOB 10/31/1969, Age 050Y, M
CT-20-0042171
4/22/2020
10:20:15



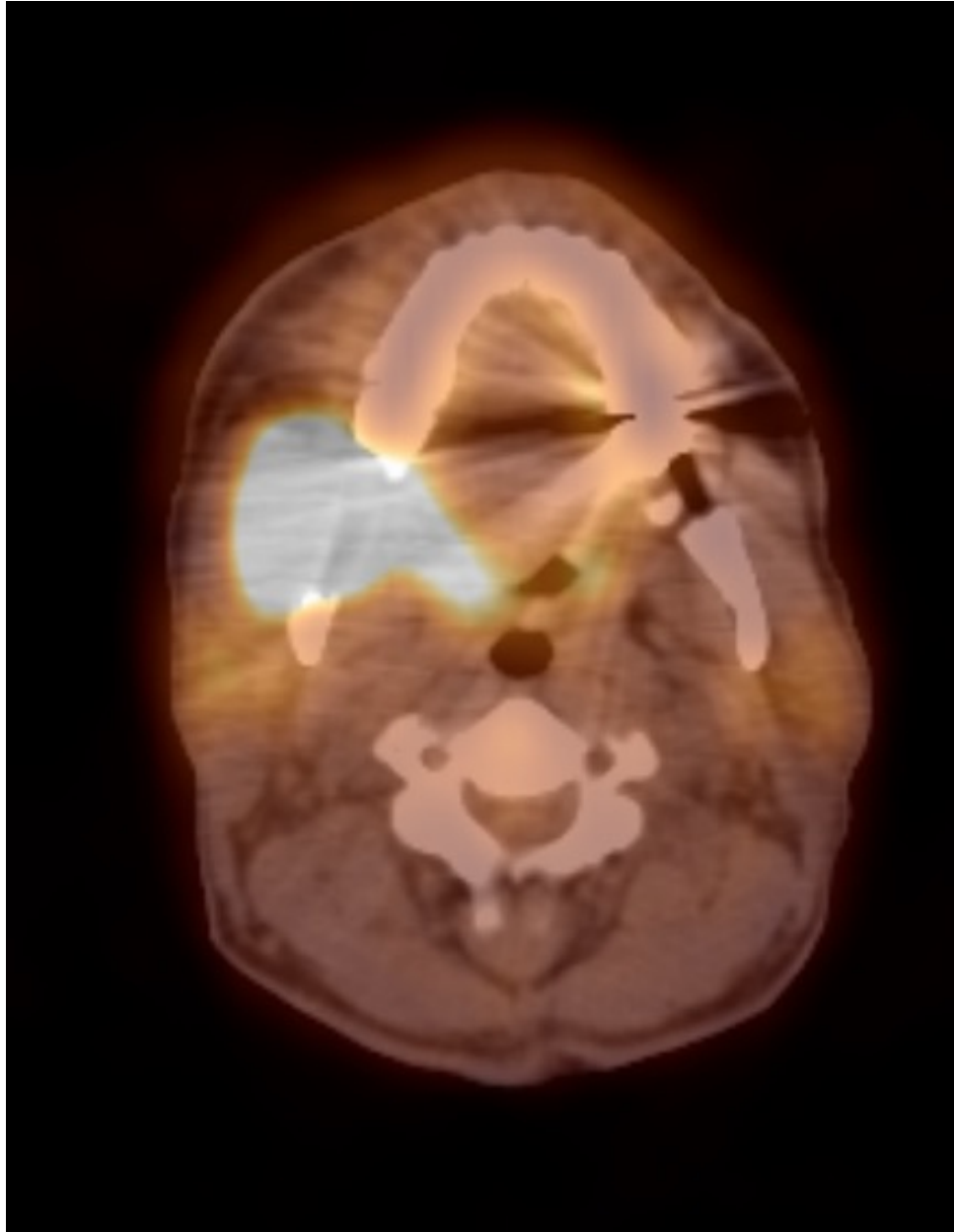
mAs 100
KVP 120
Exp Time 500
mA 200
Slice Location 31.85
Series #11
www.hwl 400/40



- MRI base of skull → base of skull is free of cancer



- PET CT/ Scan → no metastasis



STEP 4

Staging: TNM system

✓	T Category	T Criteria
	TX	Primary tumor cannot be assessed
	Tis	Carcinoma <i>in situ</i>
	T1	Tumor ≤ 2 cm with depth of invasion (DOI)* ≤ 5 mm
	T2	Tumor ≤ 2 cm with DOI* > 5 mm or tumor > 2 cm and ≤ 4 cm with DOI* ≤ 10 mm
	T3	Tumor > 2 cm and ≤ 4 cm with DOI* > 10 mm or tumor > 4 cm with DOI* ≤ 10 mm
	T4	Moderately advanced or very advanced local disease
	T4a	Moderately advanced local disease Tumor > 4 cm <u>with</u> DOI* > 10 mm or tumor invades adjacent structures only (e.g., through cortical bone of the mandible or maxilla or involves the maxillary sinus or skin of the face)
		Note: Superficial erosion of bone/tooth socket (alone) by a gingival primary is not sufficient to classify a tumor as T4.
	T4b	Very advanced local disease Tumor invades masticator space, pterygoid plates, or skull base and/or encases the internal carotid artery

✓	cN Category	cN Criteria
	NX	Regional lymph nodes cannot be assessed
	N0	No regional lymph node metastasis
	N1	Metastasis in a single ipsilateral lymph node, 3 cm or smaller in greatest dimension ENE(-)
	N2	Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension and ENE(-); or metastases in multiple ipsilateral lymph nodes, none larger than 6 cm in greatest dimension and ENE(-); or in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest dimension, and ENE(-)
	N2a	Metastasis in a single ipsilateral node larger than 3 cm but not larger than 6 cm in greatest dimension, and ENE(-)
	N2b	Metastases in multiple ipsilateral nodes, none larger than 6 cm in greatest dimension, and ENE(-)
	N2c	Metastases in bilateral or contralateral lymph nodes, none larger than 6 cm in greatest d
	N3	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-); or metastasis in any node(s) and clinically overt ENE(+)
	N3a	Metastasis in a lymph node larger than 6 cm in greatest dimension and ENE(-)
	N3b	Metastasis in any node(s) and clinically overt ENE(+)

C T4a N1 M0

✓	M Category	M Criteria
	cM0	No distant metastasis
	cM1	Distant metastasis
	pM1	Distant metastasis, microscopically confirmed

Note: A designation of "U" or "L" may be used for any N category to indicate metastasis above the lower border of the thyroid gland (U) or below the lower border of the cricoid (L). Similarly, clinical and pathological ENE should be recorded as ENE(-) or ENE(+).

AJCC – 8TH EDITION

✓	<i>When T is...</i>	<i>And N is...</i>	<i>And M is...</i>	<i>Then the stage group is...</i>
	Tis	N0	M0	0
	T1	N0	M0	I
	T2	N0	M0	II
	T3	N0	M0	III
	T1,T2,T3	N1	M0	III
	T4a	N0,N1	M0	IVA
	T1,T2,T3,T4a	N2	M0	IVA
	Any T	N3	M0	IVB
	T4b	Any N	M0	IVB
	Any T	Any N	M1	IVC

Stage IVa SCC



STEP 5

Treatment: HCCN



National
Comprehensive
Cancer
Network®

NCCN Guidelines Version 1.2020 Cancer of the Oral Cavity

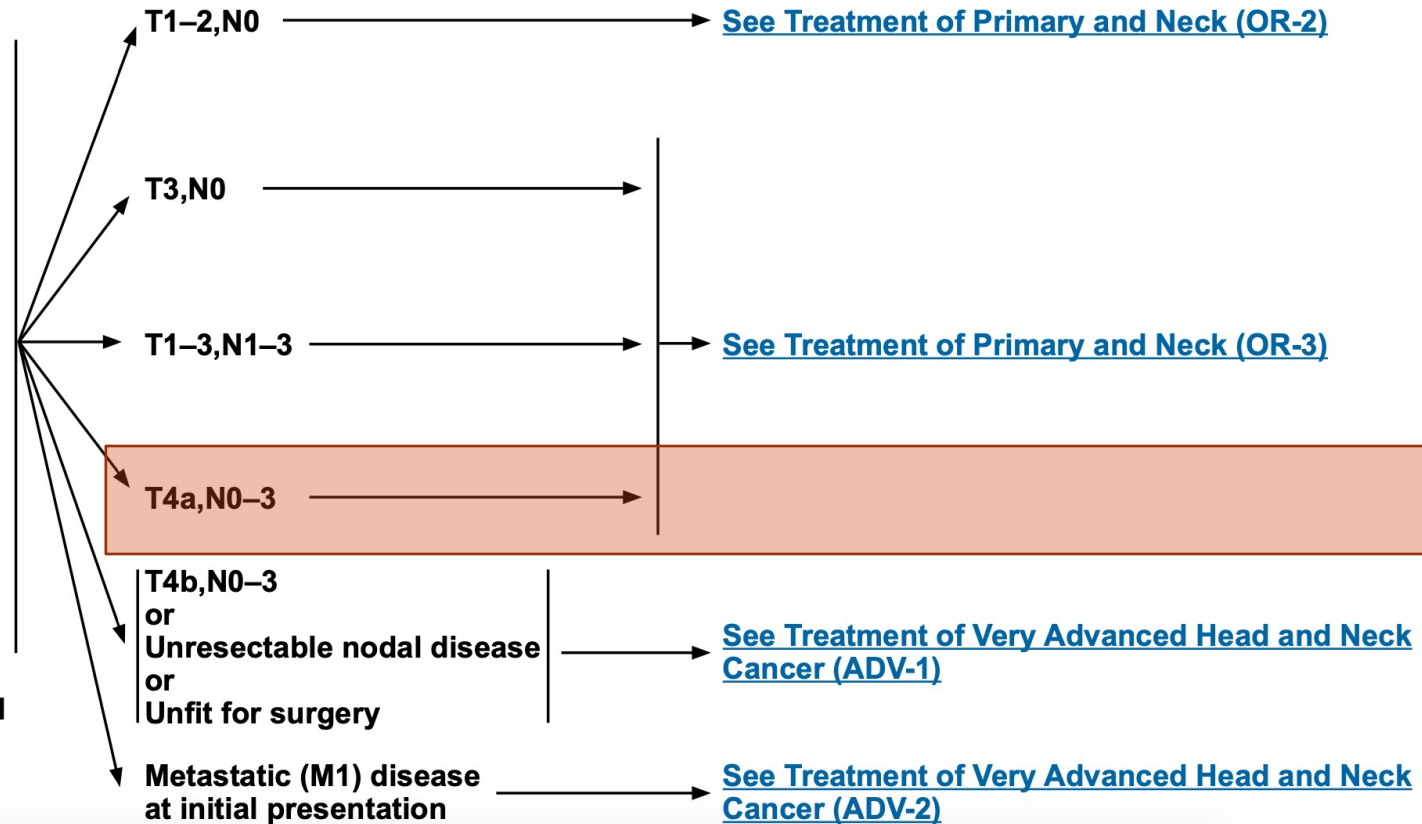
[NCCN Guidelines Index](#)
[Table of Contents](#)
[Discussion](#)

Buccal mucosa, floor of mouth, anterior tongue, alveolar ridge, retromolar trigone, hard palate

WORKUP

- H&P^{a,b} including a complete head and neck exam; mirror and fiberoptic examination as clinically indicated
- Biopsy^c
- As clinically indicated:
 - ▶ Chest CT (with or without contrast)^d
 - ▶ CT with contrast and/or MRI with contrast of primary and neck
 - ▶ Consider FDG PET/CT^{d,e}
 - ▶ Examination under anesthesia (EUA) with endoscopy
 - ▶ Preanesthesia studies
 - ▶ Dental/prosthetic evaluation,^f including Panorex or dental CT without contrast^d
 - ▶ Nutrition, speech and swallowing evaluation/therapy^g
 - ▶ Smoking cessation counseling^a
 - ▶ Fertility/reproductive counseling^h
- Multidisciplinary consultation as indicated

CLINICAL STAGING

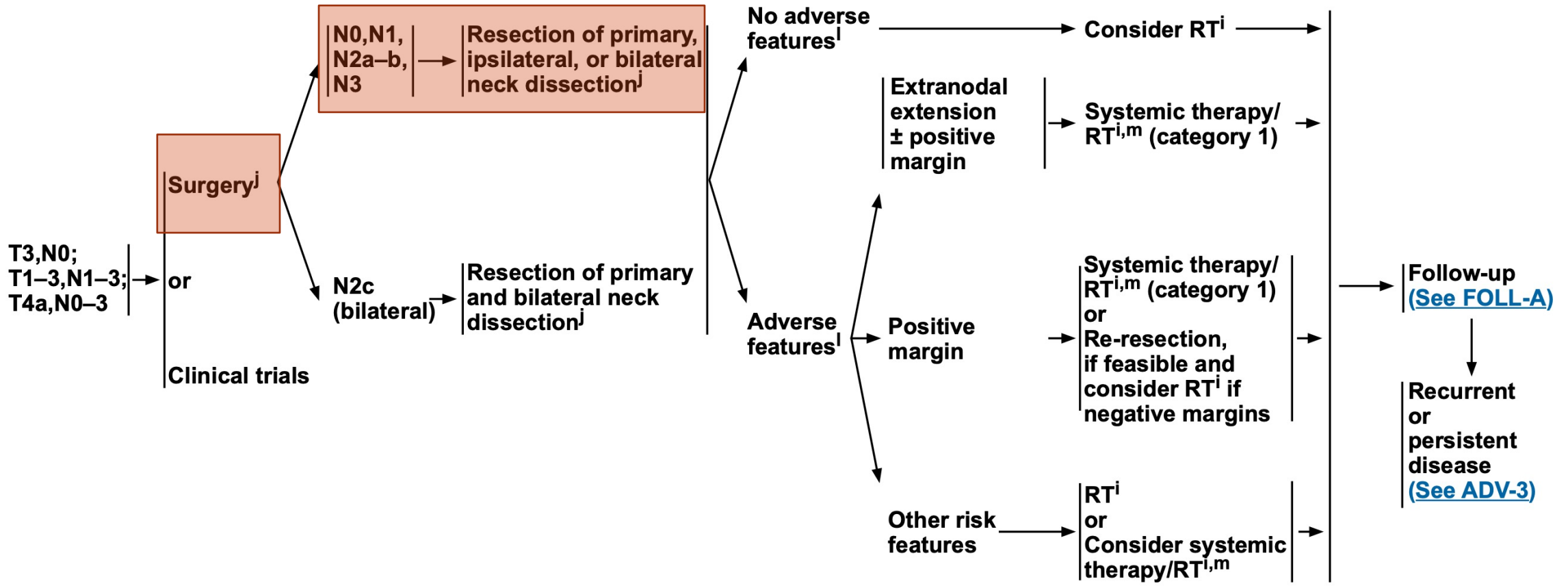


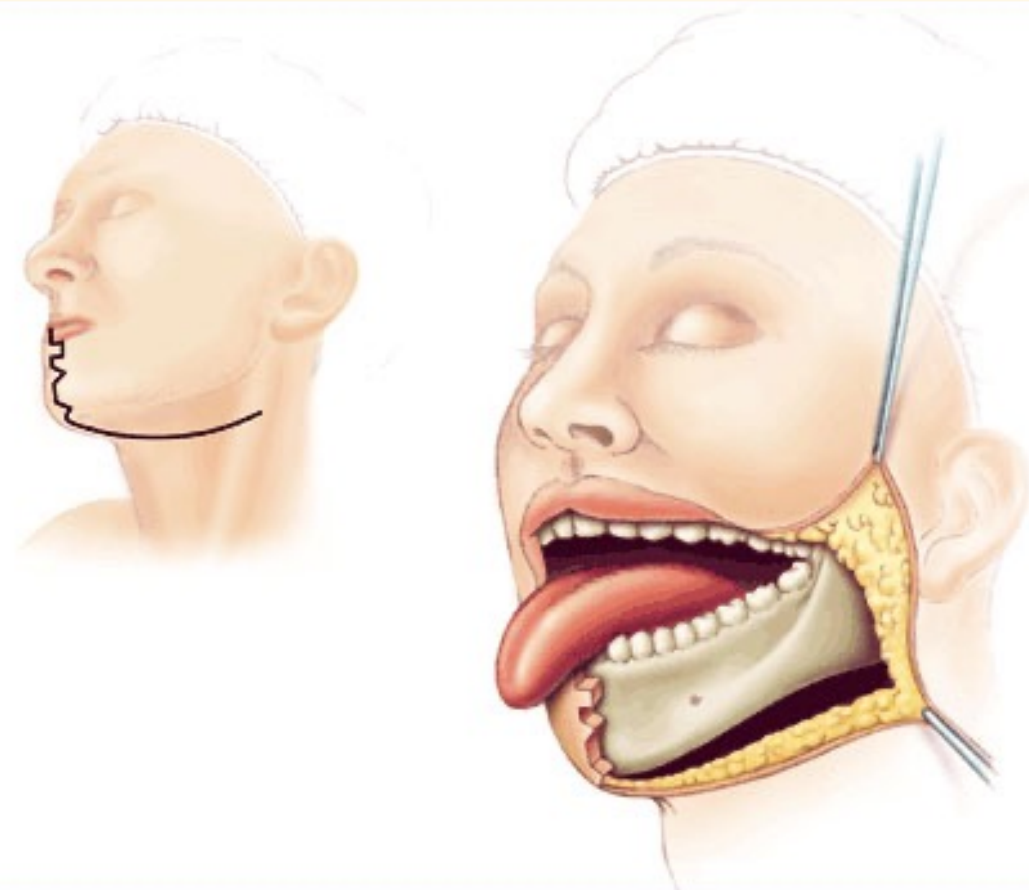
CLINICAL STAGING

TREATMENT OF PRIMARY AND NECK

ADJUVANT TREATMENT

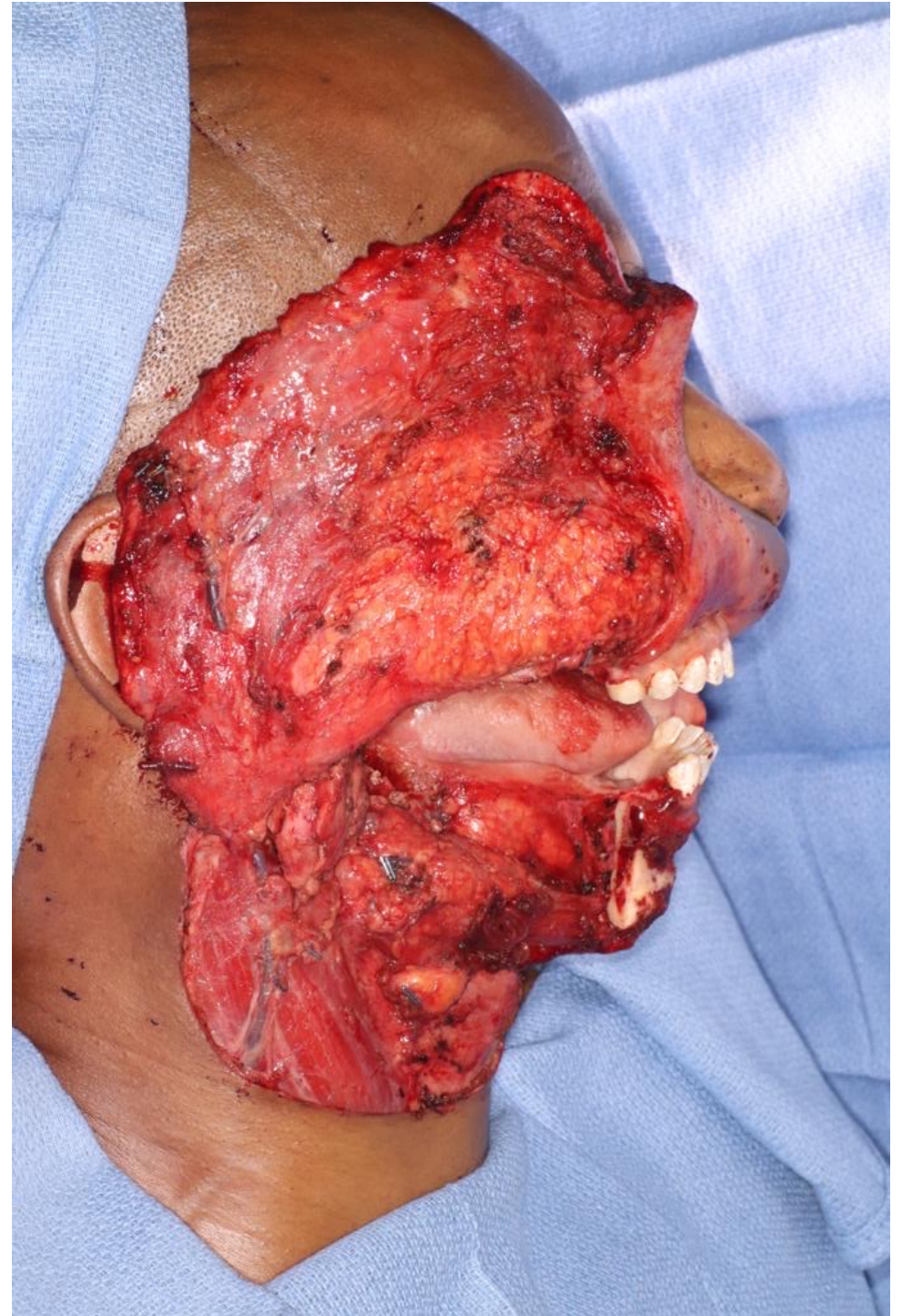
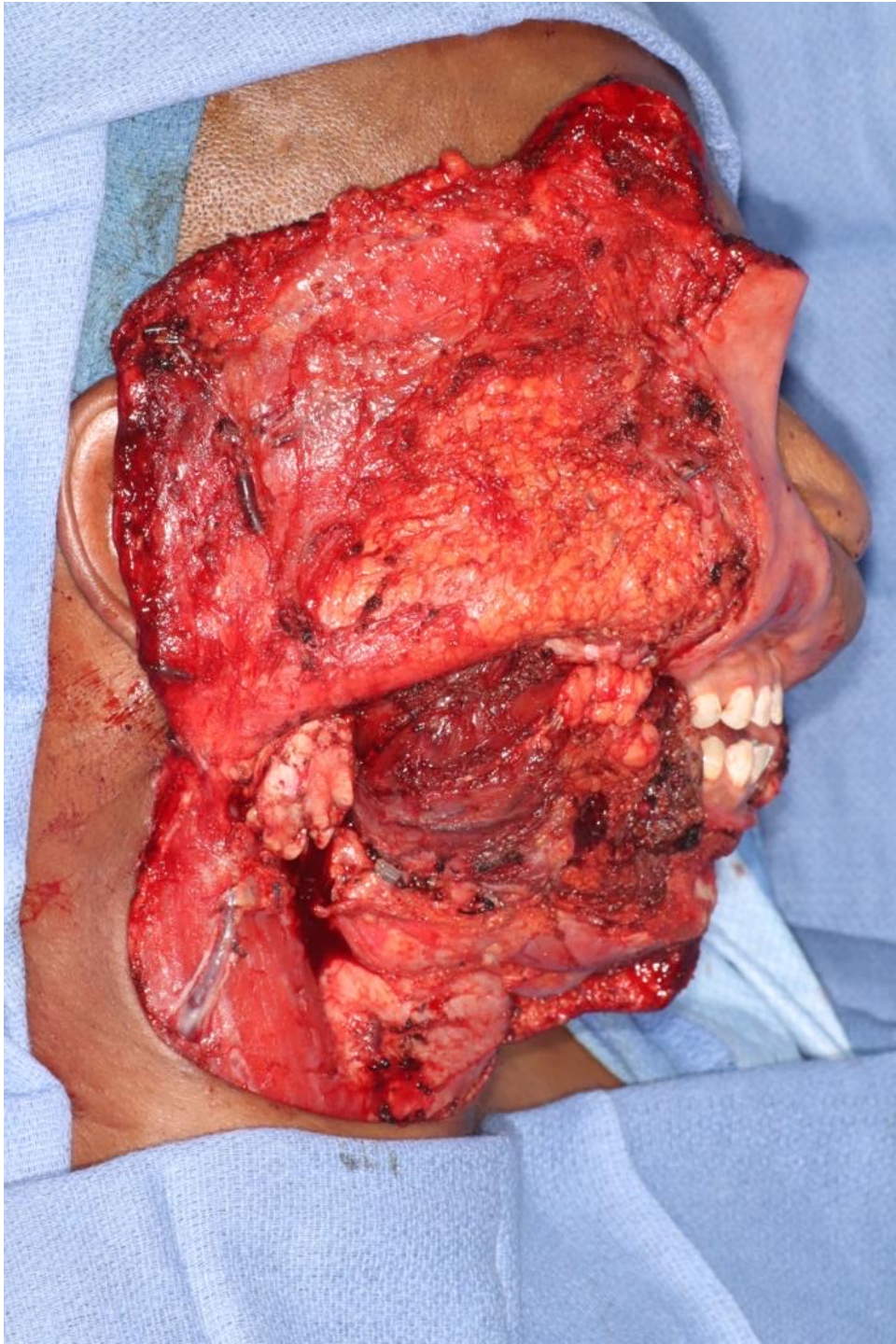
FOLLOW-UP

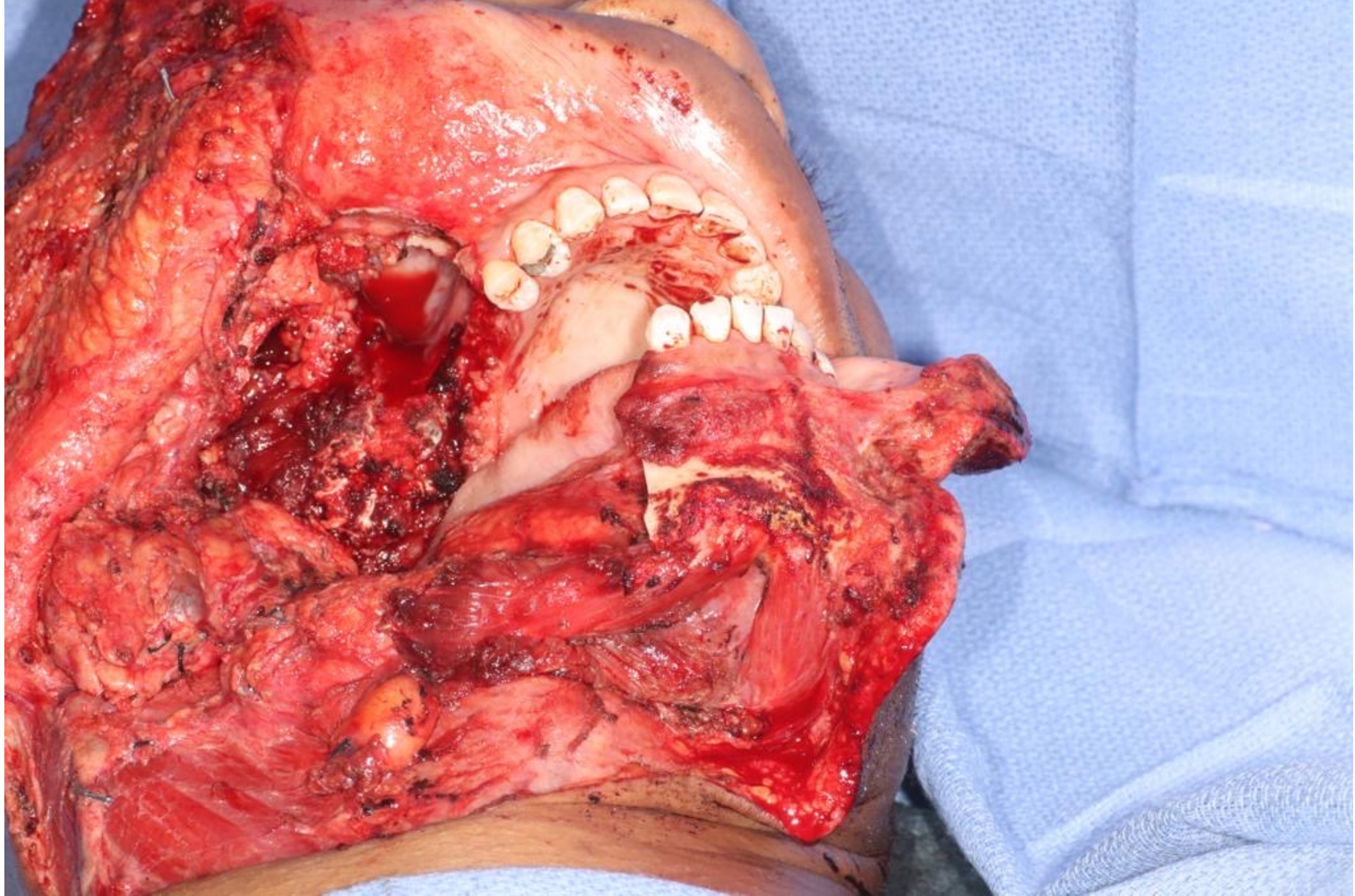


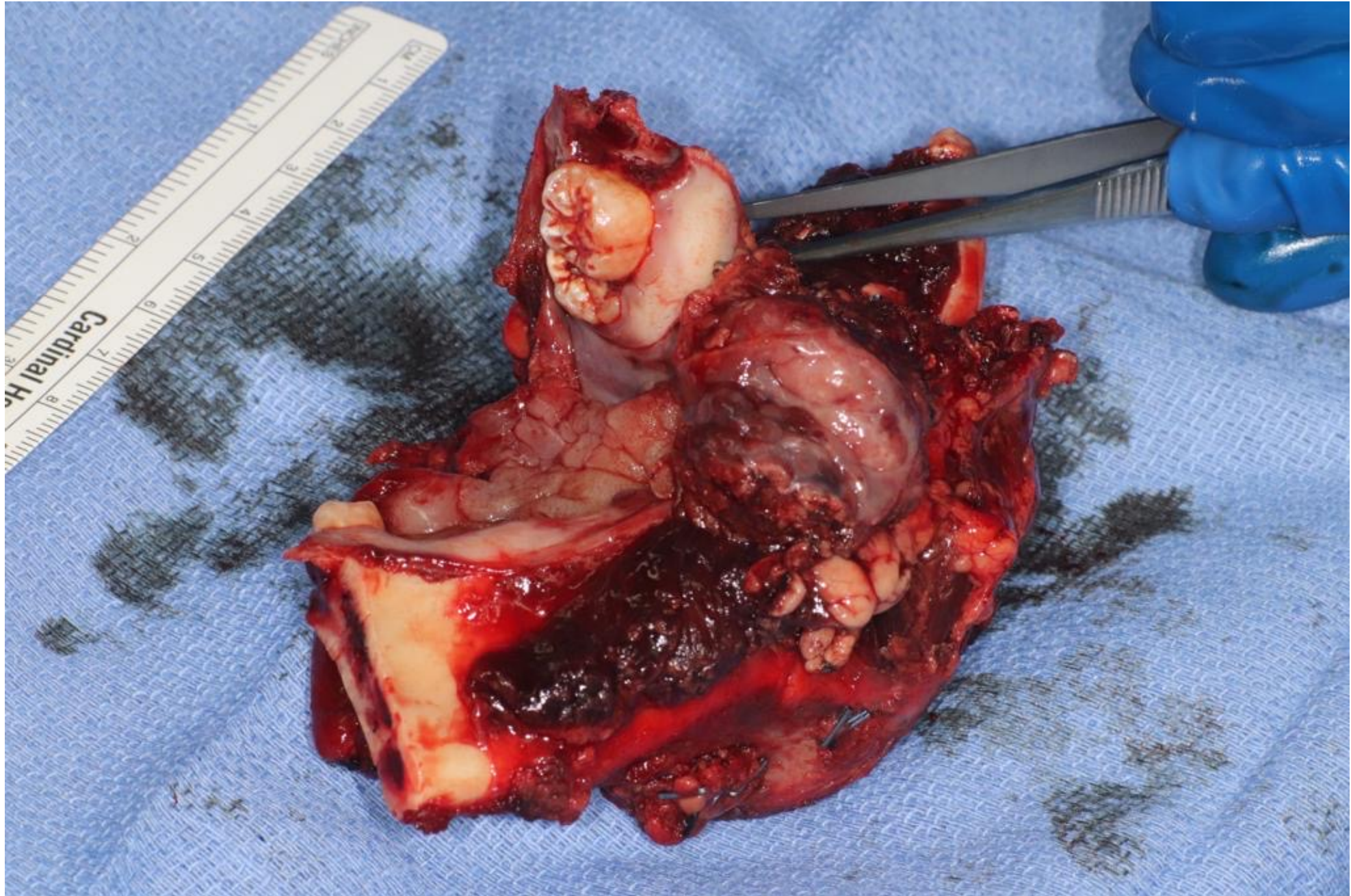


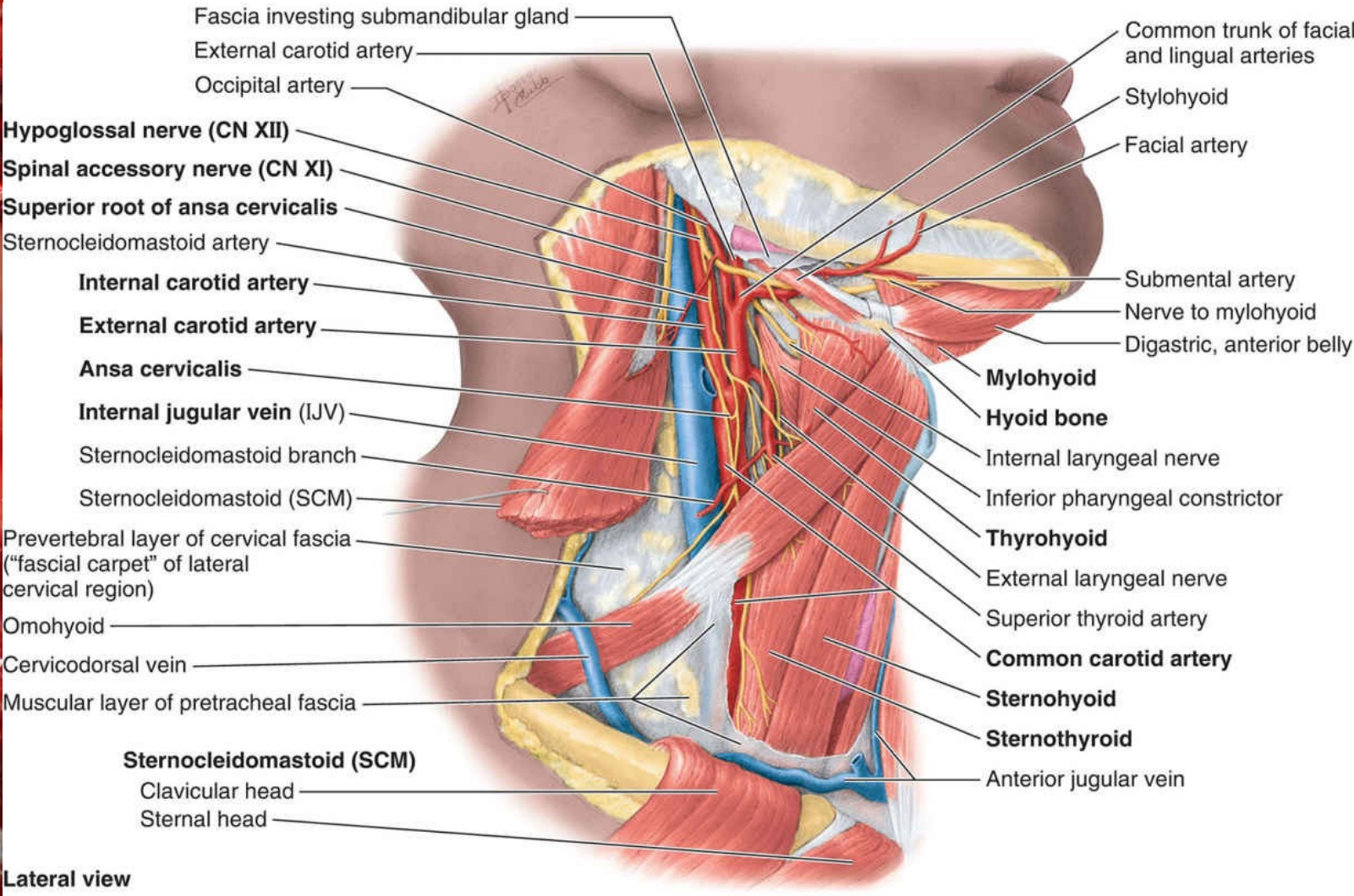
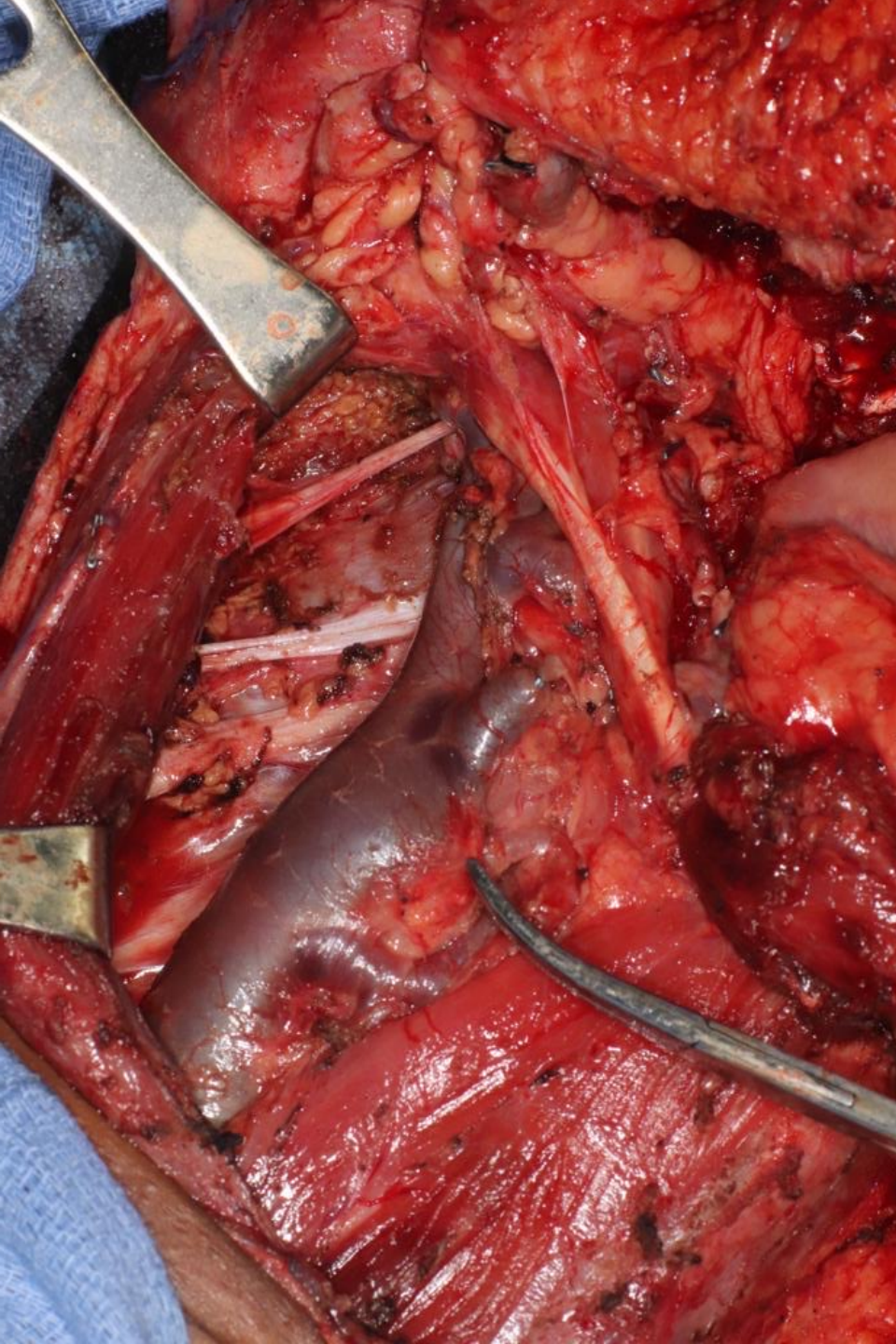
Source: ACS Surgery © 2004 WebMD Inc.

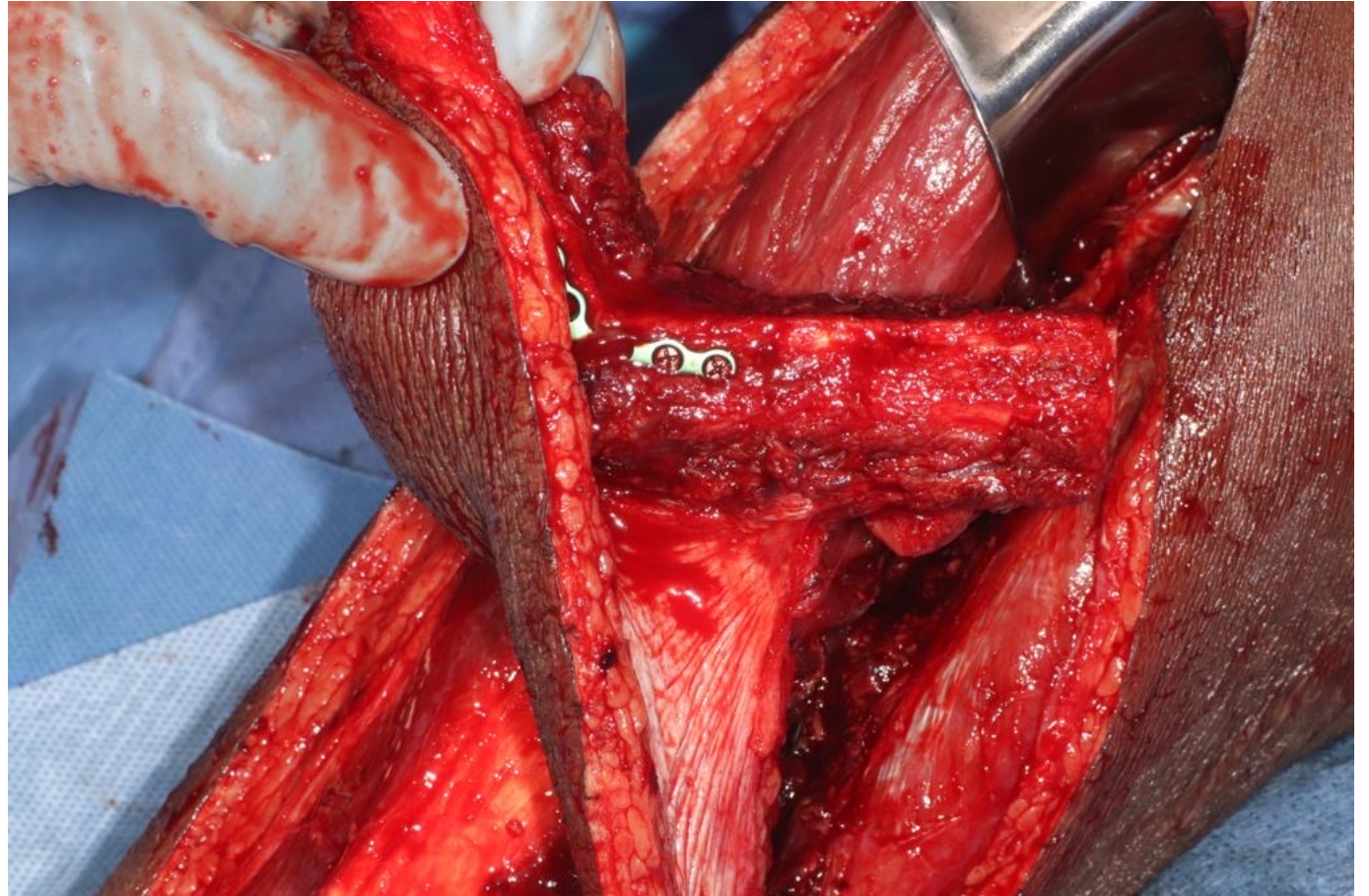
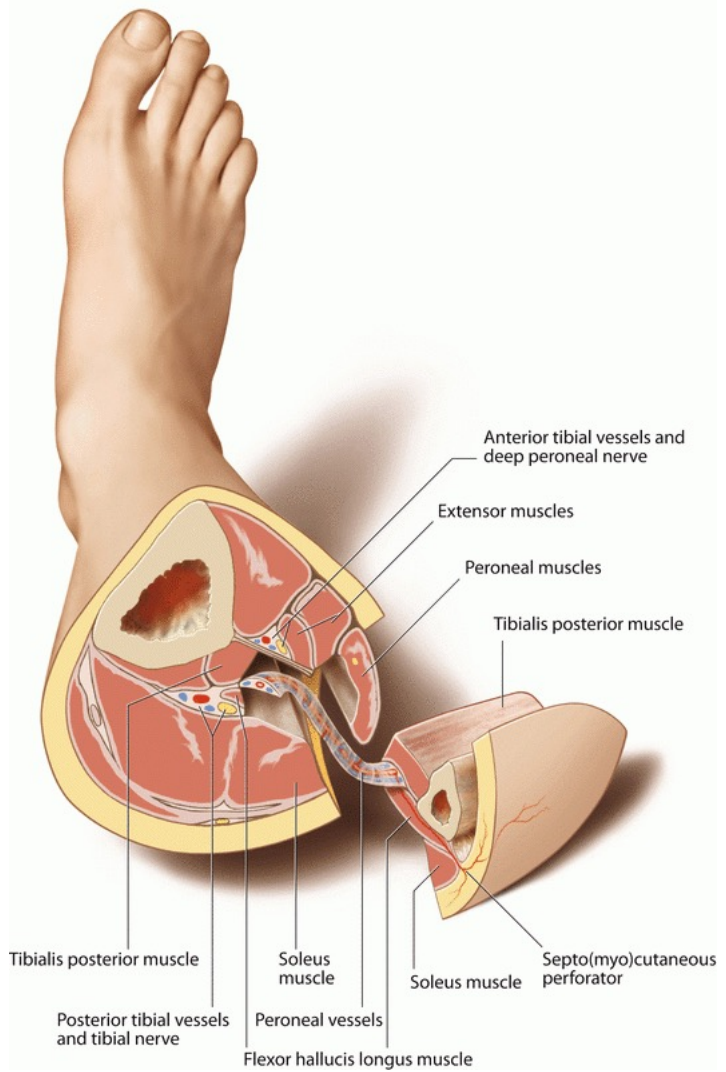


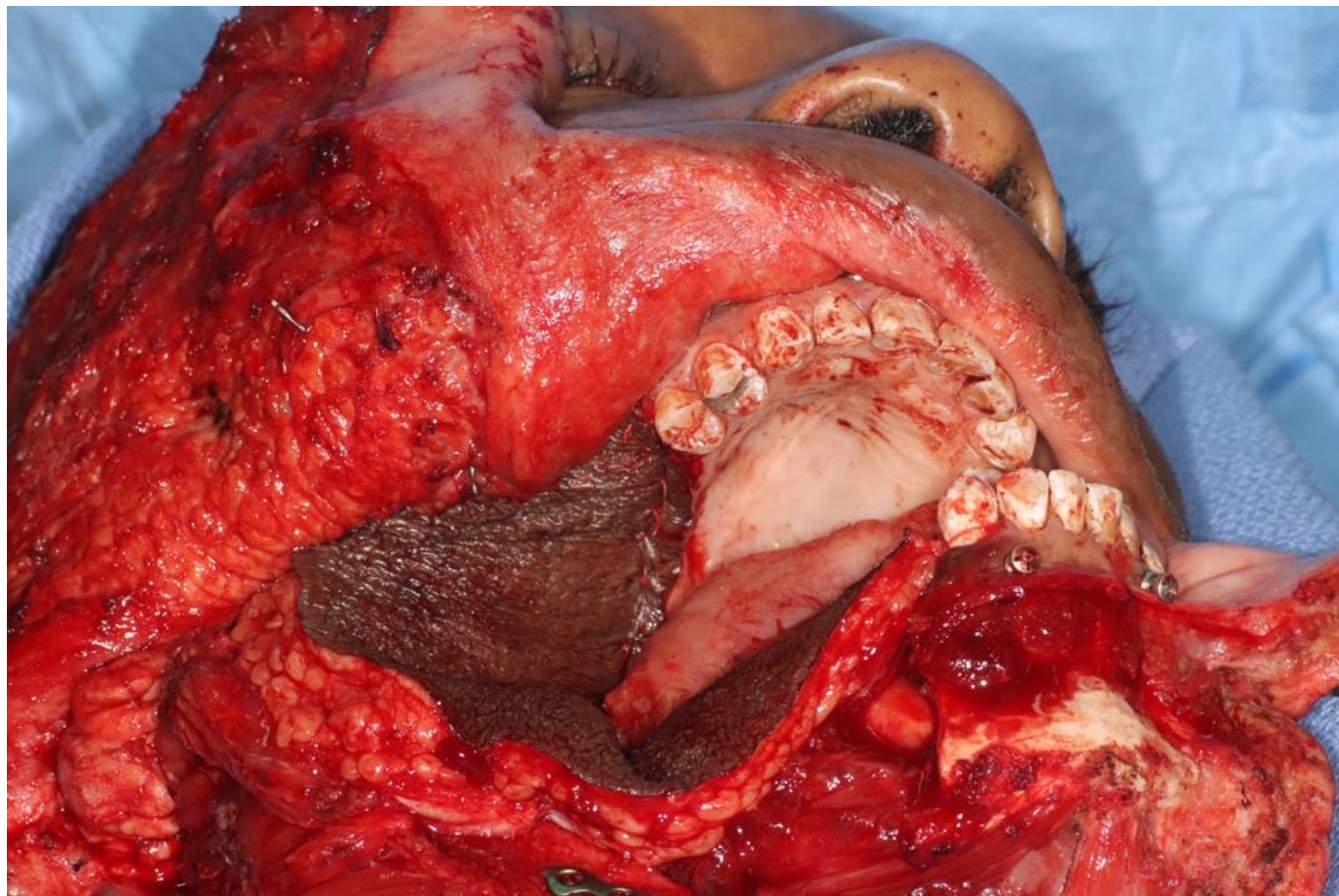














STEP 6

Biopsy result

- 0/17 lymph node
- Negative lymphvascular invasion
- Negative perineural invasion
- Negative close margin



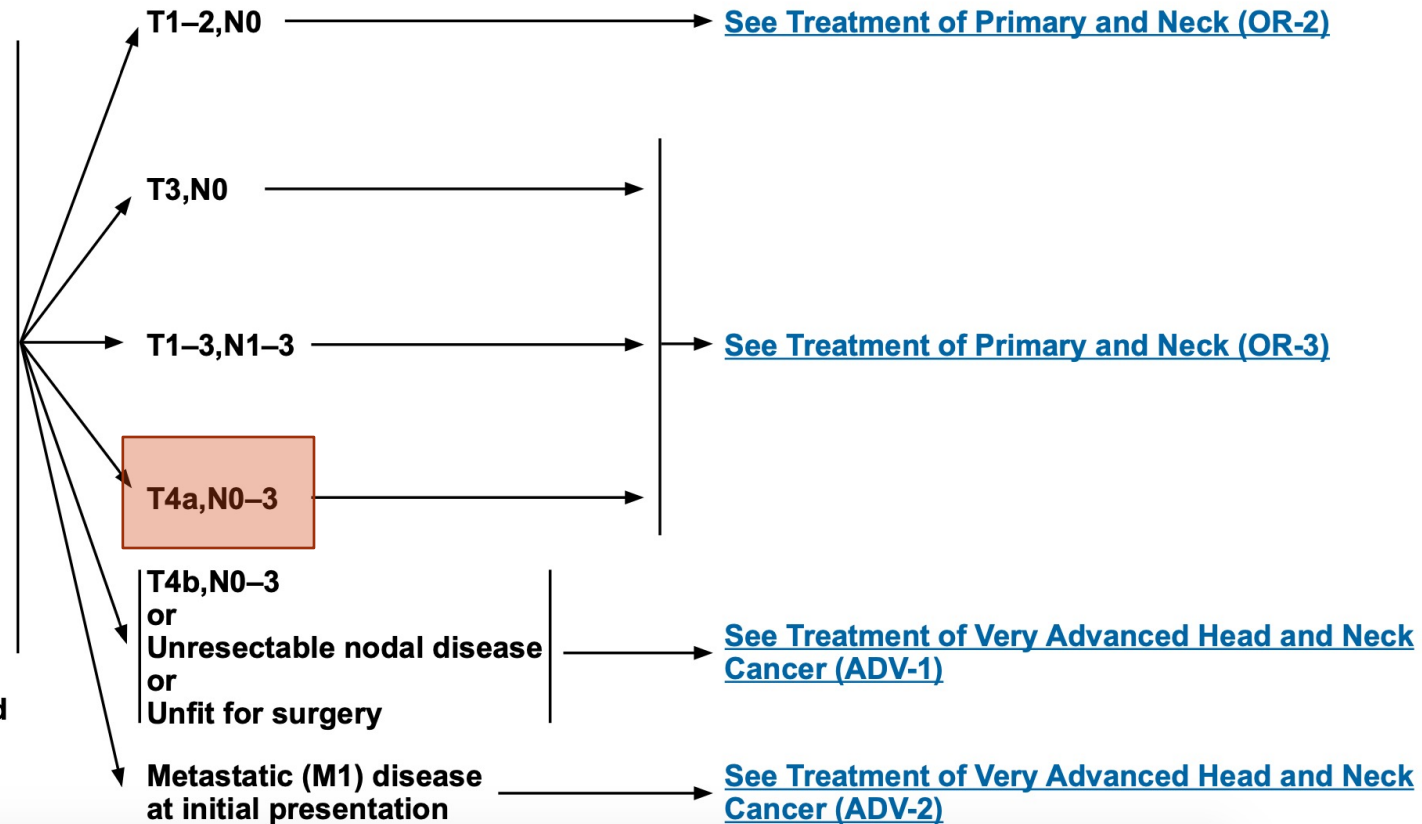


Buccal mucosa, floor of mouth, anterior tongue, alveolar ridge, retromolar trigone, hard palate

WORKUP

- H&P^{a,b} including a complete head and neck exam; mirror and fiberoptic examination as clinically indicated
- Biopsy^c
- As clinically indicated:
 - ▶ Chest CT (with or without contrast)^d
 - ▶ CT with contrast and/or MRI with contrast of primary and neck
 - ▶ Consider FDG PET/CT^{d,e}
 - ▶ Examination under anesthesia (EUA) with endoscopy
 - ▶ Preanesthesia studies
 - ▶ Dental/prosthetic evaluation,^f including Panorex or dental CT without contrast^d
 - ▶ Nutrition, speech and swallowing evaluation/therapy^g
 - ▶ Smoking cessation counseling^a
 - ▶ Fertility/reproductive counseling^h
- Multidisciplinary consultation as indicated

CLINICAL STAGING

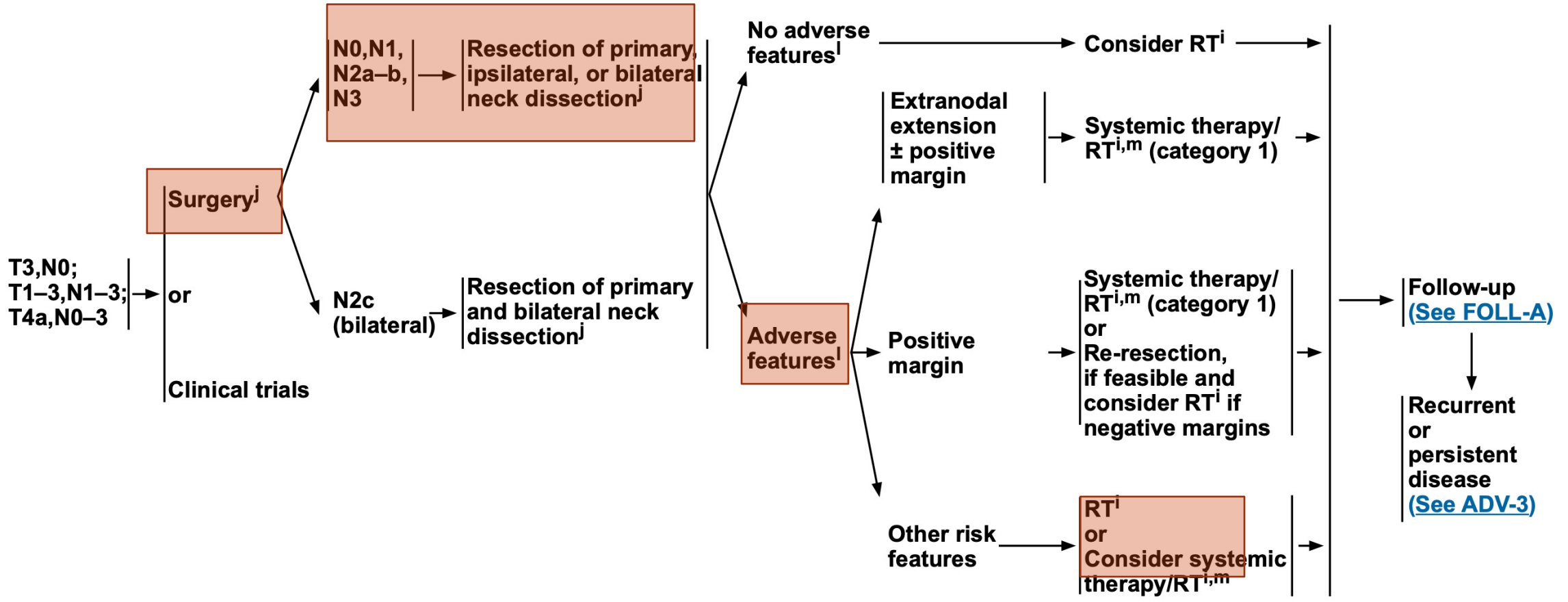


CLINICAL STAGING

TREATMENT OF PRIMARY AND NECK

ADJUVANT TREATMENT

FOLLOW-UP



STEP 7

Follow up



NCCN Guidelines Version 1.2020 Head and Neck Cancers

[NCCN Guidelines Inc](#)
[Table of Conte](#)
[Discussi](#)

FOLLOW-UP RECOMMENDATIONS^a

(based on risk of relapse, second primaries, treatment sequelae, and toxicities)

- H&P exam (including a complete head and neck exam; and mirror and fiberoptic examination):^b
 - ▶ Year 1, every 1–3 mo
 - ▶ Year 2, every 2–6 mo
 - ▶ Years 3–5, every 4–8 mo
 - ▶ >5 years, every 12 mo





THANK YOU

