PART I

GENERAL PATHOLOGY

CHAPTER 1 **Introduction to General and Oral Pathology**
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CHAPTER 2 **Basic Pathology**
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CHAPTER 3 **Inflammation and Repair**
Leslie DeLong

CHAPTER 4 **The Immune System and Immunity**
Leslie DeLong

CHAPTER 5 **Neoplasia**
Leslie DeLong

CHAPTER 6 **Developmental, Genetic, and Congenital Disorders**
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CHAPTER 7 **Endocrine Disorders**
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CHAPTER 8 **Blood Diseases**
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CHAPTER 9 **Gastrointestinal, Neurologic, and Skeletal Disorders**
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CHAPTER 1

Introduction to General and Oral Pathology

LEARNING OUTCOMES

1. Define and use the key terms in this chapter.
2. Discuss the concept of "wellness."
3. Describe the changing roles of the patient and the clinician.
4. Define "oral medicine."
5. State the objectives of the clinical evaluation.
6. Describe the elements of an extraoral and intraoral examination or oral cancer screening.
7. List observations that might suggest that a lesion is benign or malignant.
8. Note the elements of a complete clinical description.
9. List the elements that should be included in a description of radiographic findings.
10. Write a complete clinical description of a sample case study.
11. Describe the steps involved in reaching a differential diagnosis.
12. Describe possible ways of determining a definitive diagnosis.

CHAPTER OUTLINE

Health and Wellness
Disease
Oral Medicine
The Role of the Dental Hygienist
Objectives of the Clinical Evaluation
  Performing an Extraoral Examination
  Performing an Intraoral Examination
  Describing and Recording Clinical Findings
  Describing Radiographic Findings
Determining a Diagnosis
  Differential Diagnosis
  Definitive Diagnosis

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KEY TERMS

Abrasion	Induration
Amalgam tattoo	Lesion
Atypical	Localized
Benign	Lymphadenopathy
Biopsy	Macule
Bulla	Malignant
Circumscribed	Melanoma
Coalesce	Mixed
Convergence	Multilocular
Corrugated	Nodule
Crusted	Oral medicine
Definitive diagnosis	Papillary
Differential diagnosis	Papule
Divergence	Patch
Endogenous	Pedunculated
Endophytic	Plaque
Erosion	Pseudomembrane
Erythematic	Pustule
Exogenous	Radiolucent
Exophytic	Radiopaque
Exudate	Resorption
Purulent	Sessile
Fissured	Tumor
Fluctuant	Ulcer
Generalized	Unilocular
Homeostasis	Vesicle

RELATED CLINICAL PROTOCOL

#15 Office Protocol for Identifying Suspected Family Violence

Health and Wellness

Pathology is defined as the study of disease. However, before learning about disease, it is necessary to have a clear definition of health. In 1948, the World Health Organization defined health as "a state of complete physical, mental, and social well-being—not merely the absence of disease or infirmity." Almost 50 years later, *Stedman's Medical Dictionary for the Health Professions,* 7th edition, defines health as "a state characterized by anatomical, physiological, and psychological integrity, ability to perform personally valued family, work, and community roles; ability to deal with physical, biological, psychological and social stress; a feeling of well-being; and freedom from the risk of disease and untimely death." The definition and concept of health comprise a wide range of physical, emotional, and spiritual components.

The concept of health care has rapidly evolved over the past several decades, and many paradigms or models for health care have been examined and modified or eliminated. The role of the health care provider has changed from dictator to advisor and facilitator. The role of the patient has also changed. No longer do patients have to be passive participants; they can be dynamic partners in their own health care. The Internet has added a new dimension to the concept of access to health care information, enabling people to become informed consumers of health care if they so desire. People everywhere are looking at different methods of achieving "health" as it is defined today. They are seeing that many alternative and complementary forms of medicine have a place in the health care system. The concept of "wellness" places a strong focus on the active role of the patient and the importance of the total well-being of the person. The US government has proposed four all-embracing goals in its 10-year agenda for improving the nation's health, *Healthy People 2020*. These goals are (1) attain high-quality, longer lives free of preventable disease, disability, injury, and premature death; (2) achieve health equity, eliminate disparities, and improve the health of all groups; (3) create social and physical environments that promote good health for all; and (4) promote quality of life, healthy development, and healthy behaviors across all life stages (Healthy People 2020, 2016). *Healthy People 2020* reflects the changing attitudes of Americans and encourages establishing a sense of personal responsibility as the key to good health. Students pursuing a career in health care study the healthy body in anatomy and physiology and other subjects throughout their formal education. This text draws on this knowledge extensively to provide a study of disease states.

Disease

Defining disease is far simpler than defining health. *Stedman's Medical Dictionary for the Dental Professions,* 2nd edition, defines disease as "an interruption, cessation, or disorder of a body, system, or organ structure or function" or "a morbid entity ordinarily characterized by two or more of the following criteria: recognized etiologic agent(s),

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BOX 1.1

Major Findings of "Oral Health in America: A Report of the Surgeon General"

- Oral diseases and disorders in and of themselves affect health and well-being throughout life.
- Safe and effective measures exist to prevent the most common dental diseases—dental caries and periodontal diseases.
- Lifestyle behaviors that affect general health such as tobacco use, excessive alcohol use, and poor dietary choices affect oral and craniofacial health as well.
- There are profound and consequential oral health disparities within the US population.
- More information is needed to improve America's oral health and eliminate health disparities.
- The mouth reflects general health and well-being.
- Oral diseases and conditions are associated with other health problems.
- Scientific research is key to further reduction in the burden of diseases and disorders that affect the face, mouth, and teeth.

From U.S. Department of Health and Human Services. Oral health in America: A report of the Surgeon General. Rockville: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.

identifiable group of signs and symptoms, or consistent anatomical alterations." The discussion of disease does not specifically refer to an infection with a microorganism; it includes any instance in which there is a change or alteration in **homeostasis**, or balance, within the systems of the body. Knowledge of the processes associated with disease is an essential part of the practice of dental hygiene. Dental hygienists must be aware of the impact disease has on the functioning of the human body.

The dental profession has known for years that the mouth is not divorced from the rest of the body but is an integral part of it. In the year 2000, the Surgeon General of the United States released "Oral Health in America: A Report of the Surgeon General." This report was the first of its kind, and its intent was to alert Americans to the full meaning of oral health and its importance to general health and well-being (USDHHS, 2000). Boxes 1.1 and 1.2 summarize the major findings of the report and the major functional and social implications of oral and craniofacial diseases that are identified in the report. What happens in the mouth can and does affect the rest of the body. Research, while not proving a causal relationship, appears to support the concept that periodontal infections may have an impact on the development, severity, or progression of heart disease, stroke, diabetes, respiratory disease, and preterm low-birth-weight babies. In addition, many pathologic conditions and diseases have oral manifestations that may appear in the early stages of the illness, possibly prior to any other symptoms. Although the importance of oral health in the context of total health is known by many, there are many more individuals who are not aware of the connection. Health care professionals, including dental health care professionals, are entrusted with the difficult task of helping patients to achieve and maintain an optimal state of health.

Oral Medicine

Oral medicine is a specialized study within the scope of dental medicine. Although the concept of an interrelationship between dentistry and medicine has been recognized for centuries, the integration of dentistry and medicine was greatly enhanced in 1946 with the publication of "Burket's Oral Medicine" text now in its 12 edition. The discipline

BOX 1.2

Functional and Social Implications of Oral and Craniofacial Diseases as Reported in "Oral Health in America: A Report of the Surgeon General"

- Oral health is related to well-being and quality of life as measured along functional, psychosocial, and economic dimensions. Diet, nutrition, sleep, psychological status, social interaction, school, and work are affected by impaired oral and craniofacial health.
- Cultural values influence oral and craniofacial health and well-being and can play an important role in care utilization practices and in perpetuating acceptable oral health and facial norms.
- Oral and craniofacial diseases and their treatment place a burden on society in the form of lost days and years of productive work. Acute dental conditions contribute to a range of problems for employed adults, including restricted activity, bed days, and work loss, and school loss for children. In addition, conditions such as oral and pharyngeal cancers contribute to premature death and can be measured by years of life lost.
- Oral and craniofacial diseases and conditions contribute to compromised ability to bite, chew, and swallow foods; limitations in food selection; and poor nutrition. These conditions include tooth loss, diminished salivary functions, orofacial pain conditions such as temporomandibular disorders, alterations in taste, and functional limitations of prosthetic replacements.
- Orofacial pain, as a symptom of untreated dental and oral problems and as a condition in and of itself, is a major source of diminished quality of life. It is associated with sleep deprivation, depression, and multiple adverse psychosocial outcomes.
- Self-reported impacts of oral conditions on social function include limitations in verbal and nonverbal communication, social interaction, and intimacy. Individuals with facial disfigurements due to craniofacial diseases and conditions and their treatments may experience loss of self-image and self-esteem, anxiety, depression, and social stigma; these in turn may limit educational, career, and marital opportunities and affect other social relations.
- Reduced oral health–related quality of life is associated with poor clinical status and reduced access to care.

Taken from U.S. Department of Health and Human Services. Oral health in America: A report of the Surgeon General. Rockville: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.

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was created to expand the scope and depth of the dentist's knowledge and skills regarding pathophysiology, pharmacology, diagnosis, and primarily nonsurgical management of medically complex patients including those with medically related conditions affecting the oral and maxillofacial region. Oral medicine is a specialty of dentistry throughout the world and is an emerging specialty within the US dental and medical educational system. Emphasis is placed on treating the patient from a "whole body" perspective. Current curriculum guidelines for dental hygiene education have stressed providing students with an integrative background in oral medicine to address this total patient concept. Sections on Oral Medicine Considerations highlighting this concept are included throughout this text.

The Role of the Dental Hygienist

Healthy People 2020 brings the role of the dental hygienist to the forefront of prevention of not only dental disease but other illnesses as well by setting goals to "increase the proportion of adults who receive preventive interventions in dental offices" (Healthy People 2020, 2016). Three goals specifically include the dental hygienist (in addition to the dentist) in the endeavor to (1) increase the number of adults receiving information or counseling in regard to tobacco cessation, (2) increase the number of adults receiving an oral and pharyngeal cancer screening, and (3) increase the number of adults being tested or referred for glycemic (blood sugar) control (Healthy People 2020, 2016). The dental hygienist is uniquely qualified, as the dental health care team's prevention specialist, to make observations regarding a patient's total health as it relates to oral health and vice versa. The dental hygienist is also in a position to develop strategies directed toward education and the early detection and prevention of disease. Patients schedule preventive appointments two to four times per year; therefore, the dental hygienist is in a key position to recognize abnormalities, sometimes before the patient knows they exist, and to call attention to these abnormalities. Following collaboration with the dentist, the dental hygienist may be the person who assists the patient in obtaining the necessary care.

Objectives of the Clinical Evaluation

Each patient must be thoroughly assessed for any indication of medical and/or oral problems prior to dental or dental hygiene procedures. The extraoral and intraoral examinations compose a large portion of this assessment, and while they are generally referred to as the extraoral and intraoral examinations, together they make up the oral cancer screening examination. Although these examinations may take less time to perform compared with a periodontal examination or a dental charting, they are extremely important. Information from the examinations is essential in determining if there is any indication of deviation from normal, not only in the oral cavity but also in the body as a whole. Findings may be suggestive of oral or pharyngeal cancer or of systemic conditions that may manifest in the oral cavity. The American Cancer Society estimates 69% of oral cancers are diagnosed at late stages, when regional and distant metastasis have already occurred (American Cancer Society, 2016). Late stage diagnoses complicate treatment and lead to low survival rates. The 5-year survival rate for all stages combined is 63%, with a range of 83% for localized lesions to 38% for distant metastasis (Howlader et al., 2016). If more of these cancers were found at an earlier stage, survival rates would increase and morbidity (loss of function and disfigurement) would decrease. The American Cancer Society estimates 48,330 individuals in the United States will be diagnosed with oral or oropharyngeal cancer in 2016, and an estimated 9,570 will die from the disease in 2016 (American Cancer Society, 2016).

Positive findings during this examination can prompt the dental team to order additional tests or procedures to determine a diagnosis for the condition. The dental hygiene

APPLICATION **1.1. Research in Action**

Raising Public Awareness of Head and Neck Cancers and Their Risk Factors

More than 15 years ago, studies done by Horowitz et al. and Forrest et al. found that dental hygienists did not consistently provide oral cancer screening examinations for their patients even though most knew it should be done (Forrest et al., 2001; Horowitz et al., 2002). When these findings were released, increased efforts were made to educate the dental community about the significance of performing the screening examinations. Statistics show that these efforts have been relatively successful. In 2013, Walsh et al. studied approximately 1,500 hygienists from across the United States and found that 94% self-reported performing the examinations. However, they also found that only 51% reported palpating the structures of the neck area and only 76% routinely informed the patient of the reason for the examination (Walsh et al., 2013). Studies done in the United States and in the United Kingdom (Awojobi et al., 2012; Luryi et al., 2014; Riley et al., 2013; Walsh et al., 2013) all conclude there is a lack of public awareness of head and neck cancers including oropharyngeal cancers. They found that most individuals reported knowing little or nothing about the cancers and risk factors, most did not know if their dentist had ever examined them for signs of cancer. The study done in the United Kingdom also found that 92% of the patients wanted their dentist to inform them of the examination and 97% wanted the dentist to help them lower their risk factors (Awojobi et al., 2012).

Many of the patients surveyed by the various studies who initially reported never having an oral cancer screening examination changed their answers after they were provided with a description of the examination. This finding shows that the dental community needs to place much more emphasis on educating our patients and helping them to identify and lessen or eliminate their risk factors.

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BOX 1.3 Objectives of the Clinical Evaluation

1. Screen for oral cancer
2. Determine whether the patient is well enough to continue dental treatment
3. Determine the need for medical or other consultations
4. Enable early diagnosis of pathology
5. Determine possible treatment modifications
6. Prepare and record baseline patient assessment information
7. Review and update baseline assessment information
8. Determine whether additional diagnostic procedures are necessary

appointment may have to be postponed to obtain a medical consultation based on findings during this examination (see Box 1.3 for a listing of objectives of the clinical evaluation).

Some positive findings may cause the dental professional to suspect intentional trauma or neglect. (Refer to Clinical Protocol #15 for more information on family violence and suggestions for recognizing and managing this situation.)

Performing an Extraoral Examination

The extraoral component of the examination should include a general assessment of the patient, an assessment of all visible areas of skin, and an assessment of the head and neck area. This assessment starts with the dental hygienist determining if there are any noticeable physical abnormalities as the patient walks to the dental chair. The patient's gait, posture, and how he or she sits in the chair should be observed as well as the patient's speech; any abnormalities should be noted in the patient's record. All visible areas of the patient's skin may be observed while gathering medical and dental history information and obtaining vital signs. Any abnormalities should be addressed using follow-up questions. The answers to these follow-up questions will determine the next course of action. Patients will respond to most questions that are asked in a professional manner, and most are very willing to discuss their physical status, especially when informed of the necessity for the information.

There is no set sequence for performing a head and neck examination; however, it should be done the same way every time. A systematic procedure for these examinations increases the amount of attention paid to what is being examined, instead of what should be examined next, and wondering if something was omitted. A systematic approach will also make the examinations faster and more reliable. Always look first (visual) and then palpate (tactile), pressing the tissue between fingers or against a firm structure such as bone in every area examined, even if there are no visible abnormalities. The head and neck area should be examined for symmetry by observing the patient from all angles including the supraorbital area (Fig. 1.1). The patient's profile should be classified as mesognathic, prognathic, or retrognathic. Observe the skin of the face, look for acne, moles (nevi), lumps or bumps, or roughened areas of skin. Many of the conditions or characteristics of conditions



FIGURE 1.1. Supraorbital. Facial symmetry observed from the supraorbital aspect.

discussed in this text are referred to as **lesions**. A lesion is a wound or a distinct area in which a pathologic change has taken place. The more normal and abnormal entities the hygienist observes over time, the more observant he or she will become. With experience, the hygienist will see things that cause alarm as well as notice things that do not.

The following is a suggested order for performing the extraoral examination:

- Observe the eyes and the pupils. Figure 1.2 depicts an abnormal area at the inner canthus of the eye called a pterygium that may be caused by excessive exposure to sunlight or may be associated with lichen planus (see Chapter 13) or other skin disorders. This type of finding should be noted, and the patient should be questioned about it for a possible referral. Hold up the eyelids in older adults so the entire eyelid can be observed (Fig. 1.3).
- Look at the ears and the skin in back of the ears because patients are not able to see this area themselves, and it can be easily forgotten. Also check the area at the back of the neck, which can be observed while the lymph nodes are being palpated. Acanthosis nigricans, a darkening and thickening of the skin at the nape of the neck, is associated with prediabetes and would warrant a referral to a physician (see Chapter 7 and Figure 7.21).



FIGURE 1.2. Pterygium. A pterygium is an overgrowth of tissue (conjunctiva).

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FIGURE 1.3. Examine the upper eyelid. Stretch the upper eyelid so that you can observe all areas of the lid.

- Palpate the occipital, auricular, buccal, submandibular, submental, supraclavicular, and cervical chain, including the deep, superficial, and posterior lymph nodes. Figure 1.4 shows the locations of these lymph nodes. Findings that should be noted include **induration** or hardening, tenderness, mobility or movability, and, if abnormal, whether one or more nodes are involved. Another term used to describe enlarged, indurated, and sometimes tender lymph nodes is lymphadenopathy. Figures 1.5 and 1.6 show clinically visible cervical **lymphadenopathy**.
- While palpating the nodes, be aware of the salivary glands in the area and extend the palpations to the parotid and under the mandible for the submandibular. Look for areas of swelling, induration, or tenderness.
- Examine the thyroid gland by pressing one side of the gland against the thyroid cartilage while holding the other side of the gland (Fig. 1.7). Then check to make sure the thyroid cartilage moves symmetrically during swallowing.
- Bilateral palpation of the temporomandibular joints should be done next. The function of the joint is best observed from a supraorbital position while the patient is opening and closing the mouth and moving the jaw from side to side (Fig. 1.8). In addition, examine the patient for any limitations in opening the mouth or for any joint sounds. Ask about joint tenderness or modifications in food choices made to accommodate painful joint function.

Any abnormalities should be accurately recorded in the patient's record. Terminology and a suggested format for recording descriptions of abnormal conditions are presented following the discussion of the intraoral examination.

Performing an Intraoral Examination

The intraoral examination is a continuation of the extraoral examination and may overlap in several areas, especially near

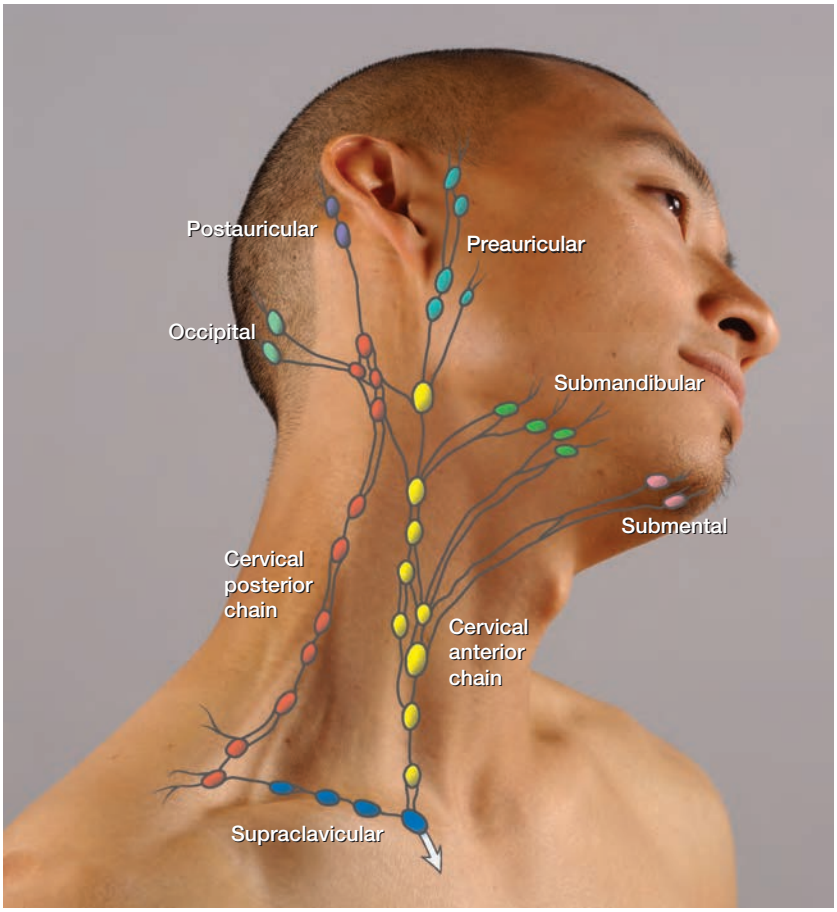


FIGURE 1.4. Lymph nodes of the head and neck. The location of the lymph nodes to be palpated during the extraoral examination. (From Nield-Gehrig JS. Patient assessment tutorials. 2nd ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2010.)

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FIGURE 1.5. Lymphadenopathy. Clinically visible enlarged lymph node in anterior cervical chain. (Courtesy of Dr. Carolyn Bentley.)

the lips and buccal mucosa. Again, the sequence of the examination is not as important as developing a routine, systematic approach. Repeating the same steps over and over again will increase the accuracy of the examination and decrease the chance anything will be missed. The following is a suggested sequence for performing the intraoral examination.

- The oropharynx is a common place to start. Make sure the entire area of the oropharynx is observed. There may be only one chance to see the area because some patients have a problem with gagging and after they realize what is being done, they may become "difficult," even though they have been informed of the procedures prior to the start of the examination. Figure 1.9 depicts the oropharyngeal area of a patient who has a problem with the retention of food particles within the surface tissues of the tonsils. She complained of a bad mouth odor and stated that occasionally she was able to remove the packed food from these areas with a toothbrush.
- Next, visualize and palpate the soft and hard palates and the maxillary tuberosity.



FIGURE 1.6. Lymphadenopathy. Clinically visible enlarged lymph node in posterior cervical chain.



FIGURE 1.7. Examine the thyroid gland. Gently press the thyroid gland against the thyroid cartilage with the fingers of one hand while you hold the other side of the gland steady against the cartilage.



A



B

FIGURE 1.8. Examine the temporomandibular joint (TMJ). Position yourself to observe the mouth opening and closing and moving side to side from the supraorbital aspect while you bimanually palpate the TMJ. **A.** Opening and closing. **B.** Moving from side to side.

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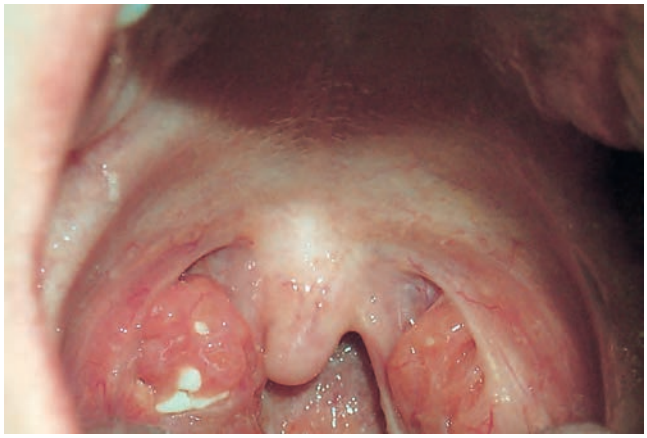


FIGURE 1.9. Examine the oropharynx. Get a good look at the entire oropharynx as quickly as possible. Notice the yellowish areas of food debris stuck in the craters of the tonsillar tissue.



FIGURE 1.11. Examine the floor of the mouth. Use the fingers of your intraoral hand to press the tissues of the floor of the mouth against the fingers of your extraoral hand.

- Stretch out the buccal mucosa (Fig. 1.10) and roll the labial mucosa over your fingers and thumbs so you can visualize the entire surface of each. Palpate all of the soft tissues after they have been observed.
- Examine the mandible; stretch the alveolar mucosa at the floor of the mouth to see any areas that may be hiding under the inferior border of the mandible. Palpate the entire mandible from the inferior border to the angle of the mandible.
- Next, examine the floor of the mouth; use bimanual palpation to press the structures against the fingers of your extraoral hand (Fig. 1.11). Look for any areas of color change, tenderness, induration, or masses.
- Hold the tongue with a gauze square and gently roll the tongue over on one side to observe the lateral border, and then repeat for the other side (Fig. 1.12). Observe the dorsal and ventral surfaces and then palpate the entire tongue. After removing the gauze, observe the tip of the tongue.
- Finally, observe and palpate the attached gingiva on the maxillary and mandibular arches.
- Assess the amount and quality of saliva by observation and by milking the parotid gland. Remember thick foamy saliva is usually a sign of a very dry mouth.
- Parafunctional habits such as bruxism (grinding) or clenching also need to be assessed and, if present, noted in the record.

Describing and Recording Clinical Findings

Written descriptions of an abnormality must provide enough detail so another professional the patient may need to see has adequate information to decide whether the abnormality is resolving or becoming worse. Remember, the patient record is a legal document and should stand up to legal scrutiny if it ever becomes necessary. Intraoral photographs are being used in many practices to provide an adjunct to the written description for future comparison, but there must always be a written description in the patient's record. Certain observations will cause the dental hygienist more concern than others. Some findings are often associated with very aggressive, malignant or cancerous conditions, while others may indicate relatively benign



FIGURE 1.10. Examine the buccal mucosa. Stretch the buccal mucosa away from the maxillary and mandibular arches to examine the entire surface.



FIGURE 1.12. Examine the lateral borders of the tongue. Turn the tongue over rather than pulling the tongue out. It is not as uncomfortable and more can be seen than if the tongue is straight.

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BOX 1.4

Observations Suggestive of Benign versus Malignant or Aggressive Lesions

1. Observations implying a more benign condition
   a. Nonulcerated lesions
   b. Bilateral involvement
   c. Sharply demarcated borders
   d. Multiple areas of involvement
   e. Elevated, soft, and movable lesions
   f. Lesions that have a direct cause-and-effect relationship
2. Observations implying a more aggressive, possibly malignant condition
   a. Paresthesia
   b. Single area of involvement
   c. Poorly defined and ragged borders
   d. Flat, indurated, and fixed lesions
   e. Alteration of the periodontal ligament space and/or lamina dura
   f. Mixed red and white lesions and velvety red lesions
   g. Lesions on the lateral borders of the tongue, soft palate, floor of the mouth, and lip
   h. Radiographic evidence of bone expansion or root erosion, displacement, or resorption

or noncancerous and less aggressive conditions. While these findings are often indicators of severity, do not be fooled into thinking this is always the case because even the most innocuous looking lesion may very well be **malignant**. Box 1.4 lists some observations that are associated with **benign** conditions and those that might imply a more serious or malignant condition. The description of unknown lesions or other abnormalities should include the following:

- History—Very often, there is no history of an oral condition because the patient is unaware of having it. Sometimes the medical/dental history will provide clues to the etiology and history of the problem through notations about chronic conditions such as diabetes, recent illnesses, and medications. The patient should be asked about pain in the area or feelings of paresthesia (numbness, tingling, or other altered sensations). If there is pain, additional information such as the level of pain, whether it is sharp or dull, constant or occasional, can help begin the process of determining what is happening. Box 1.5 discusses effective use of follow-up questions.
- Location—An accurate description of the location of the lesion must be recorded. Some dental charts will have a diagrammatic representation of the areas in the mouth where a facsimile of the lesion can be drawn. If not, the location of the lesion needs to be described using appropriate terminology. Use terms such as inferior, superior, lateral, medial, anterior, posterior, distal, and mesial to denote location. Always try to pick a fixed point of reference close to the lesion to start the location description, such as adjacent to tooth #29 on the buccal mucosa or located in the middle one-third of the tongue or 2 mm left of the midline. Use a probe to measure distances from the point of reference to the lesion and the size of the lesion itself.

BOX 1.5

Effective Use of Follow-Up Questions

Our ability to effectively obtain information from our patients depends on many factors, which include showing genuine concern for them, having a nonjudgmental attitude, and asking the right question in the right way. The patient's age and level of health literacy should be considered when deciding how to word a question. The use of everyday language rather than professional jargon will usually get a more reliable response. The following are some suggestions for obtaining general information. Follow-up questions related to specific conditions will be included in the discussion of those conditions. The word "lesion" can be replaced with a term that better describes your patient's condition.

- When did you first notice this lesion?
- How long has it been present?
- Has it changed, gotten better or worse?
- Have you had the same or similar type of lesion before? In the same place?
- Do you have more lesions anywhere else?
- Has anyone else in your family had the same type of lesion?
- Was there any trauma to the area?
- Is there pain or any other type of different sensation?
- On a scale of 1 to 10 how would you rate your pain?
- Have you been treating it? With what? Has it been effective?
- Have you had any new health problems recently or since your last visit?
- Are you taking any new medications?
- Have you changed your diet?

- Distribution and definition—Terms that describe distribution include the following:
  - **Localized**, or found in one area only. The term "focal" can also be used (Fig. 1.13).
  - **Generalized**, or located in most of the tissues in one area. The term "diffuse" is also sometimes used (Fig. 1.14).
  - "Single lesion" (Fig. 1.13) or "multiple lesions" (Fig. 1.15) further define the distribution.
    - If there are multiple lesions, are they distinct or discrete and separate, or are they **coalescing** or growing together and becoming one large lesion (Fig. 1.16)?



FIGURE 1.13. Localized. This nodule is confined to the gingival tissues between the canine and the premolar.

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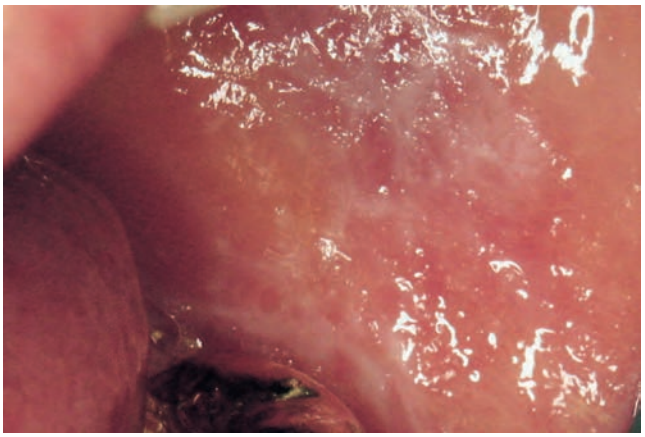


FIGURE 1.14. Generalized with irregular margins. This white lesion of lichen planus (see Chapter 13) called Wickham striae covers the entire right and left buccal mucosal surfaces with an irregular lacy pattern.

- Margins define the extent of the lesion and are either "well defined" or **circumscribed** (Fig. 1.17) or "poorly defined" and vague. Poorly defined margins are difficult to determine, and the dental hygienist may not be sure where the lesion ends and where normal tissue begins (Fig. 1.18).
- Well-defined margins may be "regular" (Fig. 1.17) or "irregular" (Fig. 1.24) in shape.

- Size and shape—Note the general shape and measure the size of the lesion with a probe. Measure the diameter of round lesions and the width and length of square, rectangular, and oval lesions. When writing the numbers for length and width, the width will come first; for example, a 5-inch by 7-inch picture frame will be 5 inches wide and 7 inches long. The size of a very large lesion might have to be related to the area it covers, such as the entire left lateral border of the tongue from the tip to the circumvallate papilla. If the lesion has any height, this must be noted also. Height is listed after the length of the lesion.



FIGURE 1.15. Multiple lesions. The hard palate is covered with multiple discrete lesions along with some that appear to coalesce.



FIGURE 1.16. Coalescing lesions. This recurrent herpes labialis lesion consists of separate vesicles that have begun to coalesce or grow together.



FIGURE 1.17. Well circumscribed with a well-defined regular margin. This granular cell tumor is well defined within the tissues. Note the yellow papules called Fordyce granules (see Chapter 13). (Courtesy of the U.S. Department of Veteran's Affairs.)



FIGURE 1.18. Poorly defined margin. Sun exposure has caused actinic keratosis or cheilitis on the lower lip. Some of the central areas are obvious, but it is difficult to determine exactly where the lesion ends, as it extends away from the central area. (Courtesy of the U.S. Department of Veteran's Affairs.)

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FIGURE 1.19. Macule. This flat lesion is differentiated from the surrounding tissue by color alone.

- A flat lesion differentiated from the surrounding tissue by color alone is called a **macule** (Fig. 1.19) if it is less than 1 cm in diameter and a **patch** if it is more than 1 cm. A patch may also describe an area that has a different surface texture with or without a color change.
- An elevated lesion may be a **vesicle** (Fig. 1.20) if it is 0.5 cm or less and is filled with a clear fluid. If it is larger than 0.5 cm, it would be called a **bulla** (Fig. 1.21).
- A **pustule** is a raised lesion filled with pus or **purulent exudate**.
- A raised lesion with no fluid inside is called a **papule** (Fig. 1.22) if it is less than 5 mm in diameter; a slightly larger, less than 2-cm, raised lesion is called a **nodule** (Fig. 1.23), and anything larger is called a **tumor**.
- If the area is broad and slightly raised, has a flat top, and looks pasted on, it is called a **plaque** (Fig. 1.24).
- A growth can be attached to the surrounding tissues by a broad or **sessile** base, as illustrated by the fibromas in Figures 1.22 and 1.23 or by a stalk (referred to as **pedunculated**) (Fig. 1.25).



FIGURE 1.20. Vesicle. This recurrent herpes labialis lesion (see Chapter 10) is in the vesicular stage. The outlines of the smaller vesicles that have coalesced into this larger lesion are still visible.



FIGURE 1.21. Bulla. This large bulla formed as a result of a contact thermal burn.

- Depressed lesions can either be **ulcers** (Fig. 1.26), which extend through the epithelium into the dermis, or **erosions** (Fig. 1.27), which do not extend through the epithelium. Erosions can also be called **abrasions**.
- Two other terms are used to describe the general direction of growth of a lesion. **Exophytic** lesions grow outward from the surface of the tissue like the fibromas in Figures 1.22 and 1.23, and **endophytic** lesions grow into the surrounding tissues and present as palpable masses with or without any noticeable swelling.

■ Color—Abnormal areas may be the same color as the surrounding tissues or they could be white, **erythematic** (red), yellow, or pigmented.

- Normal color includes all variations of normal including normal physiologic pigmentations (Fig. 1.28).
- White lesions that cannot be wiped off (Fig. 1.24) usually involve excess keratin in the tissues, making them more opaque, like a callus on the hand.



FIGURE 1.22. Papule. This small fibroma (see Chapter 16) is the appropriate size to be described as a papule.

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FIGURE 1.23. Nodule. This larger fibroma on the buccal mucosa is considered to be a nodule.



A



B

FIGURE 1.25. A, B. Pedunculated. The small pink papule apical to 24 and 25 **(A)** is attached to the underlying tissue by a thin stalk as seen when the tissue is lifted with the tip of an explorer **(B)**. (Courtesy of Dr. Harvey Kessler.)

- Erythematic areas (Fig. 1.29) usually indicate thinning of the epithelium allowing the more vascular subepithelial or submucosal tissues to be seen, or erythema may indicate an increased blood flow into the area due to an inflammatory reaction (see Chapter 3).
- Yellow can indicate the presence of purulent exudate or adipose tissue (fat) (Fig. 1.30).
- Other pigmentations include brown, black, and blue. These colors can represent either **endogenous** (from within the body) or **exogenous** (from an outside source) pigments. Black macules that are adjacent to teeth with amalgam restorations are very often caused by pigments from the amalgam, accidentally introduced into the soft tissues, leaching into the surrounding tissue, resulting in an **amalgam tattoo** (Fig. 1.31). Smaller black macules in the roof of the



FIGURE 1.24. Plaque. The slightly raised and flat configuration of this white lichen planus lesion covering a relatively broad area is indicative of a plaque. Also note the well-defined irregular margin.



FIGURE 1.26. Ulcer. These ulcers exhibit the classic features associated with this type of lesion, a central depressed area covered by a white pseudomembrane and surrounded by an erythematic ring.

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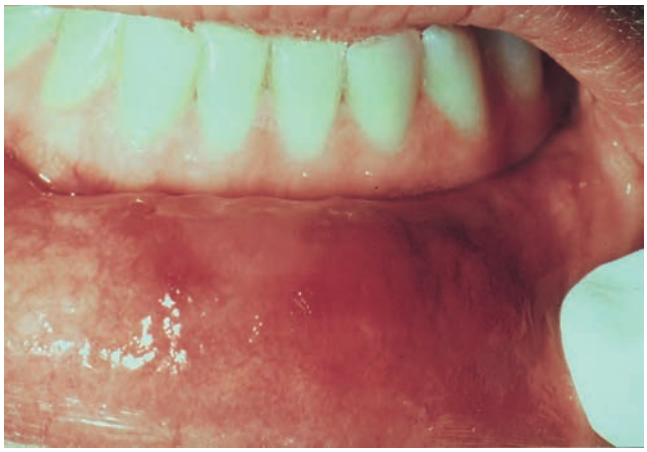


FIGURE 1.27. Erosion. Just the surface epithelium has been destroyed, leaving a diffuse area of erythema in these erosive lichen planus lesions on the lower lip.



FIGURE 1.28. Physiologic pigmentation. Normal melanin pigmentation of the gingival tissues.

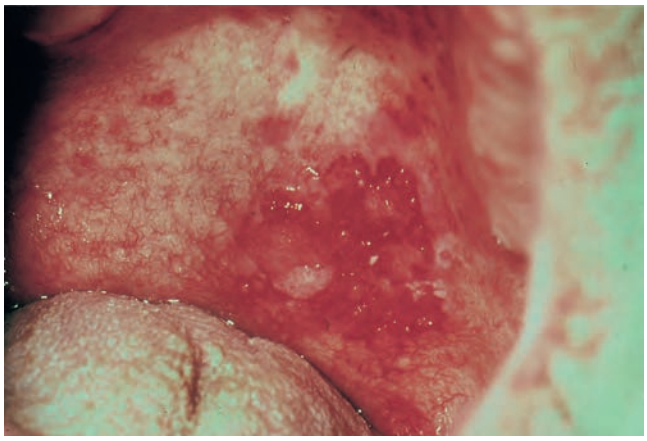


FIGURE 1.29. Erythema. This red lesion with poorly defined margins was found to be an invasive squamous cell carcinoma. (Courtesy of the U.S. Department of Veteran's Affairs.)



FIGURE 1.30. Yellow. Xanthelasma, a yellowish plaque located around the eye lids, is associated with high levels of cholesterol.

mouth, gingiva, or lips can be caused by a pencil lead being stabbed into the tissues. This is usually accidental and occurs when children run or play with a pencil in their mouth. The patient may or may not remember the incident. Another cause of a black macule is **melanoma**, a cancer of the pigment-producing cells or melanocytes (see Fig. 14.14A and B in Chapter 14). Melanoma is very serious and very difficult to treat. Blue lesions are most likely vascular, such as labial varicosities (Fig. 1.32), but they can also be intraoral nevi (Fig. 1.33) or melanomas. Brown lesions usually contain melanin pigments and can be associated with normal physiologic pigmentation, an intraoral nevus, a melanotic macule (Fig. 1.19), or a melanoma. Any black, blue, or brown pigmented lesion is cause for

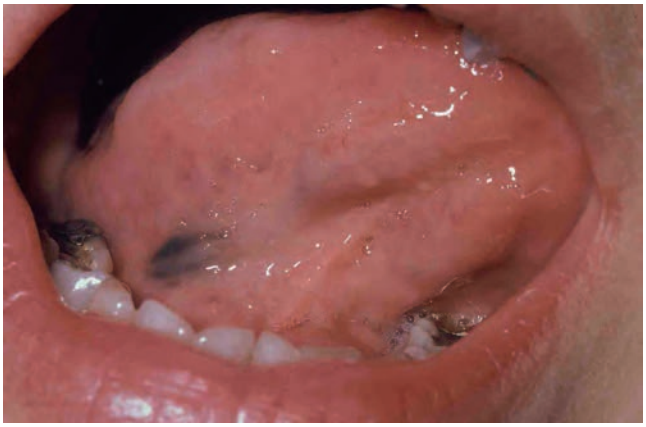


FIGURE 1.31. Black or blue/black lesion. An amalgam tattoo on the floor of the mouth. The amalgam was accidentally introduced into the soft tissues when an amalgam restoration was being placed. (Courtesy of Dr. Peter Jacobsen.)

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FIGURE 1.32. Labial varices. This older gentleman has a bluish vascular lesion on the upper lip.

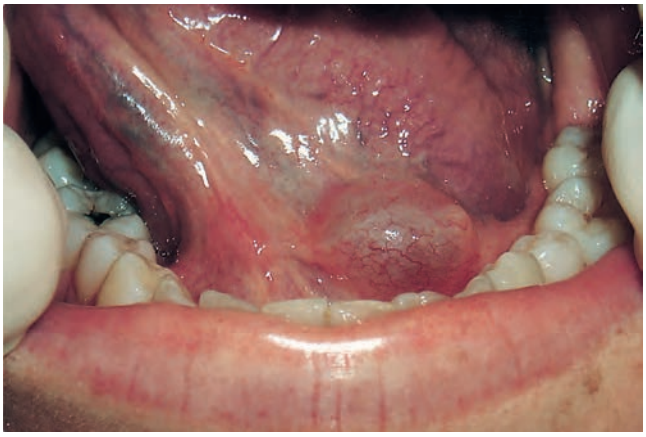


FIGURE 1.34. Smooth surface texture. The swelling on the floor of the mouth depicts a normal smooth surface texture.

concern, and an explanation for its presence should be determined. The options for follow-up on lesions such as these are discussed in Chapters 5 and 14.

- Consistency—Consistency refers to how something feels when pressed on or between two surfaces such as between your thumb and forefinger or between your finger and the hard palate. Students and clinicians often confuse the terms used for consistency and those used for surface texture. Try to remember consistency is determined by how the area feels when pressed, not what it feels like when a fingertip is rubbed across its surface. Most of the case studies in this book provide a description of consistency, since consistency cannot be seen.
  - The consistency of soft tissue abnormalities is often soft or normal feeling.
  - Indurated soft tissue lesions, such as an inflamed lymph node, feel quite hard.
  - **Fluctuant** is used to describe a fluid-filled lesion that moves fluid from one area to another when the lesion is pressed.
- Surface texture—The surface texture of an intraoral lesion is determined by how it feels when the pad of a fingertip is run across it and what it looks like. "Smooth" and "rough" are the main descriptive categories.
  - A smooth surface texture is usually found when there is submucosal swelling and the surface of the lesion is covered by normal mucosal epithelium (Fig. 1.34).
  - Rough surface textures are described by how they feel and how they look. Common terms to describe roughness include the following:
    - **Papillary**, consisting of finger-like projections (Fig. 1.35)
    - **Corrugated**, rippled, or washboard-like (Fig. 1.36)
    - **Fissured**, consisting of many deep crevices (Fig. 1.37)
    - **Crusted** or covered with a scab may also be used to describe perioral lesions (Fig. 1.16). The intraoral counterpart of a crust is a **pseudomembrane** or false membrane that covers the surface of a lesion and can be wiped off (Fig. 1.38).

Describing Radiographic Findings

Radiographs are an integral part of most dental examinations. Diagnostic radiographs may be exposed as part of a routine dental examination, or they may be exposed to

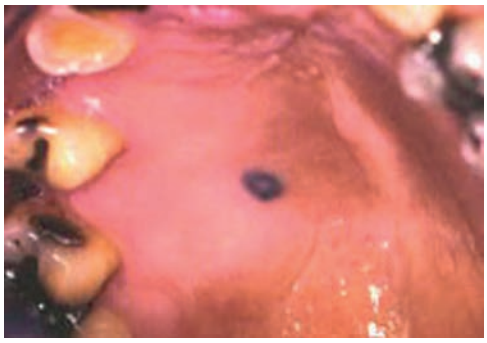


FIGURE 1.33. Nevus. Blue nevus of the hard palate. (Courtesy of Marquette University School of Dentistry.)



FIGURE 1.35. Papillary. This lesion is made up of many finger-like projections as its name papilloma suggests. (Courtesy of the U.S. Department of Veteran's Affairs.)

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FIGURE 1.36. Corrugated. The white corrugated lesions extending from the buccal mucosa through the mucobuccal fold up into the attached gingival are characteristic of those caused by spit tobacco use.



FIGURE 1.37. Fissured. This is a classic example of a fissured tongue. The deep fissures can collect food debris and provide a perfect environment for the growth of dental biofilm. The fissuring is not usually seen in children and worsens as the individual ages.



FIGURE 1.38. Pseudomembrane. The white surface membrane characteristic of pseudomembranous candidiasis leaves a sore erythematic area behind when it is wiped off with gauze.

APPLICATION **1.2. Application to Practice**

Clinical Description of Oral and Perioral Lesions

Refer to Figure 1.34 for an image of the soft tissue description developed in this section.
History: The patient was unaware of this lesion until 2 days ago. She reports no history of trauma, and there are no significant findings on the medical or dental histories.

- Location: Floor of the mouth (FOM) 5 mm to the left of the lingual frenum at the level of the sublingual caruncle
- Distribution and definition: Single, localized, and well circumscribed
- Size and shape: Round nodule 18 mm in diameter 10 mm in height, sessile base
- Color: Slightly bluish with an erythematic ring around the base
- Consistency: Soft and fluctuant
- Surface texture: Smooth

Description: Single, well-circumscribed, bluish nodule approximately 18 mm in diameter and 10 mm in height, surrounded by an erythematic ring, soft, fluctuant with a smooth surface and sessile base, located on the FOM, 5 mm left of lingual frenum level with sublingual caruncle. Patient reports she became aware of the swelling 2 days ago, no report of trauma, and no other significant findings on the medical or dental histories.

obtain more information about an abnormality discovered through observation or palpation of the intraoral or perioral tissues. Radiographic abnormalities are often discovered by accident when there are no clinically observable signs or symptoms. A brief description of radiographic findings should be recorded in the patient's record in case the radiographs become misplaced. The features that should be described include the following:

- History—The patient should be asked whether he or she is aware of the area in the radiograph or not. If the patient is aware, ask what he or she was told it was, how long it has been present, and if there are any symptoms associated with it. The most common symptoms associated with bone lesions are pain and paresthesia. Very often, there is no history, and the dental team will have to start the process of determining the cause of the lesion.
- Location and size—Determining the location of a radiographic finding is often made difficult by the radiographic technique used for exposing the film. Radiographs taken with excessive or inadequate vertical or horizontal angulation will not reflect the true location of the anomaly. Panoramic radiographs may also distort the true position of an anomaly. Care must be taken to use every means to accurately locate the abnormality. In most instances when there is doubt about the location, multiple radiographs will be taken from different aspects and with different angulations to more accurately place the anomaly. Size can be recorded in millimeters or centimeters and, if large, relative to the structures involved.

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- Distribution—Distribution describes the number of anomalies and how they are positioned within the hard tissues.
  - "Single" is used to describe one lesion.
  - More than one lesion is described as "multiple lesions."
    - "Localized" or "focal" describes a clustered group of lesions.
    - "Generalized" or "diffuse" describes multiple findings in a large area of bone.
- Radiographic features—Specific terms are used to describe radiographic findings. These terms include the following:
  - Whether a radiographic anomaly is **radiopaque** (whiter than the normal radiographic appearance of the bone) as in Figure 1.39, **radiolucent** (darker than the normal radiographic appearance of bone) as in Figure 1.40 or **mixed** (consisting of both radiopaque and radiolucent areas) as in Figure 1.41 will help to exclude many conditions from a list of potential diagnoses. The radicular cyst (see Chapter 20) seen in Figure 1.40 would not be considered as a possible diagnosis if the spherical lesion at the apex of a tooth were radiopaque. Condensing osteitis (see Chapter 19) would be much more likely because its normal presentation is radiopaque (Fig. 1.39), while that of a radicular cyst is radiolucent.
  - Many lesions present as a single or **unilocular** radiopaque or radiolucent area, while others look as if there are compartments within the lesion. A radiolucent lesion made up of these compartments is said to be **multilocular**, and they are often described as having a "soap bubble" appearance (Fig. 1.42).
  - It is important to determine the clarity of the margins of a radiographic anomaly. Lesions with clearly defined or well-demarcated margins (Fig. 1.43) are more likely to be benign and less aggressive entities. Indistinct margins should be described as poorly defined or "irregular." Poorly defined margins will appear fuzzy or ragged, and it is difficult to determine where the abnormal hard tissue ends and the normal tissue begins (Fig. 1.44). Poorly defined margins are considered to be more indicative of an aggressive or malignant condition.

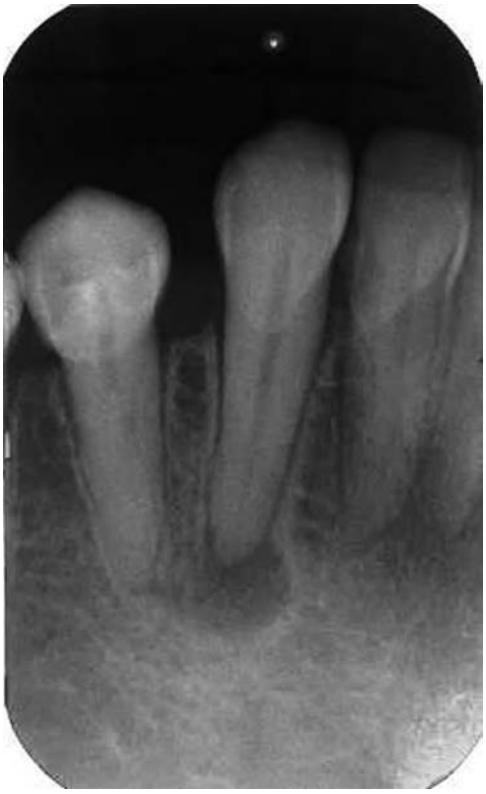


FIGURE 1.40. Radiolucent. Note the well-defined spherical radiolucent area apical to the canine.



FIGURE 1.39. Radiopaque. Note the well-defined radiopaque area of condensing osteitis at the apex of the root of the second premolar and first molar.



FIGURE 1.41. Mixed. This lesion exhibits both radiolucent and radiopaque characteristics.

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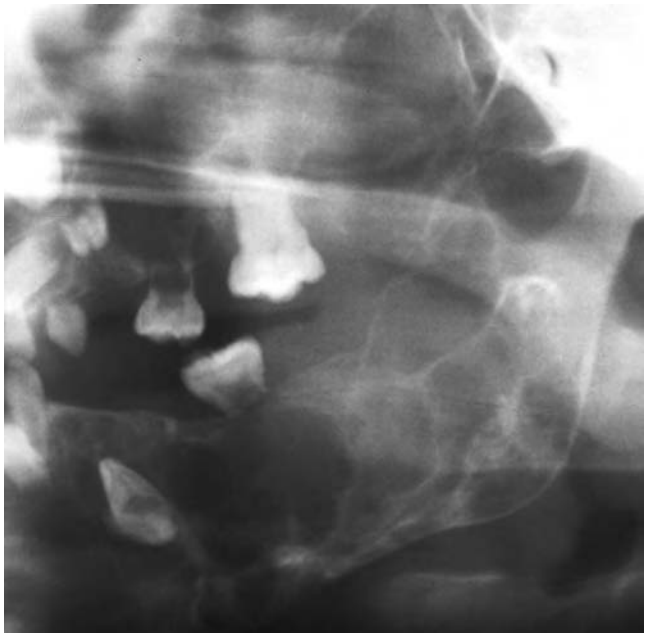


FIGURE 1.42. Multilocular. The multilocular radiolucent lesions in this radiograph are associated with a connective tissue condition called cherubism.



FIGURE 1.43. Well-defined margins. The odontoma (see Chapter 18) is an example of a lesion that has well-defined radiographic margins as well as mixed radiolucent and opaque elements.



FIGURE 1.44. Poorly defined margins. Note the radiopaque area surrounding the first and second molars and the slightly opaque areas that seem to be extending toward the anterior region. It is difficult to determine the extent of this osteogenic sarcoma (bone cancer) because of the poorly defined borders. (Courtesy of the U.S. Department of Veteran's Affairs.)

- The appearance of the surrounding tissues is also important, and close attention must be paid to this area.
  - If the abnormality involves the roots of any teeth, it is important to determine if it is causing **resorption** or destruction of the roots (Fig. 1.45) or causing them to move out of the way through **convergence** (movement toward each other) or **divergence** (movement away from each other) (Fig. 1.46).



FIGURE 1.45. Root resorption. The distal root of the mandibular second molar has been severely resorbed by the pathologic lesion surrounding the unerupted third molar.

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FIGURE 1.46. Divergence. This radiolucent lesion has caused the canine and lateral roots to spread apart.

- Changes in the periodontal ligament space such as widening (Fig. 1.47) or loss of the space should be noted.
- The lamina dura should be observed to determine whether there have been any changes in its structure or if it is missing altogether.

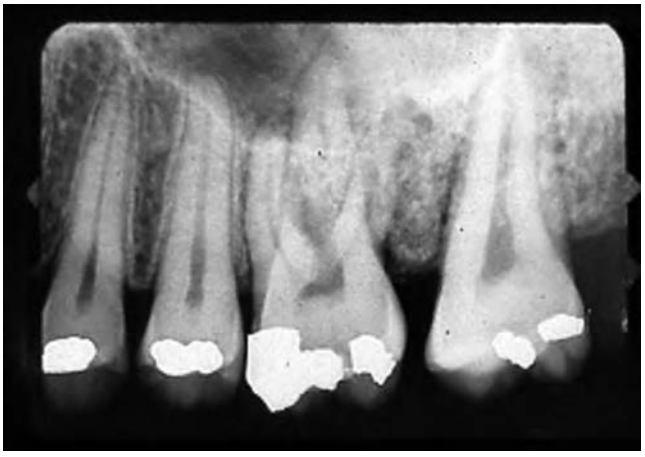


FIGURE 1.47. Widening of the periodontal ligament space. This radiograph is of a 34-year-old woman who was incorrectly treated for periodontal disease. Note the widened periodontal ligament space around the first molar. There is a separation between the first and second molar, and the interproximal alveolar bone has a mottled atypical appearance compared to what would be expected. A biopsy of the area between the two molars found osteogenic carcinoma. (Courtesy of Dr. John W. Preece.)



FIGURE 1.48. Cortical bone destruction. The central giant cell granuloma (see Chapter 17) pictured in this radiograph has eroded through the cortical bone in the edentulous mandibular area. (Courtesy of the U.S. Department of Veteran's Affairs.)

- If the cortical bone can be seen, it should be noted if there have been any changes, specifically if the lesion has been able to erode through the cortical bone (Fig. 1.48) or if there has been expansion of the bone in the surrounding area (Fig. 1.49).

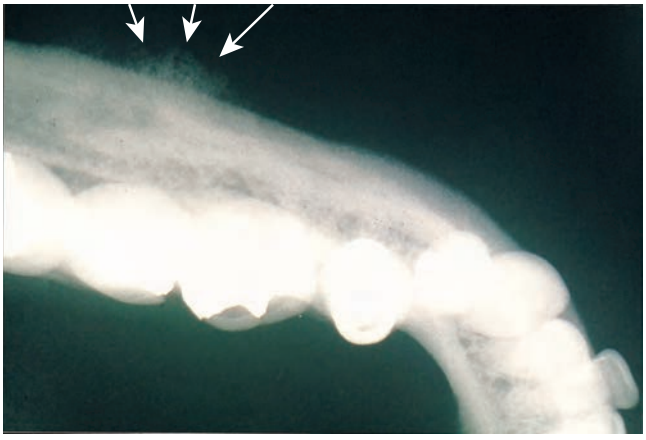


FIGURE 1.49. Bone expansion. This is an occlusal view of an osteogenic sarcoma (see Chapter 17). *Arrows* point to the sunburst pattern of abnormal bone and expansion that are characteristic of this tumor. (Courtesy of the U.S. Department of Veteran's Affairs.)

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APPLICATION **1.3. Application to Practice**

Radiographic Descriptions

The panoramic radiograph in Figure 1.50 depicts the radiopaque object used as the example for developing the following radiographic description.

History: The patient is unaware of this finding and knows of no symptoms associated with it.

- Location: Left ramus of the mandible just inferior to the condyloid process
- Size: Round, approximately 1 cm in diameter (in the original film)
- Distribution: Single
- Margins: Well defined
- Opacity: Radiopaque

Description: A single, well-defined, 1-cm diameter, round radiopaque object located slightly inferior to the left condyloid process. The patient is unaware of the lesion and reports no symptoms.



FIGURE 1.50. Radiopaque object.

Determining a Diagnosis

Creating a **differential diagnosis** for a particular lesion can be very interesting and educational. Exploring the outermost boundaries of the scope of dental hygiene practice can provide intellectual stimulation and create career satisfaction.

Differential Diagnosis

A differential diagnosis is a listing of the probable causes of a particular disease manifestation or group of manifestations. There is a process involved with creating a differential diagnosis, and it should be followed more or less every time something is seen that cannot be identified. The steps to creating a differential diagnosis are as follows:

1. Describe the abnormality in clinical terms.
2. Determine a list of diseases/conditions that present with similar manifestations.
3. Eliminate some of the possible causes already listed by adding other factors that could be involved with the abnormality (chronic health condition, medications, patient age, and whether the patient has any other manifestations that are inconsistent with any of the listed possibilities).
4. Rank the remaining possible causes according to the probability they are the causative agent.
5. Decide what additional information might be necessary to eliminate more of the possibilities, such as blood tests, **biopsy**, diagnostic radiographs, cultures of oral microbes, and medical consultations.

The clinician may decide to treat the lesion as the manifestation of the most likely cause as the best course of action (therapeutic diagnosis). For example, if the most likely cause of a lesion is a fungal infection, and it is treated for 10 days with a topical antifungal medication resolving the lesion, it was most likely a fungal infection. A second possibility is that it resolved on its own, and no one will ever be sure of the actual cause. If it does not resolve, more specific diagnostic procedures are appropriate. It is not within the scope of practice of a dental hygienist to order any of these tests or to recommend some therapies, but it is appropriate to be aware of what the options are and thus be able to have some input as a valuable member of the dental team. If a definitive diagnosis is not determined by the additional information obtained, then the list of conditions that remains is the differential diagnosis.

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APPLICATION 1.4. Application to Practice

How to Create a Differential Diagnosis

The following is a simple example of how to create a differential diagnosis. The possible causes listed in the differential diagnosis are described in detail in Chapter 11. Refer to this chapter if necessary for a more complete description of why a condition is eliminated from the list of possibilities. Refer to Figure 1.51 for this application.



FIGURE 1.51. Differential diagnosis.

1. Clinical description and history: Single, well-defined ulcer covered by a white pseudomembrane and surrounded by an erythematic ring; the ulcer is oval, approximately 4 mm × 3 mm, firm and slightly rough to the touch, and located on the lower labial mucosa adjacent to tooth #27 at the margin of the labial mucosa and the extraoral lip tissue. The patient is 10 years old and has no significant medical or dental findings other than the report of slight pain in the lip.
2. The following are considered as part of the differential diagnosis:
   - Reiter syndrome (Chapter 11)
   - Syphilis (Chapter 11)
   - Erythema multiforme (Chapter 11)
   - Traumatic ulcer (Chapter 11)
   - Recurrent aphthous ulcer (Chapter 11)
3. Rationale for excluding some elements of the differential diagnosis
   - Reiter syndrome usually occurs in males in their 30s and normally manifests with concurrent generalized arthritis. This young man is 10 and reports no significant medical findings such as arthritis. Thus, Reiter syndrome can be eliminated as a possibility.
   - Primary syphilis is a sexually transmitted disease that presents with a large ulcer-like chancre at the initial point of contact. This patient is most likely not sexually active at age 10, but the possibility of sexual abuse would have to be ruled out. The clinical appearance of this lesion is much too small to be a chancre, and there would be no pain associated with a chancre, so this can also be eliminated.
   - Erythema multiforme is an immune response that presents with skin and mucous membrane lesions. The absence of skin lesions and the fact that this is a solitary lesion probably indicate that this disorder can be eliminated.
   - Traumatic ulcers look like this lesion, and they are often found on the lip, tongue, cheeks, and other areas that are subject to frequent trauma. This diagnosis is highly likely.
   - Recurrent aphthous ulcers look like this lesion and present on the moveable mucosa; in addition, they can be precipitated by trauma to the tissues. It is not known whether this patient has had this type of ulcer before. Without more information, this diagnosis must also be considered likely.
4. A ranking of the remaining possibilities is difficult in this case because there is an equal probability it could be either one. In this case, more information is needed. It is necessary to ask a few more questions, such as the following:
   - When did you notice the ulcer?
     - Answer: About 2 days ago.
   - Have you ever had ulcers like this on your lip or in your mouth before?
     - Answer: I had one on my gums after I hit myself with a toothbrush.
   - Do you remember doing anything to cause the ulcer?
     - Answer: Yeah, I bit my lip!
5. These questions have clarified the circumstances that occurred prior to the development of the ulcer. The following must be considered before eliminating either of the possibilities.
   - Only one other ulcer located on the attached gingival surface occurred previous to this ulcer, and that ulcer was also associated with trauma.
   - Recurrent aphthous ulcers do not normally affect the attached gingiva, indicating that the previous ulcer was probably not recurrent aphthous.
   - Causal relationships are important, and in this case, the patient has supplied the cause.
6. The only possible way to obtain a definitive diagnosis of this lesion would be to biopsy the lesion, which may not provide anything more than to describe the lesion as containing inflammatory cells, which would be likely in either case. The cause-and-effect relationship between the trauma of biting the lip and the appearance of the ulcer and the fact that there is no previous report of aphthous ulcers support the diagnosis of a traumatic ulcer. The clinical manifestation of the ulcer would be treated the same way for either diagnosis. The only consideration would be to alert the patient of the possibility that more ulcers occurring in the absence of trauma might indicate recurrent aphthous ulcers.

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Definitive Diagnosis

A **definitive diagnosis** is determined when all of the suspected causes on the list except one have been eliminated. That one cause is the definitive diagnosis. It would be difficult for the dental hygienist to repeat this process every time an abnormal area in or around the oral cavity was discovered. Fortunately, such a lengthy process is not necessary. Many of the most common abnormalities have such distinguishing characteristics that unlikely causes can be eliminated solely through observation of the abnormality. Some of the conditions discussed in this book are **atypical**, or variations of normal, and not pathologic. By observing these conditions clinically, the dental hygienist will become very familiar with them and will know immediately if there is something else happening. Conditions such as leukoedema and tori can be clinically diagnosed because they are very common and have such clear clinical manifestations there is no doubt about what they are. Some other pathologic conditions such as caries can be diagnosed from their characteristic radiographic appearance. The danger arises when the dental team starts assuming everything seen is a variation of normal. Often, there is concern the patient might be subjected to undue stress about something that is most likely benign. An effort must be made to determine the cause of all suspicious areas identified. In many cases, this will require a visit to an oral surgeon for a biopsy; or the biopsy, exfoliative cytology, or brush biopsy may be performed in the general dental office. Some patients may be unduly alarmed by a referral for a biopsy of what turns out to be an amalgam tattoo, but the alternative diagnosis of a melanoma must be considered until ruled out. Many of the conditions throughout this book include a differential diagnosis or listing of other conditions that may cause similar lesions. Attention should be paid to these, and they should be incorporated into the student's dental hygiene education.

Summary

- The concept of health comprises a wide range of physical, emotional, and spiritual components.
- Individuals are being encouraged to take charge of their lives and establish a sense of personal responsibility for their own health.
- Patients are expected to take a dynamic role in their health care. Health care providers are expected not only to provide treatment but also to facilitate this new active role by helping to direct and educate the patient in ways of attaining total body wellness.
- Oral health is an integral part of total body health, and the dental team is responsible for helping the patient achieve and maintain good oral health.
- Oral medicine is an emerging dental speciality concerned with treating medically complex patients from a "whole body" perspective.
- The oral cancer screening examination is an important element in determining the oral health of the patient. Oral cancers are usually diagnosed in the late stages, and early diagnosis and treatment will decrease the incidence of disfiguring surgery and increase cancer survival rates.
- It is necessary to write an accurate and complete description of abnormal clinical or radiographic findings in the patient's dental record so the proper follow-up can be accomplished.
- An exciting aspect of oral pathology is first creating a differential diagnosis and then determining a definitive diagnosis based on the elimination of improbable elements of the differential diagnosis.
- A definitive diagnosis should always be obtained for unknown oral or perioral abnormalities.

CHAPTER REVIEW

Case Study 1.1

Refer to Figure 1.52 for this case study. This panoramic radiograph was taken as part of an initial examination of a 25-year-old woman.

1. Which of the following best describes this radiographic finding?
   A. Round radiopaque circle in the right mandible.
   B. Thin radiopaque ring about 5 mm in diameter surrounding normal-appearing bone distal to #31.
   C. Single round well-circumscribed area of normal-appearing bone surrounded by a thin distinct radiopaque margin in the right retromolar area approximately 5 mm in diameter, patient unaware, no symptoms, and no knowledge of trauma, etc., in the area.
   D. Patient has a lesion in the right retromolar area that she has no knowledge of. She reports no symptoms of pain or other sensations and she says she doesn't remember any trauma to the area. The lesion looks round and has a white ring around it. It is about the size of a dime on the radiograph.
2. Based on the radiograph alone, list some questions you might want to ask this patient to determine a differential diagnosis?
3. How would you clinically evaluate the area?

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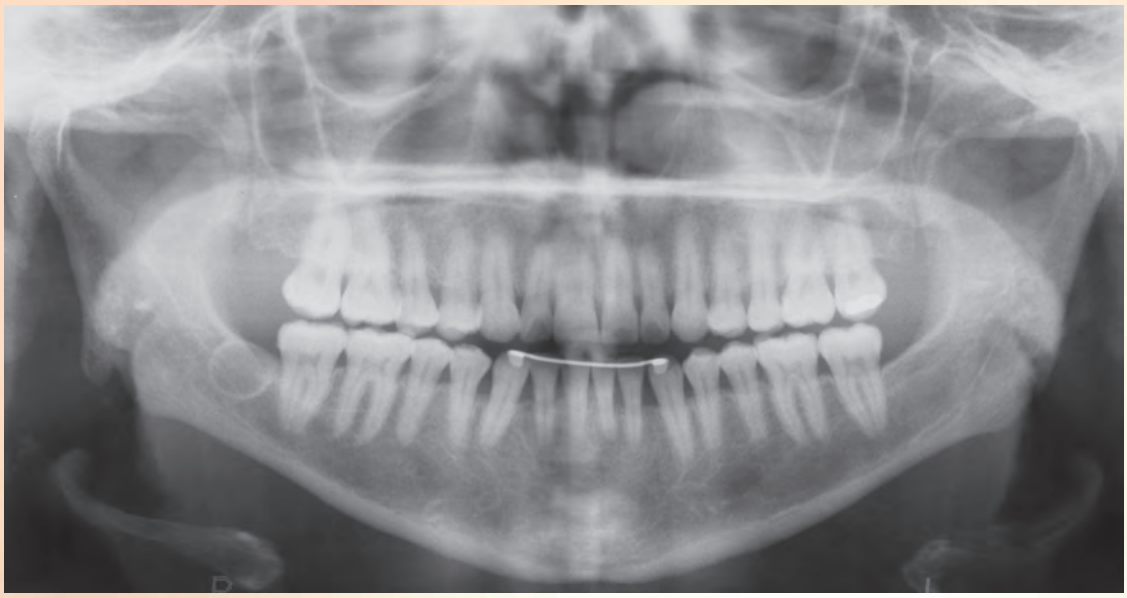


FIGURE 1.52.

For answers and additional review activities, please visit the Navigate 2 Preferred Access site.

Case Study 1.2

Your patient, Tracie, is a 34-year-old woman. Two days ago, you performed periodontal debridement with ultrasonic and hand instruments in the mandibular right quadrant. High-volume evacuation and a saliva ejector were used to help maintain a clear field of operation. Tracie is returning for her second periodontal debridement today. Before beginning treatment, you review the medical and the dental history, obtain vital signs, and update her extra and intraoral examinations. You discover the lesion seen in Figure 1.53. You are quite startled at the bright red color and the fact the lesion was not there 2 days ago.



FIGURE 1.53.

1. Write a complete clinical description of the lesion (size approximately 1 cm in diameter, consistency soft).
2. Write out some questions you could ask her to help you determine a differential diagnosis. (Look at the following conditions in Chapter 12 for help in developing your questions—petechiae, ecchymoses, and purpura; erosive lichen planus; erythematous candidiasis; erythroplakia; congenital hemangioma.)
3. Look at the conditions listed above and see if any can be eliminated based only on the information given in this case study so far.
4. In your opinion, what is the definitive diagnosis? Support your opinion with information from the case.

For answers and additional review activities, please visit the Navigate 2 Preferred Access site.

Chapter 1 Review Questions

1. Which one of the following is a descriptive term for "consistency"?
   A. Rough
   B. Fissured
   C. Fluctuant
   D. Endogenous
   E. Pedunculated

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2. The term "oral medicine" refers to which one of the following?
   A. Maintaining total health
   B. Medication taken by mouth
   C. Nonsurgical management of oral diseases
   D. Dental speciality concerned with treating the "total patient"
   E. Medical speciality concerned with treating oropharyngeal cancers

3. Which one of the following structures is examined using bilateral palpation?
   A. Tongue
   B. Hard palate
   C. Temporomandibular joint
   D. Submandibular lymph nodes

4. Which one of the following observations is consistent with an aggressive condition?
   A. Moveable
   B. Nonulcerated
   C. Irregular margins
   D. Bilateral involvement

5. Which one of the following terms denotes the smallest of the fluid-filled elevated lesions?
   A. Bulla
   B. Vesicle
   C. Pustule

6. A/n _____ lesion is attached to the underlying tissues by a thin stalk.
   A. Fixed
   B. Sessile
   C. Fluctuant
   D. Endophytic
   E. Pedunculated

7. Which one of the following depressed lesions does NOT extend through the epithelium?
   A. Ulcer
   B. Erosion
   C. Abrasion
   D. Laceration

8. Which one of the following terms denotes the smallest of the solid elevated lesions?
   A. Tumor
   B. Papule
   C. Nodule
   D. Plaque

9. All of the following terms describe surface texture EXCEPT one. Which one is the EXCEPTION?
   A. Smooth
   B. Fissured
   C. Papillary
   D. Indurated
   E. Corrugated

10. A radiopaque area is darker or blacker than the surrounding bone 2. A radiolucent area is whiter than the surrounding bone.
    A. Both statements are true.
    B. Both statements are false.
    C. Statement 1 is true, and statement 2 is false.
    D. Statement 1 is false, and statement 2 is true.

11. Radiographic evidence indicating a more aggressive lesion includes all of the following EXCEPT one. Which one is the EXCEPTION?
    A. Root resorption
    B. Bone expansion
    C. Distinct margins
    D. Root displacement

12. Which of the following is a better example of a clinical description than the others?
    A. Papule, 1 mm, red, left lateral tongue near #18
    B. 1-mm red papule on the lateral border of the tongue
    C. 1-mm red papule left lateral tongue near #18, unaware
    D. Small red spot on the side of the tongue near the middle

13. Which one of the following terms is defined as a listing of the probable causes of a group of disease manifestations seen in a patient?
    A. Clinical diagnosis
    B. Definitive diagnosis
    C. Differential diagnosis
    D. Therapeutic diagnosis

14. Which of the following procedures can provide a definitive diagnosis of a suspicious lesion?
    A. Biopsy
    B. Clinical observation
    C. Radiographic evaluation
    D. Therapeutic intervention

Critical Thinking Activities

1. You have taken a position as a dental hygienist in an established practice. You are told what you are expected to accomplish during an initial appointment, maintenance appointments, and special appointments for sealants and periodontal debridement. You notice nothing has been said about a cancer screening examination. You ask if this is an oversight and are told that only the dentist performs the cancer screening examination. What are your initial thoughts about this? Do you think this is a good protocol for a dental practice? If yes, justify your answer. If no, what would you do to try to change it? Research your state's dental practice act and report on what the responsibility of the hygienist is in regard to this situation.
2. Refer to Figure 1.34 and the information in Application to Practice 1.2 for this activity. The patient has given you the following additional information: She states that she has experienced frequent dull aching sensations from the area that get sharper just before, during, and for a short time after she eats. Does the additional information bring you any closer to a definitive diagnosis of the lesion? If so, in what direction is it leading you?

Media Menu

Web Sites

Healthy People 2020 http://healthypeople.gov/2020/default.aspx
https://www.healthypeople.gov/2020/topics-objectives/topic/oral-health

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Prevent Abuse and Neglect through Dental Awareness (P.A.N.D.A.)
http://www.healthy.arkansas.gov/programsServices/oralhealth/Pages/PANDA.aspx

Oral Health in America: A Report of the Surgeon General
http://www.nidcr.nih.gov/DataStatistics/SurgeonGeneral/sgr/welcome.htm

dentalcare.com: Crest® Oral-B® online continuing education program The Intraoral and Extraoral Exam
http://www.dentalcare.com/en-US/dental-education/continuing-education/ce337/ce337.aspx?ModuleName=introduction&PartID=-1&SectionID=-1

SEER Cancer Statistics Factsheets: Oral Cavity and Pharynx Cancer. National Cancer Institute. Bethesda, MD
http://seer.cancer.gov/statfacts/html/oralcav.html

Study Tools

Take advantage of additional online resources to help you study and ace your exams!

- Answers to case studies in the book
- Additional interactive case studies
- Interactive quiz bank with answer feedback
- Clinical protocol e-book
- Condition summary tables
- Expanded Media Menu with direct links to related Web sites and multimedia resources
- Supplemental references



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