

**The American Academy of Otolaryngology—  
Head and Neck Surgery Foundation  
(AAO-HNSF) Presents. . .**



## **Chapter 15: Head and Neck Cancer**

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## Chapter 15: Head and Neck Cancer

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Dr. Gregory Staffel first authored this short introduction to otolaryngology for medical students at the University of Texas School for the Health Sciences in San Antonio in 1996. Written in conversational style, peppered with hints for learning (such as "read an hour a day"), and short enough to digest in one or two evenings, the book was a "hit" with medical students.

Dr. Staffel graciously donated his book to the American Academy of Otolaryngology—Head and Neck Surgery Foundation to be used as a basis for this primer. It has been revised, edited and is now in the second printing. This edition has undergone an extensive review, revision and updating. We believe that you, the reader, will find this book enjoyable and informative. We anticipate that it will whet your appetite for further learning in the discipline that we love and have found most intriguing. It should start your journey into otolaryngology, the field of Head and Neck Surgery.

Enjoy!

Mark K. Wax, MD

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### Head and Neck Cancer in Primary Care:

Diagnosis and management of head and neck cancer is a large topic. In this chapter we hope to provide you some background information and a few case studies to help.

There are some things you must remember in the primary care setting, where you're most likely to be. First of all, an adult patient with a lump in the neck and no easily explainable reason for it should be considered to have cancer until that can be ruled out. Obviously, this doesn't mean a child with strep throat and bilateral neck adenopathy, but it certainly does include a 60-year-old smoker who notices a lump while shaving. In the past, a physician would often biopsy a lump in a patient's neck and find that the lump was squamous cell carcinoma. The doctor would then take the patient back to the operating room for endoscopy and find that the patient actually had a **pyri-**



**Figure 15.1.**

This patient has a squamous cell carcinoma of the hypopharynx but presented to the primary care physician with a large upper neck mass. Fine Needle aspiration confirmed it to be squamous cell carcinoma.



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**form sinus squamous cell carcinoma** that had already metastasized to the neck. The problem with this scenario is that the patient's chance of survival may have been decreased because the neck was biopsied before definitive treatment of the primary, which, in this case, would have been resection of the tumor and a neck dissection followed by radiation therapy. This patient would need a complete head and neck exam, followed by triple endoscopy, before biopsy of the neck mass. If a needle aspirate is performed on a lump in the neck, it won't decrease the patient's chance of survival. The discovery of a squamous cell carcinoma on fine needle aspiration would tell you that you must look harder to find the primary.

Other patients who should be referred for laryngeal examination are those who have been hoarse for more than 2 weeks. The most common cause of hoarseness is an upper respiratory infection (URI) with edema (swelling) of the true vocal cords. This often lasts several weeks, but it rarely lasts 6 weeks. Six weeks of hoarseness in an adult is considered to be cancer of the larynx until proven otherwise. Other causes of hoarseness include inflammation from **gastroesophageal reflux disorder (GERD)**, allergic rhinitis causing postnasal drip, **laryngeal papillomatosis**, vocal cord nodules, vocal cord polyps, and **unilateral**



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**vocal cord paralysis.** However, patients who have become hoarse for no apparent reason should be referred without the 2-week waiting time.

Remember that allergic rhinitis causing postnasal drip and vocal cord inflammation is usually treated with intranasal steroid sprays. GERD, which can also give a feeling of having something stuck in the throat, is treated with antireflux measures. These include not eating within 3-4 hours of going to sleep, avoiding caffeine and alcohol (especially at night), and avoiding aspirin or nonsteroidal anti-inflammatory medications (including over-the-counter ones). You can also recommend that these patients elevate the head of their bed on bricks (extra pillows don't count) and take an antacid before bedtime. If they still have symptoms, they are usually started on an H2 blocker such as ranitidine or cimetidine. Proton pump inhibitors may be used in recalcitrant cases. Remember: Laryngeal examination is required before making these diagnoses and prescriptions.

A patient who may have cancer might also present to a primary care physician with pain in the throat or pain in the ear (**otalgia**) that has no obvious cause. The pharynx and hypopharynx are innervated by the 9th and 10th nerves. These also send branches to the ear, and sometimes a cancer in the throat can send referred pain to the ear. If a patient comes in with ear pain and the ear looks



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normal to you, it probably is normal and the pain is probably being caused by some other otolaryngologic problem. The most common cause of ear pain with a normal ear exam **is temporomandibular joint (TMJ) syndrome.**

This is an inflammation of the joint of the jaw and can be diagnosed by pain on palpation of the joint (just in front of the **tragus**) when the patient opens and closes the jaw. If the joint is not tender and there is no other obvious cause of ear pain, the patient needs further evaluation. Likewise, difficulty in swallowing (**dysphagia**), pain on swallowing (**odynophagia**), or a **persistent oral ulcer** may be due to cancer. Patients with these symptoms should see an otolaryngologist. Sometimes a cancer in the nasopharynx can obstruct one of the Eustachian tubes, causing a **unilateral serous otitis (fluid in middle ear) in an adult.**

The most common cause of this condition is simply a URI, but a unilateral serous otitis without a clear history of a cold must be referred for nasopharyngoscopy.

Occasionally, patients will present with a superficial lymph node located in the posterior triangle of the neck (behind the **sternocleidomastoid muscle**). Most commonly, this is a swollen lymph node secondary to some type of skin infection or inflammation on the scalp, so you should check the scalp carefully in such a case. Sometimes, however, this can be something as serious as a lymphoma. Usually, upper aerodigestive tract squamous cell



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carcinoma doesn't initially spread to the posterior triangle nodes, but, in rare cases, this can occur—especially with nasopharyngeal cancer. Physicians can be tempted to remove this superficial node of the neck in the office. However, these superficial posterior neck nodes should not be surgically addressed, except by someone very familiar with head and neck surgery: The **spinal accessory nerve** runs over the top of these nodes and can very easily be damaged if the doctor is not experienced in doing this kind of surgery.

You can also be easily fooled by discovering a lump in front of or below the ear. This most commonly represents a parotid neoplasia, the most common of which is the benign mixed tumor (pleomorphic adenoma). A mass in this area, however, can be something as superficial as an **epidermal inclusion cyst**, or something more serious—such as lymphoma. The problem with this particular area is that it is quite difficult to distinguish between something that is merely subcutaneous versus something that is in the parotid gland. The **ascending ramus of the mandible** is immediately deep to the parotid gland, thus a mass may be well within the substance of the gland; however, it can feel very superficial because there is a solid background immediately behind it. Well-intentioned surgeons, thinking this was a sebaceous cyst, have ventured into removing one of these lumps and found they unex-



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pectedly need to go deep to the parotid fascia. If you ever find yourself in this position, you should immediately back out. This isn't the time for surgical heroics—remember the facial nerve! In situations such as this, it is better to refer the patient to an otolaryngologist.

### Review

Like your 6<sup>th</sup>-grade teacher used to say, "Let's review." Since most doctors are in some type of primary care specialty, it is important to know when to refer a patient to a specialist in diseases of the head and neck for any symptoms that suggest the **possibility of cancer**:

- **a mass in the neck**
- **hoarseness for 2 weeks or more**
- **pain in the ear (otalgia), pain in the throat on swallowing (odynophagia), or difficulty swallowing (dysphagia)**
- **a lump below or in front of the ear**
- **a persistent oral ulcer**
- **unilateral serous otitis**

Almost all (95%) head and neck cancer is squamous cell carcinoma. The cancer originates from the **cuboidal cells** along the basement membrane of the mucosa. Under the microscope, the cancerous cells appear flat, so the can-



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cer is called squamous (from the Latin *squama*, "a scale or platelike structure") cell carcinoma. It occurs most often in middle-aged to



**Figure 15.2.**

Carcinoma of the floor of the mouth. Mucosal tumors of the upper aerodigestive tract are almost always squamous cell cancer and occur as a result of exposure to tobacco and alcohol. Unfortunately, tumors are often discovered late, making cure problematic.

elderly people who have exposed their upper aerodigestive tract mucosa to the carcinogens in cigarette smoke and ethanol. These carcinogenic agents act in a synergistic manner—that is, each promotes the occurrence of the cancer, but the combined effect is greater than the sum of the two. It follows that if a person gets one cancer, he or she may get another one in a different part of the upper aerodigestive tract (esophagus and lungs). Indeed, additional cancers are found in 10-20% of the patients who present with head and neck cancer.

**Endoscopy Diagnosis and Treatment:**

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A full ENT exam is performed. In addition, fiberoptic or formal endoscopy in the operating room is performed.

One reason for this is to evaluate the size and extent of the primary tumor (the original mucosal tumor, the source of the metastases likely to be found in the neck). Many patients present with a mass in the neck, and you will use endoscopy to locate the primary tumor.

Sometimes the primary is very small, while the neck metastasis is very large. About 10% of the time in this situation, the primary tumor can't be found—this is called "**the unknown primary.**"

A 2nd reason to perform endoscopy is to look for **second primaries.**

The 3rd reason to use endoscopy is to take a small piece of tissue with biopsy forceps to obtain a tissue diagnosis



**Figure 15.3.**

Mass occurring in mid-portion of right neck in a man with a past history of tobacco usage. This most likely represents metastatic squamous cell cancer from a primary site somewhere in the head and neck. Diagnostic workup includes head and neck examination, CT scan imaging, and fine needle aspiration biopsy.



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of cancer. Otolaryngologists use **rigid endoscopes** more than other specialists do because they make it easier to get a good biopsy specimen. (Rigid scopes are also the scope of choice for treatment of foreign body aspiration.)

Rigid endoscopy is usually done under general anesthesia for better relaxation and patient comfort. If the tumor is in the oral cavity, base of the tongue, or oral pharynx, it is palpated as well. The procedure usually takes less than an hour, and the patient may go home the same day.

Overnight observation may be necessary if the patient has a large cancer of the larynx and there is a risk that the swelling caused by the procedure may obstruct the already compromised airway.

**Diagnosis and Treatment:**

Once the patient has been "scoped," what do you do next?

Remember that endoscopy is used to evaluate the size of the tumor, including estimation of the 3rd



**Figure 15.4.**

Early squamous cell cancer of the vocal cord arising in a smoker. This patient presented with voice change and hoarseness. Early detection and appropriate treatment will cure essentially all of these individuals.



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dimension (depth). In general, T1 cancers measure less than 2 cm, T2 cancers are 2-4 cms, T3 are larger than 4 cm, and T4 are massive. Cancer of the larynx is usually smaller at presentation, and a different staging system is used. Little tumors without metastases do well and large or metastatic tumors do poorly. Unfortunately, though, 60-75% of patients don't present until the tumor is large or metastatic.

In general, T1 and T2 cancers respond well to surgery or radiation therapy with good results (75-80% 5-year survival). For larger or metastatic lesions, combined surgery and radiation therapy is usually recommended and the prognosis is poorer (15-35% 5-year survival). In addition, chemotherapy seems to synergize with irradiation and has become an important adjunct in the treatment of head and neck cancer.

When head and neck cancer patients receive radiation therapy as part of their treatment, it is usually given once per day for 6 weeks, although some physicians use twice-per-day protocols. It is generally felt that 5600 rads (centigray [cGy]) is a minimum dose for a neck with microscopic disease. If there is a big, bulky tumor somewhere, the dose may go up to 7000 cGy. Implants (**brachytherapy**) may be placed to deliver a very high, localized dose. Radiation therapy also dries the major and minor salivary glands. Since teeth remineralize with the minerals in sali-



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va, they are very prone to decay during and after this therapy. If a patient has teeth in very poor condition, all the teeth are extracted before the patient begins radiation therapy. This is called a total odontectomy, and has nothing at all to do with removing the odontoid process.

**Metastasis:**

Squamous cell carcinoma tends to metastasize early to the lymph nodes of the neck before going to the lung, liver, bone, and brain. A chest x-ray is obtained to be certain the patient has neither metastasis nor a second tumor (which is more likely) in the lung. If the tumor has metastasized to the lungs or liver, the role of surgery is limited to palliation. If the metastases are confined to the lymph nodes of the neck (the most common scenario), then a neck dissection—removing lymph nodes from the neck—is performed at the time of surgery. The lymph nodes are nestled in fat and wrapped in fascia. **Selective neck dissection (SND)** involves removing only nodes, fat, and fascia most likely involved by metastasis. A **radical neck dissection (RND)** is performed when bulky metastasis demands radical surgery and includes **removal of the sternomastoid muscle, internal jugular vein, and spinal accessory nerve**. The main deformity that results from most head and neck surgery is caused by the surgery done to remove the primary, so the term "radical" should be used to describe only the neck dissection, not



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the entire cancer-removing procedure.

**Questions, Section #15**

1. By far, the most common cancer of the upper aerodigestive tract is \_\_\_\_\_
2. Cigarette smoke and ethanol work in a \_\_\_\_\_ manner to promote cancer.
3. People who have one cancer of the upper aerodigestive tract may often have another, which is one of the reasons why \_\_\_\_\_ is performed.
4. Evaluation of the actual size of a tumor, as well as taking a biopsy, are two other reasons why \_\_\_\_\_ is performed before final treatment of a head and neck cancer.
5. Small head and neck cancers can often be treated with either \_\_\_\_\_ or \_\_\_\_\_
6. Large head and neck cancers are often treated with \_\_\_\_\_ and \_\_\_\_\_
7. Squamous cell carcinoma of the head and neck usually metastasizes to the lymph nodes in the \_\_\_\_\_ before going to other sites.
8. One key to happiness in the 3rd year of medical school is \_\_\_\_\_



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- to \_\_\_\_\_  
\_\_\_\_\_
9. A radical neck dissection (RND) involves removing the stern-ocleidomastoid muscle, the spinal accessory nerve, and the \_\_\_\_\_, which are intimately related to the lymphatic structures of the neck.
  10. Total odontectomy involves \_\_\_\_\_
  11. Radiation therapy dries up the \_\_\_\_\_ glands.
  12. A mass in the neck may be a \_\_\_\_\_ from a cancer somewhere in the upper aerodigestive tract.
  13. A patient who is hoarse for more than 2 weeks may have \_\_\_\_\_ of the larynx.
  14. A patient with a lump below or in front of the ear may have a tumor of the \_\_\_\_\_ gland and needs to see an otolaryngologist.
  15. A persistent oral ulcer may be the first sign of a \_\_\_\_\_
  16. When there is a normal ear exam, pain in the ear may be caused by a \_\_\_\_\_ in the pharynx.
  17. Persistent unilateral serous otitis media may be caused by a \_\_\_\_\_ in the nasopharynx obstructing the Eustachian tube.



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18. Parotid masses feel superficial, because the parotid gland is immediately superficial to the \_\_\_\_\_  
\_\_\_\_\_ of the mandible.

**Answers**

1. Squamous Cell Carcinoma
2. Synergistic
3. Triple Endoscopy
4. Endoscopy
5. Surgery, Radiation Therapy
6. Surgery, Radiation Therapy
7. Neck
8. Read for an hour every day
9. Jugular Vein
10. Removing all the teeth
11. Salivary
12. Metastasis
13. Cancer
14. Parotid
15. Cancer
16. Cancer
17. Cancer
18. Ascending Ramus



## More educational opportunities from the AAO-HNSF

The American Academy of Otolaryngology—Head and Neck Surgery Foundation offers many programs designed to keep you up-to-date without leaving your practice. Most activities offer Category 1 AMA/PRA credits. The Academy/Foundation also serves as a primary resource for otolaryngology/head and neck surgery activities and events, and serves as an online clearinghouse for patient education and specialty information.

Visit the Academy's website, <http://www.entnet.org>, to learn more about these programs.

