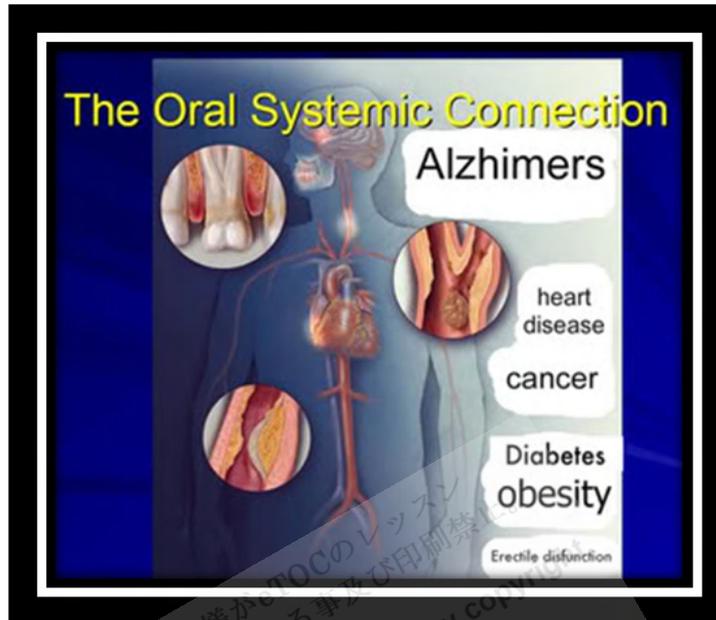


## Systemic Disorders and the Mouth



<http://i686.photobucket.com/albums/vv221/paleoeat/Oral-Systemic-Connection2-2.jpg>

Clues suggesting systemic disease may be found in the mouth and adjacent structures. A dentist should consult a physician when a systemic disorder is suspected, when the patient is taking certain drugs (eg, **warfarin**, **bisphosphonates**), and when a patient's ability to withstand general anesthesia or extensive oral surgery must be evaluated. Patients with certain heart valve abnormalities may require antibiotic **prophylaxis** to help prevent bacterial **endocarditis** before undergoing certain dental procedures.

**Table 1**

### **Oral Findings in Systemic Disorders**

<b>Oral Manifestation</b>	<b>Possible Indication</b>
<b>Candidiasis</b>	Diabetes, AIDS, other causes of <b>immunosuppression</b> (eg, <b>agranulocytosis</b> , <b>neutropenia</b> , <b>leukemia</b> , <b>immunoglobulin</b> defects, disorders of <b>leukocyte</b> function), antibiotic use

**Atrophic glossitis** (a smooth tongue caused by atrophy of **filiform papillae**)

Iron deficiency

Painful atrophy of the oral **mucosa** and surface of the tongue, sometimes with **aphthous ulcers**

**Megaloblastic anemias**

**Magenta tongue**

Vitamin B<sub>12</sub> deficiency

Darkly **pigmented** areas (if not a racial characteristic)

**Hemochromatosis**, **Addison's disease**, **Peutz-Jeghers syndrome**, **melanoma** (rare, but may be seen on the **palate**), smoker's **melanosis**

Linear, grayish discoloration (lead line) in the **gingiva** adjacent to teeth

Lead, silver, or **bismuth poisoning**

**Violaceous patches**

**Kaposi's sarcoma**, AIDS

**Keratotic lichenoid patches**, sometimes with painful **mucosal atrophy**

Graft-vs-host disease if in the mouth of an organ-transplant recipient

Reddish discoloration of the teeth

**Congenital erythropoietic porphyria**

High, arched **soft palate**

**Marfan syndrome**

Notched **incisors**, domed or **mulberry molars**

**Congenital syphilis**

Hairy **leukoplakia**  
(white, vertical folds  
on lateral border of  
tongue)

HIV transforming to AIDS

Red or reddish purple  
collections of oral  
**telangiectases**

Hereditary **hemorrhagic  
telangiectasia** (Osler-Weber-Rendu  
syndrome)

Multiple **impacted  
supernumerary teeth**  
and **osteomas**

**Gardner's syndrome**

## DENTAL CARE OF PATIENTS WITH SYSTEMIC DISORDERS

Certain medical conditions (and their treatment) predispose patients to dental problems or affect dental care.

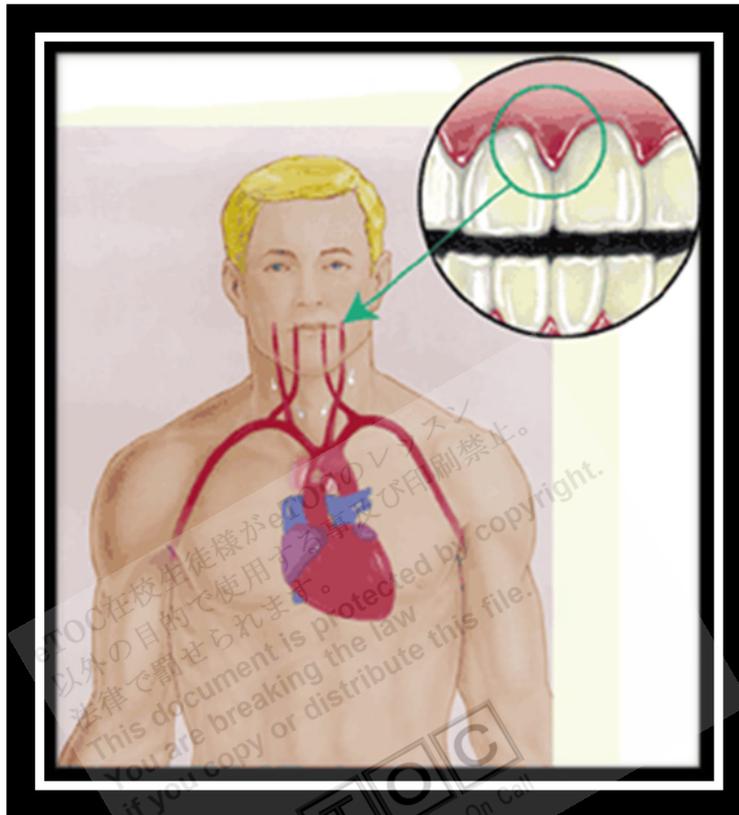
**Hematologic disorders:** People who have disorders that interfere with coagulation (eg, **hemophilia**, **acute leukemia**, **thrombocytopenia**) require medical consultation before undergoing dental procedures that might cause bleeding (eg, extraction, **mandibular block**). **Hemophiliacs** should have clotting factors given before, during, and after an extraction. Such oral surgery should be done in the hospital in consultation with a **hematologist**. All patients with bleeding disorders should maintain a lifelong routine of regular dental visits, which includes cleanings, fillings, topical fluoride, and preventative sealants, to avoid the need for extractions.

**Cardiovascular disorders:** After an MI, dental procedures should be avoided for 6 mo, if possible, to allow damaged **myocardium** to become less electrically labile. Patients with **pulmonary** or **cardiac** disease who require inhalation anesthesia for dental procedures should be hospitalized.

**Endocarditis prophylaxis** is required before dental procedures only in patients with

- Prosthetic cardiac valves
- Previous history of bacterial **endocarditis**

- **Cyanotic congenital** defects of the heart or great vessels (if unrepaired, if completely repaired during first 6 mo after surgery, or if repaired but with residual defects)
- Cardiac **transplantation** recipients with a **valvulopathy**



<http://www.dentalgentlecare.com/images/man-mouth.gif>

The heart is better protected against low-grade **bacteremias**, which occur in chronic dental conditions, when dental treatment is received (with **prophylaxis**) than when it is not received. Patients who are to undergo cardiac valve surgery or repair of congenital heart defects should have any necessary dental treatment completed before surgery.

Although probably of marginal benefit, antibiotic **prophylaxis** is sometimes recommended for patients with hemodialysis shunts and within 2 yr of receipt of a major prosthetic joint (hip, knee, shoulder, elbow). The organisms causing infections at these sites are almost invariably of dermal rather than oral origin.

**Epinephrine** and **levonordefrin** are added to local anesthetics to increase the duration of anesthesia. In some cardiovascular patients, excess amounts of

these drugs cause **arrhythmias**, **myocardial ischemia**, or **hypertension**. Plain anesthetic can be used for procedures requiring < 45 min, but in longer procedures or where hemostasis is needed, up to 0.04 mg **epinephrine** (2 dental cartridges with 1:100,000 epinephrine) is considered safe. Generally, no healthy patient should receive > 0.2 mg epinephrine at any one appointment. Absolute contraindications to epinephrine (any dose) are uncontrolled **hyperthyroidism**; **pheochromocytoma**; BP > 200 mm Hg systolic or > 115 mm Hg **diastolic**; uncontrolled **arrhythmias** despite drug therapy; and unstable angina, MI, or stroke within 6 mo.

Some electrical dental equipment, such as an electrosurgical cautery, a pulp tester, or an ultrasonic scaler, can interfere with early-generation pacemakers.

**Cancer:** Extracting a tooth adjacent to a **carcinoma** of the **gingiva**, **palate**, or **antrum** facilitates invasion of the **alveolus** (tooth socket) by the tumor. Therefore, a tooth should be extracted only during the course of definitive treatment. In patients with leukemia or **agranulocytosis**, infection may follow an extraction despite the use of antibiotics.

**Immunosuppression:** People with impaired immunity are prone to severe mucosal and periodontal infections by fungi, herpes and other viruses, and, less commonly, bacteria. The infections may cause **hemorrhage**, delayed healing, or **sepsis**. **Dysplastic** or **neoplastic** oral lesions may develop after a few years of immunosuppression. People with AIDS may develop Kaposi's **sarcoma**, **non-Hodgkin lymphoma**, hairy **leukoplakia**, **candidiasis**, **aphthous ulcers**, or a rapidly progressive form of **periodontal** disease.

**Endocrine disorders:** Dental treatment may be complicated by some endocrine disorders. For example, people with hyperthyroidism may develop tachycardia and excessive anxiety as well as **thyroid** storm if given **epinephrine**. Insulin requirements may be reduced on elimination of oral infection in diabetics; insulin dose may require reduction when food intake is limited because of pain after oral surgery. In people with diabetes, **hyperglycemia** with resultant polyuria may lead to dehydration, resulting in decreased salivary flow (**xerostomia**), which, along with elevated salivary **glucose** levels, contributes to caries.

Patients receiving **corticosteroids** and those with **adrenocortical** insufficiency may require supplemental corticosteroids during major dental procedures. Patients with **Cushing's syndrome** or who are taking corticosteroids may have **alveolar** bone loss, delayed wound healing, and increased capillary fragility.

**Neurologic disorders:** Patients with seizures who require dental appliances should have nonremovable appliances that cannot be swallowed or aspirated. Patients unable to brush or floss effectively may use **chlorhexidine** 12% rinses in the morning and at bedtime.

**Obstructive sleep apnea:** Patients with obstructive sleep apnea who are unable to tolerate treatment with a positive airway pressure (CPAP, biPAP) mask are sometimes treated with an intraoral device that expands the **oropharynx**. This treatment is not as effective as CPAP, but more patients tolerate using it.

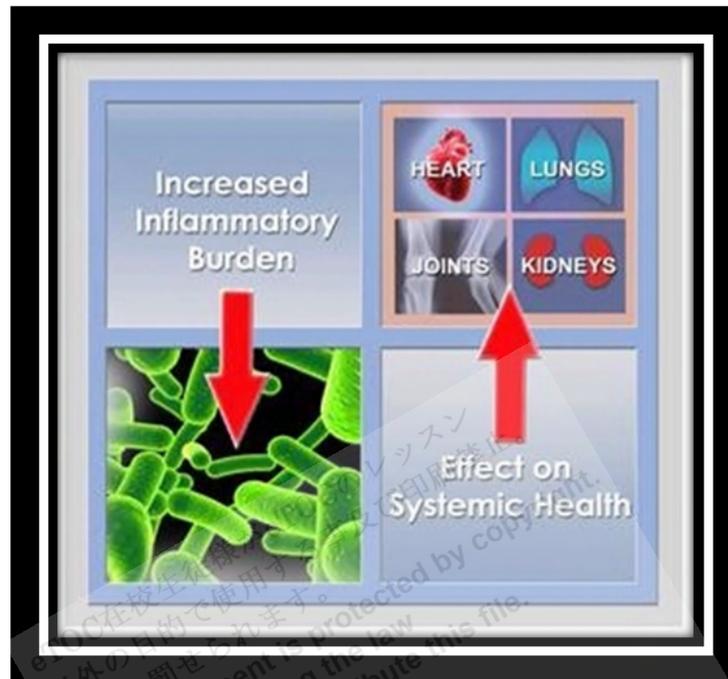
**Drugs:** Certain drugs, such as **corticosteroids**, immunosuppressants, and **antineoplastics**, compromise healing and host defenses. When possible, dental procedures should not be done while these drugs are being given.

Some **antineoplastics** (eg, **doxorubicin**, 5-**fluorouracil**, **bleomycin**, **dactinomycin**, cytosine, **arabinoside**, **methotrexate**) cause stomatitis, which is worse in patients with preexisting periodontal disease. Before such drugs are prescribed, oral **prophylaxis** should be completed, and patients should be instructed in proper toothbrushing and flossing.

Drugs that interfere with clotting may need to be reduced or stopped before oral surgery. Patients taking aspirin, NSAIDs, or **clopidogrel** should stop doing so 4 days before undergoing dental surgery and can resume taking these drugs after bleeding stops. **Warfarin** should be stopped 2 to 3 days before oral surgery. PT is obtained; INR of 1.5 is considered safe for surgery. For people receiving **hemodialysis**, dental procedures should be done the day after dialysis, when **heparinization** has subsided.

**Phenytoin** and Ca channel blockers, particularly **nifedipine**, contribute to gingival **hyperplasia**; however, this hyperplasia is minimized with excellent oral hygiene and frequent oral **prophylaxes** (cleanings).

**Bisphosphonates**, primarily when given parenterally for treatment of bone cancer, and to a much lesser degree when used orally to prevent osteoporosis, can result in osteonecrosis after an extraction.



<http://www.oralsystemicevaluationcenter.com/oral-system-home.jpg>

**Radiation therapy:** (CAUTION: Extraction of teeth from irradiated tissues [particularly if the total dose was  $> 65$  Gy, especially in the mandible] is commonly followed by **osteoradionecrosis** of the jaw. This is a catastrophic complication in which extraction sites break down, frequently sloughing bone and soft tissue.) Thus, if possible, patients should have any necessary dental treatment completed before undergoing radiation therapy of the head and neck region, with time allowed for healing. Teeth that may not survive should be extracted. Necessary sealants and topical fluoride should be applied. After radiation, extraction should be avoided, if possible, by using dental restorations and root canal treatment instead.

Head and neck radiation often damages salivary glands, causing **xerostomia**, which promotes caries. Patients must therefore practice lifelong good oral hygiene. A fluoride gel and fluoride mouth rinse should be used daily. Rinsing with 0.12% **chlorhexidine** for 30 to 60 sec, if tolerated, can be done in the morning and at bedtime. Viscous **lidocaine** may enable a patient with sensitive oral tissues to brush and floss the teeth and eat. A dentist must be seen at 3-, 4-, or 6-mo intervals, depending on findings at the last

examination. Irradiated tissue under dentures is likely to break down, so dentures should be checked and adjusted whenever discomfort is noted. Early caries may also be reversed by Ca **phosphopeptides** and **amorphous Ca phosphate**, which can be applied by a dentist or prescribed to a patient for at-home use.

Patients who undergo radiation therapy may develop oral **mucosal inflammation** and diminished taste as well as **trismus** due to fibrosis of the **masticatory muscles**. Trismus may be minimized by such exercises as opening and closing the mouth widely 20 times 3 or 4 times/day. Extractions of teeth in irradiated bone should be avoided (because of possible **osteoradionecrosis**). Sometimes root canal therapy is done, and the tooth is ground down to the gum line. If extraction is required after radiation, 10 to 20 treatments in a **hyperbaric O<sub>2</sub> chamber** may forestall or prevent **osteoradionecrosis**.

**Reference:** <http://www.merckmanuals.com>

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