Cancer of the mouth or oral cavity is one of the most prevalent cancers in the United States today. According to the Journal of the National Cancer Institute, more than 55,000 Americans were diagnosed with oral or pharyngeal cancer this year.

It will cause more than 8,000 deaths, killing roughly one person per hour, 2,400 per day. Of those 55,000 newly diagnosed individuals, only half will be alive in five years. This is a number that has not significantly improved in decades.

Although the overall incidence of oral cancer has remained stable with numbers only slightly increasing each year, currently this is the second year in a row in which there has been an increase in the rate of occurrence, about 11 percent over last year.

The death rate for oral cancer is higher than that of other cancers such as thyroid or skin cancer (malignant melanoma).1

Oral squamous-cell carcinomas (OMCs) are the eighth most common cancer among men and the fourth most common among women in the United States.5

It includes many parts of the mouth: the lips, the buccal mucosa of the lips and cheeks, the gingiva and the area behind the wisdom teeth, the floor of the mouth, the hard palate, the soft palate and the uvula, the tonsils and the tongue.4

The ratio of men to women diagnosed with oral cancer is 2:1 over a lifetime, although the ratio comes closer to 1:1 with advancing age. Approximately one-third of all oral cancer is diagnosed in persons older than 40, and the average age at the time of diagnosis is 65 years. However, recent evidence has emerged indicating that oral cancers are occurring more frequently in younger persons, those under 40 years old.2

Common symptoms of oral cancer include:

- A sore or lesion in the mouth that does not heal within two weeks.
- A lump or thickening in the cheek.
- A white or red patch on the gingiva, tongue, tonsil or lining of the mouth.
- A sore throat or a feeling that something is caught in the throat.
- Difficulty swallowing, chewing or moving the jaw.
- Difficulty moving the jaw or tongue.
- Numbness of the mouth or other area of the mouth.
- Swelling of the jaw that causes dentures to fit poorly.

Oral cancer is caused by damage to the DNA of cells in the mouth. There are two distinct pathways through which most people come to have oral cancer. Many years ago, the most prevalent pathway was through the use of tobacco and alcohol, but today the growing pathway is through exposure to the human papilloma virus (HPV), the same one that is responsible for the vast majority of cervical cancers in women.

However, the pathway, damage to the cells occurs and they malfunction, mutating into cancer cells. The anatomical malignancy sites associated with each pathway appear to also be different from each other.

In the broadest terms, they can be differentiated into the following areas: HPV-related appear to occur on the tonsillar area, the base of the tongue and the oropharynx while non-HPV positive tumors tend to involve the anterior tongue, floor of the mouth, the mucosa that covers the inside of the cheeks and alveolar ridges.

It is now confirmed that HPV is the most common virus group in the world today, affecting the skin and mucosal areas of the body. More than 100 different types/versions of HPV have been identified. Different types of the human papilloma virus are known to infect different parts of the body. There are certain forms of HPV that are sexually transmitted and are a serious problem.

Today, in the younger age group, including those who have never used tobacco products, there are those who have oral cancer, which is HPV-viral based.

Two types of genital tract HPV in particular, HPV 16 and HPV 18, are known to be linked to oral cancer and have been conclusively implicated in the increasing incidence of young, non-smoking, oral cancer patients. The HPV group is the fastest growing segment of the oral cancer population to date.1

Oral cancer is among the most debilitating and disfiguring disorders seen in today’s oral health environment. Tumors affecting a patient’s mouth, tongue and soft palate can prohibit proper swallowing and speech.5

In addition, the cancer can spread to other parts of the body, causing disability and even death. The survival of patients and the quality of life after treatment depend on early diagnosis. Eighty-one percent of patients with oral cancer survive at least one year after diagnosis. Early detection is the key.4

The best defense against oral cancer is early discovery. Early detection is complicated by the fact that many lesions in their earlier stages may be completely asymptomatic. Historically, unaided visual examination, palpation and radiographs were the only methods available for oral cancer screening. In recent years, screening technologies have become available to supplement the visual examination and help the clinician identify suspicious lesions that require further investigation.6

Adjunctive screening aids ViziLite Plus. Technol-ogy such as light-based detection systems increases a clinician’s ability to see tissue changes that the naked eye might miss. One such technology is ViziLite Plus, a simple screening tool that helps visualize suspect tissue in the oral cavity (Fig. 1). Lesions that may have gone unnoticed to the naked eye will be more visible using Touli- dine blue (T-Blue) tissue dye and chemiluminescent light, which marks and identifies oral lesions.

The patient rises with a di- lite acetic solution, and abnormal squamous epithelium tissue will appear ace- tovitally when viewed under ViziLite’s diffuse low-energy wavelength light.

Normal epithelium will absorb the light and appear dark.

ViziLite can assist a dentist or hygienist in identifying an abnormality in the oral cavity that may need further testing, such as a biopsy.

It has been difficult to determine which tissues in the mouth cause for concern. It is with continued research that technology has forged forward and developed adjuncts for the oral health care professional to intervene when early signs are unclear.

VELScope. The VELscope integrates four key elements: illumination, sophisticated filtering, natural tissue fluorescence and tissue morphology. It is a portable device that allows for early detection in the disease process.7

VELscope illuminates tissue with specific wave- lengths that interact with and provide metabolic and biochemical information about the tissue at and just beneath the surface.

This gives clinicians the ability to see early biochemical changes before they present macroscopically, thereby allowing early intervention to detect lesions earlier in the disease process.7

Figure 5a is an image of a normal tongue in normal light, and Figure 5b is an image of a normal tongue with the use of the VELscope (images courtesy LED Dental).

Figure 4a shows a tongue with an area that appears normal under white light. However, Figure 4b shows the area as seen under the VELscope. The dark area is VEL-scope positive, which was confirmed by biopsy as carcinoma in situ (images courtesy of LED Dental).

In-office tissue test OralCDx BrushTest. An essential tool for early detection of oral cancer is the OralCDx BrushTest, or oral brush biopsy (Fig. 5). This is the only painless test for oral dysplasia (pre-cancer) and cancer.

The BrushTest was found to be at least as sensitive as a scalpel in ruling out dysplasia and cancer in every study in which the same tissue was simultaneously assessed by both OralCDx and a scalpel biopsy.8,9

Fig. 1: Normal tongue viewed with the VELscope.

Fig. 2: The VELscope.

Fig. 3a: Normal tongue viewed with the VELscope.

Fig. 3b: Normal tongue viewed with the VELscope.
Such as dysplasia or full malignancy.

A pathologist examines the cells to determine the final diagnosis. A lab report is then sent to the dentist, and experts from the pathology department provide patient-specific follow-up guidance by telephone for every abnormal OralCDx report.

A final word

The American Dental Association states that 60 percent of the U.S. population sees a dentist every year. One only has to look at the impact of the annual PAP smear for cervical cancer, the mammogram to check for breast cancer, or PSA and digital rectal exam for prostate cancer to see how effectively an aware and involved public can contribute to early detection, when coupled with a motivated medical community.

The dental community needs to incorporate adjunctive technology to the screening process and assume the same leadership role as the medical community if oral cancer is to be brought down in the future from its undeserved high ranking as a killer.

References

4. University of Texas Cancer Center; Oral Cancer M.D. Anderson Cancer Center; www.mdandal- son.org/diseases/oralcancer.

This procedure is simple and can be done right in the dentist’s chair. It results in very little or no pain or bleeding, and requires no topical or local anesthetic.

Firm pressure with a circular brush is applied to the suspicious area. The brush is then rotated five to 10 times, causing some pinpoint bleeding or light abrasion. The cellular material picked up by the brush is transferred to a glass slide, preserved and dried.

The slide is then mailed to a laboratory along with written documentation about the patient and a detailed description of the questionable area of the mouth. At the laboratory, the sample will be examined for cells that show signs of change.

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