

## Case Scenario 1

A 46 year old white male presents with left tongue pain, inability to hear, weight loss, and otalgia. The patient is a current smoker and current user of alcohol. A CT of the Larynx/Neck showed focal enlargement of left base of tongue along with small collection of air. Multiple lymph nodes were identified, some of which appear to have central necrosis in the left submental region and jugulodigastric chain. Findings are suspicious for malignancy with possible superimposed small abscess in the left base of the tongue.

Physical Exam: Oral cavity: Shows normal lips. He is edentulous. Normal buccal mucosa. Tongue shows a 2-3 cm exophytic lesion of the left base of tongue with extension on to the anterior tonsillar pillar and soft palate, with irregularity possibly all the way up to the uvula at midline. Floor of mouth seems to be free of irregularity. Posterior pharyngeal wall is within normal limits. Larynx was examined on flexible laryngoscopy.

Neck: Shows palpable lymphadenopathy on the left side in levels 2 and possibly even 3.

Flexible Laryngoscopy: Right naris was sprayed with Afrin and lidocaine and flexible scope was entered into the nasal cavity showing normal nasopharynx, some mild fullness of the left base of tongue, vallecula was within normal limits, including also the larynx. Both supraglottic and glottic structures were all normal with full vocal cord movement.

Left Tongue Biopsy: Invasive squamous cell carcinoma, mod-poorly diff

PET/CT: 1. Markedly increased FDG accumulation within the left base of tongue mass lesion visualized on CT. This is consistent with malignancy. 2. No additional sites of abnormally increased FDG accumulation are visualized elsewhere in the neck, chest, abdomen, or pelvis.

Treatment Plan: Weekly cisplatin with radiation

### Summary of Treatment:

Patient has completed his definitive chemoradiation. The Planning Target Volume (PTV) 1 includes the left base of tongue, primary grossly positive left level II/III lymph node. This area received 70Gy in 35 treatments utilizing RapidArc IMRT and 6 MV photons. PTV2 included the remainder of the left neck nodes including the retropharyngeal lymph nodes up to the base of the skull. This area received 63 Gy in 35 treatments utilizing RapidArc IMRT and 6 MV photons. PTV3 included the right neck including retropharyngeal lymph nodes up to C1. This area received 56 Gy in 35 sessions utilizing RapidArc IMRT and 6 MV photons. The bilateral supraclavicular fossa received 50 Gy in 25 treatments utilizing an AP field and 6 MV photons. The left supraclavicular fossa was boosted another 10 Gy for a total of 60 Gy, utilizing an AP field and 6 MV photons. Treatments proceeded from Jan 3 to Feb 22. He developed some moderate mucositis in the left oropharynx with sore throat, which was only partially relieved with stomatitis cocktail and Tylenol. He continued to smoke and drink throughout the course of treatment, although he was advised multiple times to quit. He will be returning to your care, but I would appreciate

the opportunity to check his progress from time to time and have asked him to see me in a month. Thank you for the opportunity of participating in his care.

Post Tx PET/CT: 1. Significant interval decrease in FDG accumulation in the left base of tongue. This is consistent with a favorable response to treatment. The remaining FDG uptake may be secondary to post treatment inflammation. 2. Mild increased FDG accumulation within a 1.2 cm subcutaneous nodule in the posterior lower right neck. This may represent uptake secondary to inflammation/infection involving a sebaceous cyst.

Post Tx CT Larynx/Neck (2 mos post tx) New post treatment changes appearing in the neck after interval chemoradiation therapy, with previously seen enhancing soft tissue mass in the left base of tongue no longer discernible. Interval decrease in size of suspicious left level II lymph nodes, with resolution of previously seen foci of central cystic changes/necrosis. Slight interval enlargement of superficial subcutaneous nodule along the right upper paramidline back with associated surrounding inflammatory changes, possibly reflecting a sebaceous cyst with superimposed infection/inflammation. New cutaneous/superficial nodule overlying the angle of the right mandible. Correlation with physical examination advised.

Restaging PET/CT: (3 mos since last one) 1. Increasing focal abnormal FDG accumulation along the left side the base of the tongue suspicious for residual/recurrent neoplasm. SUV elevated in this region at 5.5. 2. No other significant abnormality demonstrated.

Direct laryngoscopy: 1. An ulcerated left base of tongue lesion approximately 1.5-2 cm adjacent to the left mandible that did not appear to extend into the posterior pharynx or the macula.

2. Post radiation changes of the laryngeal structures and no other evidence of disease.

3. White plaque-like changes indicative of esophageal candidiasis throughout the esophagus.

Left base of tongue biopsy: Invasive well differentiated SCCA

MRI Neck/Face Soft Tissue: Ill-defined soft tissue thickening and enhancement infiltrating the left lateral oral tongue and base of tongue, probably corresponding to metabolic activity on recent PET-CT seen in a similar distribution. No definite involvement of extrinsic tongue musculature or extension into the mandible. Diffuse post treatment changes as above.

Operative Report:

1. RESECTION OF LEFT BASE OF TONGUE TUMOR WITH MANDIBULOTOMY AND MANDIBULAR SWING APPROACH.
2. LEFT SELECTIVE NECK DISSECTION LEVELS 1-4.
3. TRACHEOSTOMY
4. PECTORALIS MYOCUTANEOUS FLAP RECONSTRUCTION OF LEFT FLOOR OF MOUTH DEFECT

## Resection Pathology:

### A) LYMPH NODES LEFT NECK LEVEL IB, EXCISION:

- BENIGN SALIVARY GLAND TISSUE.
- MULTIPLE, 3, LYMPH NODES ARE NEGATIVE FOR TUMOR.

### B) LYMPH NODES LEFT NECK LEVEL IIA, EXCISION:

- A SINGLE (OF 3) LYMPH NODE IS POSITIVE FOR METASTATIC SQUAMOUS CELL CARCINOMA.
- THE POSITIVE LYMPH NODE MEASURES 2.0 CM. IN GREATEST DIMENSION WITH TUMOR INVASION THROUGH THE LYMPH NODE CAPSULE.

### C) LYMPH NODES LEFT NECK LEVEL III, EXCISION:

- MULTIPLE, 2, LYMPH NODES ARE NEGATIVE FOR TUMOR.

### D) LYMPH NODES LEFT NECK LEVEL IV, EXCISION:

- MULTIPLE, 3, LYMPH NODES ARE NEGATIVE FOR TUMOR.

### E) TONGUE, LEFT HEMIGLOSSECTOMY:

- INVASIVE MODERATELY DIFFERENTIATED SQUAMOUS CELL CARCINOMA FORMING A 4.2 X 2.3 CM. ULCERATED MASS.
- THE TUMOR INVADES INTO SKELETAL MUSCLE TO A DEPTH OF 0.7 CM.
- PERINEURAL INVASION IS PRESENT.
- NO LYMPHOVASCULAR INVASION IS IDENTIFIED.
- THE SURGICAL MARGINS ARE NEGATIVE FOR TUMOR.

### HPV-InSitu hybridization for Human Papillomavirus:

- Block E10:
  - In Situ Hybridization (ISH) studies performed on paraffin-embedded tissue sections for Human Papilloma Virus (HPV) DNA.
    - HPV (family 6) ISH is Negative for types 6 and 11.
    - HPV (family 16) ISH is Negative for types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58 and 66.

- What is the primary site?
- What is the histology?
- What is the grade/differentiation?
- What is grade path system/grade path value?

### Stage/ Prognostic Factors

CS Tumor Size		CS SSF 9	
CS Extension		CS SSF 10	
CS Tumor Size/Ext Eval		CS SSF 11	988
CS Lymph Nodes		CS SSF 12	988
CS Lymph Nodes Eval		CS SSF 13	988
Regional Nodes Positive		CS SSF 14	988
Regional Nodes Examined		CS SSF 15	988
CS Mets at Dx		CS SSF 16	988
CS Mets Eval		CS SSF 17	988
CS SSF 1		CS SSF 18	988
CS SSF 2		CS SSF 19	988
CS SSF 3		CS SSF 20	988
CS SSF 4		CS SSF 21	988
CS SSF 5		CS SSF 22	988
CS SSF 6		CS SSF 23	988
CS SSF 7		CS SSF 24	988
CS SSF 8		CS SSF 25	

### Treatment

Diagnostic Staging Procedure			
<b>Surgery Codes</b>		<b>Radiation Codes</b>	
Surgical Procedure of Primary Site		Radiation Treatment Volume	
Scope of Regional Lymph Node Surgery		Regional Treatment Modality	
Surgical Procedure/ Other Site		Regional Dose	
<b>Systemic Therapy Codes</b>		Boost Treatment Modality	
Chemotherapy		Boost Dose	
Hormone Therapy		Number of Treatments to Volume	
Immunotherapy		Reason No Radiation	
Hematologic Transplant/Endocrine Procedure		Radiation/Surgery Sequence	
Systemic/Surgery Sequence			

## Case Scenario 2

68 year old white male presents with tonsillar mass found on intubation for urologic procedure. Patient is a smoker and has a history of heavy alcohol use. He has a history of leukemia in 1981.

Physical Exam: Pink lips with intact gingiva and soft floor of mouth. The tongue demonstrates unrestricted movement and is soft diffusely including the base of tongue. The left tonsil is 2+ and does not demonstrate any mucosal irregularity of firmness to palpation. The right tonsil however, is nodular and firm with large cavitory central ulceration. The tonsil mass appears to involve the posterior tonsillar pillar. The anterior tonsillar pillar is intact. The tumor appears to extend to the glossotonsillar sulcus but does not involve the tongue mucosa directly. The tumor extends posteriorly to involve the right lateral pharyngeal wall with an area of irregular mucosa and deep central ulceration. Floor of mouth is soft.

Direct laryngoscopy: A McIntosh laryngoscope blade was placed in his oral cavity and allowed visualization of the base of tongue and oropharyngeal region. The left tonsil was 2+ and soft by palpation, with no obvious irregularities masses or lesions. The base of the tongue was soft as well, with no apparent abnormalities as was the posterior pharyngeal wall. The soft palate was unremarkable and the uvula was singular and demonstrated no mucosal masses, lesions or ulcerations. However, the right tonsil appeared to have a broad centrally ulcerated lesion with heaped up mucosal edges around it circumferentially. The lesion appeared to involve the entire tonsil and gave the contour of the tonsil an irregular mucosal appearance. The right tonsil lesion was palpated medially and appeared to involve the glossotonsillar sulcus, but there was no obvious induration in the musculature of the tongue itself, and the lesion did not appear to extend up onto the soft palate itself.

Right tonsil biopsy: Invasive, poorly diff SCCA

HPV-InSitu hybridization for Human Papillomavirus:

- Block A2:
  - In Situ Hybridization (ISH) studies performed on paraffin-embedded tissue sections for Human Papilloma Virus (HPV) DNA.
    - HPV (family 6) ISH is Negative for types 6 and 11.
    - HPV (family 16) ISH is Negative for types 16, 18, 31, 33, 35, 39,45, 51, 52, 56, 58 and 66.

CT Larynx/Neck: There is asymmetric thickening along the right tonsillar fossa which likely correspond to the clinically known right-sided tonsillar cancer. The right tonsillar lesion is relatively sessile, limiting assessment of its true size. As can be visualized on these CT images, it measures up to 2.2 x 0.9 cm in cross section, and 2.1 cm craniocaudal. There are multiple right-sided lymph nodes suspicious for malignancy. Specifically, there is a 1.1 cm right retropharyngeal lymph node (image 72 of 165) and centrally low attenuation/necrotic lymph nodes seen in the right II A-B, III, and IV nodal levels noted. The largest lymph nodes measure up to 1.9 cm craniocaudal at the right II-III level junction, and 1.8 cm in the right IV nodal level.

In addition, there is suspicious soft tissue thickening involving the right true cord, infiltrating the right paraglottic fat, and protruding exophytically from the undersurface of the right true cord. The lesion

may extend transglottic, with irregularity of the right laryngeal ventricle and suspicious soft tissue in the right false vocal fold. The lesion extends up to the anterior commissure but with no definite contralateral extension. There is no convincing laryngeal cartilaginous involvement.

The remainder of the neck reveals a few small left-sided lymph nodes, not enlarged by pathologic size criteria nor demonstrating suspicious central necrosis/low attenuation. The major salivary glands are symmetric and unremarkable. The oral cavity and tongue, nasopharynx, remainder of the oropharynx, hypopharynx, and remainder of the supraglottic larynx are unremarkable.

#### Operative Report:

##### TOTAL LARYNGECTOMY.

- BILATERAL SELECTIVE NECK DISSECTIONS, LEVELS 2A, 2B, 3, AND 4 WITH SACRIFICE OF THE RIGHT INTERNAL JUGULAR VEIN.
- RIGHT PARTIAL PHARYNGECTOMY.
- PRIMARY TRACHEOESOPHAGEAL PUNCTURE.
- CRICOPHARYNGEAL MYOTOMY.

#### Resection Pathology:

##### A) RIGHT OROPHARYNX MARGIN, EXCISION:

- NEGATIVE FOR MALIGNANCY.

##### B) BASE OF TONGUE MARGIN, EXCISION:

- NEGATIVE FOR MALIGNANCY.

##### C) SOFT PALATE MARGIN, EXCISION:

- NEGATIVE FOR MALIGNANCY.

##### D) INFERIOR MARGIN, EXCISION:

- NEGATIVE FOR MALIGNANCY (SEE COMMENT).

##### E) LYMPH NODES, RIGHT LEVEL III, EXCISION:

- MULTIPLE, 4 (OF 5), LYMPH NODES ARE POSITIVE FOR METASTATIC BASALOID SQUAMOUS CELL CARCINOMA.
- THE LARGEST POSITIVE LYMPH NODE MEASURES 2.5 CM. IN GREATEST DIMENSION.
- EXTRANODAL TUMOR INVASION IS PRESENT.

##### F) LYMPH NODES, RIGHT LEVEL IV, EXCISION:

- MULTIPLE, 3 (OF 10), LYMPH NODES ARE POSITIVE FOR METASTATIC BASALOID SQUAMOUS CELL CARCINOMA.
- THE LARGEST POSITIVE LYMPH NODE MEASURES 3.0 CM. IN GREATEST DIMENSION.
- EXTRANODAL TUMOR INVASION IS PRESENT.

##### G) LYMPH NODES, LEFT LEVEL IIB, EXCISION:

- MULTIPLE, 5, LYMPH NODES ARE NEGATIVE FOR MALIGNANCY.

##### H) LYMPH NODES, LEFT LEVEL IIA, EXCISION:

- MULTIPLE, 5, LYMPH NODES ARE NEGATIVE FOR MALIGNANCY.

I) LYMPH NODES, LEFT LEVEL III, EXCISION:

- MULTIPLE, 13, LYMPH NODES ARE NEGATIVE FOR MALIGNANCY.

J) LYMPH NODES, LEFT LEVEL IV, EXCISION:

- MULTIPLE, 5, LYMPH NODES ARE NEGATIVE FOR MALIGNANCY.

K) RIGHT OROPHARYNX, EXCISION:

- INVASIVE HIGH-GRADE BASALOID SQUAMOUS CELL CARCINOMA FORMING A 3.7 X 2.7 X 0.9 CM MASS.
- NO LYMPHOVASCULAR INVASION IDENTIFIED.
- THE SEPARATELY SUBMITTED SURGICAL MARGINS (SPECIMENS "A-D") ARE NEGATIVE.

L) LARYNX AND RIGHT THYROID LOBE, TOTAL LARYNGECTOMY WITH HEMITHYROIDECTOMY:

- INVASIVE MODERATELY TO POORLY DIFFERENTIATED SQUAMOUS CELL CARCINOMA FORMS A 2.0 X 1.5 X 0.7 CM. MASS INVOLVING THE RIGHT TRUE AND FALSE CORDS AND SUBGLOTTIS WITH EXTENSION ACROSS THE ANTERIOR COMMISSURE TO INVOLVE THE ANTERIOR LEFT TRUE AND FALSE CORDS.
- HYOID BONE, THYROID CARTILAGE, ARYTENOID CARTILAGE, AND CRICOID CARTILAGE ARE NEGATIVE FOR TUMOR.
- THERE IS NO LYMPHOVASCULAR INVASION IDENTIFIED.
- BENIGN RIGHT THYROID GLAND CONTAINING ADENOMATOUS NODULE WITH CALCIFICATIONS.
- SQUAMOUS CELL CARCINOMA IN-SITU IS PRESENT AT THE ANTERIOR EPIGLOTTIC MUCOSAL MARGIN. THE REMAINING SURGICAL MARGINS ARE NEGATIVE.

M) LYMPH NODES, RIGHT LEVEL II, EXCISION:

- MULTIPLE, 10 (OF 10), LYMPH NODES ARE POSITIVE FOR METASTATIC BASALOID SQUAMOUS CELL CARCINOMA FORMING A MATTED MASS MEASURING 4.5 X 3.5 CM.
- EXTRANODAL TUMOR INVASION IS PRESENT.

N) INTERNAL JUGULAR VEIN, INFERIOR, EXCISION:

- NEGATIVE FOR MALIGNANCY.

### Radiation Oncology

Patient completed his postoperative radiotherapy. He received 40 Gy in 20 sessions to initial neck field utilizing 6 MV photons, 3D conformal radiotherapy and opposing lateral fields. The opposing lateral fields were narrowed after this dose to exclude the spinal cord, and he received an additional 10 Gy in 5 treatments for a total of 50 Gy in 25 sessions. The area of initial gross disease was boosted using 6 MV photons, 3D conformal technique and opposing LAO/RPO oblique fields for an additional 10 Gy in 5 treatments, for a total of 60 Gy in 30 treatments. The bilateral supraclavicular fossa received 50 Gy in 25 sessions using a single AP field with 5 mm bolus on the tracheal stoma. He received an additional 10 Gy to the right supraclavicular fossa, utilizing 6 MV photons seen in AP field for a total of 60 Gy in 30 sessions.

### CT Chest/Abd/Pelvis:

1. Probable liver metastasis, new since CT prior to surgery.
2. Anasarca, as evidenced by diffuse subcutaneous edema, increasing bilateral pleural effusions, mesenteric edema, and ascites.
3. Chronic liver disease. TIPS. Portal venous collaterals.

Heme/Onc assessment 2 weeks s/p XRT:

Patient has metastatic poorly-differentiated squamous cell carcinoma of the right tonsil with multiple lymph node involvement and recently diagnosed metastatic disease to the liver. The patient also has underlying cirrhosis and is not a candidate for any aggressive therapy. I discussed in detail his prognosis and the value of chemotherapy in his situation and the patient does not want any chemotherapy and wants to receive only best supportive care, I agree with the patient's decision given the multitude of comorbidities this patient has.



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Surgical Procedure/ Other Site		Regional Dose	
<b>Systemic Therapy Codes</b>		Boost Treatment Modality	
Chemotherapy		Boost Dose	
Hormone Therapy		Number of Treatments to Volume	
Immunotherapy		Reason No Radiation	
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