3. ORAL MEDICINE

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Now keep this straight:
You take the white penicillin tablet every 6 hours and 1 red pill every 2 hours
and 1/2 a yellow pill before every meal
and 2 speckled orange pills between lunch
and dinner followed by 3 green pills before bedtime, unless you have taken the oblong white tablet for pain, then…
Any questions? Good luck.

Modified from unknown source

DISORDERS OF HEMOSTASIS

1. How do you screen a patient for potential bleeding problems?

The best screening procedure for a bleeding disorder is a good medical history. If the review of the medical history indicates a bleeding problem, a more detailed history is needed. The following questions are basic:

1. Is there a family history of bleeding problems?
2. Has bleeding been noted since early childhood, or is the onset relatively recent?
3. How many previous episodes have there been?
4. What are the circumstances of the bleeding?
5. When did the bleeding occur? After minor surgery, such as tonsillectomy or tooth extraction? After falls or participation in contact sports?
6. What medications was the patient taking when the bleeding occurred?
7. What was the duration of the bleeding episode(s)? Did the episode involve prolonged oozing or a massive hemorrhage?
8. Was the bleeding immediate or delayed?

Kupp MA, Chatton MJ: Current Medical Diagnosis and Treatment. East Norwalk CT, Appleton &Lange, 1983, p 324.

2. What laboratory tests should be ordered if a bleeding problem is suspected?

- Platelet count: normal values = 150,000—450,000
- Prothrombin time (PT): normal value = 10—13.5 seconds
- Partial thromboplastin time (PTT): normal value = 25—36 seconds
- Bleeding time: normal value = < 9 minutes (bleeding time is a nonspecific predictor of platelet function)

Normal values may vary from one laboratory to another. It is important to check the normal values for the laboratory that you use. If any of the tests are abnormal, the patient should be referred to a hematologist for evaluation before treatment is performed.

3. What are the clinical indications for use of 1-deamino-8 vasopressin (DDAVP) in dental patients?

DDAVP (desmopressin) is a synthetic antidiuretic hormone that controls bleeding in patients with type I von Willebrand's disease, platelet defects secondary to uremia related to renal dialysis, and immunogenic thrombocytopenic purpura (ITP). The dosage is 0.3 mg/kg. DDAVP should not be used in patients under the age of 2 years; caution is necessary in elderly patients and patients receiving intravenous fluids.

4. When do you use epsilon aminocaproic acid or tranexamic acid?

Epsilon aminocaproic acid (Amicar) and tranexamic acid are antifibrinolytic agents that inhibit activation of plasminogen. They are used to prevent clot lysis in patients with hereditary clotting disorders. For epsilon aminocaproic acid, the dose is 75—100 mg/kg every 6 hours; for tranexamic acid, it is 25 mg/kg every 8 hours.

5. What is the minimal acceptable platelet count for an oral surgical procedure?

Normal platelet count is 150,000—450,000. In general, the minimal count for an oral surgical procedure is 50,000 platelets. However, emergency procedures may be done with as few as 30,000 platelets if the dentist is working closely with the patient's hematologist and uses excellent techniques of tissue management.

6. For a patient taking warfarin (Coumadin), a dental surgical procedure can be done without undue risk of bleeding if the PT is below what value?

Warfarin affects clotting factors II, VII, IX, and X by impairing the conversion of vitamin K to its active form. The normal PT for a healthy patient is 10.0—13.5 seconds with a control of 12 seconds. Oral procedures with a risk of bleeding should not be attempted if the PT is greater than 1½ times the control or above 18 seconds with a control of 12 seconds.

7. Is the bleeding time a good indicator of pen, and postsurgical bleeding?

The bleeding time is used to test for platelet function. However, studies have shown no cor relation between blood loss during cardiac or general surgery and prolonged bleeding time. The best indicator of a bleeding problem in the dental patient is a thorough medical history. The bleeding time should be used in patients with no known platelet disorder to help predict the potential for bleeding.

Lind SE: The bleeding time does not predict surgical bleeding. Blood 77:2547—2552, 1991.

8. Should oral surgical procedures be postponed in patients taking aspirin?

Nonelective oral surgical procedures in the absence of a positive medical history for bleeding should not be postponed because of aspirin therapy, but the surgeon should be aware that bleeding may be exacerbated in a patient with mild platelet defect. However, elective procedures, if at all possible, should be postponed in the patient taking aspirin. Aspirin irreversibly acetylates cyclooxygenase, an enzyme that assists platelet aggregation. The effect is not dose-dependent and lasts for the 7—10-day life span of the platelet.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 440.

9. Are patients taking nonsteroidal medications likely to bleed from oral surgical procedures?

Nonsteroidal antiinflammatory medications produce a transient inhibition of platelet aggregation that is reversed when the drug is cleared from the body. Patients with a preexisting platelet defect may have increased bleeding.

10. If a patient presents with spontaneous gingival bleeding, what diagnostic tests should be ordered?

A patient who presents with spontaneous gingival bleeding without a history of trauma, tooth brushing, flossing, or eating should be assessed for a systemic cause. Etiologies for gingival bleeding include inflammation secondary to localized periodontitis, platelet defect, factor deficiency, hematologic malignancy, and metabolic disorder. A thorough medical history should be obtained, and the following laboratory tests should be ordered: (1) PT, (2) PIT, and (3) complete blood count (CBC).

INDICATIONS FOR PROPHYLACTIC ANTIBIOTICS

11. For what cardiac conditions is prophylaxis for endocarditis recommended in patients receiving dental care?

High-risk category

- Prosthetic cardiac valves, including both bioprosthetic and homograft valves
- Previous bacterial endocarditis
- Complex cyanotic congenital heart disease (e.g., single ventricle states, transposition of the great arteries, tetralogy of Fallot)
- Surgically constructed systemic pulmonary shunts or conduits

Moderate-risk category

- Most congenital cardiac malformations other than above and below (see next question)
- Acquired valvular dysfunction (e.g., rheumatic heart disease)

• Hypertrophic cardiomyopathy
• Mitral valve prolapse with valvular regurgitation and/or thickened leaflets

Dajani AS, et al: Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 277:1794—1801, 1997.

12. What cardiac conditions do not require endocarditis prophylaxis?

Negligible-risk category (no higher than the general population)

• Isolated secundum atrial septal defect
• Surgical repair of atrial septal defect, ventricular septal defect, or patent ductus arteriosus (without residua beyond 6 months)
• Previous coronary artery bypass graft surgery
• Mitral valve prolapse without valvular regurgitation
• Physiologic, functional, or innocent heart murmurs
• Previous Kawasaki disease without valvular regurgitation
• Previous rheumatic fever without valvular regurgitation
• Cardiac pacemakers (intravascular and epicardial) and implanted defibrillators

Dajani AS, et a!: Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 277:1794—1801, 1990.

13. What are the antibiotics and dosages recommended by the American Heart Association (AHA) for prevention of endocarditis from dental procedures?

The AHA updates its recommendations every few years to reflect new findings. The dentist has an obligation to be aware of the latest recommendations. The patient's well-being is the dentist's responsibility. Even if a physician recommends an alternative prophylactic regimen, the dentist is liable if the patient develops endocarditis and the latest AHA recommendations were not followed.

Standard regimen

Amoxicillin, 2.0 gm orally 1 hr before procedure

For patients allergic to amoxicillin and penicillin

Clindamycin, 600 mg orally 1 hr before procedure or
Cephalexin* or cefadroxil,* 2.0 gm orally 1 hr before procedure *or*
Azithromycin or clarithromycin, 500 mg orally 1 hr before procedure

Patients unable to take oral medications

Ampicillin, intravenous or intramuscular administration of 2 gm 30 mm before procedure

For patients allergic to ampicillin, amoxicillin, and penicillin

Clindamycin, intravenous administration of 600 mg 30 mm before procedure
or Cefazolin,* intravenous or intramuscular administration of 1.0 gm within 30 mm before procedure

* Cephalosporins should not be used in patients with immediate-type hypersensitivity reaction (urticaria, angioedema. or anaphylaxis) to penicillins.

Dajani AS, et al: Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 277:1794-1801, 1997.

14. For what dental procedures is antibiotic premedication recommended in patients identified as being at risk for endocarditis?

- Dental extractions
- Periodontal procedures including surgery, scaling and root planing, probing, and recall maintenance
- Dental implant placement and reimplantation of avulsed teeth
- Endodontic (root canal) instrumentation or surgery only beyond the apex
- Subgingival placement of antibiotic fibers or strips
- Initial placement of orthodontic bands but not brackets
- Intraligamentary local anesthetic injections
- Prophylactic cleaning of teeth or implants if bleeding is anticipated

Dajani AS, et a!: Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 277:1794-1801, 1997.

15. For what dental procedures is antibiotic premedication not recommended in patients identified as being at risk for endocarditis?

- Restorative dentistry (including restoration of carious teeth and prosthodontic replacement of teeth) with or without retraction cord (clinical judgment may indicate antibiotic use in selected circumstances that may create significant bleeding)
- Local anesthetic injections (nonintraligamentary)
- Intracanal endodontic treatment (after placement and build-up)
- Placement of rubber dams
- Postoperative suture removal
- Placement of removable prosthodontic or orthodontic appliances
- Making of impressions
- Fluoride treatments
- Intraoral radiographs
- Orthodontic appliance adjustment
- Shedding of primary teeth

Dajani AS, et a!: Prevention of bacteria! endocarditis: Recommendations by the American Heart Association. JAMA 277:1794-1801, 1997.

16. Should a patient who has had a coronary bypass operation be placed on prophylactic antibiotics before dental treatment?

No evidence indicates that coronary artery bypass graft surgery introduces a risk for endocarditis. Therefore, antibiotic prophylaxis is not needed.

Dajani AS, et a!: Prevention of bacterial endocarditis: Recommendations by the American Heart Association. JAMA 277:1794—1801, 1997.

17. What precautions should you take when treating a patient with a central line such as a Hickman or Portacath?

Patients with central venous access are usually receiving intensive antibiotic therapy, chemotherapy, or nutritional support. It is imperative to consult with the patient's physician before performing any dental procedures. If it is determined

that the dental procedure is necessary, the patient should receive antibiotic prophylaxis to protect the central venous access line from infection secondary to transient bacteremias. The same antibiotic regimen recommended for the prevention of endocarditis should be prescribed.

18. Should a patient with a prosthetic joint be placed on prophylactic antibiotics before dental treatment?

Case studies support the hematogenous seeding of prosthetic joints. However, it is questionable whether organisms from the oral cavity are a source for late deep infections of prosthetic joints. The decision whether to premedicate should be determined by the dentist's clinical judgment in consultation with the patient's physician or orthopedic surgeon. Patients considered at high risk for developing a late infection of a prosthetic joint should be premedicated. Such patients can be grouped based on predisposing systemic conditions, issues associated with joint prostheses, or presence of acute infection at sites distant to the joint prosthesis.

High-risk Patients with Total Joint Replacements

Predisposing systemic conditions	
Rheumatoid arthritis	Insulin-dependent diabetes mellitus
Systemic lupus erythematosus	Hemophilia
Disease-, drug-, or radiation-induced immunosuppression	Malnourishment
Issues associated with joint prostheses	
First 2 years after joint replacement	Loose prosthesis
History of replacement of prosthesis	History of previous infection of prosthesis
Acute infection located at distant sites: skin, oral cavity, other	

From Fitzgerald RH, et al: Advisory statement: Antibiotic prophylaxis for dental patients with total joint re placements. American Dental Association; American Academy of Orthopaedic Surgeons. J Am Dent Assoc 128: 1004—1007, 1997; and Little JW: Managing dental patients with joint prostheses. JAm Dent Assoc 125:1374—1379, 1994.

19. What are the antibiotics and dosages recommended by the American Dental Association and the American Academy of Orthopaedic Surgeons to prevent late joint infections in patients considered to be at high risk?

Standard regimen

Cephalexin* or cephradine* or amoxicillin, 2 gm orally 1 hr before procedure

For patients allergic to amoxicillin and penicillin

Clindamycin, 600 mg orally 1 hr before procedure

Patients unable to take oral medications

Cefazolin,* intravenous or intramuscular administration of 1.0 gm 1 hr before procedure *or*

Ampicillin, intravenous or intramuscular administration of 2.0 gm 1 hr before procedure

For patients allergic to ampicillin, amoxicillin, and penicillin

Clindamycin, intravenous or intramuscular administration of 600 mg 1 hr before procedure

* Cephalosporins should not be used in patients with immediate-type hypersensitivity reaction (urticaria, angioedema, or anaphylaxis) to penicillins.

Fitzgerald RH, eta!: Advisory statement: Antibiotic prophylaxis for dental patients with total joint replace ments. American Dental Association; American Academy of Orthopaedic Surgeons. JAm Dent Assoc 128:1004—1007, 1997.

20. Is it necessary to prescribe prophylactic antibiotics for a patient on renal dialysis?

Patients on dialysis with arteriovenous (AV) shunts should be premedicated before any dental treatment that has the potential of producing a transient bacteremia. The dosages for antibiotic coverage are as follows:

Standard regimen

Amoxicillin, 2.0 gm orally 1 hr before procedure

For patients allergic to amoxicillin and penicillin

Clindamycin, 600 mg orally 1 hr before procedure *or*

Cephalexin* or cefadroxil,* 2.0 gm orally 1 hr before procedure

Azithromycin or clarithromycin, 500 mg orally 1 hr before procedure

Patients unable to take oral medications

Ampicillin, intravenous or intramuscular administration 2.0 gm within 30 mm before procedure

For patients allergic to ampicillin, anioxicillin, and penicillin

Clindamycin, intravenous administration of 600 mg within 30 mm before procedure *or*

Cefazolin,* intravenous or intramuscular administration of 1.0 gm within 30 mm before procedure

* Cephalosporins should not be used in patients with immediate-type hypersensitivity reaction (urticaria, angioedema, or anaphylaxis) to penicillins.

TREATMENT OF HIV-POSITIVE PATIENTS

21. What are the considerations in treating patients infected with the HIV virus and treated with azidothymidine (AZT)?

AZT is an antiviral widely used in patients infected with the human immunodeficiency virus (HIV). The drug is toxic to the hematopoietic system and may result in anemia, granulocytopenia, or thrombocytopenia. Patients taking AZT should have a CBC every 2 weeks. Before oral surgical procedures, a CBC should be done to determine whether the patient is neutropenic or thrombocytopenic.

Deglin JH, et al: Davis's Drug Guide for Nurses, 2nd ed. Philadelphia, F.A. Davis, 1991.

22. What is the mechanism of action of the HIV-1 protease inhibitors? What precautions must be taken in treating patients that receive protease inhibitors?

The protease inhibitors represent a major advance in the management of HIV disease. Once HIV- 1 enters a cell, viral RNA undergoes reverse transcription to produce double-stranded DNA. The viral DNA is integrated into the host genome. It is then transcribed and translated by cellular enzymes to produce large, nonfunctional polypeptide chains, known as polyproteins. Polyproteins are assembled and packaged at the cell surface, and then immature virions are produced and released into the plasma. HIV- 1 protease then cleaves the polyproteins into smaller, functional proteins, thereby allowing the virion to mature. In the presence of HIV- 1 protease inhibitors, the virion cannot mature and is rapidly cleared from the system. The major protease inhibitors are reviewed below:

HIV-1 Protease Inhibitors and Precautions for the Dental Practitioner

MEDICATION	ADVERSE REACTION	INTERACTIONS
Saquinavir (Invirase)	Nausea, diarrhea, abdominal discomfort, and rash	Avoid drugs that alter the cytochrome P450 activity in the liver because they affect the bioavailability of saquinavir. Ketoconazole inhibits cytochrome P450 and may result in increased plasma levels of saquinavir.
Ritonavir (Norvir)	Nausea, vomiting, diarrhea, fatigue, abdominal pain, circumoral paresthesias, taste disturbances, anorexia, elevated triglycerides, creatinine kinase, and transaminases	Use of sedative/hypnotics is contraindicated (e.g., diazepam, midazolam) because of the potential for oversedation. Ritonavir is a powerful inhibitor of cytochrome P450; thus, plasma concentrations of these drugs remain high. Narcotic analgesics, erythromycin, antifungal agents, and corticosteroids must be prescribed with caution for the same reason. NSAIDs may be subject to decreased bioavailability. Ritonavir is formulated in alcohol. Therefore, metronidazole in also contraindicated.
Indinavir (Crixivan)	Nephrolithiasis, abdominal discomfort, asymptomatic hyperbilirubinemia	Generally, indinavir is well-tolerated. No significant contraindications.
Nelfinavir (Viracept)	Diarrhea, loose stools	No significant contraindications, but more testing is necessary.

From Deeks SG, et al: HIV-l protease inhibitors: A review for clinicians. JAMA 277:145—153, 1997, with permission.

23. A patient with HIV infection requires an oral surgical procedure to remove teeth after severe bone loss due to H1V-related localized periodontitis. What precautions should be taken?

It is estimated that 10—15% of patients with HIV develop immunogenic thrombocytopenic purpura (ITP). The antiplatelet antibodies appear to be found more frequently in advanced stages of the disease. Affected patients should have a CBC before any oral surgical procedure. If the platelets are low (below 150,000), the procedure should be done only after consultation with the patient's physician and with the knowledge that bleeding may be increased. The patient may require platelet transfusions to control postoperative bleeding.

Magnac C, et al: Platelet antibodies in serum of patients with human immunodeficiency virus (HIV) infection. AIDS Res Hum Retroviruses 6:1443—1449,1990.

24. Are there any contraindications to restorative dentistry procedures in patients with HIV infection?

If the patient is not neutropenic or thrombocytópenic, there are no contraindications to pre ventive and restorative dental care. In fact, patients should receive aggressive dental care to reduce t oral cavity as a source of infection. They should be placed on a 3—6-month recall to maintain optimal oral health and followed closely for opportunistic infections and HIV-related oral conditions.

CARDIOVASCULAR DISEASE

25. What is the appropriate response if a patient with a history of cardiac disease develops chest pain during a dental procedure?

1. Discontinue treatment immediately.

2. Take and record vital signs (blood pressure, pulse, respiration), and question the patient about the pain. Chest pain from ischemia may be either substernal or more diffused. Patients often describe the pain as crushing, pressure, or heavy; it may radiate to the shoulders, arms, neck, or back.

3. If the patient has a history of angina and takes nitroglycerin, give the patient either his or her own nitroglycerin or a tablet from your emergency cart. Continue to monitor the patient's vital signs. If the pain does not stop after 3 minutes, give the patient a second dose. If after 3 doses in a 10-minute period the pain does not subside, contact the medical emergency service and have the patient transported to an emergency department to rule out a myocardial infarction.

4. If the patient does not have a history of heart disease and persistent chest pain for greater than 2 minutes, the medical emergency service should be

contacted and the patient transported to a hospital emergency department for evaluation.

5. If the patient is not allergic to aspirin, administer one tablet of aspirin (325 mg) orally. The aspirin acts as an antithrombotic agent.

26. At what blood pressure should elective dental care be postponed?

Elective dental care should be postponed if the systolic blood pressure is> 160 mmHg or the diastolic pressure is> 100 mmHg.

27. At what blood pressure should emergency dental care be postponed and the patient treated palliatively until the blood pressure is controlled?

Emergency dental treatment should be postponed if the systolic pressure is> 180 or the diastolic pressure is > 110. Patients must be referred for care immediately to prevent morbidity if they have either (1) asymptomatic severe hypertension with a systolic pressure > mmHg or diastolic pressure> 130 mmHg or (2) symptomatic hypertension, headache, heart failure, angina, or elevated perioperative blood pressure, with a systolic pressure of> 200 mmHg or diastolic pressure of > 120.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 366.

28. How long should dental care be postponed after a heart attack?

Dental treatment in a patient who has had a myocardial infarction should be done only after consultation with the patient's physician. Cintron et al. showed that patients treated within 3 weeks of an uncomplicated myocardial infarction experienced no significant hemodynamic changes or complications related to local anesthesia, vigorous dental prophylaxis, or dental extraction. The general guidelines for a patient without angina or heart failure is to wait 6 months for elective dental care.

Cintron 0, et al: Cardiovascular effects and safety of dental anesthesia and dental interventions in patients with recent uncomplicated myocardial infarction. Arch Intern Med 146:2203—2204, 1986.

29. How do you differentiate between stable and unstable angina?

Unstable angina is characterized by a change in the pattern of pain. The pain occurs with less exertion or at rest, lasts longer, and is less responsive to medication. Dental care for such patients must be postponed and the patient referred to his or her physician immediately for care. Patients are at increased risk for myocardial infarction. If emergency dental care is necessary before the patient is stable, it should be attempted only with cardiac monitoring and sedation.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 298.

30. What precautions should be taken in treating a patient with recent onset of angina?

Patients with recent onset of angina less than 30 days' duration are at increased risk for myocardial infarction and sudden death. The angina may not be severe and may occur only with exercise. However, even though symptoms are mild, dental treatment should be postponed until the patient has had a medical evaluation.

Kilmartin C, Munroe CO: Cardiovascular diseases and the dental patient. J Can Dent Assoc 6:513—518, 1986.

31. Is the use of a vasoconstrictor in local anesthetics contraindicated in patients with cardiac disease?

The use of vasoconstnictors is not contraindicated in patients with cardiovascular disease. According to conservative recommendations, epinephrine should not exceed 0.04 mg, which equates to 4 carpules of 1/200,000 or 2 carpules of 1/100,000.

Holnoyd SV, Wynn RL, Requa-Clark B (eds): Clinical Pharmacology in Dental Practice, 4th ed. St. Louis, Mosby, 1988.

32. Should retraction cord that contains epinephrine be used in a patient with cardiovascular disease?

The concentration of epinephrine in impregnated cord is high, and systemic absorption occurs. Impregnated cord should not be used in patients with cardiac disease, hypertension, or hyperthyroidism. Malamed argues that epinephnine-containing retraction cord should not be used in dental practice.

Kilmartin C, Munroe CO: Cardiovascular diseases and the dental patient. J Can Dent Assoc 6:513—518, 1986.

33. When should vasoconstrictors not be used in either local anesthetic or retraction cord?

Vasoconstrictors should not be used in patients with uncontrolled hypertension or hyperthyroidism. Epinephrine should not be used in dental patients under general anesthesia when either halogenated hydrocarbons or cyclopropane are used for anesthesia.

Hoiroyd SV, Wynn RL, Requa-Clark B (eds): Clinical Pharmacology in Dental Practice, 4th ed. St. Louis, Mosby, 1988, p 58.

34. Is it safe to treat a patient who has had a heart transplant in an outpatient dental office?

Dental treatment should be done only after consultation with the patient's cardiologist. If the patient is stable without rejection, there are no contraindications to dental treatment. Such patients do not require prophylactic antibiotics for dental procedures unless the transplanted heart has valvular pathology or the patient is severely immunosuppressed. The patient most likely will be taking prednisone and cyclosporine. For restorative and preventive dental procedures and simple extractions, it is not necessary to increase the

corticosteroids. Erythromycin and ketoconazole should not be prescribed for a patient on cyclosponine. Erythromycin and ketoconazole inhibit the metabolism of cyclosponine.

METABOLIC DISORDERS

35. What precautions do you need to take in treating a patient with insulin-dependent dia betes mellitus (IDDM)?

The major concern for the dental practitioner treating the patient with IDDM is hypoglycemia. It is important to question the patient for changes in insulin dosage, diet, and exercise routine before undertaking any outpatient dental treatment. A decrease in dietary intake or an increase in either the normal insulin dosage or exercise may place the patient at risk for hypoglycemia.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 928.

36. What are the symptoms of hypoglycemia?

1. Tachycardia
2. Palpitations
3. Sweating
4. Tremulousness
5. Nausea
6. Hunger

The symptoms may progress to coma and convulsions without intervention.

37. What should the dentist be prepared to do for the patient who has a hypoglycemic reaction?

The dental practitioner should have some form of sugar readily available—packets of table sugar, candy, or orange juice. Also available are 3-mg tablets of glucose (Dextrosol). If a patient develops symptoms of hypoglycemia, the dental procedure should be discontinued immediately; if conscious, the patient should be given some form of oral glucose.

If the patient is unconscious, the emergency medical service should be contacted. Then 1 mg of glucagon can be injected intramuscularly, or 50 ml of 50% glucose solution can be given by rapid intravenous infusion. The glucagon injection should restore the patient to a conscious state within 15 minutes; then some form of oral sugar can be given.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 932.

38. Is the diabetic patient at greater risk for infection after an oral surgical procedure?

It is important to minimize the risk of infection in diabetic patients. They should have aggressive treatment of dental caries and periodontal disease and then be placed on frequent recall examinations and oral prophylaxis.

After oral surgical procedures, endodontic procedures, and treatment of suppurative periodontitis, diabetic patients should be placed on antibiotics to prevent infection secondary to delayed healing. Antibiotics of choice are potassium

phenoxymethyl penicillin, 500 mg, or clindamycin, 150 mg, 4 times/day for 7—10 days.

39. When is it necessary to increase the dose of prednisone in patients taking corticosteroids?

Patients with heart transplants who are on long-term prednisone therapy undergo cardiac biopsy without either intravenous sedation or stress doses of corticosteroids. For restorative dentistry, dental hygiene, mucogingival surgery, and simple extractions, it is not necessary to increase the patient's corticosteroids. However, it is important that the patient has taken the usual dose.

For multiple extractions or extensive mucogingival surgery, the dose of corticosteroids should be doubled on the day of surgery. If the patient is treated in the operating room under general anesthesia, stress level doses of cortisone, 100 mg intravenously or intramuscularly, should be given preoperatively.

40. Should antibiotics be prescribed for oral surgical procedures in patients receiving corticosteroids?

As with the diabetic patient, it is important to minimize the risk of infection in patients taking corticosteroids. Patients on long-term therapy, such as organ transplant recipients, should receive aggressive treatment to eliminate the oral cavity as a source of infection and then be placed on frequent recall examinations and oral prophylaxis.

Patients on corticosteroid therapy should be placed on antibiotic therapy after oral surgical procedures. Antibiotics should be started on the day of the procedure and continued for 5—7 days postoperatively. The antibiotic of choice is potassium phenoxymethyl penicillin, 500 mg 4 times/day. If the patient is allergic to penicillin and not taking cyclosporine, erythromycin, 250 mg 4 times/day for 5—7 days, should be prescribed. If the patient is allergic to penicillin and taking cyclosporine, clindamycin, 300 mg 3 times/day for 5—7 days, is the antibiotic of choice.

41. What are the clinical symptoms of hypothyroidism? What dental care can be safely provided?

The clinical sym of hypothyroidism are weakness, fatigue, intolerance to cold, changes in weight, constipation, headache, menorrhagia, and dryness of the skin. Dental care should be deferred until after a medical consultation in a patient with or without a history of thyroid disease who experiences a combination of the above signs and symptoms. If the patient is myxedematous, he or she should be treated as a medical emergency and referred immediately for medical care. It is important not to prescribe opiates for palliative treatment of the myxedematous patient. The myxedematous patient may be unusually sensitive and die from normal doses of opiates.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, pp 863, 865.

42. What would you prescribe for the patient who develops a mild soft-tissue swelling of the lips under the rubber dam?

The patient probably has a contact allergic reaction from the Latex. If the reaction is mild (slight swelling with no extension into the oral cavity) and self-limiting, the patient should be given 50 mg of oral diphenhydramine and observed for at least 2 hours for possible delayed reaction. If the reaction is moderate to severe, the patient should be given 50 mg of diphenhydramine, either intramuscularly or intravenously, and closely monitored. Emergency services should be contacted to transport the patient to the emergency department for treatment and observation. With the advent of the epidemic of HIV infection, Latex gloves and condoms are now widely used. Allergic patients should be instructed to inform health care providers of their Latex allergy and referred to an allergist.

43. What should you do if a patient for whom you prescribed the prophylactic antibiotic amoxicillin approximately 1 hour previously reports urticaria, erythema, and pruritus (itching)?

If the reaction is delayed (longer than 1 hour) and limited to the skin, the patient should be given 50 mg of diphenhydramine, intramuscularly or intravenously, then observed for 1—2 hours before being released. If no further reaction occurs, the patient should be given a prescription for 25—50 mg of diphenhydramine to be taken every 6 hours until symptoms are gone.

If the reaction is immediate (less than 1 hour) and limited to the skin, 50 mg of diphenhydramine should be given immediately either intravenously or intramuscularly. The patient should be monitored and emergency services contacted to transport the patient to the emergency department. If other symptoms of allergic reaction occur, such as conjunctivitis, rhinitis, bronchial constriction, or angioedema, 0.3 cc of aqueous 1/1000 epinephrine should be given by subcutaneous or intramuscular injection. The patient should be monitored until emergency services arrive. If the patient becomes hypotensive, an intravenous line should be started with either Ringer's lactate or 5% dextrose/water.

Malamed SF, Sheppard GA: Medical Emergencies in the Dental Office, 4th ed. St. Louis. Mosby, 1992.

44. What are the signs and symptoms of anaphylaxis? How should it be managed in the dental office?

Anaphylaxis is characterized by bronchospasm, hypotension or shock, and urticaria or angioedema. It is a medical emergency in which death may result from respiratory obstruction,

circulatory failure, or both. With the first indication of anaphylaxis, 0.2—0.5 cc of 1/1000 aqueous epinephrine should be injected subcutaneously or

intramuscularly, and emergency services should be contacted. The injection of epinephrine may be repeated every 20—30 minutes, if necessary, for as many as 3 doses. Oxygen at a rate of 4 L!min must be delivered with a face mask. The patient must be continuously monitored, and an intravenous line containing either Ringer's lactate or normal saline should be infused at 100 cc/hour. If the patient becomes hypotensive, the intravenous infusion should be increased. If airway obstruction occurs from edema of the larynx or hypopharynx, a cricothyrotomy must be done. If the airway obstruction is due to bronchospasm, an albuterol or terbutaline nebulizer should be administered or intravenous aminophylline, 6 mg/kg, infused over 20—30 minutes.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 634.

HEMATOLOGY/ONCOLOGY

45. What are the normal values for a CBC?

White blood cell count		**Hemoglobin (Hgb)**	
18 years and older	4,000—10,000/ml	18 years and older	
12—17 years	4,500—13,000/ml	Male	13.5—18.0 gm/ldl
6 months to 11 years	4,500—13,500/ml	Female	11.5—16.4 gm/ldl
Red blood cell count		12—17 years	
18 years and older		Male and female	12.0—16.0 gm/dl
Male	4.5—6.4 M/ml	6 months to 11 years	
Female	3.9—6.0 M/ml	Male and female	10.5—14.0 gm/dl
12—17 years		**Platelet count (PLT)**	
Male and female	4.1—5.3 M/ml	8 days and older	150,000—450,000/ml
6 months to 11 years		Up to 7 days	150,000—350,000/ml
Male and female	3.7—5.3 M/ml		
Hematocrit (Hct)			
18 years and older			
Male	40—54%		
Female	36—48%		
12—17 years			
Male and female	36—39%		
6 months to 11 years			
Male and female	34—45%		

46. What precautions should be taken in providing dental care to a patient with sickle-cell anemia?

1. Patients with sickle-cell disease should not receive dental treatment during a crisis, except for the relief of dental pain and treatment of acute dental infections. Dental infections should be treated aggressively; if facial cellulitis develops, the patient should be admitted to the hospital for treatment.

2. The patient's physician should be consulted about the patient's cardiovascular status. Myocardial damage secondary to infarctions and iron deposits is common.

3. Patients with sickle-cell anemia are at increased risk for bacterial infections and should receive prophylactic antibiotics before any dental procedure

that may cause a transient bacteremia. The prophylactic antibiotic regimen used for the prevention of endocarditis should be followed. After a surgical procedure, antibiotics (500 mg penicillin VK 4 times/day or erythromycin, 250 mg 4 times/day, for penicillin-allergic patients) should be continued for 7—10 days postoperatively.

Sams DR, et al: Managing the dental patient with sickle cell anemia: A review of the literature. Pediatr Dent l2(5):3l7—320, 1990.

Smith HB, eta!: Dental management of patients with sickle cell disorders. JAm Dent Assoc 114:85, 1987.

47. Can local anesthetic with a vasoconstrictor be used in a patient with sickle-cell disease?

Because of the possibility of impairing local circulation, the use of vasoconstrictors in patients with sickle-cell disease is controversial. It is recommended that the planned dental procedure dictate the choice of local anesthetic. If the planned procedure is a routine, short procedure that can be performed without discomfort by using an anesthetic without a vasoconstrictor, the vasoconstrictor should not be used. However, if the procedure requires long, profound anesthesia, 2% lidocaine with 1/100,000 epinephrine is the anesthetic of choice.

Smith HB, et al: Dental management of patients with sickie cell disorders. JAm Dent Assoc 114:85, 1987.

48. Can nitrous oxide be used to help manage anxiety in patients with sickle-cell anemia?

Nitrous oxide can be safely used in patients with sickle-cell anemia as long as the concentration of oxygen is greater than 50%, the flow rate is high, and the patient is able to ventilate adequately.

Smith HB, et al: Dental management of patients with sickle cell disorders. JAm Dent Assoc 114:85, 1987.

49. Can a dental infection cause a crisis in a patient with sickle-cell anemia?

Preventive dental care—routine scaling and root planing, topical fluorides, sealants and treatment of dental caries—is important in patients with sickle-cell anemia. The literature reports two cases of a sickle-cell crisis precipitated by periodontal infections.

Sams DR, et al: Managing the dental patient with sickle cell anemia: A review of the literature. Pediatr Dent 12(5):3l7—320, 1990.

50. What are the oral symptoms of acute leukemia?

Over 65% of patients with acute leukemia have oral symptoms. The symptoms result from myelosuppression due to the overwhelming numbers of malignant cells in the bone marrow and/or large numbers of circulating immature cells (blasts).

1. Symptoms from thrombocytopenia: gingival oozing, petechiae, hematoma, and ecchymosis

2. Symptoms from neutropenia: recurrent or unrelenting bacterial infections, lymphadenopathy, oral ulcerations, pharyngitis, and gingival infection

3. Symptoms from circulating immature cells (blasts): gingival hyperplasia from blast infiltration

Patients with the above signs or symptoms should be evaluated to rule out a hematologic malignancy. The dentist should consider carefully whether the symptoms can be explained by local factors or are disproportionate to the local factors. If a hematologic malignancy is suspected, a CBC with a differential white cell count should be ordered.

Sonis SI, et al: Principles and Practice of Oral Medicine, 2nd ed. Philadelphia, W.B. Saunders, 1995, pp262—275.

51. Is it safe to extract a tooth in a patient who is receiving chemotherapy?

The major organ system affected by cytotoxic chemotherapy is the hematopoietic system. When a patient receives chemotherapy, the white cell count and platelets may be expected to decrease in about 7—10 days. If the patient's absolute neutrophil count (calculated by multiplying the white cell count by the number of neutrophils in the differential count and dividing by 100) drops below 500 neutrophils, the patient is considered neutropenic and at risk for infection. If the platelet count drops below 50,000, the patient is at risk for bleeding.

Dental procedures should be scheduled, if possible, 2 weeks before planned chemotherapy or after the counts begin to recover, usually 14 days for white cells and 21 days for platelets. Dental treatment should be attempted only after consultation and in coordination with the patient's physician and after the patient has had a CBC.

52. What precautions should be taken in treating a patient who has received bone marrow transplantation for a hematologic malignancy?

Dental care should be done only in consultation with the patient's physician. As a rule, elective dental treatment should be postponed for 6 months after transplant. However, emergency dental treatment can be done. If dental care must be done before the recommended postponement, a CBC should be checked and if the results are acceptable (platelets > 50,000 and neutrophils > 500), the patient should be premedicated with the same regimen used for the prevention of endocarditis.

53. What should be done if a patient has enlarged lymph nodes?

Lymphadenopathy may be secondary to a sore throat or upper respiratory infection or the initial presentation of a malignancy. A thorough history and clinical examination help to determine the etiology of the lymphadenopathy.

Patients with lymphadenopathy and an identifiable inflammatory process should be reexamined in 2 weeks to determine whether the lymphadenopathy has

responded to treatment. If no inflammatory process can be identified or if the lymphadenopathy does not resolve after treatment, the patient should be referred to a physician for further evaluation and possible biopsy.

	Inflammatory Process	*Granulomatous Disease/Neoplasia*
Onset	Acute	Progressive enlargement
Pain on palpation	Tender	Neoplasia: asymptomatic Granulomatous: painful
Symmetry	Bilateral for systemic infections Unilateral for localized infections	Usually unilateral
Consistency	Firm, movable	Firm, nonmovable

From Sonis ST, et a!: Principles and Practice of Oral Medicine, 2nd ed. Philadelphia, W.B. Saunders, 1995, pp 269—271, with permission.

KIDNEY DISEASE

54. What precautions should be taken before beginning treatment of a patient on dialysis?

Patients typically receive dialysis 3 times/week, usually on a Monday, Wednesday, Friday schedule or a Tuesday, Thursday, Saturday schedule. Dental treatment for a patient on dialysis should be done on the day between dialysis appointments to avoid bleeding difficulties (patients receive the anticoagulant, heparin, on dialysis days). Patients with an arteriovenous shunt should be premedicated to prevent infection of the shunt whenever the risk of transient bacteremia is present.

55. What adjustments in the dosage of oral antibiotics should you make for a patient on renal dialysis who has a dental infection?

Penicillin 500 mg orally every 6 hr; dose after hemodialysis
Amoxicillin 500 mg orally every 24 hr; dose after hemodialysis
Ampicillin 250 mg to I g orally every 12—24 hr; dose after hemodialysis
Erythromycin 250 mg orally every 6 hr; not necessary to dose after hemodialysis
Clindamycin 300 mg every 6 hr; not necessary to dose after hemodialysis

Bennett WM, et al: Drug Prescribing in Renal Failure, 2nd ed. Philadelphia, American College of Physicians, 1991.

56. What pain medications can be safely prescribed for patients on dialysis?

• **Codeine** is safe to use in dialysis but may produce more profound sedation. The dose should be titrated beginning with one-half the normal dose for patients on dialysis and one-half to three-fourths the normal dose for patients with severely decreased renal function.

• **Acetaminophen** is nephrotoxic in overdoses. However, it may be prescribed in patients on dialysis at a dose of 650 mg every 8 hours. For patients with decreased renal function, the regimen should be 650 mg every 6 hours.

• **Aspirin** should be avoided in patients with severe renal failure and in patients on renal dialysis because of the possibility of potentiating hemorrhagic diathesis.

• **Propoxyphene** (Darvon) should not be prescribed for a patient on renal dialysis. The active metabolite norpropoxyphene accumulates in patients with end-stage renal disease.

• **Meperidine** (Demerol) should not be prescribed in patients on renal dialysis. The active metabolite, normeperidine, accumulates and may cause seizures.

Bennett WM, el al: Drug Prescribing in Renal Failure, 2nd ed Philadelphia, American College of Physicians, 1991.

57. What changes do you expect to see in the dental radiographs of a patient on renal dialysis?

The most common changes are decreased bone density with a ground-glass appearance, increased bone density in the mandibular molar area compatible with osteosclerosis, loss of lamina aura, subperiosteal cortical bone resorption in the maxillary sinus and the mandibular canal, and brown tumor.

Spolnik KJ: Dental radiographic manifestations of end-stage renal disease. Dent Radiogr Photogr 54(2):21—31, 1981.

58. What precautions should be taken in treating a patient after renal transplantation?

After renal transplant patients receive immunosuppressive drugs and have an increased susceptibility to infection. Dental infections should be treated aggressively. Prophylactic antibiotics should be considered whenever the risk of bacteremia is present. Erythromycin should not be prescribed for any patient taking cyclosporine.

59. What antibiotic, used often in dentistry, should be avoided in a patient taking cyclo sporine?

Cyclosporine is used to prevent organ rejection in renal, cardiac, and hepatic transplantation and to prevent graft-vs.-host disease in patients with bone marrow transplants. Erythromycin should not be prescribed for patients taking cyclosporine. Erythromycin increases the levels of cyclosporine by decreasing its metabolism.

PULMONARY DISEASE

60. What precautions should be taken in treating a patient with chronic obstructive pulmonary disease (COPD)?

Patients with COPD and a history of hemoptysis should be prescribed drugs with antiplatelet activity (aspirin and nonsteroidals) with caution. Hemoptysis has been reported after the use of aspirin in patients with COPD.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993, p 197.

61. What antibiotic should not be prescribed for patients with COPD who take theophylline?

Erythromycin should not be prescribed for patients taking theophylline. Erythromycin decreases the metabolism of theophylline and may cause toxicity.

Deglin JH, et al: Davis's Drug Guide for Nurses, 2nd ed. Philadelphia, F.A. Davis, 1991.

62. What intervention is appropriate for a dental patient who has an asthma attack in the office?

The medical history should provide an indication of the severity of the asthma and the medications that the patient takes for an asthma attack. The symptoms of an acute asthma attack are shortness of breath, wheezing, dyspnea, anxiety, and, with severe attacks, cyanosis. As with all medical emergencies, the first two steps are (1) to discontinue treatment and (2) to remain calm and not increase the patient's anxiety. Patients should be allowed to position themselves for optimal comfort and then placed on oxygen, 2—4 L/min. If patients have their own nebulizer, they should be allowed to use it. If the patient does not have a nebulizer, he or she should be given either a metaproterenol or albuterol nebulizer from the emergency cart or case and take 2 inhalations.

If the symptoms do not subside or increase in severity, emergency services should be contacted; the patient must be closely monitored and given either 0.3—0.5 ml of a 1:1000 solution of epinephrine subcutaneously or intravenous aminophylline, 5.6 mg/kg in 150 ml of either D-5 ½ normal saline or normal saline infused over 30 minutes. (To calculate kg weight, divide the patient's weight in pounds by 2.2.) The dose of epinephrine may be repeated every 30 minutes for as many as 3 doses. Epinephnne should not be used in patients with severe hypertension, severe tachycardia, or cardiac arrhythmias. Aminophylline should not be used in patients who have had theophylline in the past 24 hours.

63. Can nitrous oxide be used safely to sedate a patie with COPD?

Sedation with nitrous oxide should be avoided in patients with COPD. The high flow of oxygen may depress the respiratory drive. Low-flow oxygen via a nasal cannula may be safely used without risk of respiratory depression.

Little JW, Falace DA: Dental Management of the Medically Compromised Patient, 5th ed. St. Louis, Mosby, 1996.

LIVER DISEASE

64. What laboratory blood tests should be ordered for a patient with alcoholic hepatitis?

Alcoholic hepatitis is the most common cause of cirrhosis, which is one of the most common causes of death in the United States. There are a number of concerns in treating the patient with alcoholic hepatitis:

1. Increased risk of pen- and postoperative bleeding, secondary to a decrease in vitamin K- dependent coagulation factors
2. Qualitative and quantitative effects of alcohol on platelets
3. Anemia secondary to dietary deficiencies and/or hemorrhage

Before attempting a surgical procedure, the minimal laboratory tests are PT, PTF, CBC, and bleeding time.

65. What precautions should be taken with patients on anticonvulsant medications?

It is important to obtain a detailed history of the seizure disorder to determine whether the patient is at risk for seizures during dental treatment. Important information includes the type and frequency of seizures, the date of the last seizure, prescribed medications, the last blood test to determine therapeutic ranges, and activities that tend to provoke seizures. For patients taking valproic acid or carbamazepine, periodic tests for liver function should be performed. Blood counts for patients taking carbamazepine and ethosuximide should be done by the patient's physician. Both liver function and blood counts should be checked before any oral surgical procedure is planned.

Deglin JH, et al: Davis's Drug Guide for Nurses, 2nd ed. Philadelphia, F.A. Davis, 1991.

Little JW, Falace DA: Dental Management of the Medically Compromised Patient, 5th ed. St. Louis, Mosby, 1996.

Tierney LM, McPhee SJ, Papadakis MA, Schroeder SA: Current Medical Diagnosis and Treatment. Norwalk, CT, Appleton & Lange, 1993.

Seizure Medications and Precautions for the Dental Practitioner

MEDICAT10N	ADVERSE REACTIONS	INTERACTIONS
Valproic acid (Depakote)	Prolonged bleeding time, leucopenia, thrombocytopenia	Increased risk of bleeding with aspirin and NSAIDs or warfarin.
Heparin		Additive depression of CNS with other depressants, including narcotic analgesics and sedative/hypnotics.
Carbamazepine (Tegretol)	Aplastic anemia, agranulocytosis, thrombocytopenia, leukopenia, leukocytosis	Erythromycin increases levels of carbamazepine and may cause toxicity.
Phenytoin (Dilantin)	Aplastic anemia, agranulocytosis, leukopenia, thrombocytopenia	Additive depression of CNS with other depressants, including narcotics and sedative/hypnotics.
Phenobarbital		Additive depression of CNS with other depressants, including narcotics and sedative/hypnotics. May increase risk of hepatic toxicity of acetaminophen.

Seizure Medications and Precautions for the Dental Practitioner (Continued)

MEDICAT10N	ADVERSE REACTIONS	INTERACTIONS
Primidone	Blood dyscrasias, orthostatic hypotension	Additive depression of CNS with other depressants, including narcotics and sedative/hypnotics.
Ethosuximide	Aplastic anemia, granulocytosis, leukopenia	Additive depression of CNS with other depressants.
Clonazepam	Anemia, thrombocytosis, leukopenia	Additive depression of CNS with other depressants.

66. What emergency procedures should be taken for a patient having a seizure?

It is important to determine whether the patient has a history of seizure disorder. Any patient who has a seizure in the dental office without a history of seizures must be treated as a medical emergency. The emergency medical service should be contacted as the dentist proceeds with management. There are two stages of a seizure: the ictal phase and the postictal phase. The management of each is described below.

Ictal phase

1. Place the patient in a supine position away from hard or sharp objects to prevent injury; a carpeted floor is ideal. If the patient is in the dental chair, it is important to protect the patient by moving equipment as far as possible out of the way.

2. Airway must be maintained and vital signs monitored during the tonic stage. If suctioning equipment is available, it should be ready with a plastic tip for suctioning secretions to maintain the airway. The patient may experience periods of apnea and develop cyanosis. The head should be extended to establish a patent airway, and oxygen should be administered. Vital signs, pulse, respiration and blood pressure must be monitored throughout the seizure.

3. If the ictal phase of the seizure lasts more than 5 minutes, emergency services should be called. Tonic-clonic status epilepticus is a medical emergency. If the dentist is trained to do so, an intravenous line should be initiated, and a dose of 25—50 ml of 50% dextrose should be given immediately in case the cause of the seizure is hypoglycemia. If there is no response, the patient should be given 10 mg of diazepam intravenously over a 2-minute period. The patient's vital signs must be monitored, because the diazepam may cause respiratory depression. The dose of diazepam may be repeated after 10 minutes, if necessary.

Postictal phase

1. Once the seizure activity has stopped and the patient enters the postictal phase, it is important to continue to monitor the vital signs and, if necessary, to provide basic life support. If respiratory depression is significant, emergency

services should be called, the airway maintained, and respiration supported. Blood pressure may be initially depressed but should recover gradually.

2. If the patient recovers from the postictal phase without basic life support or other complications, the patient's physician should be contacted, and the patient, if stable, should be discharged from the dental office, accompanied by a responsible adult.

Malamed SF, Sheppard GA: Medical Emergencies in the Dental Office, 4th ed. St. Louis, Mosby, 1992, pp 23 3—236.

67. What dental considerations must be considered in treating patients with seizure disorders?

Patients taking phenytoin are at risk for gingival hyperplasia. Tissue irritation from orthodontic bands, defective restorations, fractured teeth, plaque, and calculus accelerate the hyperplasia.

The dental practitioner should consider the patient's seizure status. A rubber dam with dental floss tied to the clamp should be used for all restorative dental procedures to enable the rapid removal of materials and instruments from the patient's oral cavity. Fixed prosthetics, when indicated, should be fabricated rather than removable prosthetics. If removable prosthetics are indicated, they should be fabricated with metal for all major connectors. Acrylic partial dentures should be avoided because of the risk of breaking and aspiration during seizure activities. Unilateral partial dentures are contraindicated. Temporary crowns and bridges should be laboratory-cured for strength.

68. What are the common causes of unconsciousness in dental patients?

The most common cause of loss of consciousness in the dental office is syncope. The signs and symptoms are diaphoresis, pallor, and loss of consciousness. Place the patient in the supine position with the feet elevated, monitor vital signs, and give oxygen, 3—4 L/minute, via nasal cannula.

RADIATION THERAPY

69. What are the risk factors for the development of osteoradionecrosis?

Bone exposed to high radiation therapy is hypovascular, hypocellular, and hypoxic tissue. Osteoradionecrosis develops because the radiated tissue is unable to repair itself. The risk for osteoradionecrosis increases as the dose of radiation increases from 5,000 rads to over 8,000 rads. Tissues receiving less than 5,000 rads are at low risk for necrosis. In addition, the risk increases with poor oral health. Oral surgical procedures after radiation therapy place the patient at high risk for developing osteoradionecrosis. Soft-tissue trauma from dentures and oral infections from periodontal disease and dental caries also put the patient at risk.

70. How should the dentist prepare the patient for radiation therapy of the head and neck?

The dentist should consult with the radiotherapist to determine what oral structures will be in the field as well as the maximal radiation dose. If teeth are in the field and the dose is greater than 5,000 rads, periodontally involved teeth and teeth with periapical lucencies should be extracted at least 2 weeks before radiation therapy begins. The dentist should prepare the patient for postradiation xerostomia, provide custom fluoride trays, and prescribe 0.4% stannous fluoride gel to be used for 3—5 minutes twice daily. The patient must he placed on a 2—3-month recall schedule. On recall, the teeth must be carefully examined for root caries, and instruction in oral hygiene should be reviewed.

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