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ADA.

COMMON ORAL PATHOLOGY

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Conflicts of interest & disclaimers

- Conflict of interest: None
- The opinions expressed in this presentation are those of the speaker and not those of my lab.
- The opinions expressed in this course should not be construed as advice to care for specific patients.

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Course objectives

- Upon completion of this course, you will be able to:
 - Identify common lesions of the oral cavity during routine examination
 - Determine how to properly manage patients presenting with various oral pathologic lesions
 - Discuss the treatment plan and prognosis of various oral pathologic lesions with patients

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INFECTIONS

Herpes simplex virus
Candidiasis

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Herpes simplex virus (HSV)

- HSV-1 is spread primarily through saliva/active perioral lesions and best adapted to above the waist locations
- **HOWEVER:** A 2003 study followed college students for 9 years; up to 77% of new genital herpes infections were caused by HSV-1

Neville B, Damron D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition, Elsevier, Inc.; St. Louis, Missouri; Pg 218-224.
Roberts CM, Pfister JR, and Spear SJ. Increasing Proportion of Herpes Simplex Virus Type 1 as a Cause of Genital Herpes Infection in College Students. Sexually Transmitted Diseases. 2003;80(10):197-800.

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Herpes simplex virus – primary infection

- Acute herpetic gingivostomatitis has an abrupt onset accompanied by constitutional symptoms such as fever
- Numerous pinhead vesicles collapse rapidly to form small red, lesions; these areas ulcerate and coalesce
- Both movable and attached oral mucosa can be affected in health; this is not the case with recurrences

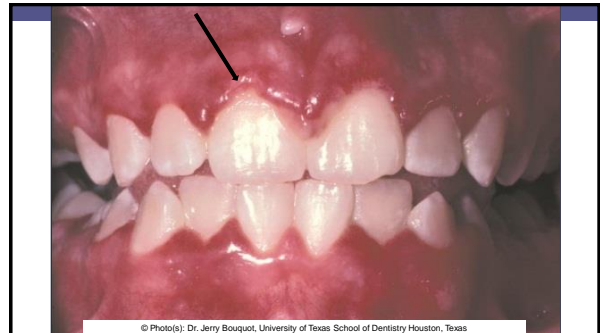
Neville B, Damron D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition, Elsevier, Inc.; St. Louis, Missouri; Pg 218-224.

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Herpes simplex virus – primary infection

- In all cases, the gingivae are enlarged, painful, and extremely red; the gingivae may also exhibit "punched-out" erosions of the midfacial free gingival margins
- Vermilion and perioral skin may be involved
- Self-inoculation of fingers, eyes, and genitals can occur
- All cases resolve in 1-2 weeks

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Recurrent herpes simplex

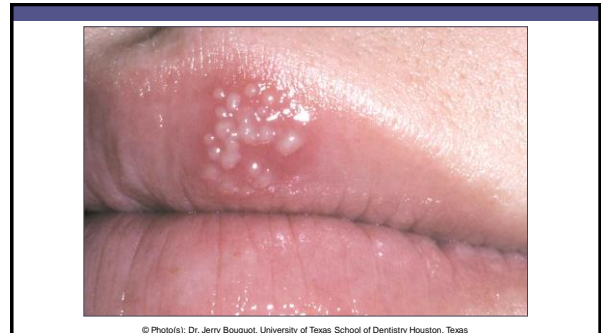
- Most common site = vermilion border/adjacent skin of the lips (herpes labialis; AKA cold sore or fever blister)
- Affects 40% of US; typically 2 per year with a 24h prodrome
- Multiple, small, erythematous papules which form clusters of fluid-filled vesicles
 - These rupture and crust within 2 days; active viral replication is complete
 - Rupture of intact vesicles releases the virus and can result in spreading of lesions (do not treat patients with intact vesicles)
- Lesions heal without scarring in 7-10 days

North H, Deem D, Alho C, et al. Oral and Maxillofacial Pathology: Fourth Edition. Photos by Dr. Lynn Maxwell. Pg 218-221

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Recurrent herpes simplex

- Intraoral recurrent lesions:
 - In health, **ALWAYS** on keratinized, bound mucosa (hard palate, attached gingiva)
 - If proven on movable mucosa, immune status tests are **REQUIRED**
 - Subtle changes with less intense symptoms
 - Lesions begin as 1-3 mm vesicles which rapidly collapse to form a cluster of red macules that coalesce
 - Damaged epithelium is lost and a central, yellowish area of ulceration appears which without scarring in 7-10 days

Neblett B, Demm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc.; St. Louis, Missouri, Pg 218-224

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One week later



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Primary herpes simplex - treatment

- Primary herpetic gingivostomatitis:
 - Rinse-and-swallow acyclovir suspension: 15mg/kg up to adult dose of 200 mg 5x/d for 5d (do not use capsule or tablet forms as they are less effective in primary infections)
- Recurrences:
 - Valacyclovir (Valtrex®): 2 grams at prodrome and 2 grams 12 hours later
 - Acyclovir: 400 mg taken 5x/d for 5 days
- If recurrences are associated with dental procedures:
 - 2 grams valacyclovir 2x/d on day of procedure and 1 gram the following day
- Short term prophylactic (ex: beach vacation):
 - Acyclovir 400mg 2x/d or Valacyclovir 1g daily

Neblett B, Demm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc.; St. Louis, Missouri, Pg 218-224

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Candidiasis

- The best recognized form is pseudomembranous candidiasis, AKA "thrush"
- White plaques that resemble cottage cheese
 - Plaques are composed of tangled masses of hyphae, yeast, desquamated epithelial cells, debris
- Characteristic: these plaques are **removable**
 - Apply pressure with gauze
 - Underlying mucosa may be normal or red

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Erythematous candidiasis

- More common than pseudomembranous but often overlooked clinically
- Several clinical presentations:
 - Median rhomboid glossitis
 - Chronic multifocal
 - Angular cheilitis
 - Denture stomatitis
 - Acute atrophic (antibiotic sore mouth)

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Candidiasis - erythematous

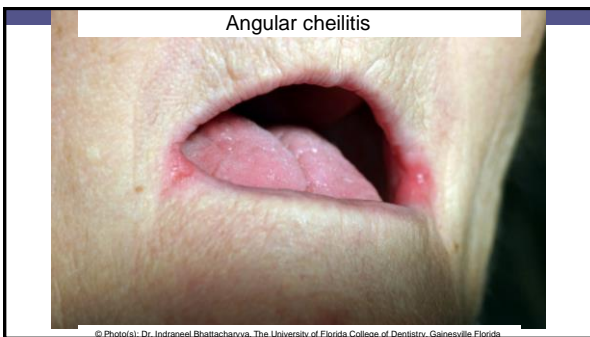
- **Median rhomboid glossitis:**
 - Well-demarcated red zone affecting the midline, posterior dorsal tongue just anterior to the circumvallate papilla
 - Asymptomatic and symmetrical
- **Angular cheilitis:**
 - Occurs most commonly in older edentulous patients
 - Characterized by erythema, fissuring, and scaling at the corners of the mouth
 - Etiology can be fungus, bacteria, or both
- **Chronic multifocal candidiasis:**
 - Median rhomboid glossitis with signs of infection at other sites
 - Junction of hard and soft palate ("kissing lesion")
 - Angles of the mouth (angular cheilitis)

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Candidiasis - erythematous

- **Denture stomatitis:**
 - Redness on denture-bearing areas of a removable denture
 - Denture harbors most of the organism
- **Acute atrophic candidiasis:**
 - "Antibiotic sore mouth" – follows a course of broad-spectrum ABX
 - Mouth feels as though a hot liquid scalded it
 - Diffuse loss of filiform papillae of dorsal tongue (appears bald)
 - Similar appearance & symptomology is noted in xerostomia patients

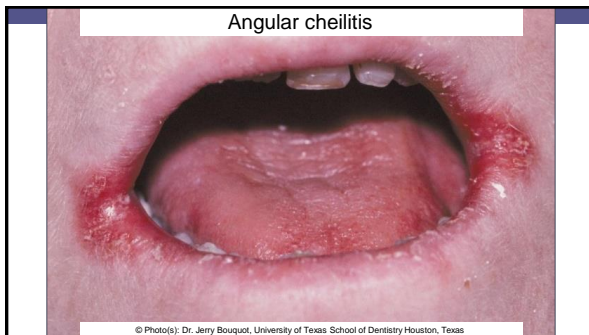
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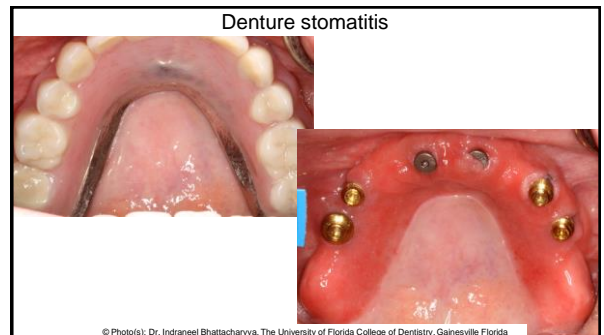
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Candidiasis - treatments

- Clotrimazole 10 mg troche, #70, dissolve 1 on tongue 5x/d for 14 days. Finish all medication
- Fluconazole 100 mg tab, #15, take 2 tab on first day and 1 tab every day after. Finish all medication**
- **Ensure patient can take this medication! Call pharmacy if you must. Examples of contraindications include cisapride, astemizole, erythromycin, pimozide, and quinidine.
- Clotrimazole 1% cream is over the counter
 - Best for angular cheilitis because it also has antibacterial properties
 - Have patient stop other soothing remedies

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ALLERGIES

Recurrent aphthous ulcerations

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Recurrent aphthous ulcerations (RAU)

- Prevalence is about 20%
- Most commonly cited antigens:
 - Sodium lauryl sulfate (SLS) or sodium dodecyl sulfate (SDS) – a surfactant (foaming agent) found in most toothpastes
 - Systemic medications like NSAIDs
 - Foods like chocolate, nuts, milk, strawberries, tomatoes, etc

Alshrya SO and Greenberg MS. Recurrent Aphthous Stomatitis. Dent Clin North Am. 2014;58(2):261-297.
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition, Elsevier Inc., St. Louis, Missouri, Pg. 303-309

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Recurrent aphthous ulcerations (RAU)

- Smoking cessation can lead to ulcerations
- Exclusively occur on movable mucosa with rare exception
- Occurs more commonly in younger patients
- 80% of patients with RAU have their first ulceration before age 30 (if not, a systemic condition should be suspected)
- All ulcerations will have a yellow-white, removable fibrinopurulent membrane with surrounding red halo and are much more painful than they appear

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Recurrent aphthous ulcerations

- Minor form:
 - Patients experience ulcers every few days to few years
 - Between 3-10 mm, heal without scarring in 1-2 weeks; 1 to 5 lesions per episode
- Major form:
 - 1-3 cm in diameter, heal in 2-6 weeks and may scar upon resolution, 1-10 lesions per episode
 - Most commonly occur on the labial mucosa, soft palate, and tonsillar fauces

Alkroye SO and Greenberg MS. Recurrent Aphthous Stomatitis. Dent Clin North Am. 2014;58(2):281-297.
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc. St. Louis, Missouri, Pa 303 308

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Recurrent aphthous ulcerations

- Diagnosis is made from the clinical presentation and exclusion of other conditions
 - Patients with complex ulcerations should be evaluated for other systemic conditions (refer)
 - About 60% will have an associated deficiency or disease

Alkroye SO and Greenberg MS. Recurrent Aphthous Stomatitis. Dent Clin North Am. 2014;58(2):281-297.
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc. St. Louis, Missouri, Pa 303 308

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Recurrent aphthous ulcerations

- You can suggest your patients use SLS-free toothpaste:
 - Prevident® 5000+ Dry mouth (Only SLS-free Prevident® product)
 - Biotène® (GSK) – 2 types; both SLS-free
 - Sensodyne® – 21 types; not all are SLS-free
 - Squigle® Enamel saver (Mild toothpaste with no SLS; no irritating flavors, no tartrate control agents); need to buy online

Akintoye SO and Greenberg MS. Recurrent Aphthous Stomatitis. Dent Clin North Am. 2014;58(2):281-297.
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc. St Louis, Missouri, Pa 303-308.

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Recurrent aphthous ulcerations

- Patients with minor or simple aphthae often receive no treatment or over the counter palliative care
- Zilactin® or Orajel® is usually sufficient
- Dentists can also prescribe Magic Mouthwash if necessary (Most common formulation for RAU is equal parts diphenhydramine, Maalox®, + viscous lidocaine)
- Topical steroids may be necessary in severe cases

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Recurrent aphthous ulcerations

- Most other treatments have not been examined in a double-blind, placebo-controlled fashion
 - Example of a widely accepted alternative: amlexanox paste (Aphthasol®)
- Laser ablation will shorten duration and decrease symptoms, though it is likely impractical
- Cautery with sulfuric acid and phenolic agents (Debacterol®) can be used, but misuse can lead to local tissue necrosis
- Cautery with silver nitrate is not recommended

Akintoye SO and Greenberg MS. Recurrent Aphthous Stomatitis. Dent Clin North Am. 2014;58(2):281-297.
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc. St Louis, Missouri, Pa 303-308.

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EPITHELIAL LESIONS

Pigmented lesions, papillary lesions

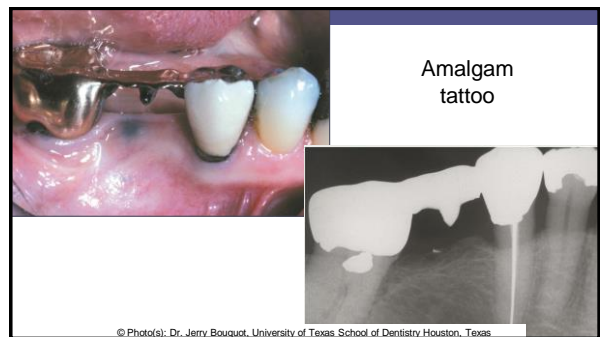
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Solitary pigmented lesions

- Differential diagnosis includes: amalgam tattoo, melanotic macule, melanocytic nevus, melanoma
- Anytime one encounters a solitary pigmented lesion in the oral cavity:
 1. If appropriate, take a radiograph
 2. If radiopacity is present: no further treatment
 3. If no radiopacity present: biopsy is required
 4. If it is not melanoma, no further action required unless there is clinical change
- Mucosal melanomas tend to present in an advanced state and have a poor prognosis

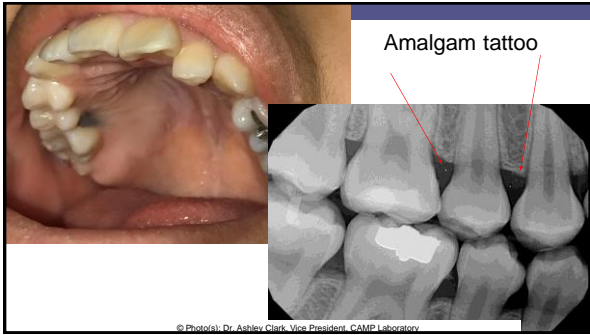
Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier Inc. St Louis, Missouri, Pa 303-308.

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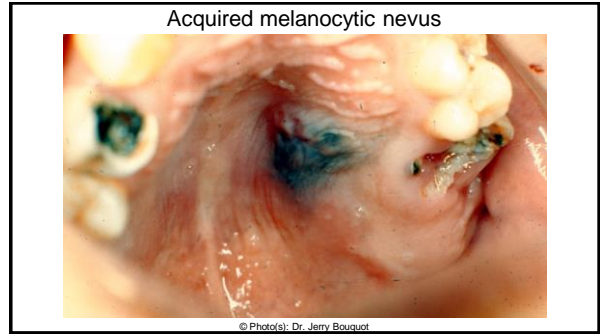


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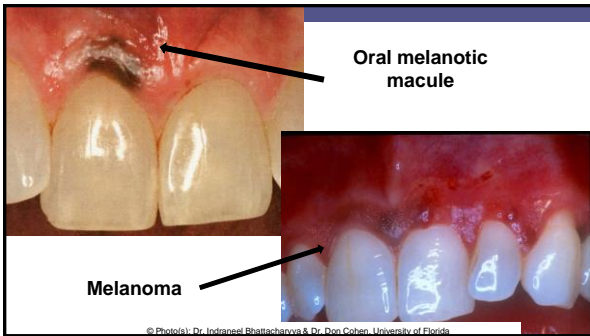
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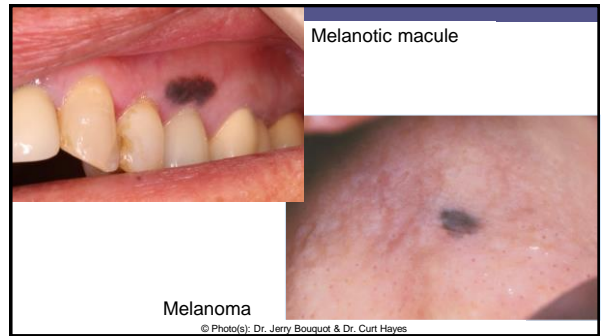
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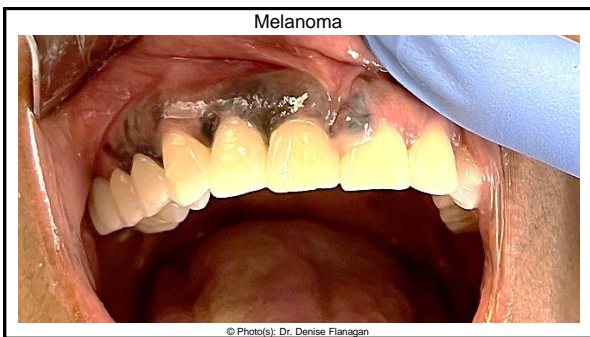
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Papillary lesions

- All papillary lesions must be biopsied
- **Squamous papilloma:**
 - Common in the oral cavity, solitary, not an STI, not very infectious (doesn't spread easily), no malignant potential, no further action after diagnosis
- **Verruca vulgaris:**
 - Uncommon in the oral cavity, multiple lesions, not an STI, infectious (spreads easily), no malignant potential, follow-up in case the patient has recurrences
- **Condyloma acuminatum:**
 - Uncommon in the oral cavity, multiple lesions, is an STI, infectious, no malignant potential, follow-up in case the patient has recurrences

Nonfle B, Curm D, Allen C. et al. Oral and Maxillofacial Pathology Fourth edition Elsevier, Inc. St. Louis, Missouri, Pg 331-340.

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Squamous papilloma



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Squamous papilloma



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Squamous papilloma



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Verruca vulgaris



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Verruca vulgaris

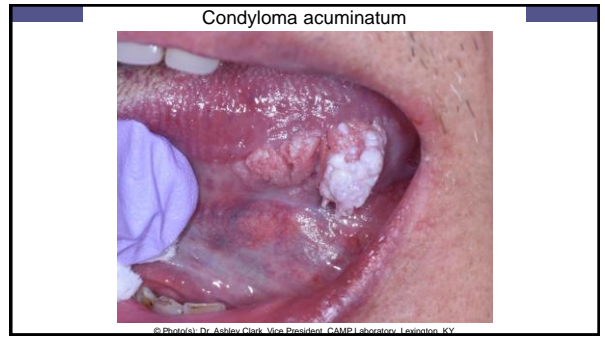


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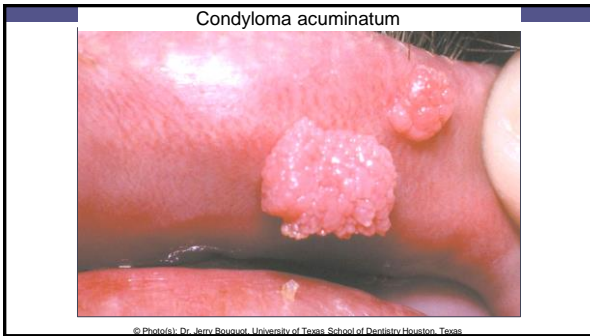
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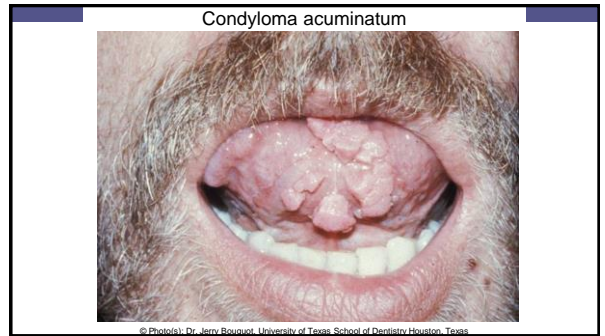
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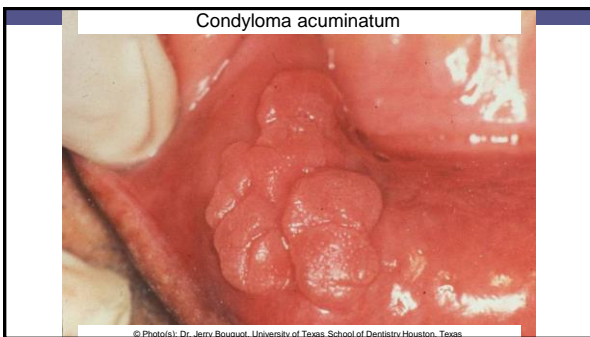
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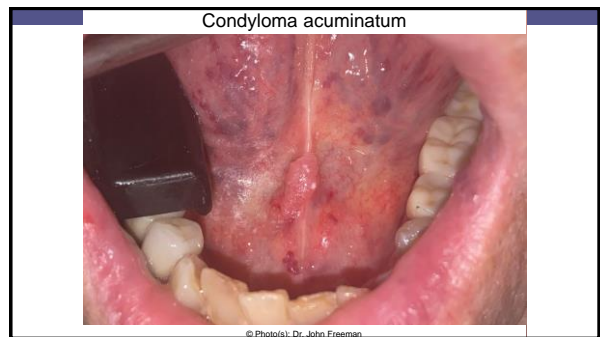
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MESENCHYMAL LESIONS

Fibroma
Bumps on the gum

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Fibroma

- Most common mesenchymal lesion of the oral cavity
- Most common in middle-aged adults around the bite line on the buccal mucosa
- Appears as an asymptomatic, sessile, smooth-surface, mucosal-colored nodule
- Treatment is conservative surgical excision with submission for histopathologic diagnosis

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Bumps on the gum

- Differential diagnosis includes the 3 Ps: pyogenic granuloma, peripheral ossifying fibroma, and peripheral giant cell granuloma
 - These are all reactive lesions
- Pyogenic granulomas are unique in that they can occur anywhere in the oral cavity (the other two are only found on the ridge) and they occur in pregnant patients with higher frequency
- All should be surgically excised to the periosteum (and scale adjacent teeth) with submission for histopathologic diagnosis
- All have about a 15% recurrence rate

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DERMATOLOGIC LESIONS

Geographic tongue

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Geographic tongue

- AKA erythema migrans or benign migratory glossitis
- Affects up to 3% of the population
- Unknown etiology, but an association with fissured tongue
- Lesions appear as red macules with slightly raised, yellowish borders concentrated on the tip and lateral borders of the tongue
- Lesions appear quickly, heal, then appear in a different area
- Most patients are asymptomatic but may experience burning when eating spicy foods
- Only treat symptomatic patients; use topical steroids

Heath & Olson D. Atlas of Oral and Maxillofacial Pathology, fourth edition. Elsevier Inc. St. Louis, Missouri, pp 226-228

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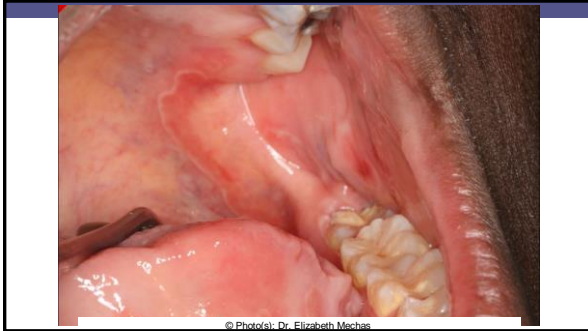


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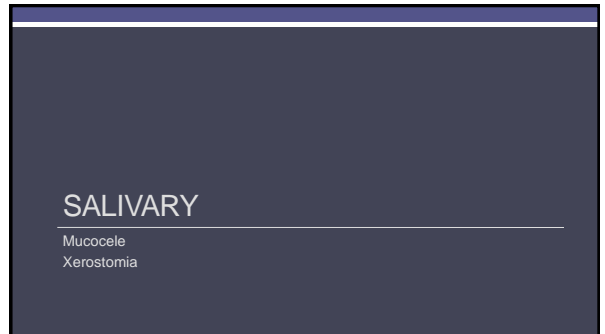
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Mucocele

- AKA Mucus extravasation phenomenon
- Results from a rupture of a salivary gland duct and spillage of mucin into surrounding soft tissues; typically due to trauma
- Many patients report a history of swelling, rupture, & recurrent swelling
- Appear as dome-shaped, bluish, fluctuant, mucosal swellings on the lower lip in young people 80% of the time

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Mucocele

- Lesions can also occur:
 - Floor of mouth (aka ranula), usually from sublingual gland
 - Ventral tongue (from glands of Blandin-Nuhn)
- Superficial lesions can occur on the buccal mucosa, palate, or retromolar pad; they present as tense vesicles that burst and then heal; they can recur
- Do not occur on the upper lip

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Mucocele

- Lesions are chronic and local surgical excision with submission for histopathologic diagnosis is necessary
 - Exception: superficial mucoceles
- A "mucocele" on the retromolar pad should be considered a mucoepidermoid carcinoma until proven otherwise
- To prevent recurrence, remove adjacent minor salivary glands that could be feeding into the lesion
- Prognosis is excellent

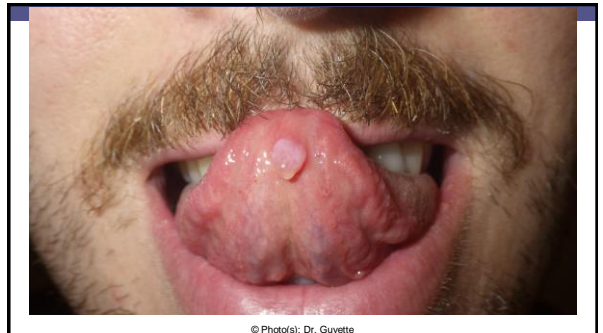
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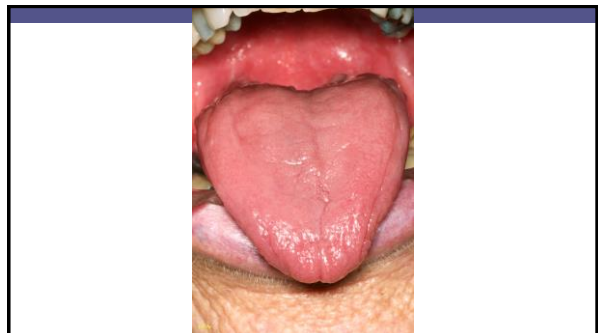


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Xerostomia

- Very frustrating and treatment is often unsatisfactory
- Most likely due to medications
- Over the counter treatments: Xylimelts®, Salivea®, Enamelon gel®
 - Note: Biotene® removed lactoperoxidase, lysozyme, and lactoferrin enzymes and is likely not as effective
- Prescription medications: such as NeutraSal®, SalivaMax®, Salivart® Synthetic Saliva
- If these do not work, pilocarpine or cevimeline can be prescribed if no contraindications (such as narrow-angle glaucoma)
 - Pilocarpine = 5 mg up to tid up to a maximum dose of 10 mg tid
 - Cevimeline = 30 mg tid

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RADIOGRAPHIC LESIONS

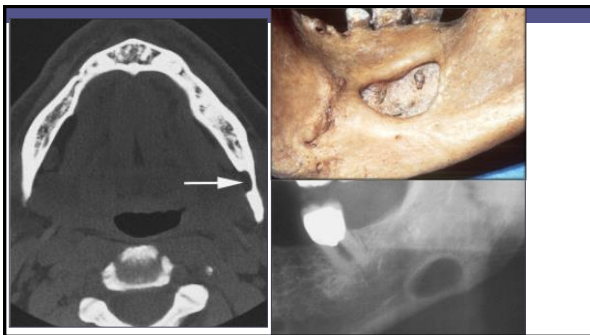
Stafne defect
Radiopaque lesions

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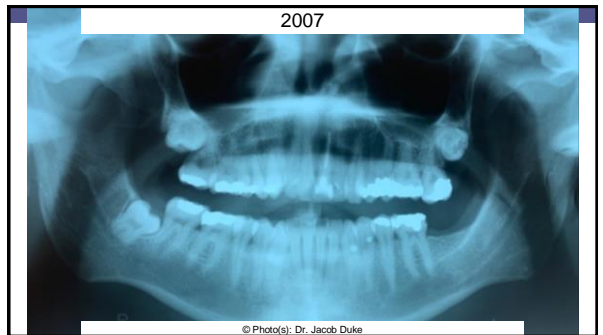
Stafne defect

- AKA submandibular salivary gland depression
- Focal concavity of the cortical bone in the lingual surface of the mandible
- Classically presents as an asymptomatic, well-circumscribed radiolucency below the mandibular canal in the posterior mandible
- Usually unilateral but can be bilateral
- Found in up to 0.5% of adults; 90% are in males
- No treatment except to radiograph periodically

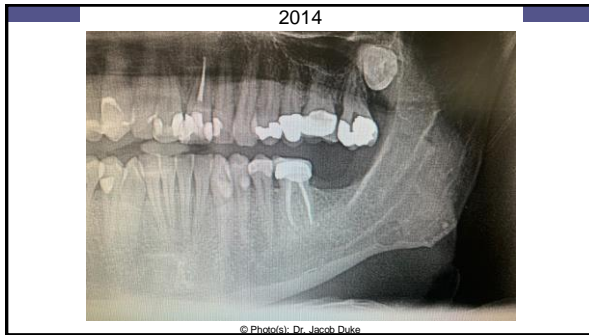
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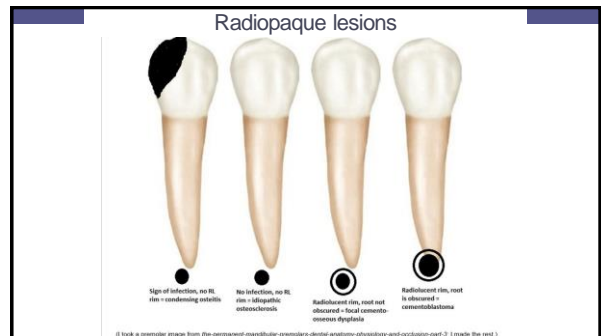
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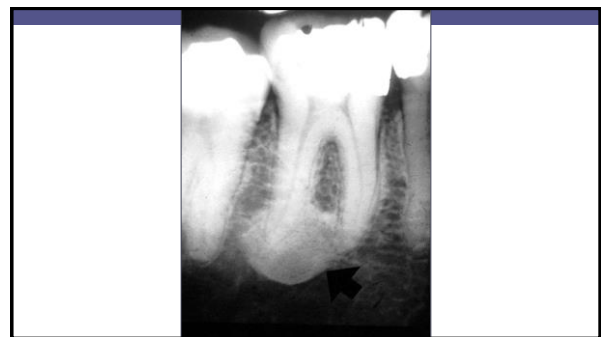


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Condensing osteitis

- Localized area of bone sclerosis at apices of teeth with pulpitis
- Appears as an increased radiopacity adjacent to a tooth apex that has a thickened PDL or apical inflammatory lesion
- Association with inflammation is necessary for diagnosis
- No clinical expansion of bone or radiolucent border
- 85% regress after odontogenic infection is eliminated
 - Residual areas are termed bone scars
- No other treatment is necessary

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Idiopathic osteosclerosis

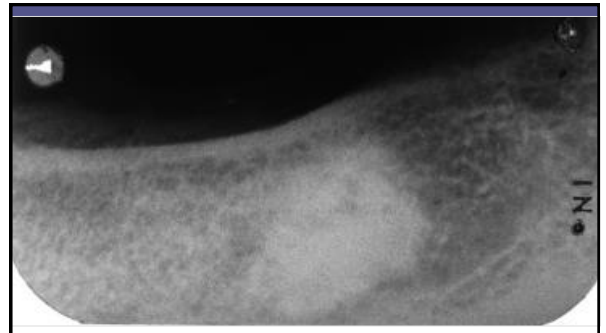
- AKA dense bone island, bone scar, or enostosis
- Focal area of increased radiodensity that is of unknown cause and cannot be attributed to anything else
- Affects approximately 5% of Americans
- Most cases arise in teenage years and remain static
- Invariably asymptomatic and nonexpansile
- 90% occur in the mandible; most often in the first molar area

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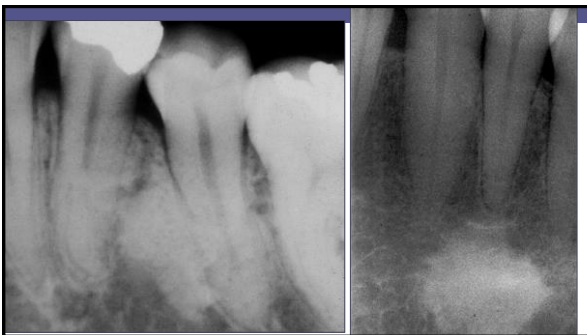
Idiopathic osteosclerosis

- Radiographic features:
 - Well-defined, round or elliptical, radiopaque lesion
 - Most are associated with a root apex
 - Vary from 3mm to 2cm in greatest diameter
 - A radiolucent rim does NOT surround the lesion
- Diagnosis is made on history, clinical features, radiographic findings
- Biopsy only if there are symptoms, continued growth, or cortical expansion
- If lesion is discovered during adolescence, periodic XRAYs are prudent until the area stabilizes; after that, no treatment is necessary

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Cemento-osseous dysplasia

- Occurs in tooth-bearing areas of the jaws
- Most common fibro-osseous lesion encountered in clinical practice
- Three variants:
 - Focal
 - Periapical
 - Florid

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Focal cemento-osseous dysplasia

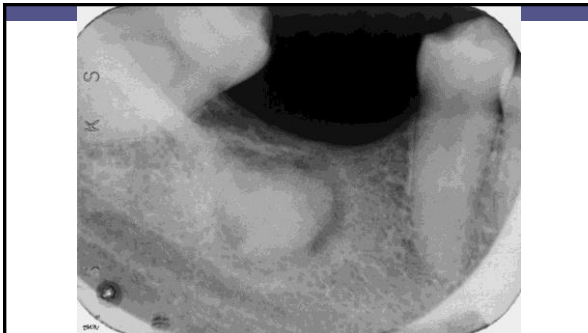
- Single sight of involvement
- 90% occur in females
- Average age is 40
- Most common in Black people; however, this variant is seen in a greater proportion of white people when compared to the periapical and florid variants
- Most commonly present as asymptomatic lesions in the posterior mandible; less than 1.5 cm

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Focal cemento-osseous dysplasia

- Radiographic features:
 - Lesion is usually well-defined
 - Vary from completely radiolucent to densely radiopaque with a thin radiolucent rim
 - The radiolucent rim differentiates from idiopathic osteosclerosis & condensing osteitis
 - Most commonly, there is a mixed radiolucent-radiopaque pattern
 - The PDL is usually intact, though ankylosis can occur

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Periapical cemento-osseous dysplasia

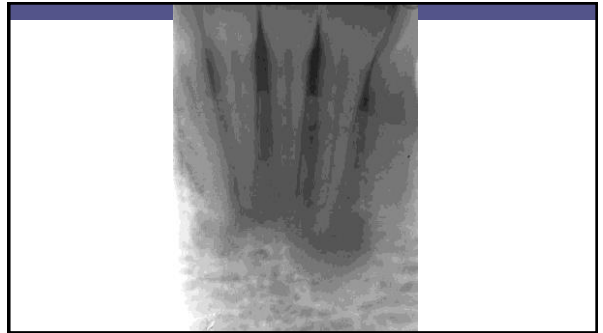
- Involves the periapical region of the anterior mandible
- Multiple foci are usually present
- 90% are female
- 70% are Black
- Average age = 40
- Teeth are vital
- Asymptomatic and discovered when XRAYs are taken for other reasons
- Early lesions are circumscribed areas of radiolucencies involving the apex of a tooth – this lesion looks identical to that of a periapical granuloma or cyst

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Periapical cemento-osseous dysplasia

- Over time, adjacent lesions fuse together to form a linear pattern of radiolucency that involves the apices of several teeth
- Lesions "mature" over time to have a mixed radiolucent-radiopaque appearance
- End-stage lesions are densely radiopaque with a radiolucent rim
- The PDL will be intact; the lesion will not fuse to the tooth
- Each lesion is self-limiting and progressive growth does not occur

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Florid cemento-osseous dysplasia

- Multiple focal involvement not limited to the anterior mandible
- Patients may just have lesions in the posterior jaws, but many patients have lesions throughout
- 90% are female
- 90% are Black
- Occurs in middle-aged or older adults
- Marked tendency to be bilateral and symmetrical
- May be completely asymptomatic
- Patients may complain of dull pain or have an alveolar sinus tract which exposes yellowish, avascular bone to the oral cavity
- Rarely, there may be jaw expansion

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Florid cemento-osseous dysplasia

- Radiographic examination demonstrates an identical pattern of maturation noted in the other two forms:
 - Initially, lesions are predominantly radiolucent
 - Over time become mixed radiolucent-radiopaque
 - End-stage lesions are predominantly radiopaque with a thin radiolucent rim
- Involvement is unrelated to presence or absence of teeth
- Traumatic bone cysts may be seen

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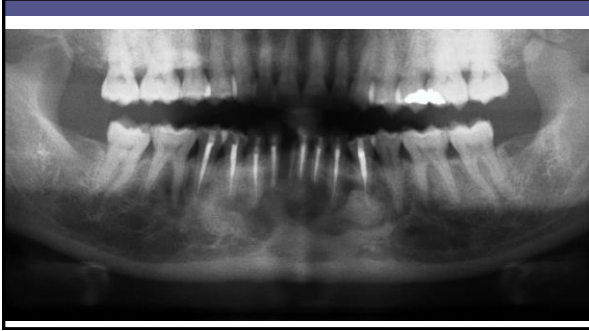
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Cemento-osseous dysplasia

- For periapical- or florid cemento-osseous dysplasia, diagnosis can be made from the distinctive clinical & radiographic findings – do not biopsy
 - In fact, biopsy of florid cemento-osseous dysplasia may lead to necrosis due to the hypovascularity
- FCOD (focal cemento-osseous dysplasia) may require biopsy because the features are less specific

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Cemento-osseous dysplasia

- Encourage good oral hygiene to those with periapical or florid cemento-osseous dysplasia so they keep their teeth as extraction may lead to necrosis
- Management of symptomatic patients is difficult because of the inflammatory component – patients can develop osteomyelitis
 - Antibiotics are indicated but usually not effective
- Follow-up is required

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Cementoblastoma

- Odontogenic neoplasm of cementoblasts
- 80% arise in the mandible, almost always in the molar/premolar region
- Typically only affect permanent teeth
- There is no sex predilection
- 75% occur before age 30
- Pain and swelling are present in 2/3
- Slow, progressive growth is typical

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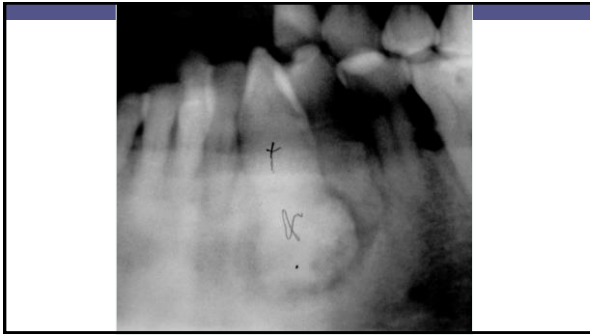
Cementoblastoma

- Radiographic examination:
 - Radiopaque mass that is fused to one or more tooth roots
 - Outline of the root or roots is usually obscured
 - Surrounded by a thin radiolucent rim
- Treatment is surgical extraction of the tooth with the calcified mass
- Excision of mass with root amputation and RCT can be considered
- Recurrence is about 20%; this is probably due to incomplete removal

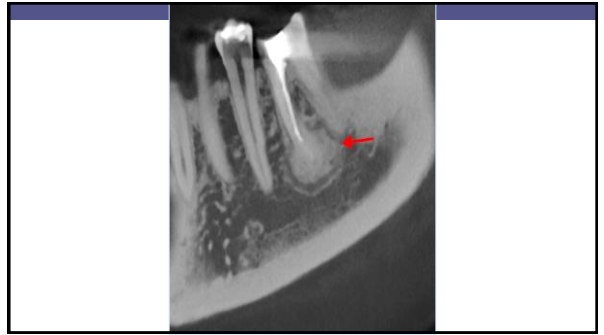
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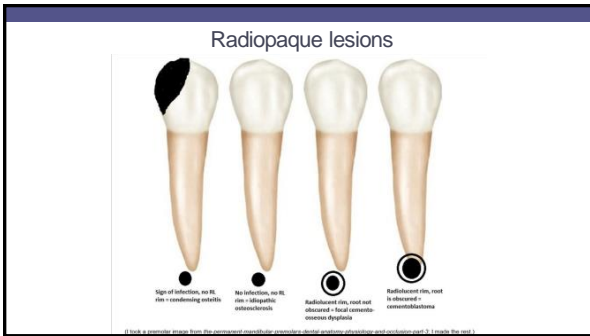
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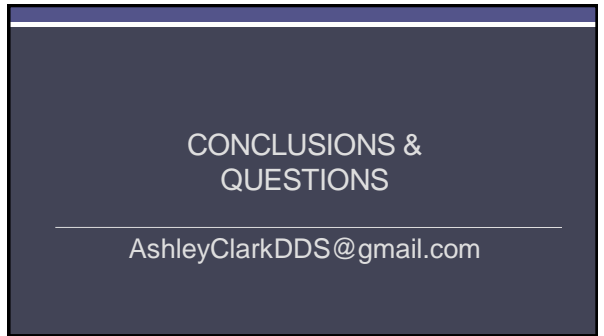
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