

Contents

Preface: Clinical Decisions in Medically Complex Dental Patients, Part I	xix
Mel Mupparapu and Andres Pinto	

Scaling and Root Planing in a Patient with Atherosclerosis, Arrhythmia, and Anticoagulation	393
--	------------

Kimberly A. Strauch and Miriam R. Robbins

Patients with cooccurring coronary artery disease and arrhythmias are frequently encountered by dental providers. Individuals with comorbid cardiovascular disease who require dual anticoagulant and antiplatelet therapy are a clinical challenge with regard to the need to balance the risks and benefits of intensive antithrombotic therapy. Modifications to dental care will need to be individualized considering the current disease state and medical management. Oral health promotion and good oral hygiene measures are recommended among this population.

Restorative Treatment in a Patient with Symptomatic Valvular and Structural Heart Disease	397
--	------------

Kimberly A. Strauch and Miriam R. Robbins

Heart failure (HF) and valve replacements are common conditions encountered by dental professionals. Identification and differentiation between acute versus chronic HF symptoms will be key to providing safe and effective dental care. Vasoactive agents should be used cautiously in individuals with advanced HF. People with underlying cardiac conditions that put them at an increased risk of developing infectious endocarditis require antibiotic prophylaxis before all dental procedures. Establishing and maintaining optimal oral health is necessary to minimize the risks of bacterial seeding from the oral cavity to the heart.

Crown Preparation in a Patient with Hypertension and Type 2 Diabetes Mellitus	403
--	------------

Miriam R. Robbins and Kimberly A. Strauch

Management of the diabetic dental patient should focus on the delivery of comprehensive dental care with an emphasis on maintaining periodontal health. Gingivitis, periodontitis, and associated bone loss independent of plaque accumulation are associated with poorly controlled diabetes. Periodontal status should be monitored carefully in patients with diabetes and underlying disease managed aggressively. Likewise, the dental team plays an important role in the identification of hypertension and managing dental-related side effects of anti-hypertensives.

Treatment of a Mandibular Abscess in a Patient with Coronary Artery Disease and Intermittent Angina	407
Miriam R. Robbins and Kimberly A. Strauch	
An in-depth understanding of coronary artery disease will be critical to providing safe and effective dental care. Individuals with ischemic heart disease are at increased risk for anginal symptoms during dental care. Consultation with a cardiologist is advisable to ascertain cardiac stability for dental care if a patient has undergone recent coronary artery bypass graft surgery (less than 6 months ago). Judicious use of vasoactive agents during dental treatment is recommended. Antiplatelet and anticoagulant medications should be continued and local hemostatic measures used to control bleeding.	
A Patient with Permanent Cardiac Pacemaker, History of Stroke Presents for an Extraction of Mandibular Molar Tooth	411
Miriam R. Robbins and Kimberly A. Strauch	
Poor oral health and/or dental disease are highly prevalent among stroke survivors. Muscle weakness and loss of dexterity can decrease the patient's ability to provide effective oral hygiene post-stroke. Modifications to dental treatment should be based on the degree of neurologic sequelae, including scheduling needs. Special considerations must be taken with individuals who have permanent cardiac pacemakers.	
A Child with Tetralogy of Fallot Presents for Extraction of Mandibular Premolars	415
Jayakumar Jayaraman	
A 11-year-old boy was referred from an orthodontist for routine extraction of premolars. The patient's cardiac condition was thoroughly examined, and the premolars were extracted following antibiotic prophylaxis to prevent bacterial endocarditis.	
Complete Denture Fabrication in a Patient with Chronic Obstructive Pulmonary Disease and Active Tobacco Use	419
Miriam R. Robbins and Kimberly A. Strauch	
Patients with chronic obstructive pulmonary disease (COPD) have varying degrees of compromised airway function that can affect their ability to tolerate dental treatment. Thus, the delivery of dental care to individuals with COPD may need to be modified based on an understanding of the severity and control of the patient's disease, exacerbating factors, frequency of signs/symptoms, and disease management protocols. There is a strong association between aspiration of plaque organisms and pneumonia in individuals with COPD. Good oral hygiene and tobacco cessation education can help mitigate COPD exacerbations.	
A Patient with a History of Extrinsic Asthma Presents for Endodontic Therapy for the Upper Molar	423
Miriam R. Robbins and Kimberly A. Strauch	
With increasing rates of asthma in the general population, dental professionals need to be able to recognize the signs and symptoms of poorly	

controlled asthma and modify dental treatment accordingly. Prevention of an acute asthma exacerbation is key. Patients should be reminded to bring their rescue inhaler with them to every dental appointment. Patients who are using inhaled corticosteroids to manage their asthma are at greater risk of oral candidiasis, xerostomia, and caries. Regular dental visits and good oral hygiene are important among this population.

Restorative Treatment in a Patient with Chronic Obstructive Pulmonary Disease, Ischemic Heart Disease, and Arrhythmia **427**

Kimberly A. Strauch and Miriam R. Robbins

Cardiovascular diseases are among the most common medical problems in the general population. Individuals with underlying cardiac conditions require special considerations with regard to appropriateness of dental treatment and precautions needed to deliver safe and effective care. Patients with unstable cardiac disease are at higher risk of developing complications during dental treatment. Similarly, comorbid conditions among patients with ischemic heart disease, such as chronic obstructive pulmonary disease, can further affect dental health and treatment, and they often require more individualized dental approaches.

An Initial Visit in a Patient with a History of Tuberculosis **431**

Kimberly A. Strauch and Miriam R. Robbins

As public health stewards, dental providers must be mindful of actual or potential infectious disease risks. Tuberculosis (TB) is a leading cause of death in adults worldwide and is spread via aerosolized droplets. Individuals at the greatest risk of contracting TB are those with impaired immunity or those who have a higher risk of being exposed to an infection due to environmental factors. Dental providers must be aware of the clinical and public health implications of treating people with active versus latent TB infections.

Periodontal Maintenance in a Patient with a Lung Transplantation Post-COVID-19 Infection **435**

Miriam R. Robbins and Kimberly A. Strauch

Early dental screening and treatment before and after solid organ transplantation are recommended infection prophylaxis measures. Dental treatment after transplantation should only be rendered after a discussion with the patient's health-care provider and/or transplant surgeon to determine the patient's stability for dental care. Potential sources of acute or chronic oral infections should be evaluated at every visit. Periodontal evaluation and through dental prophylaxis should be performed. Oral hygiene instruction including the importance of maintaining excellent oral health after transplant should be reviewed.

An Adolescent with Poorly Managed Asthma Referred for Pulp Therapy in a Permanent Tooth **439**

Jayakumar Jayaraman and Paula L. Coates

A 13-year old male patient with uncontrolled asthma presents with a grossly decayed permanent first molar. Medical consultation was obtained

from a pulmonologist to understand the type and severity of asthma, history of allergies, aggravating factors, and medications. The patient was treated in the dental setting with nitrous oxide and oral conscious sedation with benzodiazepine.

Adolescent Patient with Cystic Fibrosis Presents with Suspected Ludwig Angina

443

Jayakumar Jayaraman

A 15-year-old boy attended Emergency Department with a complaint of difficulty in breathing due to dental infection. A pulmonologist was consulted regarding the severity of the cystic fibrosis. The patient was admitted and intravenous (IV) fluids and antibiotics were given. The infected mandibular right first permanent molar tooth # 30 was extracted under IV ketamine dissociative anesthesia in the hospital setting.

Patient Receiving Hematopoietic Stem Cell Transplantation Reports for Dental Clearance

447

Payam Mirfendereski and Katherine France

Patients planned for hematopoietic stem cell transplantation (HSCT) routinely undergo dental evaluation. Conditioning before HSCT engenders immunosuppression that may lead to flares of oral infections. Before transplantation, the dental provider should educate the patient on the oral complications of HSCT and identify and treat dental needs as appropriate to the patient's medical status. Dental evaluation and treatment must be performed in close coordination with the patient's oncology team.

Dental Management of the Human Papilloma Virus-Related Oropharyngeal Cancer Patient

453

Jillian Rigert, Andres Pinto, and Mel Mupparapu

Human papilloma virus (HPV)-attributable head and neck cancers (HNCs) are on the rise, impacting younger patients compared with HPV (-) HNC. Fortunately, HPV (+) HNCs are associated with favorable prognoses and tend to be radiosensitive. However, radiation therapy for the treatment of HNC is associated with acute and chronic normal tissue toxicity to salivary glands, muscles, bone, and the oral cavity and presents a treatment challenge. Thus, the prevention of normal tissue injury and optimization of oral health are key. Dental teams are important members of the multidisciplinary cancer team.

An Adolescent Patient Reports to Dental Office for Pain in Relation to Mandibular Molar with an Incidental Palpable Thrill in the Submandibular Region

457

Leonard Jensen, Andres Davila, Andres Pinto, and Mel Mupparapu

A young female patient presents to a dental clinic for treatment of swelling and pain. Clinical examination and testing are completed revealing concomitant, suspected vascular pathology of the head and neck area. An endodontic diagnosis is made, but an unusual clinical finding of a vascular entity, not typically considered by dentists, requires interdisciplinary assessment and management with vascular surgery before surgical intervention of the oral cavity.

- Mönckeberg Medial Arteriosclerosis in a Geriatric Patient with Chronic Kidney Disease and Poorly Controlled Diabetes Reporting for a Dental Recall Visit** 461
Leonard Jensen, Ali Z. Syed, Scott Odell, Karoline E. Genung, and Mel Mupparapu
- Mönckeberg medial arteriosclerosis is a condition characterized by the calcification of the tunica media layer of the blood vessels that are visible on plain radiography or sectional tomography. In dentistry, a properly acquired panoramic radiograph may show the condition incidentally. It is also known as medial arterial calcinosis and can be associated with diabetes mellitus or chronic kidney disease. This condition is different from the more common atherosclerosis where the tunica intima remains unaffected, and the diameter of the vessel lumen is preserved. Dental treatment can be performed when the patient is stable with medically controlled diabetes.
- Patient with Hemophilia A Presenting for Extractions and Implants** 465
Temitope T. Omolehinwa and Adeyinka Dayo
- The authors describe the management of a 57-year-old man with hemophilia A who presents for extractions and implant placements. The patient required a combination of extractions, scaling and root planning, and composite restorations. The authors describe the management protocol for this patient as well as general considerations in the management of patients with hemophilia A.
- Patient with von Willebrand Disease Presenting for Selective Scaling and Root Planning** 469
Temitope T. Omolehinwa, Adeyinka Dayo, and Enitan Adegite
- Von Willebrand disease is a platelet phase bleeding disorder, affecting platelet aggregation and adhesion. It can be inherited or acquired in origin. Patients with von Willebrand disease can be successfully treated in a dental setting. This article discusses the dental management of a 74-year-old white woman presenting with pain and gingival erythema in the maxillary anterior area. The article emphasizes the importance of consultation with the hematologist in treating patients with von Willebrand disease, and understanding that disease severity varies in patients. A patient-specific protocol recommended by the hematologist should be followed for each patient.
- Young Hemophilia Patient Presenting with Avulsed Maxillary Permanent Incisor** 473
Jayakumar Jayaraman
- A 7-year-old girl came to the Emergency Department following an avulsion of the maxillary central incisor. The tooth was replanted and splinted. The patient was referred to a hematologist for follow-up and maintenance of adequate levels of Factor VIII.
- Mandibular Arteriovenous Malformation (Vascular Lesion) in a 16-Year-Old Patient** 477
Adeyinka Dayo and Temitope T. Omolehinwa
- Intraosseous arteriovenous malformations in jaws are rare congenital vascular abnormalities that the dentist may encounter. A vascular lesion

or disease should be suspected when there is unexplained bleeding from the oral cavity. Diagnostic imaging is a valuable tool in diagnosing and localizing vascular lesions. An understanding of some of the salient clinical and radiographic features of arteriovenous malformations in jaws aids the clinician in correctly diagnosing this condition and avoids iatrogenic injuries, such as hasty tooth extraction, which may potentially cause severe bleeding and possibly death. The dentist should acknowledge their expertise/limitation, and know when the need for referral arises.

Patient Living with Human Immunodeficiency Virus and Depression with High HIV Viral Load Presenting for Evaluation of Root Caries

481

Temitope T. Omolehinwa, Osamudiamen Idahosa, and Chizobam Idahosa

A 26-year-old man living with HIV and depression presents with symptoms of tooth sensitivity. His laboratory studies are all within normal limits except for a high viral load. The patient does not require any special dental management protocol and should be treated like other patients, with his laboratory studies reviewed every 6 months to 1 year. HIV is now a chronic medical conditions, with most patients having stable disease if they are compliant with their medications. Universal infection control protocols should be followed for all patients regardless of their HIV status.

Dental Extraction in a Patient Living with Human Immunodeficiency Virus with Neutropenia and Thrombocytopenia

483

Temitope T. Omolehinwa, Osamudiamen Idahosa, and Chizobam Idahosa

A 34-year-old male patient living with human immunodeficiency virus (HIV) presents to the dental clinic with a 1-week history of throbbing tooth pain. He was referred by an oral medicine specialist for evaluation and treatment. The patient presents with very low absolute neutrophil, platelet, and cluster of differentiation (CD) (also T-helper cell) 4+ cell counts, as well as a high HIV RNA/viral load. Determining factors for dental management before extraction of the offending teeth were the absolute neutrophil count and platelet counts.

A 50-Year-Old Woman Living with Human Immunodeficiency Virus and Comorbid Conditions, Presenting for Scaling and Root Planing

487

Temitope T. Omolehinwa, Osamudiamen Idahosa, and Chizobam Idahosa

A 50-year-old female patient with a history of HIV, uncontrolled diabetes, hyperlipidemia, hypertension, and chronic hepatitis C presents for dental evaluation and treatment because of bleeding gums. This article discusses modifications to her dental management with respect to her various medical conditions. Noninfectious comorbid conditions especially diabetes, cardiovascular disease, and hyperlipidemia are common findings in patients with HIV. Modifications to dental treatment should not be based solely on HIV RNA (viral load) and CD4⁺ cell count. Dentists can play a role in ensuring patients' comorbid medical conditions are well managed.

Patient Living with Human Immunodeficiency Virus with a History of Chronic Obstructive Pulmonary Disease and Experiencing Oxygen Desaturation During Dental Treatment 491

Temitope T. Omolehinwa, Osamudiamen Idahosa, and Chizobam Idahosa

A 60-year-old male patient living with HIV, with a medical history of chronic obstructive pulmonary disease and persistent cough, presents to the dental clinic with rampant caries and multiple missing teeth. He had an average oxygen saturation of 84% observed while taking his vital signs. The authors discuss the management of this patient during routine dental treatment.

Patient Living with Human Immunodeficiency Virus with Gingival Pain and Oral Soreness (Red and White Lesions) 495

Temitope T. Omolehinwa, Osamudiamen Idahosa, and Chizobam Idahosa

A 34-year-old male patient with poorly controlled HIV/AIDS presented with symptoms consistent with oral candidiasis and necrotizing ulcerative gingivitis. He was treated with systemic antifungal agent and topical and systemic antibiotics.

A Patient with Severe Anxiety and Episodes of Fainting in Need of Dental Restoration 499

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

Patients with extreme dental anxiety and dental phobia are candidates for syncope attacks in a dental chair. Early recognition and management of these episodes is important. Vasovagal syncope is often preceded by prodromal signs and symptoms like facial pallor, diaphoresis, fainting, dizziness, nausea, or vomiting. If any element of the patient's airway, breathing, or cardiovascular system is no longer intact, the provider should commence emergency basic life support protocols and notify emergency medical services immediately.

A Patient with a History of Myocardial Infarction and a Stent Presenting for Full Mouth Extractions 503

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

The scenario presented is of a patient in the dental chair who had history of myocardial infarction and history of stent placed in the left anterior descending coronary artery who now presents with acute chest pain, chest tightness, and extreme dizziness. Confirming cardiopulmonary arrest and beginning basic life support are the first steps in the management followed by defibrillation, advanced cardiac life support, post-resuscitation care, and long-term management.

A Patient with Epilepsy Presenting for a Dental Hygiene Visit 507

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

All dentists should be trained in the diagnosis and management of seizures in a dental chair. Although epilepsy is a common etiological factor, there are other medical situations whereby seizures are manifested. Once a

seizure is suspected and other causes of altered consciousness or involuntary motor movements are ruled out, proper management should commence immediately. The first step in management is to immediately remove/stop all provocative factors, like bright flashing lights, drill sounds, and such. Benzodiazepines remain as the first-line treatment for patients with continued seizures before activating emergency medical services.

Foreign Body Aspiration in an Elderly Male with No Significant Medical History 511

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

Accidental foreign body aspiration is not uncommon during a dental procedure and remains a real risk for many dental procedures. Although approximately 50% of patients are asymptomatic after aspiration of a foreign body, understanding the appropriate next steps in management of these patients is critical in preventing morbid and even lethal outcomes in some instances. Appropriate knowledge of identification and management of such instances is important for all practicing dentists. This article goes into the diagnosis and management of both uncomplicated foreign body ingestion and complicated foreign body aspirations.

Diabetic Patient in the Chair for Implant Surgery 515

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

Although dental treatment in a patient with well-controlled type 2 diabetes mellitus is uncomplicated, hypoglycemia is one of the most dreaded complications among diabetics and remains as one of the leading causes of endocrine medical emergencies. Identification and prompt treatment is important to all dental practitioners. This scenario goes into the diagnosis and management of medication-induced hypoglycemia.

A Patient with an Unknown Latex Allergy Presenting for Sealant Placement 519

Nikhil Mistry, Mel Mupparapu, and Neeraj Panchal

Dentists should be trained to treat any allergic reaction in a dental office, and in this scenario, allergic reaction to latex-based product (rubber dam) is illustrated. Identification of signs and symptoms related to latex allergies is vital, and all dentists should be trained in the appropriate management of such a patient. The dental management of the scenario describes details of the diagnosis and management of latex-related allergies in a dental office for both adults and children.

Penicillin Allergy in a Patient Presenting for Scaling and Root Planing 523

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

Dentists should be equipped to treat any allergic reaction in a dental office and in this scenario, anaphylaxis is noted after administration of a penicillin derivative given before a dental procedure. Identification of signs and symptoms related to anaphylaxis is vital and appropriate management of the patient is the key. The dental management of the scenario goes into the diagnosis and management of anaphylaxis in a dental office.

A Patient with Known Allergy to Local Anesthesia Presenting for a Dental Restoration 527

Nikhil Mistry, Kenneth Kufta, Mel Mupparapu, and Neeraj Panchal

Dentists should be equipped to treat an allergic reaction in a dental office, and in this scenario, the potential allergic reaction is noted after administration of a common local anesthetic lidocaine with epinephrine. The allergic reaction quickly escalates to a full-blown anaphylaxis, and the management of such an episode is detailed in this article.

Restorative Dental Treatment in a Patient with Mild to Moderate Chronic Kidney Disease (Stages 1–3) 531

Dalal Alomar

Patients with chronic kidney disease (CKD) stage 2 have mildly damaged kidneys but they still work well. The dentist can proceed with the required restorative dental treatment, which is considered a low-risk non-surgical dental procedure, with no major complications expected. Patients with CKD stage 3 have moderate impairment of renal function with altered drug metabolism, bioavailability, and rate of excretion. Diabetes is a common comorbidity in patients with CKD.

Patient with Severe End-Stage Renal Disease Stages (4–5) Presenting for Surgical Periodontal Therapy 535

Dalal Alomar

Patients with ESRD have an increased risk of bleeding owing to platelet dysfunction associated with uremia. It is important to obtain coagulation tests and complete blood count before the surgical procedure, and abnormal values should be discussed with the patient's physician. A conservative surgical technique must be followed to decrease the risk of bleeding and infection. The dentist should ensure the availability of local hemostatic agents at the dental office to be used as needed to obtain hemostasis. Following the medical complexity status (MCS) system, the patient can be designated as MCS 2B category.

Patient on Hemodialysis Develops Painful Periodontal Abscess and Presents for Treatment 539

Dalal Alomar

Dialysis patients have an increased risk of acquiring hepatitis B, hepatitis C, and HIV because the dialysis machine is disinfected, not sterilized. Therefore, the dentist must follow standard precautions for infection control when treating dialysis patients. Following the medical complexity status (MCS) system, the patient can be designated as MCS 2B category.

Patient on Hemodialysis with Elevated International Normalized Ratio Presents for Removal of Residual Roots in the Mandible 543

Anwar A. AlMuzaini

Dentists should consult the patient's nephrologist to obtain the most recent medical records for patients with chronic kidney disease (CKD)

including the stage and level of control. Patients on hemodialysis are ideally seen the day after dialysis with consideration to arteriovenous shunt placement for blood pressure measurement and avoiding or changing the dose of certain drugs based on the patient's glomerular filtration rate. Drugs cleared during hemodialysis may require a supplemental dose. Patients taking oral anticoagulants and requiring oral surgery should have the international normalized ratio (INR) measured the day of the procedure.

A Patient with Active Hepatitis B Presents for Dental Extraction

547

Fatmah Alhendi

Goals of the dental management of patients with active hepatitis B is to stabilize the patient until the active liver infection subsides and to defer all dental treatments until recovery. If treatment cannot be deferred during the active stage of the disease, consultation with the patient's physician is necessary to obtain information to avoid excessive bleeding, infection, or adverse drug reactions. Dental treatments of such patients should be carried out in an isolated operation room with adherence to the standard precautions to prevent cross-infection. An effective vaccine against hepatitis B is available; all health care workers should be fully vaccinated.

A Patient with Alcoholic Liver Disease Reports for Treatment of Dentoalveolar Abscess in Relation to Maxillary Left Molar

549

Fatmah Alhendi

Dental management of patients with alcoholic liver disease (ALD) depends on the understanding of the systemic effects of liver disease on the body's various systems. ALD can affect normal hemostatic functions by affecting platelets and coagulation factors resulting in prolonged postoperative bleeding. Given these facts, a complete blood count, liver function test, and coagulation profile should be requested before oral surgical procedures. Because the liver is an organ for drug metabolism and detoxification, liver disease may cause increased or decreased drug metabolism and hence alteration of drugs effectiveness and/or increase toxicity. Prophylactic antibiotics may be required to prevent serious infections.

Patient with End-Stage Liver Disease and Prolonged Prothrombin Time Presents for Placement of a New Dental Implant

553

Anwar A. AlMuzaini

Dentists should consult with the patient's hepatologist to obtain the most recent medical records with liver function tests and a coagulation panel. In the absence of severe liver dysfunction and with good medical management, dentists may proceed with treatment. Isolated prolongation of prothrombin time does not reflect a risk of bleeding and other coagulation parameters should be assessed. Amide local anesthesia can be safely administered and bleeding is controlled by local hemostatic measures and minimizing trauma. Other aspects of dental treatment that may require modification include the adjustment of doses of certain drugs metabolized by the liver.

Patient with Chronic Liver Disease Was Referred for Evaluation of Oral Infection and Facial Swelling and Needs Multiple Dental Extractions	557
Anwar A. AlMuzaini	

When a patient with chronic liver disease due to a hepatitis C virus infection presents with a dental emergency, it is important to identify whether the patient is under good medical management, if severe liver dysfunction exists, or if the patient is with active hepatitis. If records are not available, contacting the patient's physician to obtain the necessary information is prudent. If the source of infection is odontogenic, extraction should not be delayed. Patients with stable chronic liver disease can safely undergo dental extractions with some modifications to the dental treatment plan.