Periodontal Treatment of Medically Compromised Patients

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Outline

1-Cardiovascular Diseases

2-Endocrine Disorders

3-Hemorrhagic Disorders

4-Renal Diseases

5-Liver Diseases

6-Pulmonary Diseases

7-Medication and Cancer Therapy

8-Prosthetic Joint Replacement

Hypertension

Hypertension, the most common cardiovascular disease.

Hypertension is not diagnosed on a single elevated BP recording.

Rather, classification is usually based on the average value of two or more BP readings taken at two or more appointments.

Hypertensive Patient general guidelines

- Appointments in the afternoon!
- Controversy on Epi for HTN patients – achieve profound pain control
- Be aware of oral manifestations of HTN medications
- Side effects of various anti-HTN meds: Postural Hypotention, Depression, Nausea, etc.

Analgesics are prescribed for pain and antibiotics for infection.

Ischemic Heart Diseases

includes disorders such as :-

Angina pectoris and Myocardial infarction.

Angina pectoris:-

Angina pectoris occurs when myocardial oxygen demand exceeds supply, resulting in temporary myocardial ischemia.

Patients with a history of :-

----- **unstable angina pectoris** (angina that occurs irregularly or on multiple occasions without predisposing factors) should be treated only for emergencies and then in consultation with their physician.

------ **stable angina** (angina that occurs infrequently, is associated with exertion or stress, and is easily controlled with medication and rest) can undergo elective dental procedures.

Because stress often induces an acute anginal attack, stress reduction is important.

Myocardial infarction (MI)

Myocardial infarction (MI) is the other category of ischemic heart disease encountered in dental practice.

Dental treatment is generally deferred for at least 6 months after MI because peak mortality occurs during this time.

After 6 months, MI patients can usually be treated using techniques similar to those for the stable angina patient.

Congestive Heart Failure

Congestive heart failure (CHF) is a condition in which the pump function of the heart is unable to supply sufficient amounts of oxygenated blood to meet the body's needs.

CHF may be caused by a chronic increase in workload (as in hypertension or aortic, mitral, pulmonary, or tricuspid valvular disease), direct damage to the myocardium (as in MI or rheumatic fever), or an increase in the body's oxygen requirements (as in anemia, thyrotoxicosis, or pregnancy).

Patients with poorly controlled or untreated CHF are not candidates for elective dental procedures.

These individuals are at risk for sudden death, usually from ventricular arrhythmias.

For patients with treated CHF, the clinician should consult with the physician regarding the severity of CHF, underlying etiology, and current medical management.

- **Because of the presence of orthopnea (inability to breathe unless in an upright position) in some CHF patients,**

- **the dental chair should be adjusted to a comfortable level for the patient rather than being placed in a supine position.**

- Short appointments,

-stress reduction with profound local anesthesia and possibly conscious sedation, and use of supplemental oxygen should be considered.

Cardiac Pacemakers and Implantable Cardioverter-Defibrillators

Cardiac arrhythmias are most often treated with medications; however, some are also treated with implantable pacemakers or automatic cardioverter-defibrillators.

Pacemakers are usually implanted in the chest wall and enter the heart transvenously.

Consultation with the patient's physician allows determination of the underlying cardiac status, the type of pacemaker.

-Older pacemakers were unipolar and could be disrupted by dental equipment that generated electromagnetic fields, such as ultrasonic and electrocautery units.

-Newer units are bipolar and are generally not affected by dental equipment.

Infective Endocarditis

Infective endocarditis **(IE) is a disease in which microorganisms colonize the damaged endocardium or heart valves .**

The term *infective endocarditis* is preferred to the previous term *bacterial endocarditis* because the disease can also be caused by fungi and viruses.

The organisms most often encountered in IE are
α-hemolytic streptococci (e.g., *Streptococcus viridans*).

However, nonstreptococcal organisms often found in the periodontal pocket have been increasingly implicated, including :-

Eikenella corrodens,
Aggregatibacter actinomycetemcomitans,
Capnocytophaga,
Lactobacillus **species**

The practice of periodontics is intimately concerned with the prevention of IE.

However, bacteremia may occur even in the absence of dental procedures, especially in individuals with poor oral hygiene and significant periodontal inflammation.

Cerebrovascular Accident(CVA)

A cerebrovascular accident (CVA), or stroke, results from ischemic changes (e.g., cerebral thrombosis caused by an embolus) or hemorrhagic phenomena.

Hypertension and atherosclerosis are predisposing factors for CVA

A physician's referral should precede periodontal therapy if the signs and symptoms of early cerebrovascular insufficiency are evident.

Poststroke weakness of the facial area or paralysis of extremities may make oral hygiene procedures extremely difficult.

The clinician may need to modify oral hygiene instruments for ease of use, perhaps in consultation with an occupational therapist.

Long-term chlorhexidine rinses may greatly aid in plaque control.

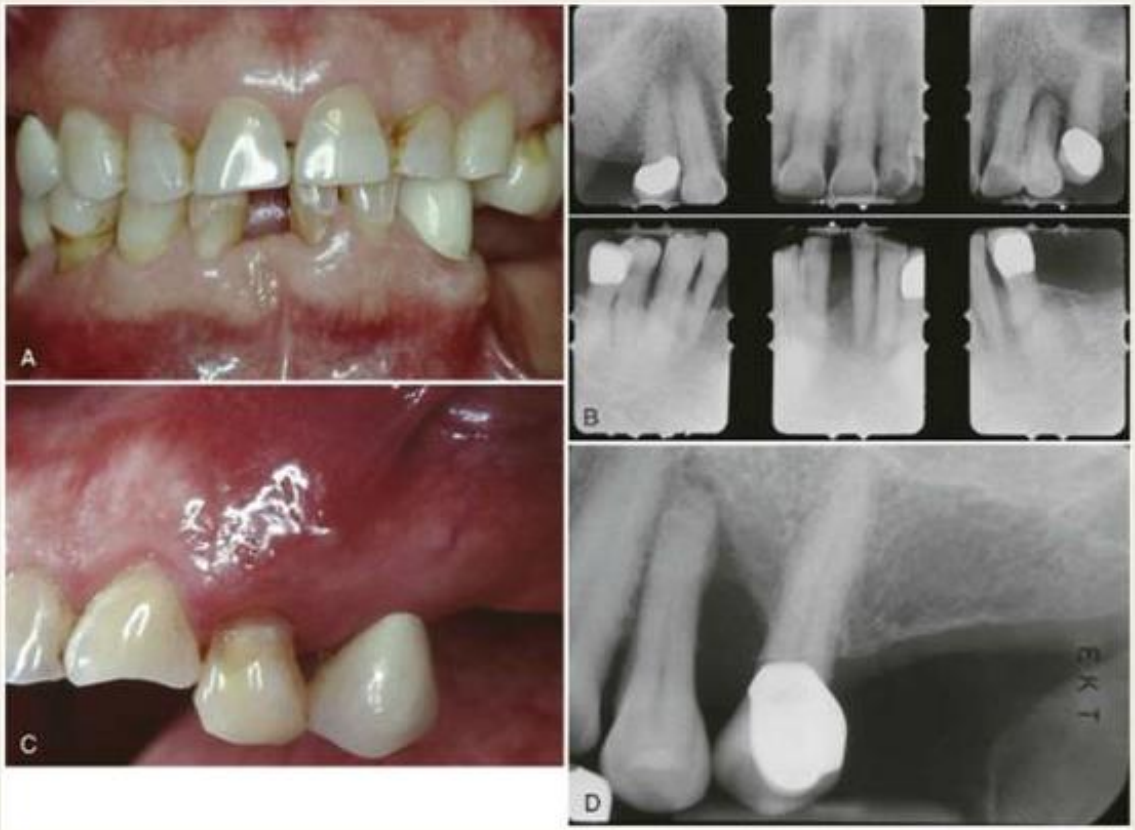
Endocrine Disorders

Diabetes

Periodontal condition in patients with diabetes. A, Adult with diabetes (blood glucose level >400 mg/dL). Note the gingival inflammation, spontaneous bleeding, and edema. B, The same patient as shown in A. Improved control of diabetes was noted after 4 days of insulin therapy (blood glucose level <100 mg/dL). The clinical periodontal condition has improved without local therapy. C, Adult patient with uncontrolled diabetes. Note the enlarged, smooth, erythematous gingival margins and papilla in the anterior area. D, The same patient as shown in C. This is a lingual view of the right mandibular area. Note the inflamed and swollen tissues in the anterior and premolar areas. E, Adult patient with uncontrolled diabetes. There is a suppurating abscess on the buccal surface of the maxillary premolars.

Endocrine Disorders

Diabetes Mellitus



A 60-year-old patient with a long-term history of type 2 diabetes. A, Anterior retracted view of the patient's dental and periodontal condition. Note the missing posterior teeth, the supereruption of the premolars, and the mild generalized gingival inflammation. B, Periapical radiographs of the remaining teeth. Note the mild generalized bone loss with localized areas of severe bone loss. The failure to replace the posterior teeth adds to the occlusal burden of the remaining dentition. C, Clinical photograph of the maxillary premolar area presenting with abscess. Notice the diffuse erythema and inflammation surrounding the abscess area. D, Periapical radiograph of the maxillary premolar showing extensive bone loss associated with abscess.

If a patient is suspected of having undiagnosed diabetes, the following procedures should be performed:

1. **Consult the patient's physician.**
2. **Analyze laboratory tests : fasting blood glucose and casual glucose.**
3. **Rule out acute orofacial infection or severe dental infection; if present, provide emergency care immediately.**
4. **Establish best possible oral health through nonsurgical debridement of plaque and calculus; institute oral hygiene instruction. Limit more advanced care until diagnosis has been established and good glycemic control obtained.**

Diabetes General Guidelines During Treatment

- **FOCUSE ON PREVENTING HYPOGLYCEMIA** (<60mg/dl*)

- Ask patients to bring glucometer to the dental office
  - Check gluclose level @ baseline
    - If low → provide some carbohydrate
    - If high → check HbA1C level and possibly postpone
  - Check glucose level during the procedure
  - Check glucose level after the procedure

- Beware of signs of hypoglycemia
  - Shakiness, confusion, agitation, sweating, tachycardia, feeling of "impending doom", unconsciousness, seizures

Diabetes and Periodontitis

- Altered immune cell function in diabetes
  - Neutrophils, monocytes, macrophages
  - Chemotaxis, adherence, phagocytosis
- Altered would healing
  - Collagen synthesis, maturation, general turnover are greatly affected
- Effect of Periodontal Therapy on DM
  - Systemic inflammation influence insulin sensitivity
  - Sc/Rp + systemic doxycyline can improve glycemic control

J Diabetes. 2011 Mar;3(1):21-8. doi: 10.1111/j.1753-0407.2010.00098.x.
Periodontitis and risk of diabetes mellitus

Thyroid and Parathyroid Disorders

Periodontal therapy requires minimal alterations in the patient with adequately managed thyroid disease.

- **Patients with thyrotoxicosis and those with inadequate medical management should not receive periodontal therapy until their conditions are stabilized.**

- **Patients with a history of hyperthyroidism should be treated in a way that limits stress and infection.**

Hyperthyroidism may cause :-

tachycardia and other arrhythmias,

increased cardiac output,

and myocardial ischemia.

Medications such as epinephrine and other vasopressor amines should be given with caution in patients with treated hyperthyroidism, although the small amounts used in dental anesthetics rarely cause problems.

Adrenal Insufficiency

Acute adrenal insufficiency is associated with significant morbidity and mortality as a result of peripheral vascular collapse and cardiac arrest.

Therefore, the periodontist should be aware of the clinical manifestations and ways of preventing acute adrenal insufficiency in patients with histories of :-

- primary adrenal insufficiency (Addison disease) or

- secondary adrenal insufficiency (most often caused by use of exogenous glucocorticosteroids).

Manifestations of Acute Adrenal Insufficiency (Adrenal Crisis)

Mental confusion, fatigue, and weakness
Nausea and vomiting
Hypertension
Syncope
Intense abdominal pain, lower back pain, and leg pain
Loss of consciousness
Coma

Equivalent Doses of Corticosteroids

Corticosteroid	Equivalent Dose (mg)
Cortisone	25
Hydrocortisone	20
Prednisone	5
Prednisolone	5
Methyl prednisone	5
Methylprednisolone	4
Triamcinolone	4
Dexamethasone	0.75
Betamethasone	0.6

Management of the patient in an acute adrenal insufficiency crisis is as follows:

1. Terminate periodontal treatment.
2. Summon medical assistance.
3. Give oxygen.
4. Monitor vital signs.
5. Place the patient in a supine position.
6. Administer 100 mg of hydrocortisone sodium succinate IV over 30 seconds or IM.

Renal Diseases

- 1. Consult the patient's physician.
- 2. Monitor BP (patients in end-stage renal failure are usually hypertensive).
- 3. Check laboratory values: PTT, PT, bleeding time, and platelet count; hematocrit; blood urea nitrogen (do not treat if <60 mg/dl); and serum creatinine (do not treat if <1.5 mg/dl).
- 4. Eliminate areas of oral infection to prevent systemic infection.
- 5. Drugs that are nephrotoxic or metabolized by the kidney should not be given (e.g., phenacetin, tetracycline, aminoglycoside antibiotics). Acetaminophen may be used for analgesia and diazepam for sedation. Local anesthetics, such as lidocaine, are generally safe.[54,80]

partial thromboplastin time (**PTT**)

Liver Diseases

Treatment Recommendations:-

1. Consultation with the physician concerning current stage of disease, risk for bleeding, potential drugs to be prescribed during treatment, and required alterations to periodontal therapy.
2. Screening for hepatitis B and C.
3. Check laboratory values for PT and PTT.
4. Check laboratory values for INR. The international normalized ratio (**INR**)

Pulmonary Diseases

The following guidelines should be used during periodontal therapy:

1. Identify and refer patients with signs and symptoms of pulmonary disease to their physician.
2. In patients with known pulmonary disease, consult with their physician regarding medications (antibiotics, steroids, chemotherapeutic agents) and the degree and severity of pulmonary disease.

Pregnancy

The aim of periodontal therapy for the pregnant patient is to minimize the potential exaggerated inflammatory response related to pregnancy-associated hormonal alterations.

Meticulous plaque control, scaling, root planing, and polishing should be the only nonemergency periodontal procedures performed.

The second trimester is the safest time to perform treatment.However, long, stressful appointments, as well as periodontal surgical procedures, should be delayed until the postpartum period.

As the uterus increases in size during the second and third trimesters,obstruction of the vena cava and aorta may occur if the patient is placed in a supine position. The reduction in return cardiac blood

supply may cause supine hypotensive syndrome, with decreased placental perfusion. Decreasing BP, syncope, and loss of consciousness may occur.

This can be prevented by placing the patient on her left side or simply by elevating the right hip 5 to 6 inches during treatment. Appointments should be short, and the patient should be allowed to change positions frequently. A fully reclined position should be avoided if possible.

Bisphosphonates

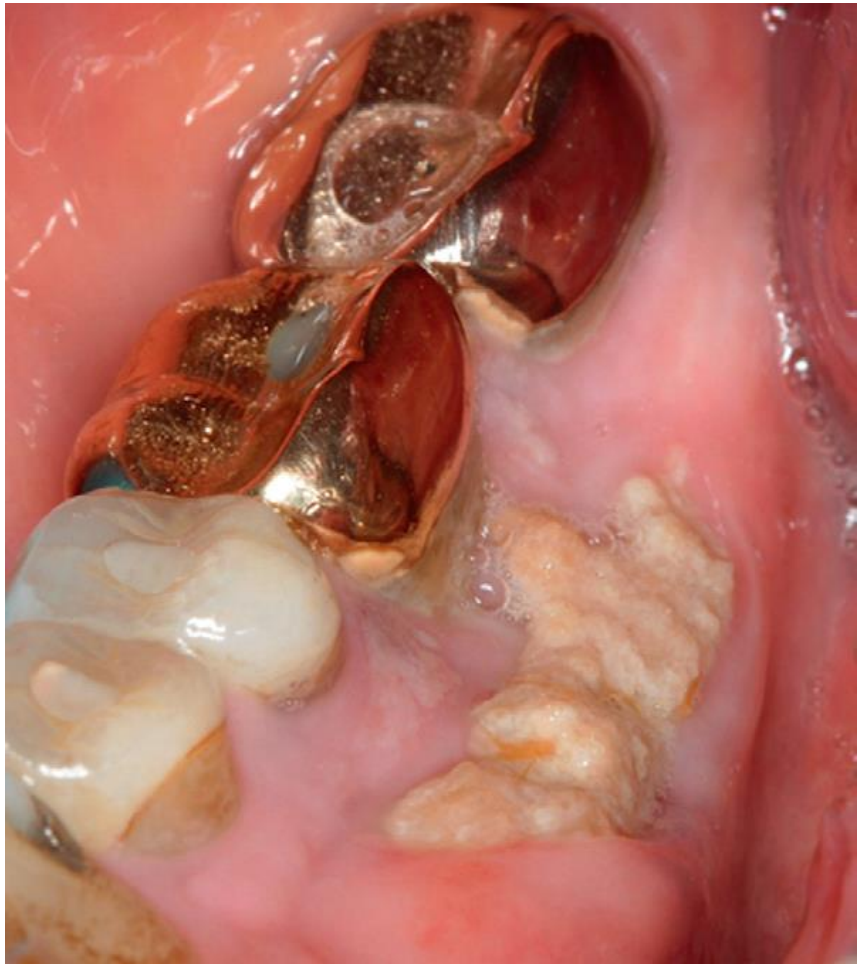
- Purpose: To treat cancer, osteoporosis
- Mechanism: Inhibit osteoclastic activity
- SE: BRONJ **(bisphosphonate-related osteonecrosis of the jaw (BRONJ).)**
- CTX controversy

C-Terminal Telopeptide (CTX) Value	Risk for BRONJ
300–600 pg/ml (normal)	None
150–299 pg/ml	None or minimal
101–149 pg/ml	Moderate
≤100 pg/ml	High

Clinically, BRONJ presents as exposed alveolar bone occurring spontaneously or after a dental procedure .

Exposed bone on the buccal lower premolar and molar
in a patient with bisphosphonate-associated osteonecrosis of the jaw after extraction of the first molar

Patient with bisphosphonate-associated osteonecrosis of the jaw with exposed bone on the lingual aspect of the lower premolar and molar after root canal treatment



Individuals treated with high potency, nitrogen-containing bisphosphonates, especially those administered via IV for cancer treatment ,

appear to be at greater risk for BRONJ than individuals taking oral bisphosphonates for prevention and treatment of osteoporosis.

Radiation Therapy

The use of radiotherapy, alone or in conjunction with surgical resection, is common in the treatment of head and neck tumors.

The side effects of ionizing radiation include:-

dramatic perioral changes of significant concern to dental health personnel.The extent and severity of mucositis, dermatitis, xerostomia, dysphagia, gustatory alteration, radiation caries , vascular changes, trismus, temporomandibular joint degeneration, and periodontal change depend on the type of radiation used, fields of irradiation, number of ports, types of tissues in the fields, and dosage.

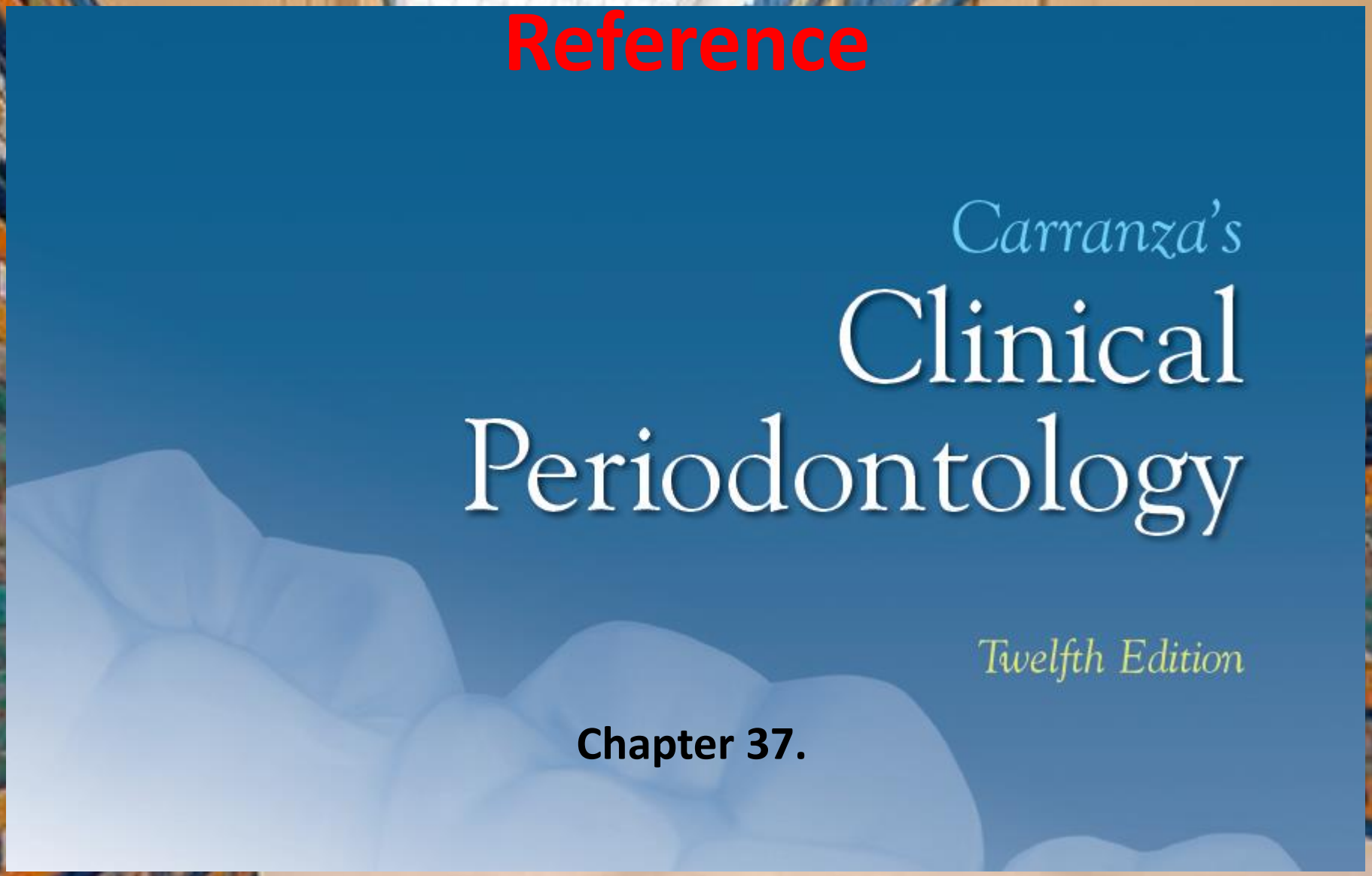
Immunosuppression and Chemotherapy

- Purpose: marrow transplantation, cancer therapy
- Risk: Life theratening infection
- Recommendation
  - Treatment should be preventive, conservative, palliative
  - Coordinate with the oncologist
  - Best to deliver treatment the day before chemoteraphy while the WBC is relatively high

Guidelines for Prosthetic Joint Replacement

- Antibiotic prophylaxis indicated:
  - almost all patients withiin the first 2 years after joint replacement
  - "high-risk" patients
    - Previous prosthetic joint infections
    - Immunosuppresion
    - Rheumatoid arthritis
    - Systemic lupus
    - Type 1 diabetes

Reference



Chapter 37.


THANK YOU