Oral Medicine and Medically Complex Patients

Seventh Edition

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Dedication

We dedicate this book to our families for their support and for maintaining an environment conducive to this effort.

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Abbreviations

AAMC	Association of American Medical Colleges
AAO-HNS	American Academy of Otolaryngology and Head and Neck Surgery
AAOMS	American Association of Oral and Maxillofacial Surgeons
AAOS	American Association of Orthopedic Surgeons
ABCDs	Airway, breathing, circulation, disability
ACLS	Advanced Cardiac Life Support
ACS	Acute coronary syndrome
ACTH	Adrenocorticotropic hormone
ADA	American Dental Association
ADHD	Attention deficit hyperactivity disorder
ADP	Adenosine diphosphate
AED	Automated electronic defibrillator
AHA	American Heart Association
AHRQ	Agency for Healthcare Research and Quality
AIDS	Acquired immunodeficiency syndrome
AJCC	American Joint Committee on Cancer
AKI	Acute kidney injury
ALL	Acute lymphoblastic leukemia
ANC	Absolute neutrophil count
ANUG	Acute necrotizing ulcerative gingivitis
A/P	Assessment/Plan
AP	Antibiotic prophylaxis
aPTT	Activated partial thromboplastin time
ASA	American Society of Anesthesiologists
ASD	Autism spectrum disorders
AVR	Aortic valve replacement
BLS	Basic life support
BMI	Body mass index
BMS	Burning mouth syndrome
BP	Blood pressure
BRONJ	Bisphosphonate-related osteonecrosis of the jaw
BUN	Blood urea nitrogen

CAD–CAM	Computer-assisted design and computer-assisted manufacturing
CBC	Complete blood count
CC	Chief complaint
CDC	Centers for Disease Control and Prevention
CEJ	Cemento-enamel junction
CKD	Chronic kidney disease
CMV	Cytomegalovirus
CN	Cranial nerves
COPD	Chronic Obstructive Pulmonary Disease
CPR	Cardiopulmonary resuscitation
CRF	Chronic renal failure
CT	Computed tomography
CVA	Cardiovascular accident
C&S	*Culture and Sensitivity*
DBP	Diastolic blood pressure
DDAVP	Desmopressin acetate (generic name)
DKA	Diabetic ketoacidosis
DM	Diabetes mellitus
DMARDS	Disease-modifying antirheumatic drugs
DOAC	Direct oral anticoagulants
DSM-5	The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
DVT	Deep venous thrombosis
EACA	Epsilon amino-caproic acid
EBL	Estimated blood loss
EBV	Epstein–Barr virus
ECG	Electrocardiogram
ED	Emergency department
EEG	Electroencephalogram
EM	Erythema multiforme
EMS	Emergency medical services
ENE	Extra nodal extension
EPT	Electric pulp test
ESR	Erythrocyte sedimentation rate
ESRD	End stage renal disease
ETT	Endotracheal Tube
FDA	Food and Drug Administration
FEV1	Forced Expiratory Volume in 1 second
FH	Family history
FUO	Fever of unknown origin
GDD	Global developmental delay
GERD	Gastroesophageal reflux disease
GI	Gastrointestinal
GOLD	Global Initiative for Chronic Obstructive Lung Disease
GSD	Glycogen storage diseases
GVHD	Graft-versus-host disease
HAART	Highly active antiretroviral therapy
HAV	Hepatitis A virus
HBOT	Hyperbaric Oxygen Therapy
HbS	Hemoglobin-S

HBV	Hepatitis B virus
HCT	Hematocrit
HCV	Hepatitis C virus
HDV	Hepatitis D virus
HEENT	Head, Eyes, Ears, Nose, Throat
HIV	Human immunodeficiency virus
HMW	High molecular weight
HNNK	Hyperglycemic hyperosmolar nonketotic coma
HPI	History of the Present Illness
HSCT	Hematopoietic stem cell transplant
HSV	Herpes simplex viruses
HTN	Hypertension
ICH	Intracranial hemorrhage
ICU	Intensive care unit
IE	Infective endocarditis
IMPT	Intensity modulated proton therapy
IMRT	Intensity modulated radiation therapy
INR	International normalized ratio
INSTIs	Integrase strand transfer inhibitors
IV	Intravenous
JIA	Juvenile idiopathic arthritis
JVD	Jugular venous distention
KS	Kaposi Sarcoma
KVO	Keep vein open
LE	Lupus erythematosus
LVAD	Left ventricular assist device
MAP	Mean arterial pressure
MAT	Medication-assisted treatment
MDR	Multidrug-resistant
MFP	Maxillofacial prosthetics
MI	Myocardial infarction
MMF	Maxillomandibular fixation
MMSE	Mini-Mental State Exam
MRI	Magnetic resonance imaging
MRONJ	Medication-related osteonecrosis of the jaw
MS	Multiple sclerosis
MTA	Mineral trioxide aggregate
MVC	Motor vehicle collision
NAM	Nasoalveolar molding
NNRTIs	Non-nucleoside reverse transcriptase inhibitors
NPO	Nothing by mouth
NRTIs/NtRTIs	nucleoside/nucleotide reverse transcriptase inhibitors
NSAIDS	Nonsteroidal anti-inflammatory drugs
NUG	Necrotizing ulcerative gingivitis
NUP	Necrotizing ulcerative periodontitis
OHCP	Oral health care professional
OI	Osteogenesis imperfecta
OLP	Oral lichen planus
OR	Operating room
ORIF	Open reduction with internal fixation

ORN	Osteoradionecrosis
OUD	Opioid use disorder
PA	Posterior–anterior
PCP	*Pneumocystis carinii* pneumonia
PD	Parkinson's disease
PDH	Past dental history
PERRLA	Pupils equal, round, react to light and accommodation
PET	Position emission tomography
PIs	Protease inhibitors
PJI	Prosthetic joint infection
PMH	Past medical history
PMI	Point of maximal impulse
PT	Physical therapy; prothrombin time
PTSD	Post-traumatic stress disorder
PTT	Partial thromboplastin time
QD	Every day
RAS	Recurrent aphthous stomatitis
RBC	Red blood cell
RIF	Rigid internal fixation
ROS	Review of systems
RRMS	Relapsing-remitting multiple sclerosis
RRT	Rapid response team
RT	Radiation therapy
RT-PCR	Reverse transcriptase polymerase chain reaction
RAU	Recurrent aphthous ulcers
SBP	Systolic blood pressure
SCC	Squamous cell carcinoma
SH	Social history
SNRIs	Selective serotonin reuptake inhibitors
SOB	Shortness of breath
T3	Triiodothyronine
T4	Thyroxin
TD	Tardive dyskinesia
TID	Three times per day
TMJ	Temporomandibular joint
TUG	Traumatic ulcerative granulomas
TUGSE	Traumatic ulcerative granuloma with stromal eosinophilia
TXA	Tranexamic acid
URI	Upper respiratory infection
VPD	Velopharyngeal dysfunction
VTE	Venous thromboembolism
vWD	von Willebrand's disease
vWF	von Willebrand's factor
vWD	von Willebrand's disease
VZV	Varicella Zoster virus infection
WBC	White blood count
YO	Year old

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Peter B. Lockhart
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Introduction

In 2021, the National Institute of Dental and Craniofacial Research (NIDCR) released *Oral Health in America: Advances and Challenge*, which was an update to the *Oral Health in America*: *A Report of the Surgeon General* published in 2000. This latest publication reiterated that oral health is inextricably linked to general health and well-being, and reviewed advances and ongoing challenges in oral health with an emphasis on disparities and inequalities of burden of disease and access and affordability of oral health care. There is an ongoing concern about the availability of oral health care for people with complex medical and physical conditions, and those with nonsurgical problems of the maxillofacial region. Some patient populations have better access than others to oral health care services, as well as sources of funding and advocacy groups. Access is further complicated by a longstanding shortage of dentists trained to manage these problems and patient populations. Dental students generally have minimal exposure to medically complex patients and clinical problems that define the specialty area of oral medicine in the United States. Thus, there is an increasing need for medical center-based training programs in hospital dentistry and oral medicine. These pre- and postdoctoral trainees will be called upon to manage oral health for the growing population of both ambulatory and hospitalized medically complex patients and provide appropriate care for those with oral mucosal diseases. This book provides support for these health professionals in all stages of learning and professional development.

Providing dental care to people with disabilities and a wide variety of medical illnesses is practiced by a relatively small but dedicated group of clinicians. Some have postdoctoral training in medical center-based residencies, and some may have acquired these skills during their careers. Patients with special needs make up a broad range of medical, physical, and emotional conditions, many of whom require dental care in the nontraditional settings of a hospital-based emergency department, an operating room under sedation or general anesthesia, and/or as an inpatient at the bedside. Clinical space, specialized equipment, and trained support staff are also important elements to facilitate access to oral care for patients with special needs. Larger hospitals may have fully staffed and equipped dental departments that provide care for hospitalized patients, as well as for ambulatory medically complex patients from the surrounding community. Most hospitals in the United States, however, offer neither inpatient nor outpatient special needs dental services,

and in these communities, people with complex medical conditions must seek oral health care from a wide variety of community-based medical and dental practitioners.

Formal, hospital-based advanced educational programs for recent dental school graduates began in the United States in the 1930s with one-year, elective "rotating dental internships." Over the following decades, these residencies gained popularity among dental students who recognized their lack of training in this discipline. This then helped to create demand for expansion in the number of these programs. One and two-year general practice residencies (GPRs) became more uniformly structured and formal accreditation guidelines by the American Dental Association's Commission on Dental Accreditation (ADA CODA) set standards for these programs (available online at: https://coda.ada.org/standards). ADA CODA standards also exist to support specialty advanced education programs in oral medicine.

Many GPR programs integrate dental residents into a medical center such that they have parity with their medical and surgical colleagues in training structure and exposure to hospital-based care. They focus on aspects of clinical and didactic training beyond that available at the pre-doctoral or dental school level to include exposure to difficult cases of infection, trauma, bleeding, and pain, as well as to a wide spectrum of nonsurgical problems of the maxillofacial region. Such complex oral health care services require at least a basic understanding of physical risk assessment, general medicine, principles of anesthesia, and exposure to a variety of other disciplines and skills. Medically complex patients also require the integration and coordination of dental and medical care plans through interdisciplinary consultation and teamwork.

In the United States, there are two professional groups that have been in existence for over 80 years to support oral health professionals with a commitment to these patient populations. The Special Care Dentistry Organization (SCDA; https://www.scdaonline.org) which, in addition to hospital dentistry, also represents the fields of geriatric dentistry and dentistry for persons with disabilities. The other group is the American Academy of Oral Medicine (AAOM; https://www.aaom.com), which has a focus on two major groups, medically complex patients and the people with nonsurgical problems of the maxillofacial region. These two clinical disciplines are organized and practiced somewhat differently throughout the world. In some countries, medically complex patients and oral medicine are separate disciplines, and in others they are combined under one dental specialty, as is the case in the United States. In 2020, the National Commission on Recognition of Dental Specialties and Certifying Boards recognized Oral Medicine as the 11th ADA-recognized dental specialty in the United States and is defined as "the specialty of dentistry responsible for the oral health care of medically complex patients and for the diagnosis and management of medically-related diseases, disorders and conditions affecting the oral and maxillofacial region" (https://ncrdscb.ada.org/recodnized-dental-specialties). Like-minded individuals are encouraged to explore membership opportunities in these professional groups that hold annual scientific conferences with continuing education offerings.

Future challenges include defining and approving an internationally accepted baseline training for oral medicine at both the dental school and postdoctoral level, further integrating medicine and dentistry, building interdisciplinary teams, developing collaborative care systems, improving reimbursement for oral health services, and supporting research in this area. The further development of specialty examinations, credentialing, and international cooperation in the form of scientific meetings and research will translate into better care for these patient populations.

Suggested Readings

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CHAPTER 1

1 Oral Health Management of the Hospitalized Patient

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Introduction

Hospital dentistry, the practice of dentistry within a hospital setting, entails dental professionals who provide oral care to patients who may have medical or psychological conditions that require hospital system support or adjunctive anesthesiology services. This area of dentistry often collaborates closely with other medical disciplines to address the oral health needs of individuals in a hospital environment. Dentistry integrated in the health system is essential for managing various patient cases involving surgery, trauma, or patients with significant or unstable medical disease, care management challenges or requiring medical coordination of care. Hospital dental care ensures a holistic approach to healthcare. In this population, the medical/psychological health and the dental needs of patients must be considered when deciding on the need for in-hospital dental care. The scope of in-hospital dental care may include (i) Providing dental care to medically complex patients as outpatients; (ii) Providing inpatient dental consults; (iii) Providing urgent/emergent care at emergency department; (iv) Consultation to other medical services for management of medical conditions in order to provide dental care safely; (v) Hospital admission to provide dental care under general anesthesia or deep sedation.

In-hospital dental care should be considered whenever the required dental treatment could threaten the patient's well-being, or indeed life, or when the patient's medical/psychological problems may seriously compromise the dental treatment without hospital support. Some hospitals have dedicated hospital-based dental clinics to accommodate medically complex patient care. Management of those patients as outpatients is discussed in Chapter 2. Some hospitals have dental services to provide inpatient consultations, emergency department consultation and care, and consulting to other medical services for inclusion of dental care in multidisciplinary management. These consultations are discussed in Chapter 4. This chapter will discuss in-hospital care for the dental patient that requires hospital admission and/or operating room (OR) care.

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Dental Admissions

Reasons for Admission

The reasons for admission to the hospital can be categorized into two groups: emergent hospitalizations, usually from the emergency department or elective/scheduled hospitalizations for specific oral surgical or dental procedures.

Types of Admission

- Admission from home directly to an OR or hospital surgical center for dental care under general anesthesia, conscious sedation or monitored anesthesia care.
- An under 23-hour "observation" stay in the hospital after a dental care episode, typically under general anesthesia.
- Night before OR dental procedure stay to maximize health of the patient for the procedure.
- Admission for an extended stay for management of an oral health condition by the medical and dental team in consultation with or by the hospital dentistry or oral and maxillofacial surgery team, as a planned or scheduled admission or an unscheduled admission from the emergency department.

Fractures of the Mandible/Maxillofacial Structures

Admission to the hospital may be necessary for the management of multisystem injuries or injuries concomitant to mandible/maxillofacial fractures. Admission may be required for medically complex or special needs patients even if the fractures are relatively minor.

Infection

Admission is necessary if the patient has an infection that:

- Compromises nutrition or hydration (especially fluid intake, e.g., severe herpetic stomatitis in very young children, which might require hospitalization because of dehydration)
- Compromises the airway (e.g., Ludwig's angina)
- Involves secondary soft tissue planes that drain or traverse potential areas of particular hazard and so are a danger to the patient (e.g., retropharyngeal or infratemporal abscesses)

Compromised Patients

Medically, mentally, intellectually or developmentally disabled (IDD), or physically compromised patients who are insufficiently cooperative, or do not have adequate systemic reserve to be treated in an outpatient setting may be admitted to the hospital for their procedure. This category includes patients who might require general anesthesia or deep sedation and/or appropriate cardiorespiratory monitoring during treatment (e.g., intellectual disability, cardiovascular compromise).

Children

Young children who require treatment under deep sedation or general anesthesia because of the combination of poor cooperation and the need for a large number of dental procedures as a result of extensive caries and/or consequent infection may be admitted to the hospital.

Medical Consultations

The objectives of medical consultations are to:

- Determine and reduce peri- and postoperative medical risk to the patient from the planned oral surgical/dental procedures.
- Determine, and thus lessen or indeed prevent, the potential adverse effects of the proposed surgery/procedures on any medical illness and limit possible postprocedure complications by managing and treating the patient's underlying medical conditions.

The Admission Note

It is essential to assess a patient's current medical and physical status. Taking an accurate, relevant, and concise medical history requires skill. The goal is to obtain sufficient information from the patient and medical record to facilitate the physical examination and, in conjunction with the examination, to arrive at working diagnoses of the problems.

Old hospital records, if they exist, can be helpful in providing information about past hospitalizations, operations (including complications), and medications, particularly if the reliability of the patient or guardian as an informant is in question. With current electronic medical record systems, it is more common to have consolidated information on patients from multiple hospitals and clinics.

The Patient's Medical History

Key Points for Taking a Medical History

- Record the patient's positive and negative responses.
- Without explanation, the patient might not understand the need for, and value of, an accurate medical history in the dental setting.
- Be persistent and patient.
- Confirm the accuracy of the information by asking questions (e.g., if a medication is listed as allergen, ask what happened when taken).
- If the patient needs an interpreter, try as much as possible to use a professional healthcare interpreter and not members of the patient's family.
- If you need to gain consent for minors, IDD adults, or elders who cannot give consent, make sure that the person whose consent you gain (patient's parent/guardian/caregiver) has the legal authority to provide consent.

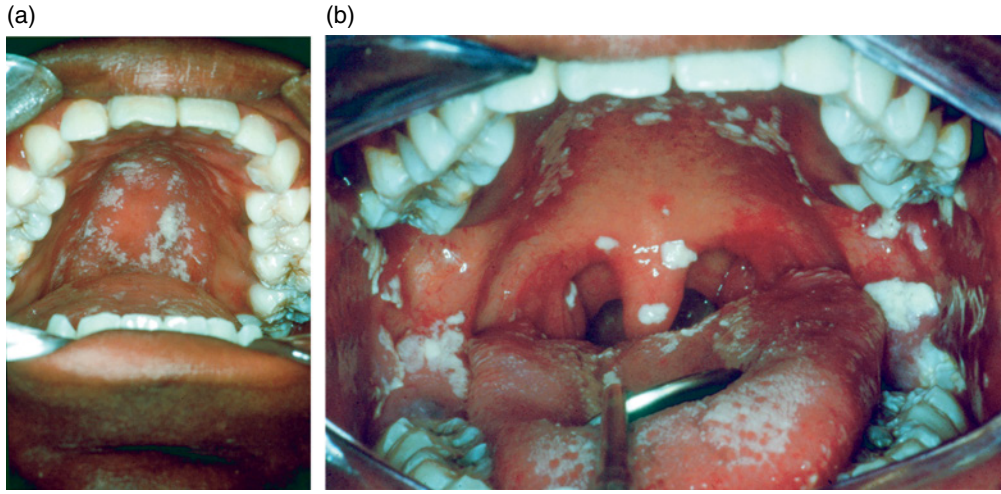

Figure 2.1. (a) and (b). Superficial candida infection during cancer chemotherapy as a result of immunosuppression.

Bleeding

- Gingival bleeding is not uncommon with low platelet counts and is exacerbated by poor oral hygiene, and periodontal disease. Ensuring good oral hygiene is thus important. If brushing and flossing cause pain or bleeding, rinsing with chlorhexidine may help control plaque biofilm formation.
- Bleeding can occur from the gingival crevice with very low platelet counts (<20,000/μl).
  - If pressure from a wet gauze sponge fails to stop the bleeding, a topical thrombin-soaked sponge may be applied to the area and held in place for 1–2 minutes. Remove the sponge gently so as not to disturb the new clot. There is some concern over the use of topical bovine thrombin due to its potential immunogenicity and the risk of developing antibodies that cross-react with human coagulation proteins, leading to thromboembolic events. Hence, its use should be discussed with the patient's physician.
  - An antifibrinolytic such as TXA (suspension-soaked gauze, made from crushed 500 mg TXA tablets and water) or EACA (Amicar®) syrup-soaked gauze pressure is another alternative to enhance hemostasis.
  - Avoid any gingival manipulation (e.g., toothbrushing) within 48–72 hours of oral bleeding or until the platelet count is increased to sufficient levels (e.g., ≥20,000/μl).

Nutrition

Weight loss can be a temporary side effect of oral pain, nausea/vomiting, poor appetite, diarrhea, or dehydration. It is best to consult a dietitian. A soft and/or liquid diet may be helpful. In severe cases, a nasogastric or gastrostomy tube may be indicated to maintain nutrition.

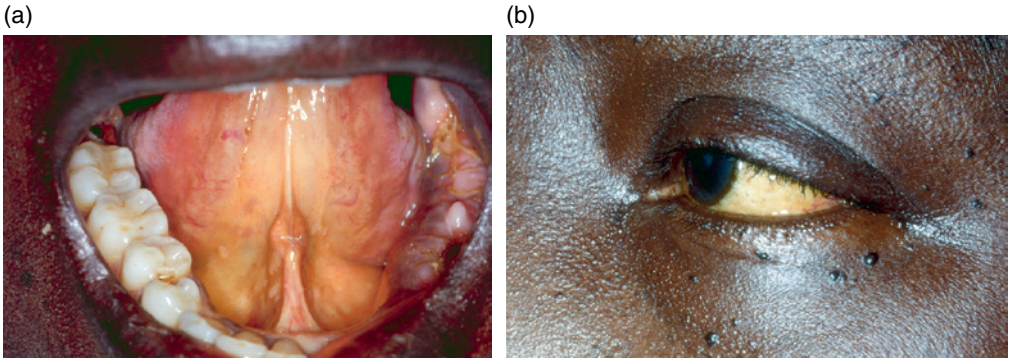

Figure 2.3. (a) and (b). Jaundice due to liver failure.

toxins (e.g., acetaminophen overdose, alcohol use disorder), ischemia or shock liver, or autoimmune hepatitis. The most common causes of liver failure are viral or toxin-mediated and is characterized by the development of encephalopathy within 8 weeks of onset of symptoms in a previously healthy person or within 2 weeks of onset of jaundice (Figure 2.3a, b) in a patient with or without previously recognized liver disease. Subacute (or subfulminant) liver failure develops more slowly, with the onset of encephalopathy usually occurring after 6 months.

Oral Health Care Considerations in Patients with Liver Failure/ Transplant

- Elective procedures should not be performed on patients with advanced liver disease.
- Pretransplant patients likely have:
  - Bleeding disorders from decreased liver-dependent coagulation factors and platelets.
  - Hypoglycemia.
  - Poor drug metabolism: Use caution with drugs metabolized in the liver.
- Post-transplant patients:
  - Immunosuppression leads to an increased risk of infection. Chronic immunosuppression leads to an increased risk of various types of cancers.[21]
  - Elective dental procedures that may induce bacteremia should be avoided, particularly in the 6 months following transplantation when immunosuppressive agents are given in high doses.
  - There is a risk of adrenal suppression secondary to the use of systemic glucocorticosteroids.

Glycogen Storage Diseases

Glycogen storage diseases (GSDs) are inherited disorders affecting the enzymes involved in glycogen metabolism and storage. Glycogen is the stored form of glucose and is used when the body requires glucose either due to high demand or low availability (oral or

[21] National Cancer Institute. (2015, April 29). Risk Factors: Immunosuppression. https://www.cancer.gov/about-cancer/causes-prevention/risk/immunosuppression. Accessed March 18, 2024.

Figure 3.4. Leukoplakia area on the alveolar ridge.

Figure 3.5. Leukoplakia area on lateral border of tongue.

Figure 3.6. Oral lichen planus.

If There is no Apparent Cause

Clinical diagnosis of leukoplakia and consider biopsy to rule in/out a potentially premalignant or malignant oral lesion (i.e., epithelial dysplasia or squamous cell carcinoma):

- Symptoms: Generally asymptomatic. High-grade dysplasia and squamous cell carcinoma (advanced but sometimes early carcinomas as well) can be symptomatic.
- History: May have no known risk factor. Potentially any type of tobacco with or without alcohol use, poor diet or possible immunosuppression.
- Signs: White only (homogeneous versus nonhomogeneous, speckled, granular, verrucous) (Figure 3.10), mixed red/white (erythroleukoplakia) (Figure 3.11), or mixed red/white/ulcerated. Latter mixed signs are more ominous.

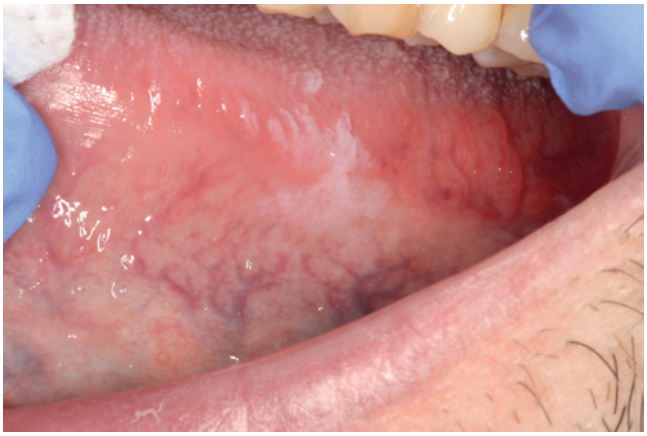

Figure 3.10. Leukoplakia on lateral border of tongue due to friction.

Figure 3.11. Mixed erythroplakia and speckled leukoplakia area in area that several years later progressed to squamous cell carcinoma.

If persists despite treatment, consider evaluation of microbial resistance, systemic conditions, or immunocompromised states which may require referral to other medical specialties.

If There is Gingival Redness with Desquamation

Consider desquamative gingivitis (e.g., vesiculobullous diseases or lichen planus. See "Ulcerative lesions" below) (Figures 3.15 and 3.16)

- Symptoms: Generalized erythema on gingiva that may bleed easily and/or be sore with or without blister formation or sloughing of mucosa.
- History: Skin or genital lesions (e.g., rash, blister, and itchiness), recent new medication.
- Signs: Positive Nikolsky sign (i.e., epithelium peels away when rubbed), other oral mucosal lesions and/or skin lesions. White reticular changes associated with redness may be suggestive of lichen planus/lichenoid mucositis reaction.

Figure 3.15. Erythema and blister formation in mucous membrane pemphigoid.

Figure 3.16. Erosive lichen planus involving gingiva.

If Solitary Lesion on Lower Labial Mucosa

Consider mucocele (Figure 3.30) (note mucoceles can occur in any site where there are minor glands but most commonly in lower lip):

- Symptoms: Possible discomfort.
- History: History of trauma (biting). Often will fluctuate in size.
- Signs: Papule to nodule, sessile, usually normal overlying epithelium, may have a bluish appearance.
- Diagnostics: Usually history and clinical exam findings are sufficient for the diagnosis. Biopsy can confirm the diagnosis.
- Treatment: Surgical excision and submission for histopathology to confirm diagnosis.

If Solitary Lesion on Gingivae

Consider reactive gingival lesion (pyogenic granuloma, peripheral giant cell granuloma, peripheral ossifying fibroma) (Figure 3.31):

Figure 3.30. Mucocele on lower labial mucosa.

Figure 3.31. Pyogenic granuloma.

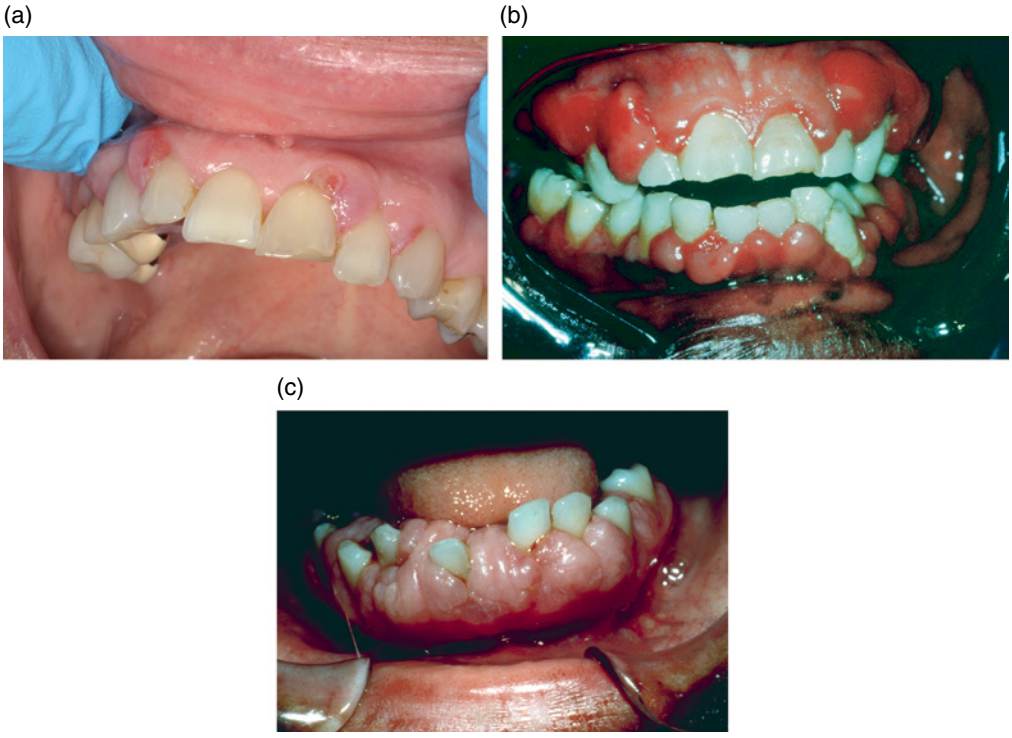

Figure 3.33. (a) Drug induced gingival hyperplasia. (b) Calcium channel blocker. (c) Dilantin hyperplasia.

Figure 3.34. Leukemic infiltrates.

If Solitary Lesion with no Obvious Cause and Persistent (Longer than 2 Weeks)

Rule out malignancy (e.g., squamous cell carcinoma (Figure 3.35), salivary gland malignancy, sarcoma, lymphoma, plasmacytoma). Other entities in differential diagnosis include other benign neoplasms, e.g., plesiomorphic adenoma, muscle-derived neoplasm.

- Symptoms: Possible pain.
- History: Risk factor (i.e., tobacco with or without alcohol, areca nut, immunosuppression, previous history of cancer, family history of cancer, etc.).

Figure 3.40. Lead poisoning from lead paint ingestion (Pica).

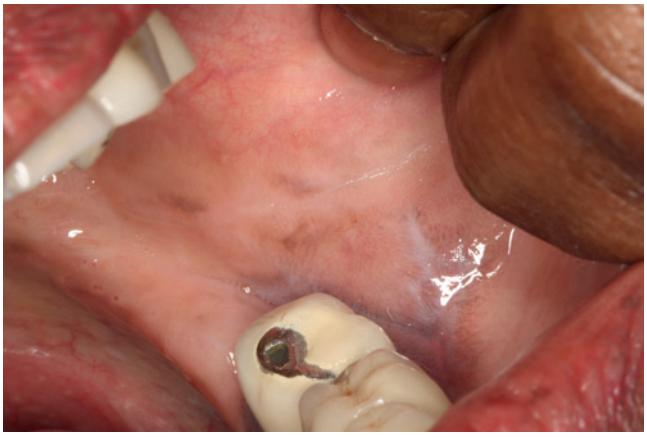

Figure 3.41. Postinflammatory pigmentation in patient with oral lichen planus.

If Diffuse Pigmentation and Negative Drug History

Consider reactive pigmentation:

- Symptoms: Asymptomatic.
- History: History of chronic inflammatory disease (e.g., oral lichen planus) (Figure 3.41). Smoker (smoker's melanosis). Hormonal changes (i.e., pregnancy).
- Signs: Diffuse pigmentation. Palatal involvement is common in smoker's melanosis. Buccal mucosa and lateral tongue involvement is common in oral lichen planus.
- Diagnostics: Usually, history and clinical exam findings are sufficient for the diagnosis. Biopsy can confirm the diagnosis.
- Treatment: None.

Figure 3.44. Tetracycline intrinsically stained teeth.

- Signs: Brown, black, red stains can be removed by dental prophylaxis (with pumice for more tenuous stains).
- Diagnostics: Usually, history and clinical exam findings are sufficient for the diagnosis.
- Treatment: Discontinue habits (tobacco, areca nut), regular dental prophylaxis.

Suggested Reading

Glick M, Greenberg MS, Lockhart PB, Challacombe SJ (Eds.). *Burket's Oral Medicine*, 13th Ed. John Wiley & Sons, Inc., Hoboken, NJ. 2021.

International Classification of Orofacial Pain, 1st edition (ICOP). *Cephalgia* 40(2): 129–221, 2020. https://doi.org/10.1177/0333102419893823.

Miller CS, Rhodus NL, Treister NS, et al. (Eds.). *Little and Falace's Dental Management of the Medically Compromised Patient*, 10th Ed. Elsevier, St. Louis, MO. 2023.

Neville BW, Damm DD, Allen CM, Chi AC (Eds.). *Oral and Maxillofacial Pathology*, 4th Ed. Elsevier, St. Louis, MO. 2016.

Figure 5.1. Primary herpes in a child.

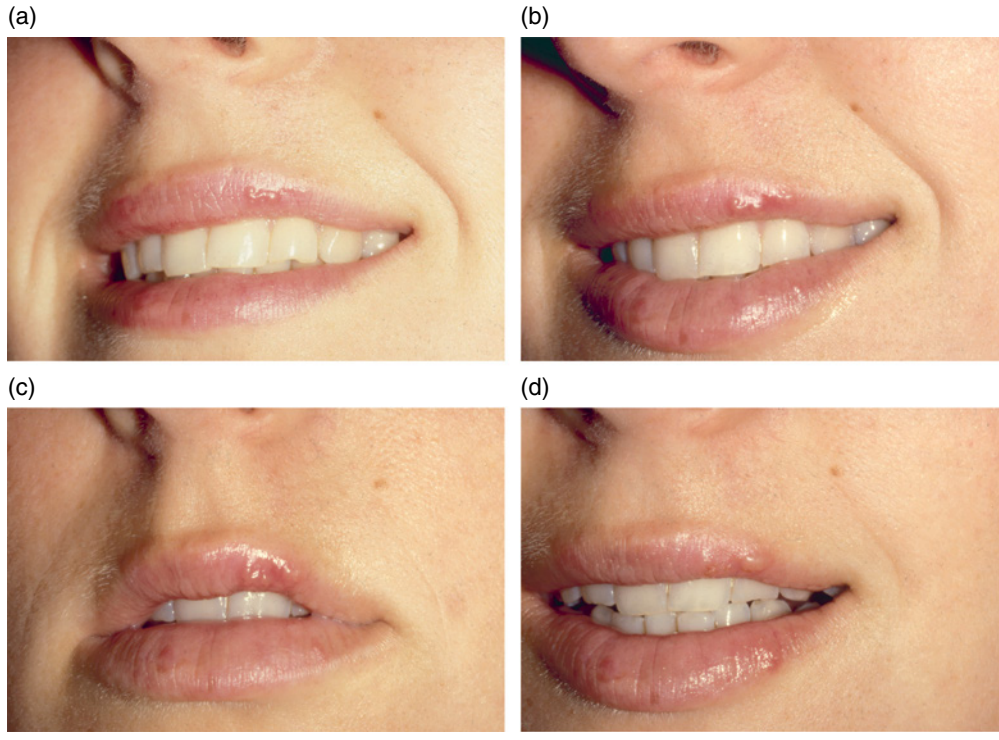

Figure 5.2. (a) Secondary herpes 45 minutes after prodrome. (b) Secondary herpes 6 hours after prodrome. (c) Secondary herpes 10 hours after prodrome. (d) Secondary herpes 30 hours after prodrome.

Primary Herpetic Gingivostomatitis

- Diagnosis: Usually seen in children or young adults not previously exposed to virus (Figure 5.1. and Figure 5.2a–d). May be subclinical or quite severe. Prodrome of fever, irritability, headache, dysphagia, and regional lymphadenopathy. A few days

Figure 7.6. Maxillary defect in the partially edentulous maxilla without obturation.

Figure 7.7. Maxillary defect in the partially edentulous maxilla with a tooth-retained and tissue supported definitive obturator.

Figure 7.8. Maxillary defect with an implant-supported fixed prosthesis without obturation.

Figure 7.13. Obturator with a speech aid pharyngeal "bulb."

Figure 7.14. Obturator with a speech aid pharyngeal "bulb" (intraoral view).

Figure 7.15. Removable partial prosthesis with a speech aid pharyngeal "bulb."

Palatal Augmentation Prosthesis

Following a surgical resection of the tongue or after a stroke, the loss of mass and the lack of coordination of the intrinsic muscles of the tongue might not allow the organ to be properly positioned relative to the hard palate, thus compromising speech production and swallowing efficiency.

A palatal augmentation prosthesis is a maxillary appliance that improves speech and swallowing by providing efficient contact of the dorsal surface of a tongue that has limited mechanical movement (see Figure 7.16).

Features and functions of a palatal augmentation prosthesis include

- Prosthetically reshapes the palatal contours to improve the tongue-to-palate relationship
- Made from PMMA and retained by cast or wrought wire clasps around the maxillary teeth

The contours of the prosthesis are shaped by applying low fusing wax to the palatal cameosurface (facing the dorsum of the tongue) of the prosthesis and having the patient functionally mold the wax as they complete functions like speech and swallowing. The wax is then processed in PMMA.

Figure 7.16. Palatal augmentation prosthesis.

Nasoalveolar Molding (NAM) Appliance

Cleft lip and palate is the most common congenital abnormality affecting the maxillary and dentoalveolar structures. The newborn infant with a cleft palate, whether unilateral

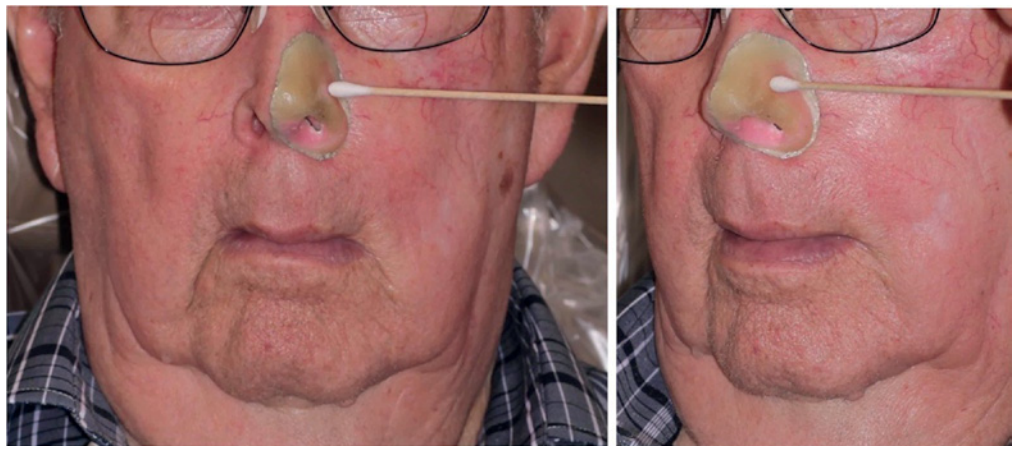

Figure 7.18. The wax prototype for a nasal prosthesis.

Figure 7.19. An auricular prosthesis that is retained by a craniofacial implant bar.

Auricular Prosthesis

This type of facial prosthesis is also referred to as an ear prosthesis.

Features and functions of an auricular prosthesis include

- Replaces all or part of the natural ear that may have been lost to trauma or surgical resection or may have been congenitally missing
- Serves to restore the normal form and contour of the natural ear as well as to collect sound waves for improved hearing. Not purely a cosmetic prosthesis
- May be retained with medical-grade skin adhesive, attachment to eyeglasses, or through mechanical interlocks or magnets placed on transcutaneous osseointegrated implants (see Figure 7.19)

Ocular Prosthesis

Commonly referred to as an artificial eye or glass eye, the ocular prosthesis replaces an eye that is missing due to surgical ablation, trauma, or congenital absence.

Features and functions of an ocular prosthesis include

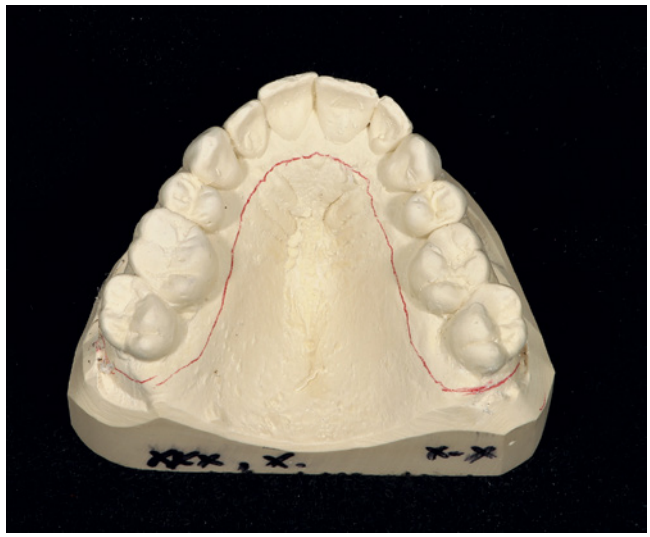

Figure 7.25. Line mark 1–2 mm beyond gingival margins to delineate the peripheral borders for a protective tray. *Source:* Photo Courtesy of Mayo Foundation for Medical Education and Research (MFMER).

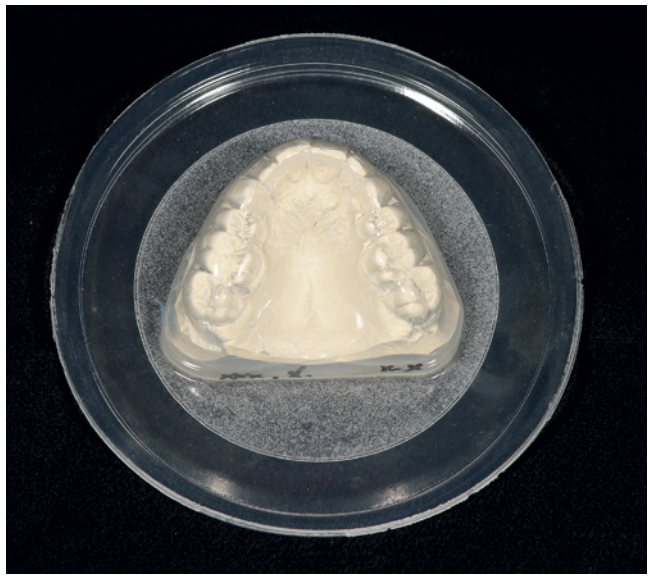

Figure 7.26. Vacuum thermoplastic sheet that has been adapted over the maxillary cast for a protective tray. *Source:* Photo Courtesy of Mayo Foundation for Medical Education and Research (MFMER).

Heat a sheet of mouth guard plastic on the vacuum former. Heat the plastic until it sags at least 1 inch. Turn the vacuum on and lower the plastic onto the model; allow it to cool (see Figure 7.26).

Transcribe a line on the plastic with an ink pen over the existing line on the model while it is still on the plaster model. The tray is then removed and trimmed to the marked line (see Figure 7.27). Rough edges can be trimmed with rotary instrumentation (Figure 7.28).

Replace the tray on the model and sear all margins carefully until smooth using a hand torch with an air stream (see Figure 7.29). Allow the tray to cool.

Deliver the tray to the patient (see Figure 7.30).

Figure 7.27. Trimming the thermoplastic material for fabricating a protective tray. *Source:* Photo Courtesy of Mayo Foundation for Medical Education and Research (MFMER).

Figure 7.28. Trimming the thermoplastic material with rotary instrumentation to smooth borders for a protective tray. *Source:* Photo Courtesy of Mayo Foundation for Medical Education and Research (MFMER).

Figure 7.29. Smoothing margins of a thermoplastic protective tray with heat applied by a hand torch. *Source:* Photo Courtesy of Mayo Foundation for Medical Education and Research (MFMER).