

# Office Assessment of Patient with Head and Neck Cancer

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## Abstract

Evaluation of patients with head and neck cancers is important for proper treatment planning. With advent of advanced fiberoptic system, assessment of the mucosal surfaces of upper aerodigestive tract is much easier and can be performed in office settings.

**Keywords:** Squamous cell carcinoma, endoscopes, flexible fiberoptic laryngoscope.

Office evaluation of the patient with head and neck cancer begins with a thorough history. Recording history from head and neck cancer patient is no different from taking history from any other surgical case. Delving carefully into the history can give some insight into the character, extent and location of disease. Symptoms related to tumor suggest a specific site. Most of the head and neck cancers are epithelial in origin, so reflect years of abuse either with cigarette and tobacco, often combined with alcohol. Environmental exposures like wood dust or heavy metals increase the likely hood of cancer. One should not forget to elicit history about sexual and avocational exposures and previous exposure to radiation. Usually the most common symptom is painful lesion in the mouth, other symptoms include persistent mass, loose teeth, ill-fitting dentures, pain in the mandible, inability to open mouth, or hypoesthesia due to perineural involvement as the tumor extends in the posterior oral cavity. Odynophagia, drooling, voice change or even respiratory distress can occur in cases presenting with advanced disease. Otalgia indicates involvement of ninth and tenth cranial nerves. Ankyloglossia indicates deep invasion of the muscles of tongue. The severity of disease is determined by the duration, type and rate of progression of the symptoms and functional impairment experienced by patient. Dysphagia often leads to weight loss, malnutrition, and weakness. This exacerbates existing co-morbidities and should be given consideration in the treatment planning.

Medical comorbidities should be looked into as they affect treatment planning. Coronary artery disease and pulmonary diseases should be identified as these cases will need extraoperative and postoperative measures for successful outcome. Pulmonary function tests and careful review of the patients exercise tolerance (i.e. can he or she walk up two flight of stairs without stopping) are especially important if conservation surgery is being contemplated because the patient's preoperative pulmonary reserve is important indicator of how well patient will tolerate aspiration postoperatively.

Patient's social history is important and does influence the treatment decision. It is always better to treat the patient rather than the disease. It is important to review patients past history. There is approximate 14% chance of developing second primary in the head and neck.

## INTRAORAL EXAMINATION

Early detection has the potential to significantly reduce oral cancer deaths and morbidity. Therefore head and neck surgeon should systematically inspect and palpate all subsites in the oral cavity for mucosal lesions and masses paying particular attention to the high risk sites for the development of oral cancer. Evaluate the specific characteristics of each lesion with particular attention to size, color, texture and outline. Particular attention should be paid to predominantly white, red and white and ulcerated and/or indurate lesions.

Mobility of tongue and elevation of soft palate should be checked. Assessment of oral submucous fibrosis and trismus should not be overlooked. One should differentiate between reduced mouth opening because of OSMF or pterygoid muscle involvement. Later indicates advanced disease. Bimanual palpation is particularly useful in evaluation of buccal surfaces, tongue and floor of mouth. Deep palpation of base of tongue should not be neglected as these lesions are often submucosal. Concept of field cancerization should always be kept in mind and clinician should always search for synchronous lesions in upper-aerodigestive tract, especially given the 4 to 8% incidence overall incidence in head and neck cancers.

### EXTRAORAL EXAMINATION

Inspect the head and neck region for asymmetry, tenderness or swelling. Careful assessment of neck should be done for determining the size, number, and consistency of palpable lymph nodes. Particular attention should be paid to lateral and central compartments of neck for evidence of extra-laryngeal extension spread of disease. Loss of normal crepitude with side to side movement of the laryngeal framework may indicate postcricoid involvement. Complete fixation of laryngeal complex on clinical examination is also suggestive of prevertebral involvement. Careful palpable assessment of thyrohyoid membrane, thyroid cartilage, and cricothyroid membrane, as well as the overlying soft tissue of the laryngeal complex may provide more clinically useful assessment of the tumor than any advanced imaging modality. A complete cranial nerve examination may disclose skull base or direct nerve involvement by the tumor. Ophthalmologic assessment is recommended if there is concern for orbital involvement.

### OFFICE BASED ENDOSCOPY

With the introduction of fiberoptic technology into the office setting our ability to examine the mucosal surfaces of upper aerodigestive tract has greatly enhanced.<sup>1</sup>

### NASAL ENDOSCOPY

Nasal endoscopy can be safely performed under topical anesthesia (Fig. 1). Endoscopic evaluation of the nasal cavity is crucial in accurate clinical assessment of an intranasal lesion (Fig. 2). It also gives valuable information regarding fixation of the mass to the surrounding structures and site of origin. Fiberoptic flexible endoscopy (FFL) provides



FIGURE 1: Nasal endoscopy can easily performed under local anesthesia

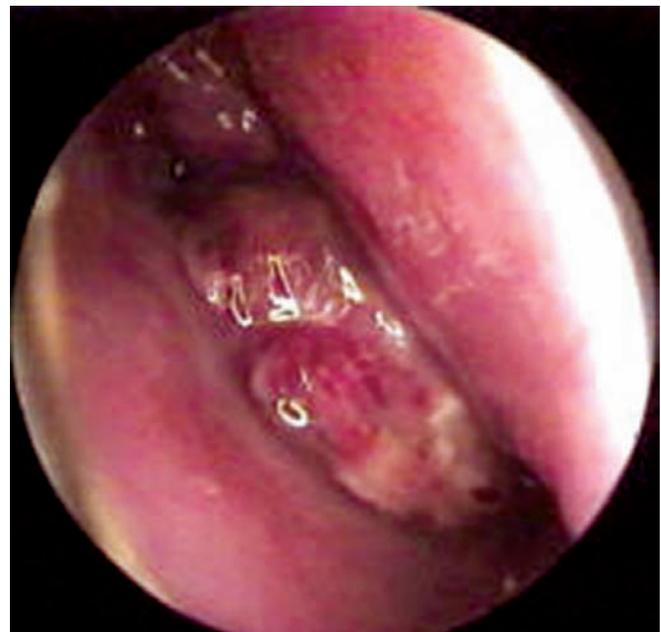


FIGURE 2: Endoscopic view of the squamous cell carcinoma of nasal cavity

adequate visualization of the lower half of the nasal cavity. Therefore, lesions presenting in the region of the inferior turbinate, middle meatus and the lower half of the nasal septum can be easily visualized by office endoscopy.<sup>2</sup> Rigid endoscopic evaluation with telescopes generally requires adequate topical anesthesia as well as shrinkage of the

mucosal surfaces. A set of 0°, 30°, 70° and 90° telescopes should be available for appropriate evaluation of the interior of the nasal cavity. A biopsy can usually be performed in office setting.

## LARYNGOSCOPY

Indirect laryngoscopy with laryngeal mirror affords an excellent overview of the larynx and tongue base with good color and depth perception. There is small subset of patients that do not tolerate complete mirror examination. In addition, protrusion of the tongue places the larynx in non-physiological state.

Endoscopic laryngoscopy either by flexible or rigid scope, possibly combined with stroboscopy, allows a closer look at individual areas and allows for photo and video documentation of a visible pathology in a physiologic setting. It has supplanted mirrors due to better optical resolution and higher sensitivity (Fig. 3). Endoscopic assessment provides the best opportunity to assess vocal fold movement as well as movement of the cricoarytenoid joint.<sup>3</sup> Maneuvers, such as having the patient cough lightly may help elucidate arytenoid mobility fully. It is critical to distinguish between a true fixed vocal cord due to paraglottic space invasion versus cricoarytenoid joint involvement by tumor. The extent of the tumor or suspicious areas will aid the planning of the operative laryngoscopy and biopsy. With adequate topical anesthesia and decongestion, the flexible fiberoptic laryngoscope (FFL) can be passed through the cords to visualize the subglottis. Evaluation of the patency of the airway combined with vocal fold function can prevent unforeseen difficulties with subsequent intubation in head and neck cancer patients.



**FIGURE 3:** Rigid laryngoscopy being performed in office setting



**FIGURE 4:** Rigid endoscopic view of glottis

The rigid Hopkin's scopy of larynx uses 70 or 90° angled lenses and allows an excellent view of the larynx through transoral route (Fig. 4). Stroboscopy allows for excellent visualization of the mucosal wave and may aid in detecting early glottic lesions by subtle changes in mucosal wave dynamics. The practical worries of patients with strong gag reflex can be solved with practical experience. Extended uses of the flexible endoscopes include biopsy. Sheaths with working channels are now available that fit over existing flexible fiberoptic scopes allowing for in-office transnasal endoscopic biopsy. Infact use of transnasal laryngoscopy and esophagoscopy may facilitate or substitute the operative panendoscopy in selected cancer patients. In a prospective study of 17 patients, postma and clogues found transnasal endoscopic biopsy results to be entirely congruent with standard panendoscopy biopies taken in the operating room.<sup>2</sup>

## HIGH RESOLUTION MAGNIFYING ENDOSCOPY

Newly developed high resolution and magnification endoscopes offer significantly better image quality than that of first generation video endoscopes or the older fiberoptic systems. This allows detailed inspection of the mucosal surfaces and improves differential diagnosis between non-neoplastic and neoplastic lesions. They are used in conjunction with chrome endoscopy. Advent of these endoscopes and chrome endoscopy has allowed japanese to detect hypopharyngeal and esophageal lesions at very early stage and subject them to endoscopic mucosal resection (EMR).

## DOCUMENTATION

A comprehensive examination is incomplete without documentation especially in head and neck cases. All head and neck oncologists should map the lesions at the initial assessment and at every re-evaluation visits which is of immense help in tracking the progression of disease.

## OFFICE BASED DIAGNOSTIC PROCEDURES

The method of tissue diagnosis includes an office based brush cytology which in case of laryngeal and hypopharyngeal regions can be obtained through a fiberoptic flexible scopes.<sup>3</sup> At present tissue biopsy remains the gold standard for diagnosing an oral premalignant or malignant lesions. If suspicious mucosal lesion persists for more than three weeks following removal of identified local irritants such as trauma, infection or inflammation, diagnostic biopsy is required. A carefully selected, performed and interpreted biopsy is critical in rendering an accurate diagnosis. If biopsy is reported as dysplasia, an oral risk assessment is recommended to determine appropriate management that may range from long-term monitoring to medical or surgical therapy.

## ADJUNCT DIAGNOSTIC MEASURES

Vital staining has not proven to be absolutely reliable but may be of some help where there is some wide spread "field change". It is simple and inexpensive diagnostic tool that uses blue dye to highlight abnormal areas of mucosa. Toluidine Blue(TB) is a basic metachromatic nuclear stain used to identify the premalignant and malignant lesions. TB has higher sensitivity to detect carcinoma in situ and oral cancer than conventional oral examination. Studies assessing the TB have shown a sensitivity and specificity ranging from 93.5 to 97.8% and 73.3 to 92.9% respectively.<sup>9-11</sup>

## BRUSH BIOPSY

Brush biopsy uses a small nylon brush to gather cytology samples which are then sent for computer scanning and analysis. If suspect cells are identified, pathologist then examines them to determine the final diagnosis. Both the reports are returned to the clinician for conventional biopsy if indicated. The technique has proved rather controversial, with concern largely related to the question of false negative results.

## DIRECT FLUORESCENCE VISUALIZATION

All tissues have tendency to glow (fluoresce) in dark, either spontaneously (autofluorescence) or if an external sensitizer is used. This property of tissues is due to presence of fluorescent chromophores within the cells. Tissue changes can affect the fluorophores and fluorescence. Autofluorescence diagnosis is based on the ability of the oxidized flavin mononucleotide(FMN) in normal cells to emit green fluorescence when exposed to blue light. Neoplastic cells can be distinguished by their significant lower levels of FMN. Preliminary studies using direct visualization however, have been very encouraging. Validation of such studies with multicenter controlled trial is necessary before they can be used for office assessment. Initial studies have shown increased accuracy and tendency towards detection of early laryngeal cancers.<sup>5,6</sup>

## CONTACT ENDOSCOPY

Less data is available contact endoscopy in which aerodigestive mucosa is stained with 1% methylene blue and examined under special endoscopes with x60 to x150 magnification. The staining and magnification allows visualization of the cells, nuclei and cytoplasm of mucosa with different grades of abnormality.<sup>7</sup> However this technique requires specialized instruments and also experience in pathologic diagnosis, which is possible in extremely specialized centers.

## PREOPERATIVE DENTAL ASSESSMENT

Most of the patients presenting to us with primary carcinomas of the oral cavity have poor orodental hygiene due to use of mixture of tobacco, betel nut and slaked lime. It is very important to provide appropriate dental care to obtain an optimal status of hygiene of oral cavity prior to any surgical procedure. All teeth deemed unrestorable, especially those in the field of radiation should be extracted either preoperatively or intraoperatively. It is, however, important to stress that teeth within the tumor or in its vicinity, should not be extracted prior to the surgical resection. Dental extraction near a tumor opens up tooth sockets where implantation of tumor can occur. Advice regarding fluoride treatment for prevention of caries of remaining viable teeth is necessary. A thorough periodontal scaling procedures should be completed before surgery to avoid complications and prevent sepsis in the oral cavity.

Any restorative dental work, however, should be done after adequate surgical treatment of the primary oral cancer.

Nowadays chemotherapy is being used both as neoadjuvant and concurrently with radiotherapy, it is critical that patient is aware of the oral hygiene measures to limit the possibility of bacteremia during the cycles of chemotherapy as risk of the infection is more because of the depressed peripheral white blood cell count.

Preoperative assessment by maxillofacial prosthodontist should be done if resection of hard palate is contemplated. If any postoperative splint, obturators or dental prostheses are desired then it is imperative that dental impressions are obtained before surgery.

### Preoperative Assessment of Oral Submucous Fibrosis and Trismus

Another problem in our patients is oral submucous fibrosis. These patients are at increased risk of developing trismus especially if resection of the part of the mandible without reconstruction is done and if postoperative radiation is required as part of treatment planning. These should be given instruction for its prevention rather than treatment once it occurs. Those patients who require partial maxillectomy that includes the tuberosity, hamular notch region, and pterygoid fossa area are at risk if postoperative radiation is required. For tumors of the nasopharynx in which muscles of mastication and temporomandibular joint are within the field of irradiation, trismus therapy must not be overlooked. To minimize this debilitating condition daily opening exercises are taught to the patients. Instructing

patients on the use of jaw stretchers or ice-cream sticks to use as leavers and monitoring mouth opening can be useful as well.

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