

Intraoral and Periodontal manifestation of systemic diseases

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Introduction

- ▶ It is important for physicians to recognize the link between systemic disease and oral findings.
- ▶ Some systemic conditions may first manifest with oral findings and a trained physician may detect and diagnose these conditions earlier.

Learner Objectives

Upon completion of this presentation, participants will be able to:

- Recall the oral manifestations of systemic conditions
- Describe the oral manifestations of some systemic conditions and oral hygiene recommendations.
- List medications that are known to cause gingival hyperplasia, staining, and xerostomia.
- State the recommended first-line and alternate antimicrobial therapy for Subacute Bacterial Endocarditis prophylaxis.

Hematologic Disorders

Hematologic disorders include:

- ▶ 1. Anemia
- ▶ 2. Leukemia
- ▶ 3. Langerhans Cell Histiocytosis
- ▶ 4. Thrombocytopenia
- ▶ 5. Leukocyte (Neutrophil) Disorders
- ▶ 6. Antibody Deficiency Disorders

Anemia

- ▶ Iron, B12, or folate deficiency can result in anemia and changes in the oral mucosa.
- ▶ Oral manifestations include mucosal pallor, angular cheilitis, and atrophic glossitis or “bald tongue” caused by atrophy of the lingual papillae. Atrophic glossitis
 - ▶ triggers pain, tenderness, and burning.

Iron deficiency anemia: atrophic glossitis



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Leukemia

- ▶ Leukemia may present with paleness of the oral mucosa, gingival bleeding, oral petechiae, painless gingival hyperplasia, and ulcerative necrotic lesions.
- ▶ Be especially concerned about spontaneous gingival bleeding in the absence of plaque, caries, calculus or trauma.

Leukemia: enlargement of gingiva



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Leukemia

- ▶ Oral manifestations can be the presenting clinical signs of leukemia at disease onset, especially with Acute Myelogenous Leukemia (AML).
- ▶ However, Acute Lymphocytic Leukemia (ALL) is the most common of the childhood cancers, so this is the most likely disease you will encounter.

Common oral effects from cancer treatment include:

- ▶ Gingivitis and mucositis secondary to chemotherapy, radiation, or opportunistic infection
- ▶ Preventive protocols to improve hygiene and prophylaxis against infection can minimize complications

Langerhans Cell Histiocytosis

▶ Alveolar bone invasion by histiocytes commonly occurs in the mandible and may result in:

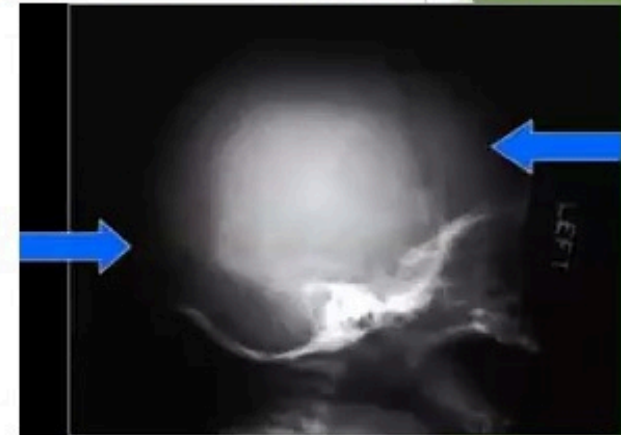
▶ 1. Pain, loose teeth, and jaw fracture.

▶ 2. X-ray appearance of teeth “floating in air” due to radiolucent areas in the bone.

▶ 3. Precocious eruption or exfoliation of primary teeth (early tooth loss).

▶ Histiocytosis can also cause gingivitis and oral ulcers.

Histiocytosis X “punched out” skull lesion:



Neonatal molar erupting shortly after birth



Thrombocytopenia

- ▶ **Reduced platelets:** characterized by low platelet count, a prolonged clot retraction and bleeding time and a normal or slightly prolonged clotting time.
- ▶ **Spontaneous bleeding in the oral cavity is seen**
- ▶ **Meticulous oral hygiene is recommended to minimize dental procedures.**

Thrombocytopenia in the oral cavity



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Leucocyte (Neutrophil) Disorders

- ▶ Neutropenia
- ▶ Agranulocytosis
- ▶ Chediak-Higashi Syndrome
- ▶ Lazy Leucocyte syndrome
- ▶ Leukocyte adhesion deficiency
- ▶ Paillon-Lefevre Syndrome
- ▶ Downs syndrome
- ▶ All these conditions present orally with severe periodontal disease with early loss of teeth.

Antibody Deficiency Disorders

- ▶ Agammaglobulinemia
- ▶ Patients present with aggressive periodontitis and early loss of teeth

Acquired Immunodeficiency Syndrome

- ▶ Patients are susceptible to opportunistic diseases including periodontitis and oral malignancies

Autoimmune Disorders

Autoimmune disorders include:

- ▶ 1. Systemic Lupus Erythematosis (SLE)
- ▶ 2. Inflammatory Bowel Disease
 - ▶ - Crohn's Disease
 - ▶ - Ulcerative Colitis
- ▶ 3. Sjogren's Disease

Systemic Lupus Erythematosus

- ▶ Systemic Lupus Erythematosus is rare in children, but increasingly common in teenagers and adults, especially females.
- ▶ Oral lesions are seen in 9% to 45% of patients with SLE, with prevalence depending on the form of lupus.
- ▶ Oral ulcers are the most common manifestation and often present as painless, palatal lesions. Mucosal atrophy can also occur.
- ▶ Parotid involvement of SLE can result in xerostomia.

Lupus Erythematosus: presentation on the palate



Inflammatory Bowel Disease (Crohn's Disease and Ulcerative Colitis)

- ▶ Oral findings occur in 8% to 10% of patients with Crohn's Disease and may precede gastrointestinal involvement.
- ▶ Aphthous ulcers and angular cheilitis are found in Crohn's Disease and Ulcerative Colitis. IBD associated ulcers are painful; in contrast to the painless ulcers seen in SLE.
- ▶ Cobblestoning or mucosal nodularity of the buccal mucosa and gingiva is unique to Crohn's Disease.
- ▶ Pyostomatitis vegetans, a condition of punctuate pustules on the labial and buccal mucosa, is primarily seen in Ulcerative Colitis.

Aphthous Ulcer



Sjogren's Disease

- ▶ Sjogren's Disease is characterized by recurrent parotid gland enlargement and xerostomia.
- ▶ Decrease in saliva production results in difficulty swallowing and eating, taste and speech alterations, and increased risk of dental caries.
- ▶ Sjogren's is more common as a secondary complication of another autoimmune disorder (e.g. rheumatoid arthritis, lupus).

Xerostomia

- ▶ Xerostomia is a common side effect of antidepressants, diuretics, antihypertensives, and anticholinergics (e.g. Glycopyrrolate)
- ▶ Patients experiencing this side effect should be monitored and encouraged to maintain good oral hygiene and frequent dental visits.
- ▶ Recommend frequent sips of water and non-sugary drinks. Sugar-free lemon drops and sugar-free chewing gum can stimulate saliva production. Lubricating mouth rinses and toothpastes (e.g. biotene®) can also provide xerostomia relief.

Other Oral Manifestations

Other systemic diseases with oral manifestations include:

- ▶ 1. Diabetes Mellitus
- ▶ 2. HIV
- ▶ 3. Peutz-Jeghers Syndrome
- ▶ 4. Wegener's Granulomatosis
- ▶ 5. Vitamin Deficiencies
- ▶ 6. Bulimia

Diabetes Mellitus

- ▶ Patients with diabetes have increased risk for dental caries, oral candidal infections, and xerostomia.
- ▶ Diabetic sialadenosis presents as diffuse, nontender, bilateral parotid enlargement.
- ▶ Patients with poorly controlled diabetes experience greater periodontal attachment loss compared with patients without diabetes and those with well-controlled diabetes.
- ▶ Treatment for periodontitis may improve glycemic control.

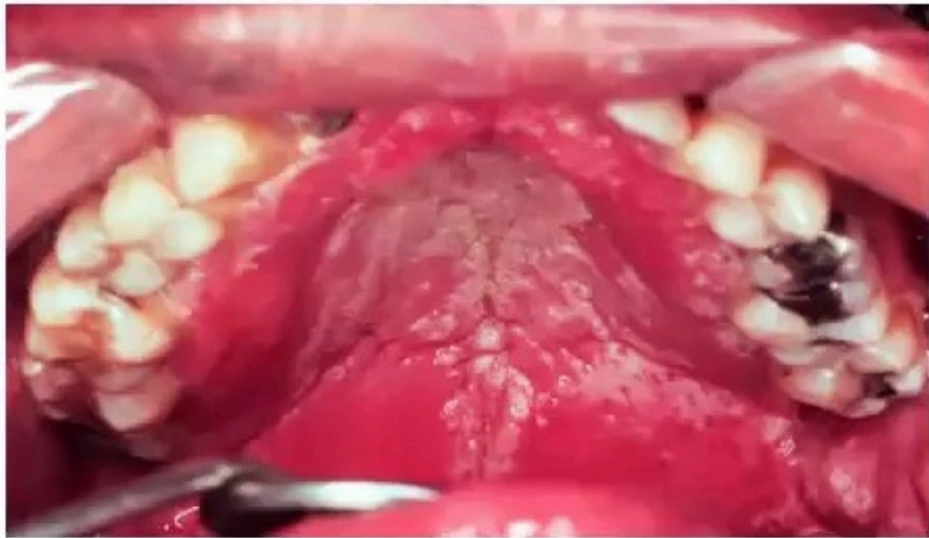
Diabetes mellitus: commonly presents with multiple abscesses when uncontrolled



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HIV

Adherent white plaques of candidiasis



Oral hairy leukoplakia occurs in 20% of asymptomatic HIV-infected adults and can also occur in children (3%). Triggered by EBV infection.

- ▶ HIV infected may present with oral candidiasis and gingivitis as the most common soft tissue oral lesions.
- ▶ Oral candidiasis may be the presenting infection in HIV in newly infected adolescents.

Peutz-Jeghers Syndrome

- ▶ Peutz-Jeghers Syndrome is an autosomal dominant condition characterized by multiple hamartomatous polyps of the GI tract with hyperpigmented maculae of the skin and oral mucosa.
- ▶ Multiple, small hyperpigmented maculae develop on the lips and buccal mucosa, beginning in infancy.

Wegener's Granulomatosis

- ▶ Wegener's Granulomatosis is a form of vasculitis that involves the respiratory tract and kidneys.
- ▶ It can cause swollen, red, granular gingival lesions, known as “strawberry gingivitis”.
- ▶ Ulceration of the gingival lesions is pathognomonic for Wegener's disease.

Vitamin C Deficiency

- ▶ Most common in children 6-12 months of age who are fed a
- ▶ diet deficient in citrus fruits and vegetables.

- ▶ Clinical manifestations of scurvy include malaise, anorexia, limb
- ▶ tenderness and swelling, costochondritis enlargement, easy
- ▶ bruising, and petechiae.

- ▶ Oral manifestations include gingival swelling and discoloration with petechial hemorrhages on the mucous membranes, loosening of the teeth, and early tooth loss.

Vitamin D Deficiency

- ▶ Vitamin D deficiency presents as Rickets with bony
- ▶ manifestations of craniotables, rachitic rosary, delayed fontanelle closure, and long bone deformities.
- ▶ Dental manifestations can also occur, including delayed eruption, enamel defects, and dental caries.

Vitamin K Deficiency

- ▶ Several factors in the clotting cascade are Vitamin K dependent, so deficiency results in excess bleeding and easy bruising
- ▶ Vitamin K deficiency may manifest as bleeding of the gums, especially with brushing.

Bulimia

- ▶ Many patients with bulimia and some patients with anorexia nervosa engage in self-induced vomiting.

Recurrent emesis results in enamel erosion, especially the lingual surface of the maxillary incisors in a specific pattern termed perimolysis.

- ▶ Enamel erosion may expose nerve endings, causing tooth sensitivity, and increase the risk of caries, tooth fracture, and gingivitis.

Dental erosion on the palatal aspect of the teeth due to gastric acids from Bulimia



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Bulimia, continued

- ▶ Patients should rinse their mouth with water, water with baking soda or a fluoridated mouth-rinse to neutralize the gastric acid after all episodes of emesis. Counsel patients not to brush the teeth for 30-60 minutes after emesis to reduce risk of toothbrush abrasion.
- ▶ All patients with recurrent emesis should be counseled to avoid acidic drinks such as soda and to use a soft toothbrush.
- ▶ Patients with self-induced or recalcitrant emesis should be referred to a dentist for evaluation and treatment in addition to a comprehensive medical and psychological evaluation of the eating disorder.

Medication Effects on Teeth and oral tissues

- ▶ Many medications have known adverse effects on the oral cavity.



- ▶ Common oral medication side effects

- ▶ include:

- Gingival Hyperplasia
- Oral Candidiasis
- Staining
- Xerostomia

Iron staining



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Gingival Hyperplasia

Gingival hyperplasia can be:

- ▶ Hereditary - Rare, onset in early childhood
- ▶ Inflammatory - Chronic gingivitis can trigger gingival overgrowth
- ▶ Infiltrative - Leukemia, often the monocytic type, can infiltrate the gingival tissues
- ▶ Drug-induced. Medications that can cause hyperplasia:
 - Phenytoin
 - Calcium channel blockers (nifedipine)
 - Cyclosporin A

Gingival Hyperplasia

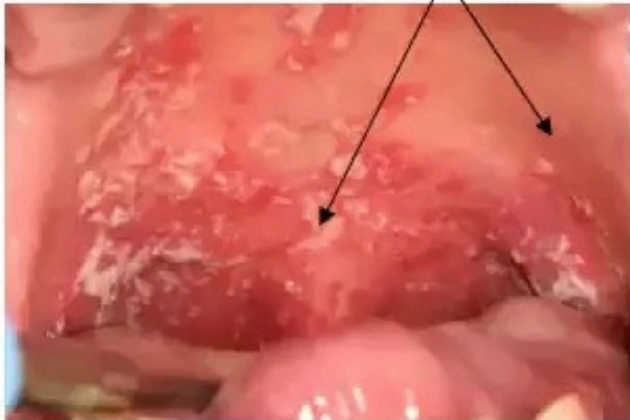
In addition to the cosmetic concern, gingival hyperplasia puts patient's at risk for

- ▶ Poor oral hygiene
 - ▶ Impaired tooth eruption,
 - ▶ Difficulty chewing
 - ▶ Severe gingivitis.
-
- ▶ Treatment includes meticulous hygiene, discontinuing the offending agent, and gingivectomy if severe.



Oral Candidiasis

Candidal plaques



- ▶ Increased risk in patients with diabetes, immunosuppression, and xerostomia.
- ▶ Characterized by adherent white plaques on mucosa and palate.
- ▶ Common complication of inhaled steroid use, usually for treatment of asthma. Counsel use of a spacer and always rinse the mouth after inhaled steroid use.
- ▶ Treat with topical antifungals (e.g. Nystatin) and sterilize bottles and nipples to prevent reinfection.

Staining

Medications that can cause dental staining:

1. Tetracycline class of antibiotics - Cause a yellow, brown, or greyish discoloration of permanent teeth and should not be administered to pregnant women or children younger than 8.
2. Iron - Liquid drops can cause a reversible grey-black stain on teeth, which can generally be prevented or minimized by good oral hygiene. Staining is easily removed by a dental professional.
3. Fluoride - Overdose can result in fluorosis of the permanent enamel and preferentially affects the incisors and molars.

Caries Risk

The following medical conditions result in increased risk for caries:

1. Gastroesophageal Reflux Disease (GERD)
2. Attention Deficit Hyperactivity Disorder
3. Bulimia
4. Xerostomia

Gastroesophageal Reflux Disease (GERD)

- ▶ Enamel erosion by acid exposes the underlying dentin. This is usually most severe on palatal surfaces.
- ▶ Enamel appears shiny and worn, then may appear yellow as the underlying dentin becomes exposed.
- ▶ Dental erosion is irreversible. Reflux precautions, dietary modifications, and medications can be considered for treatment of GERD.
- ▶ Patients should be counseled to rinse the mouth with water or a dilute baking soda solution to neutralize the oral pH. Immediate brushing may accelerate enamel loss. Regular dental examinations should be performed.

Attention Deficit Hyperactivity Disorder (ADHD)

- ▶ Children with ADHD have an increased rate of caries, which is not well understood.
- ▶ Increased rate of caries may be the result of medication side effects, oral hygiene, and/or dietary habits.
- ▶ Oral hygiene and regular dental care should be discussed with families of children with ADHD and they should be referred for evaluation in the dental home.

Dental Antibiotic Prophylaxis

The following cardiac conditions warrant infective endocarditis (IE) prophylaxis for some dental and surgical procedures:

- ▶ Prosthetic cardiac valve or prosthetic material used for valve repair
- ▶ Previous infective endocarditis
- ▶ Congenital heart disease (CHD)*
 - Unrepaired cyanotic CHD, including shunts and conduits
 - Completely repaired congenital heart defect with prosthetic material or device during the first 6 months after the procedure
 - Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device
- ▶ Cardiac transplantation recipients who develop cardiac valvulopathy

Dental Antibiotic Prophylaxis

- ▶ Prophylaxis is recommended for all dental procedures involving manipulation of gingival tissue or periapical region of teeth or oral mucosa perforation.
- ▶ Prophylaxis is NOT required for routine anesthetic injections, dental radiographs, placement of removable orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, and bleeding from trauma to the lips or oral mucosa. IE prevention standard prophylaxis is Amoxicillin 50 mg/kg (Maximum dose 2 grams) by mouth 1 hour prior to the dental procedure.
- ▶ For penicillin-allergic patients, this should be substituted with Clindamycin, a cephalosporin, or a macrolide (eg, Azithromycin).

Bleeding Disorders

- ▶ Routine screening tests for bleeding disorders before dental care is not recommended, unless there are clinical indications.
- ▶ Patients with known low platelet counts or bleeding disorders should be counseled to maintain excellent oral hygiene and regular dental check-ups.
- ▶ Avoidance of dental disease can help prevent the need for more significant interventions, such as a need for factor replacement for a root canal or extraction.

Bleeding Disorders

- ▶ Patients with a bleeding disorder should be referred to a hematologist for evaluation prior to dental interventions, but generally do not require pre-treatment for routine cleanings.
- ▶ Procedures with increased risk for bleeding, such as extraction or pulp therapy, should be considered for prophylaxis.
- ▶ Hematologists may prescribe tranexamic acid (an antifibrinolytic) as a mouthwash to help minimize oral bleeding with dental procedures. Prophylaxis may include coagulation factor or desmopressin or use of local hemostatic agents such as oxidized cellulose (Surgicel®) or fibrin glue.

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