

KDA Kentucky Dental Association

KDA Kentucky Dental Association

ORAL PATHOLOGY FOR THE DENTAL HYGIENIST

Ashley Clark, DDS, FACD, FICD, FAAOMP

Vice President, CAMP Laboratory

Diplomate, American Board of Oral and Maxillofacial Pathology

AshleyClarkDDS@gmail.com

1

Conflicts of interest & disclaimer

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

2

Outline of topics

- Infections:
 - Herpetic ulcerations, candidiasis
- Allergic:
 - Recurrent aphthous ulcerations
- Epithelial:
 - Pigmented lesions, papillary lesions, leukoplakia, squamous cell carcinoma
- Mesenchymal:
 - Fibroma, bumps on the gum
- Dermatologic:
 - Lichen planus, geographic tongue
- Salivary:
 - Mucocele
 - Xerostomia
- Radiographic lesions:
 - Common radiolucencies
 - Common radiopacities
- Miscellaneous:
 - Burning mouth disorder

3

INFECTIONS

Herpetic ulcerations
Candidiasis

4



5

Herpes simplex virus (HSV)

- HSV-1:
 - Spread primarily through saliva or 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
 - HSV-1 is the most common cause of new genital herpes infections; there is a reversal of the usual HSV-1/HSV-2 ratio
- HSV-2:
 - Spread primarily through sexual contact and best adapted to below the waist locations (though some oral lesions are due to HSV-2)
 - Approximately 20% of the population is affected by genital herpes; however, this is based solely on HSV-2 seroprevalence

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 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;30(10):789-800.

6

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, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition, Elsevier, Inc.: St. Louis, Missouri. Pp 218-224.

7

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

8



9



10



© Photo(s): Dr. Jerry Bouquet, University of Texas School of Dentistry Houston, Texas

11



© Photo(s): Dr. Jerry Bouquet, University of Texas School of Dentistry Houston, Texas

12



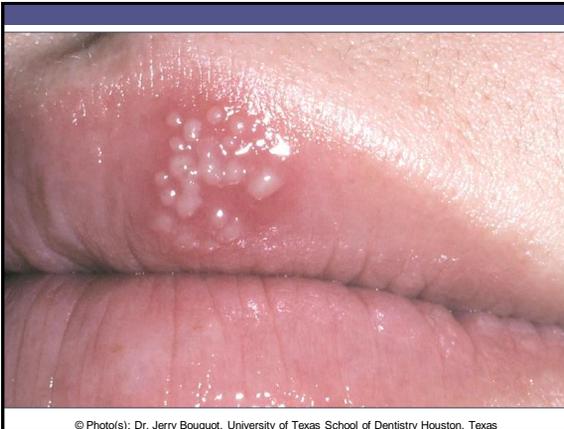
13

Recurrent herpes simplex

- Most common site of recurrence is vermillion border and adjacent skin of the lips (herpes labialis; AKA cold sore or fever blister)
- 40% of US have a history; typically experience 2 per year
 - Most have a prodrome 24 hours before the lesion appears
- Lesions are 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

Neville B. Damm D. Allen C. et al. Oral and Maxillofacial Pathology, Fourth edition, Elsevier, Inc., St. Louis, Missouri, Pp.218-224.

14



15



16



17

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**
 - Intraoral lesions exhibit subtle changes with less intense symptoms
- Lesions begin as 1-3 mm vesicles
 - These vesicles rapidly collapse to form a cluster of erythematous macules that coalesce and slightly enlarge
 - Damaged epithelium is lost and a central, yellowish area of ulceration appears
 - The lesions heals without scarring in 7-10 days

Neville B. Damm D. Allen C. et al. Oral and Maxillofacial Pathology, Fourth edition, Elsevier, Inc., St. Louis, Missouri, Pp.218-224.

18



19



20



21



22



23



24

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

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

25

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

26



© Photo(s): Dr. Jerry Bouqurot, University of Texas School of Dentistry Houston, Texas

27



28

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)

29

Candidiasis - erythematous

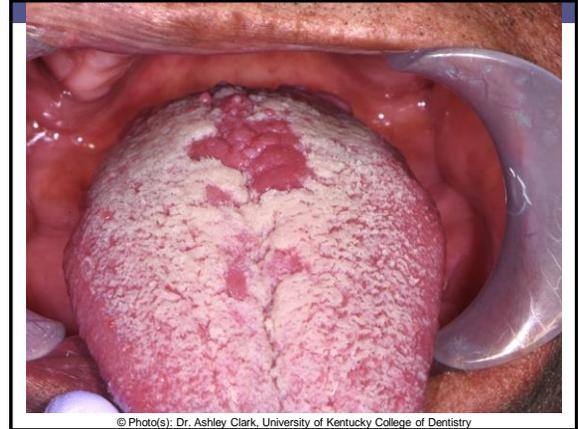
- **Median rhomboid glossitis:**
 - Well-demarcated red zone affecting the midline, posterior dorsal tongue just anterior to the circumvallate papilla
 - Asymptomatic and symmetrical
- **Angular cheilitis:**
 - Occurs most commonly in older edentulous patients
 - Characterized by erythema, fissuring, 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)

30

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

31



32



33

Angular cheilitis



34

Angular cheilitis

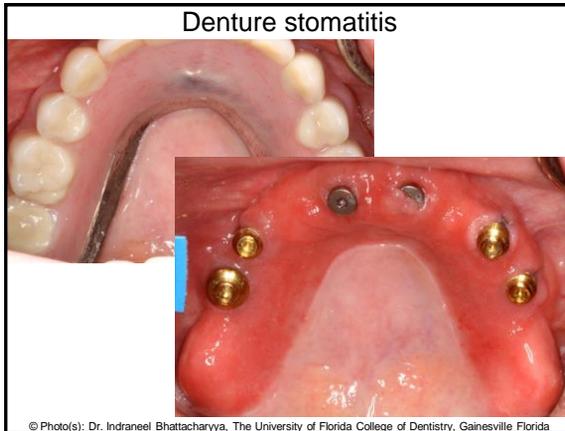


35

Cheilocandidiasis



36



37



38

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 the patient d/c anything they're putting on it, like Aquaphor®
- Clean denture if the patient has chronic atrophic candidiasis (denture stomatitis)

39

ALLERGIES

Recurrent aphthous ulcerations

40

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
- 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)

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, Pp 303-308.

41

Recurrent aphthous ulcerations

- All ulcerations will have a yellow-white, removable fibrinopurulent membrane with surrounding red halo and are much more painful than they appear
- 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

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, Pp 303-308.

42



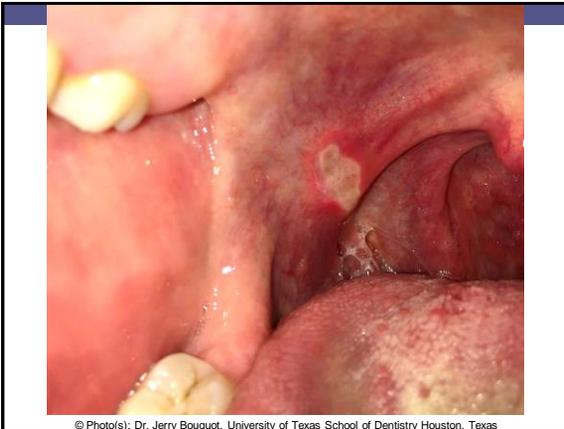
© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

43



© Photo(s): Dr. Ashley Clark, University of Kentucky College of Dentistry, Lexington, KY

44



© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

45



© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

46

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

Akinloye 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, Pp.303-308.

47

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
- Patients with minor or simple aphthae often receive no treatment or over the counter palliative care
 - Zilactin® or Orabase® 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

Akinloye 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, Pp.303-308.

48

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 (numerous safer alternatives; rare association with massive necrosis and systemic argyria)

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. Pp 303-308.

49

EPITHELIAL LESIONS

Pigmented lesions, papillary lesions, leukoplakia, squamous cell carcinoma

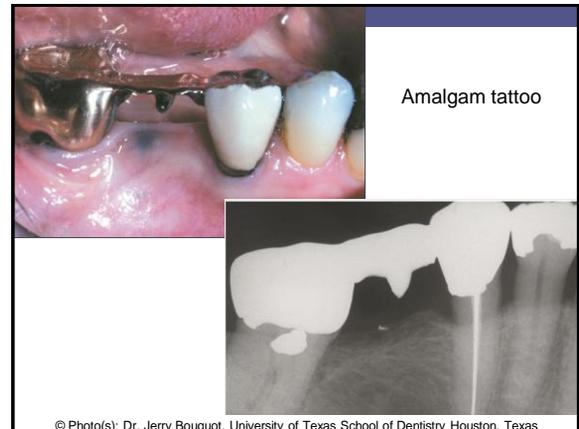
50

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
 - Exceptions: documented, unchanging, labial melanotic macule
 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

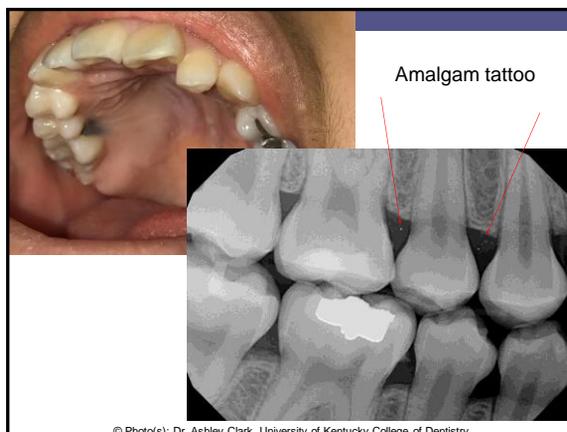
Neville B, Damm D, Allen C, et al. *Oral and Maxillofacial Pathology: Fourth edition.* Elsevier, Inc.: St. Louis, Missouri. Pp 281-284, 348-353, 401-407.

51



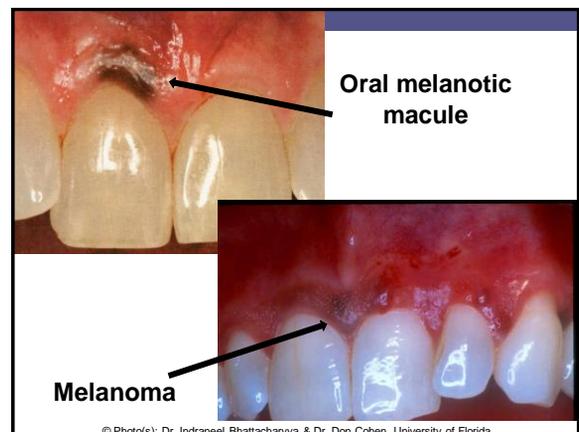
© Photo(s): Dr. Jerry Bouqurot, University of Texas School of Dentistry Houston, Texas

52



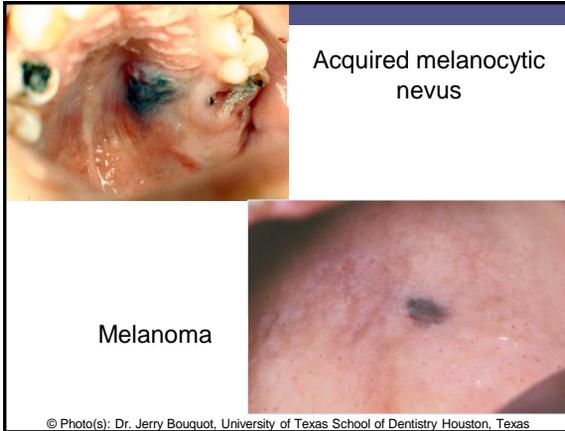
© Photo(s): Dr. Ashley Clark, University of Kentucky College of Dentistry

53

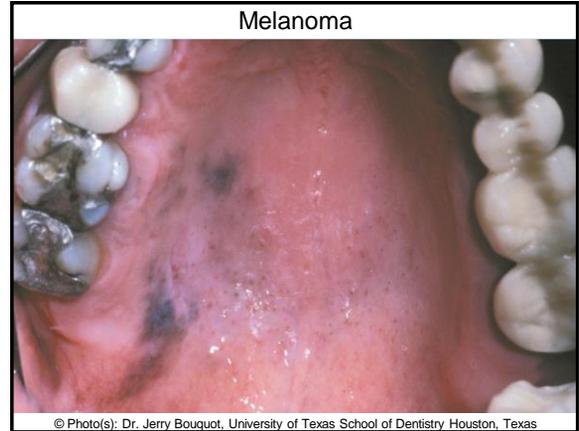


© Photo(s): Dr. Indraneel Bhattacharyya & Dr. Don Cohen, University of Florida

54



55



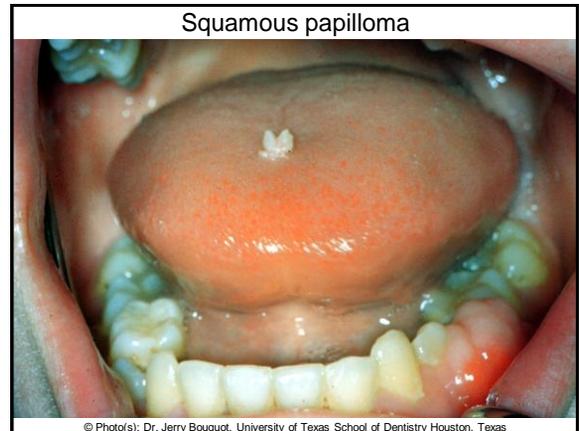
56

Papillary lesions

- All papillary lesions must be biopsied
- **Squamous papilloma:**
 - Common, solitary, not an STD, not very infectious (doesn't spread easily), no malignant potential, no further action after diagnosis
- **Verruca vulgaris:**
 - Not an STD, multiple lesions, infectious (spreads easily), no malignant potential, follow-up in case the patient has recurrences
- **Condyloma acuminatum:**
 - Is an STD, infectious, no malignant potential unless co-infected with high-risk strain (never been documented in oral cavity), follow-up in case the patient has recurrences

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 331-340.

57



58



59



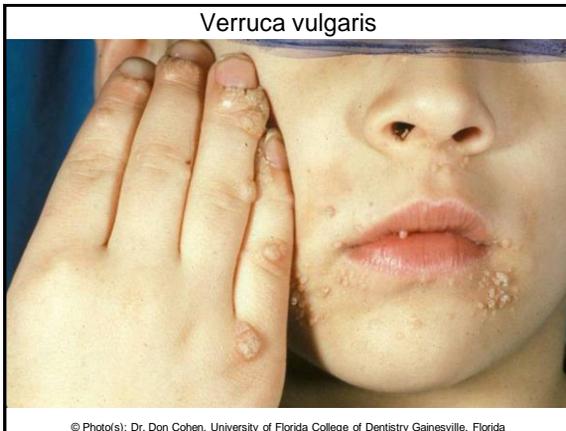
60



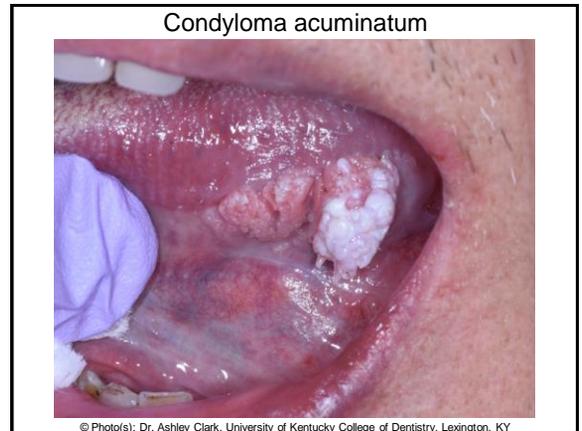
61



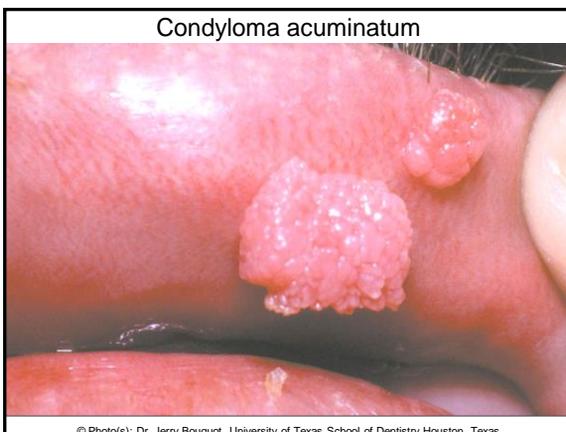
62



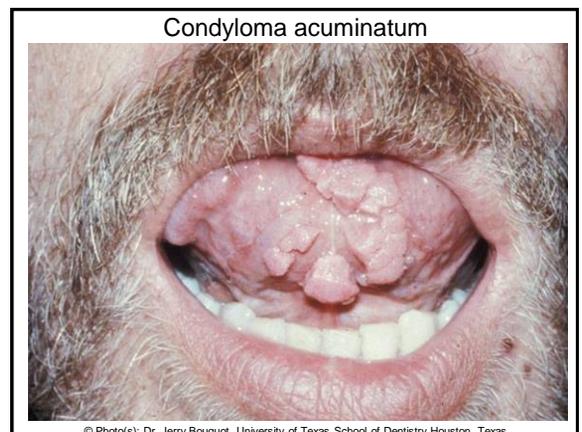
63



64

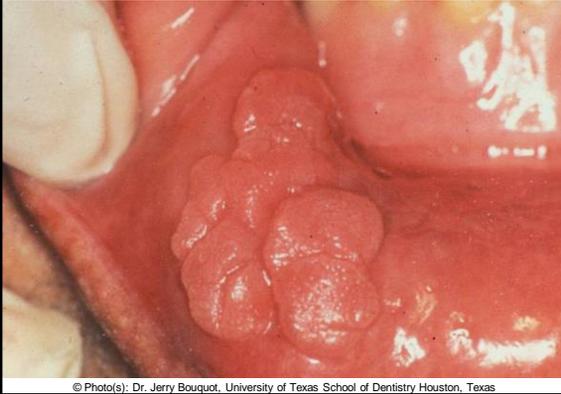


65



66

Condyloma acuminatum



© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

67

Leukoplakia

- Most common way in which oral potentially malignant disorders present (85%), though most are hyperkeratosis
- The most common etiology is tobacco and/or alcohol
- Clinical features:
 - Most commonly seen in older adults
 - Most leukoplakias are on the buccal mucosa and gingiva, but nearly all those with dysplasia or carcinoma are on the lateral/ventral tongue or floor of mouth
- Disease evolution: Starts as a thin leukoplakia, gets thicker, develops surface irregularity, then develops red patches
- Lesions have sharply demarcated borders

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 355-390.

Mehanna HM, Rattay T, Smith J, et al. Treatment and Follow-Up of Oral Dysplasia – A Systematic Review and Meta-Analysis. *Head & Neck*. 2009;31(12):1600-1609.

68

Leukoplakia

- Roughly speaking, the thinner leukoplakias are a lower-grade dysplasia
- By the time the lesion develops red areas, it is high-grade dysplasia or squamous cell carcinoma
 - Note: The only definitive way to tell is histopathologic evaluation; therefore, all areas of leukoplakia require biopsy
- Differential diagnosis includes:
 - Hyperkeratosis
 - Mild, moderate, or severe dysplasia
 - Carcinoma *in-situ*
 - Squamous cell carcinoma

69

Leukoplakia – treatment

- Hyperkeratosis = periodic follow up
 - Recurrences or changes must be re-biopsied
- Mild dysplasia =
 - Option 1 = lesion destruction (what I recommend)
 - Option 2 = With small lesions in patients with tobacco use, it is okay to follow up in 3 months if they quit to see if the lesion goes away on it's own. If not, lesion destruction
- Moderate dysplasia or worse = complete removal of the affected tissue is required
- Long-term (literature says 20 years!) follow-up at least every 6 months to watch for recurrences

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 355-390.

70

Thin leukoplakia; mild dysplasia



© Photo(s): Dr. Eugene Ko

71

Thin leukoplakia; mild dysplasia



© Photo(s): Dr. Kyra Holt, Holt Family Dental, Pearland, Texas

72

Thin leukoplakia; carcinoma *in situ* (HPV-16)

© Photo(s): Dr. Debra Stewart, University of Texas School of Dentistry Houston, Texas

73

Thick leukoplakia; mild dysplasia with hyperkeratosis



© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

74

Verruciform leukoplakia; severe dysplasia



© Photo(s): Dr. Jerry Bouquot, University of Texas School of Dentistry Houston, Texas

75

Erythroleukoplakia; moderate dysplasia



© Photo(s): Dr. Eugene Ko

76

Squamous cell carcinoma

- We won't do an in-depth discussion on SCC
- The job of the oral health care professional is to spot suspicious lesions and then biopsy or refer for biopsy
- I do want to show you some images of HPV-negative SCC so your memory is refreshed about their varied appearance
- The most common locations are the lateral/ventral tongue, floor of mouth, and gingiva
- **Gingival carcinomas** can masquerade as other lesions so be wary of unknown gingival lesions

77

Exophytic



© Photo(s): Dr. Ashley Clark, University of Texas School of Dentistry Houston, Texas

78

Ulcerated erythroleukoplakia



© Photo(s): Dr. Ashley Clark, University of Texas School of Dentistry Houston, Texas

79

Non-healing ulcer



© Photo(s): Dr. JE Bouquot, University of Texas School of Dentistry Houston, Texas

80



© Photo(s): Dr. Marcos Garcia, South Texas Periodontics & Implants, Corpus Christi, TX

81



© Photo(s): Dr. Christopher Meyer

82



© Photo(s): Dr. Greg Vance

83

To compare, this is pemphigus vulgaris



© Photo(s): Dr. Indraneel Bhattacharyya, The University of Florida College of Dentistry, Gainesville Florida

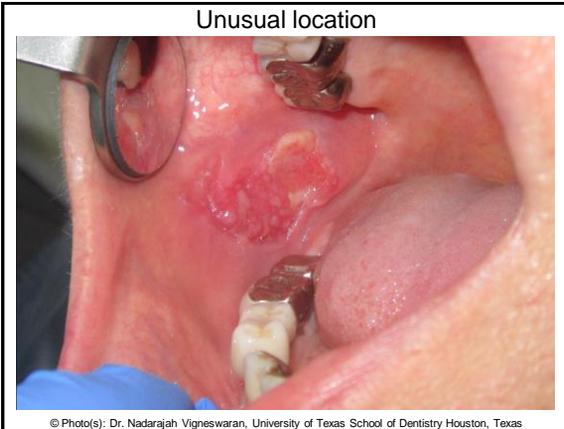
84



85



86



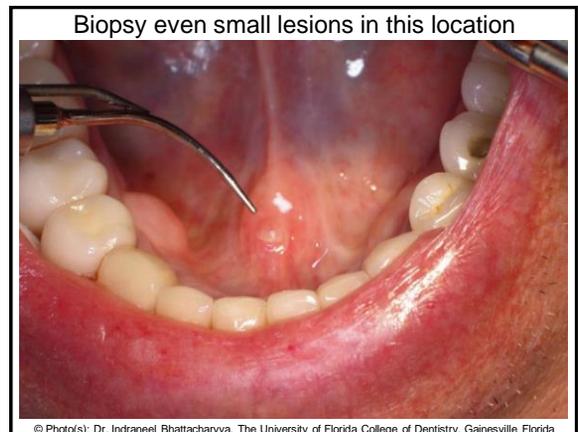
87



88



89



90

MESENCHYMAL LESIONS

Fibroma

Bumps on the gum

91

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

92

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

93



94



95



96

DERMATOLOGIC LESIONS

Lichen planus
Geographic tongue

97

Lichen planus

- Affects about 1% of your patients, most often middle-aged females
 - May be a reaction to medications, amalgam, etc. – this is better known as "lichenoid mucositis"
- Other possible extraoral sites of involvement include glans penis, vulvar mucosa, esophagus, and nails (need to warn patients about extraoral manifestations)
- Lesions are typically multiple and are bilateral and symmetric
- The most common sites: the buccal mucosa, lateral borders of tongue, and gingiva

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 729-734.
Alrashdan MS, Cirillo N, and McCullough M. Oral lichen planus: a literature review and update. Arch Dermatol Res. 2016;308:539-551

98

Lichen planus

- There are several different clinical presentations; patients may have more than one clinical form at the same time
 - Best known and most common = reticular (Wickham striae)
 - Lesions may also appear plaque-like, papular, atrophic, ulcerative/erosive, or bullous
- The plaque-like and papular forms are usually included under the umbrella of reticular oral lichen planus – they are asymptomatic
- The atrophic and bullous forms are usually included in erosive lichen planus – they are symptomatic

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 729-734.
Alrashdan MS, Cirillo N, and McCullough M. Oral lichen planus: a literature review and update. Arch Dermatol Res. 2016;308:539-551

99

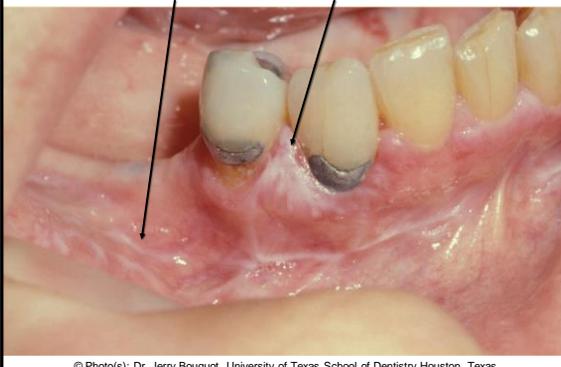
Lichen planus

- Reticular lichen planus can usually be diagnosed clinically
- If lesions are symptomatic or unilateral, biopsy is required
- Topical corticosteroids are the mainstay of treatment for oral erosive lichen planus
- The lesions should resolve in 2 weeks; if they do not, I recommend referral (dermatology, oral surgery, perio)
- The lesions will recur; the same treatment is used
 - Re-biopsies may be necessary: lesions should move around; any non-healing or suspicious-looking lesion should be re-biopsied
- All patients with any type of lichen planus requires at least yearly re-evals due to 1% malignant transformation rate

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp 729-734.

100

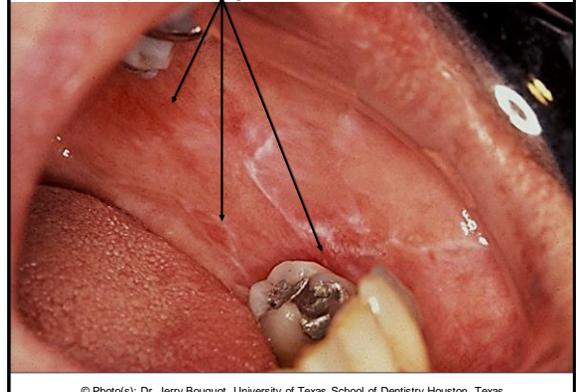
Reticular & papular



© Photo(s): Dr. Jerry Bouquet, University of Texas School of Dentistry Houston, Texas

101

Atrophic changes within reticular areas



© Photo(s): Dr. Jerry Bouquet, University of Texas School of Dentistry Houston, Texas

102

Bullous form



© Photo(s): Dr. Ashley Clark, University of Texas School of Dentistry Houston, Texas

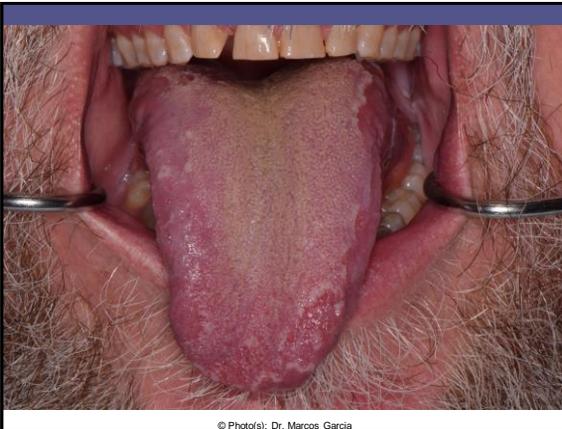
103

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 (early lesions do not have this border)
- 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

Neville B. Damm D. Allen C. et al. Oral and Maxillofacial Pathology, Fourth edition. Elsevier, Inc.: St. Louis, Missouri. Pp. 726-728.

104



© Photo(s): Dr. Marcos Garcia

105



106



© Photo(s): Dr. John Freeman

107



108

SALIVARY

Mucocele
Xerostomia

109

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
- Appear as dome-shaped, bluish, fluctuant, mucosal swellings on the lower lip in children
- Many patients report a history of swelling, rupture, & recurrent swelling

110

Mucocele

- 80% occur on the lower lip
- Lesions can also occur:
 - Floor of mouth (aka ranula), usually from sublingual gland
 - Ventral tongue (from glands of Blandin-Nuhn)
- Uncommonly, superficial lesions can occur on the buccal mucosa, palate, or retromolar pad
- Rarely, if ever, occur on the upper lip
- Superficial mucoceles present as tense vesicles that burst and then heal; they can recur

111

Mucocele

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

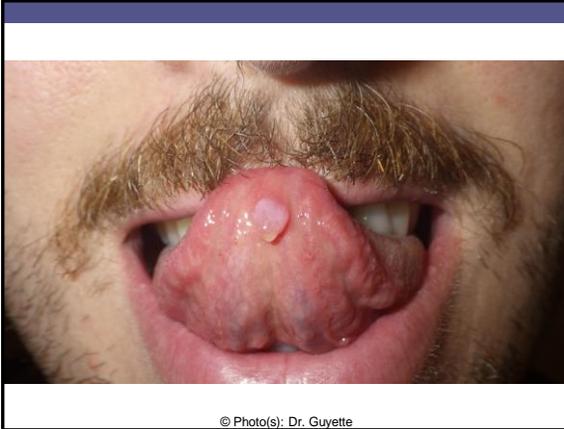
112



113



114

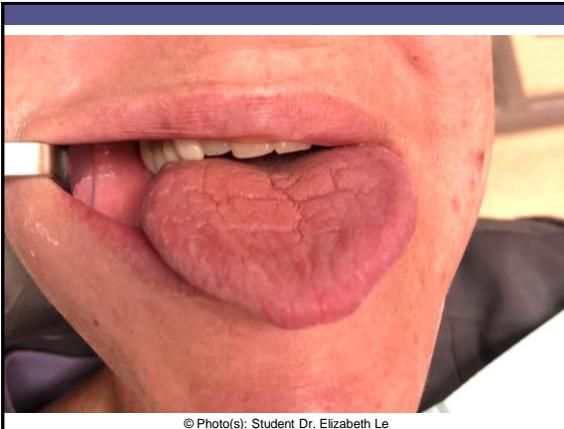


115

Xerostomia

- Very frustrating and treatment is often unsatisfactory
- Most likely due to medications
- Over the counter treatments: Xylimelts®, Salivea®, aloe water held in mouth
 - Note: Biotene® removed lactoperoxidase, lysozyme, and lactoferrin enzymes and is likely not as effective
- Prescription medications: such as NeutraSal®, SalivaMax®, Salivart® Synthetic Saliva, 3M™ Xerostomia Relief Spray
- 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

116



117



118

MISCELLANEOUS

Burning mouth disorder

Burning mouth disorder

- Affects postmenopausal women
- Patients will have a severe burning sensation and 2/3 experience altered taste (metallic, etc.)
- Starts on the dorsal tongue and can spread
- Mild discomfort on waking; pain increases throughout the day but does not interfere with sleep
- May flare with stress or certain foods
- As with all chronic pain conditions, patients are at an increased risk for psychologic dysfunction
- There are no oral findings; this is a diagnosis of exclusion

119

120

Burning mouth disorder

- Rule out the following:
 - Hypothyroidism, diabetes mellitus, deficiencies in vitamin B, xerostomia, etc.
- Inform patients this is a chronic condition, but it is benign
- Medications:
 - Alpha lipoic acid (over the counter; may be a placebo?): 600 mg/d for 1 month, 200-300 mg per day thereafter
 - Oral disintegrating clonazepam, 0.5 mg. Dissolve on tongue, swish around, and spit. Start with once per day at night. Can increase to tid over the next few weeks.
- Taste distraction – sugarless candy

121

RADIOGRAPHIC LESIONS

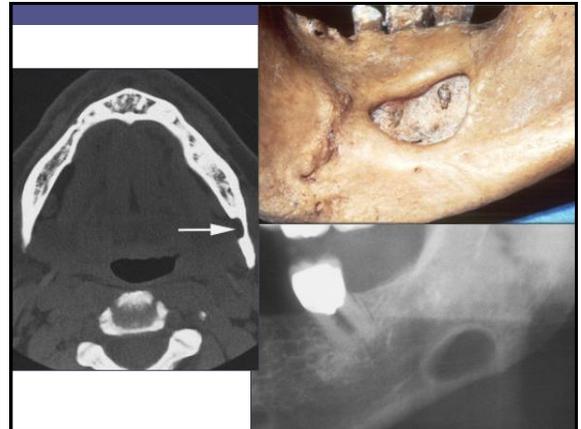
Radiolucent lesions
Radiopaque lesions

122

Stafne defect

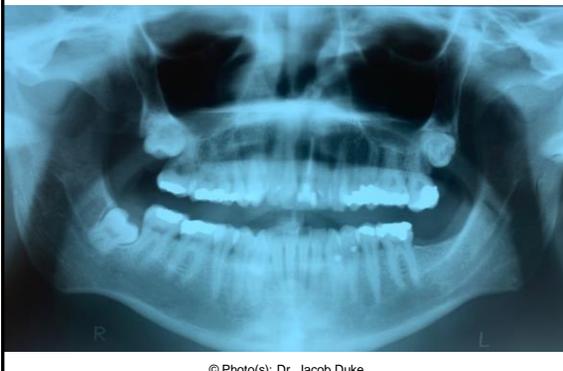
- AKA submandibular salivary gland depression
- Focal concavity of the cortical bone in the lingual surface of the mandible
- Classically presents as an asymptomatic, well-circumscribed radiolucency below the mandibular canal in the posterior mandible
- Usually unilateral but can be bilateral
- Found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

123



124

2007



© Photo(s): Dr. Jacob Duke

125

2014



© Photo(s): Dr. Jacob Duke

126



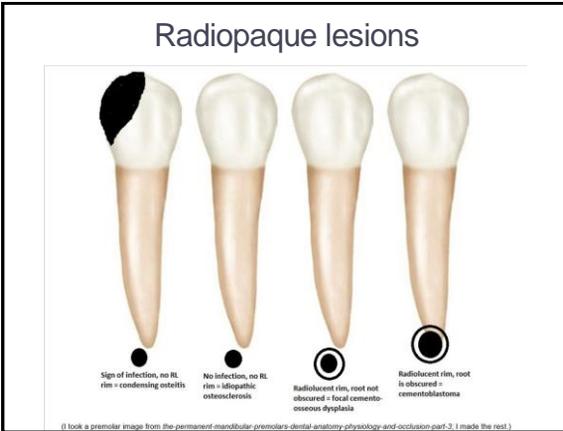
© Photo(s): Dr. Jacob Duke

127



© Photo(s): Dr. Jacob Duke

128



129

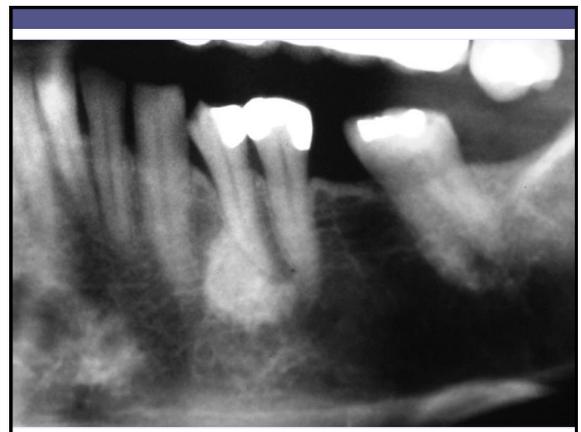
Condensing osteitis

- Localized area of bone sclerosis associated with apices of teeth with pulpitis
 - Association with inflammation is necessary for diagnosis
- Radiographically, appears as an increased radiopacity adjacent to a tooth apex that has a thickened PDL or apical inflammatory lesion
- 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

130



131



132

Idiopathic osteosclerosis

- AKA dense bone island, bone scar, or enostosis
- Focal area of increased radiopacity 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

133

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 can be made based on history, clinical features, and radiographic findings
- Biopsy is considered 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

134



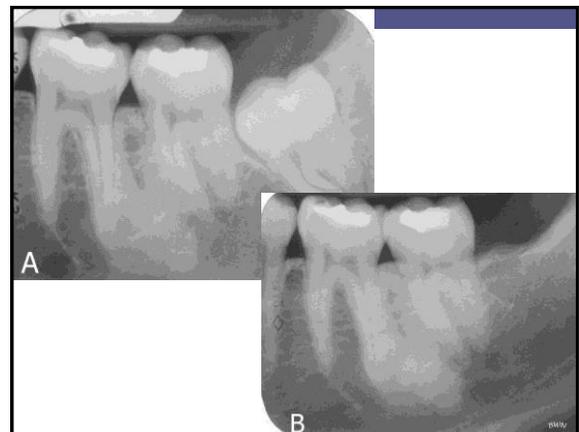
135

10 YEARS LATER...

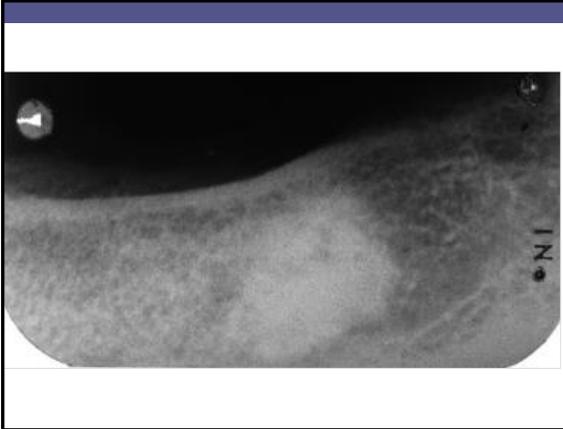
136



137



138



139



140

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

141

Focal cemento-osseous dysplasia

- Exhibits a 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

142

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

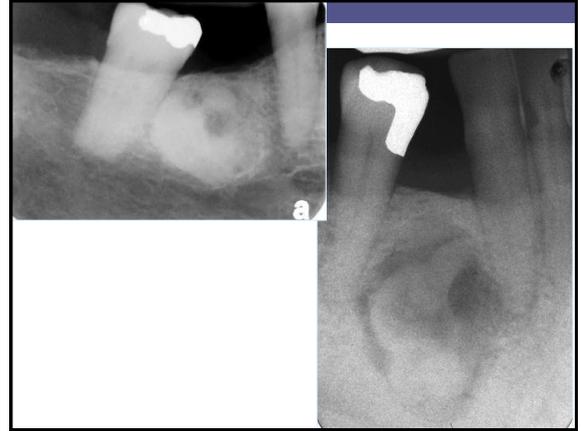
143



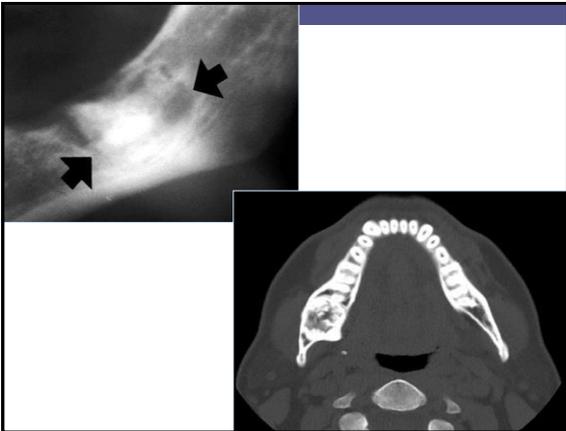
144



145



146



147



148

Periapical cemento-osseous dysplasia

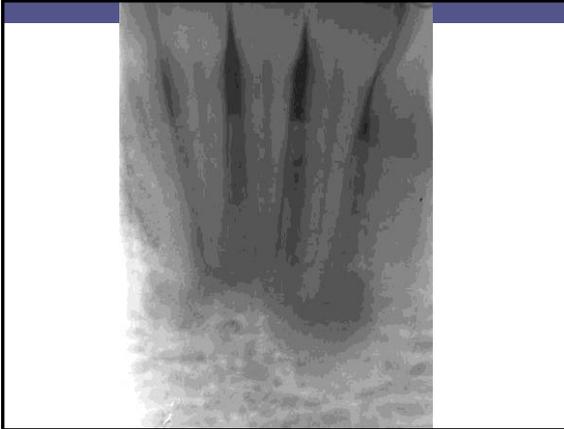
- Involves the periapical region of the anterior mandible
- Multiple foci are usually present
- 90% are female
- 70% are Black
- Average age = 40
- Teeth are vital
- Asymptomatic and discovered when XRAYs are taken for other reasons
- Early lesions are circumscribed areas of radiolucencies involving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

149

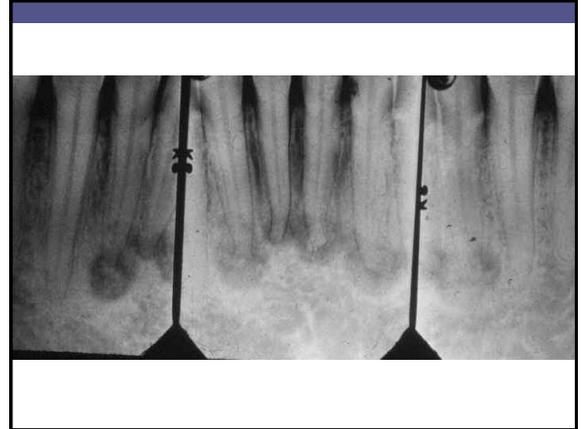
Periapical cemento-osseous dysplasia

- 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

150



151



152

Florid cemento-osseous dysplasia

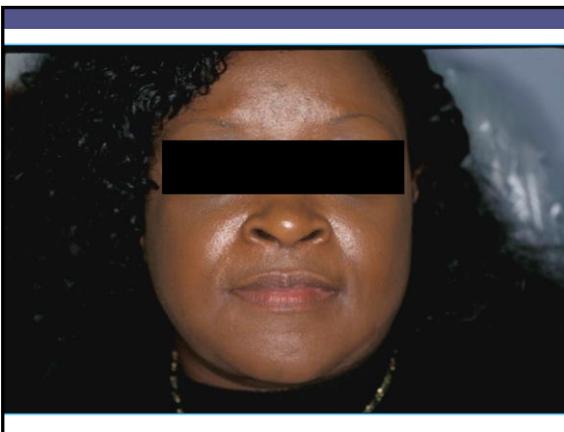
- Multiple focal involvement not limited to the anterior mandible
- Patients may just have lesions in the posterior jaws, but many patients have lesions throughout
- 90% are female
- 90% are Black
- Occurs in middle-aged or older adults
- Marked tendency to be bilateral and symmetrical
- May be completely 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

153

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

154



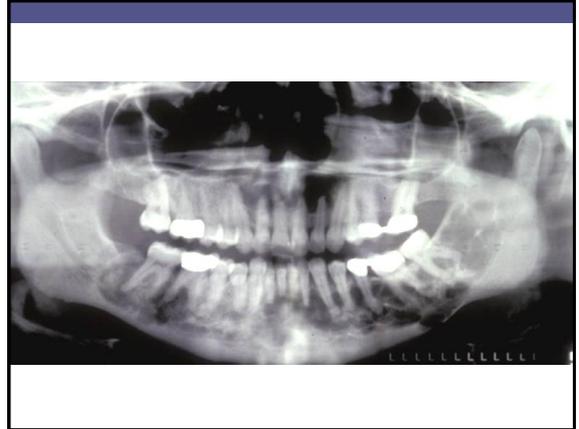
155



156



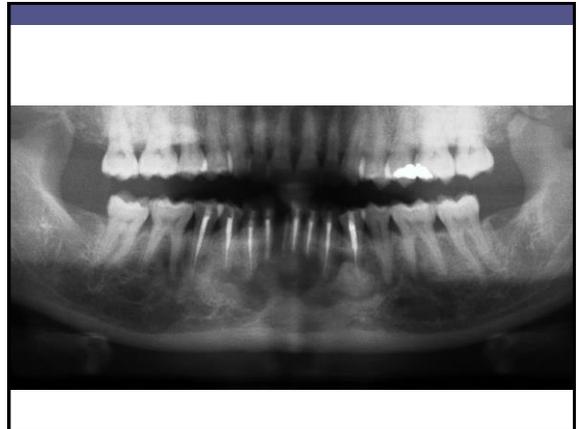
157



158



159



160



161

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

162

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 as a handful of cases will cause significant expansion

163

Cementoblastoma

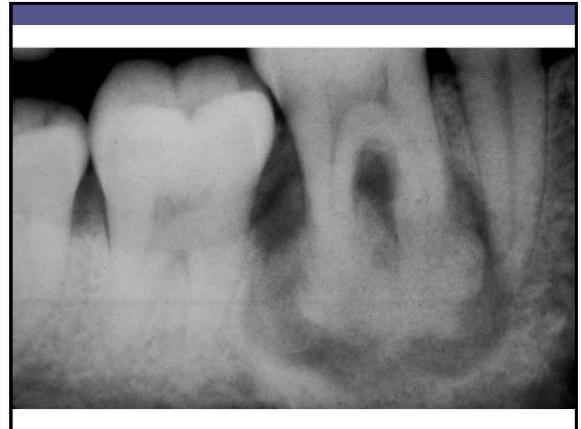
- Odontogenic neoplasm of cementoblasts
- 80% arise in the mandible, almost always in the molar/premolar region
- Typically only affect permanent teeth
- There is no sex predilection and they usually occur before age 30
- Pain and swelling are present in 2/3 and slow, progressive growth is typical

164

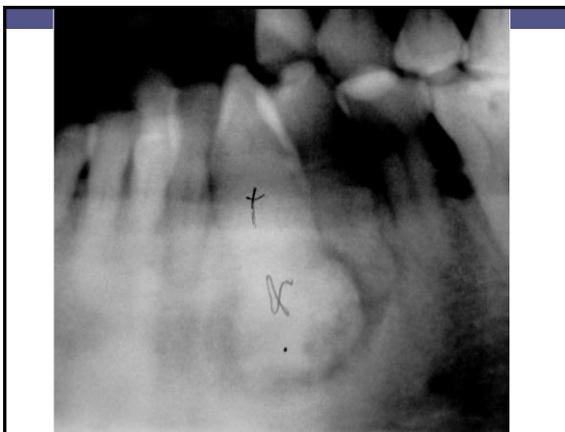
Cementoblastoma

- 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 RTC can be considered
- Recurrence is about 20%; this is probably due to incomplete removal

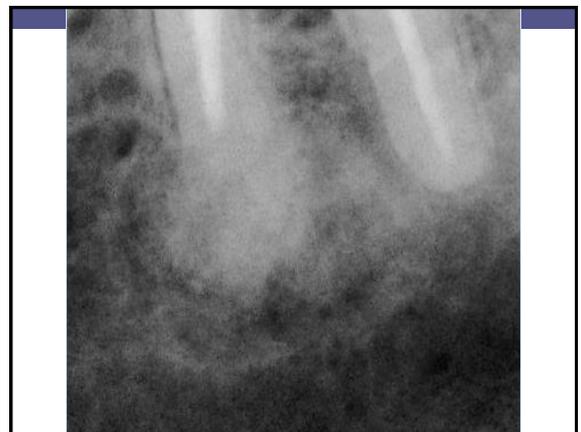
165



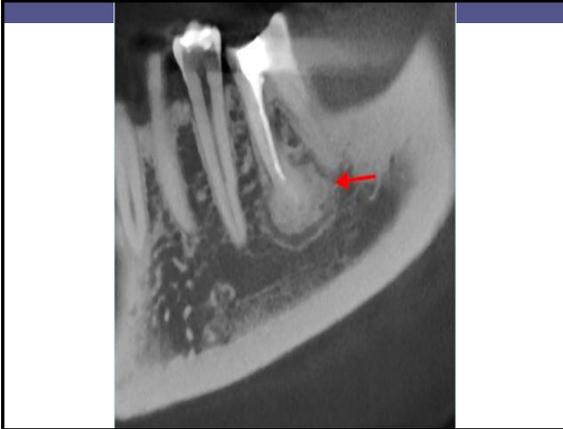
166



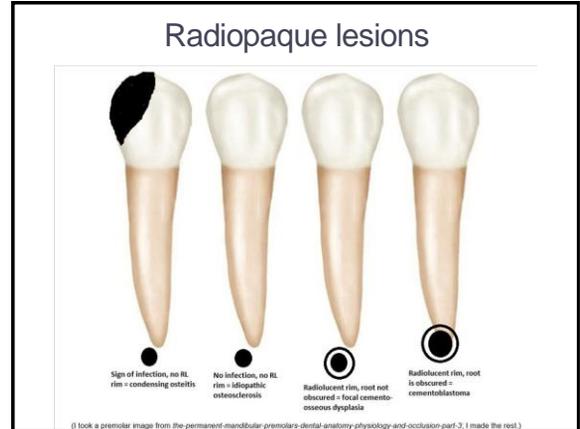
167



168



169



170

Osteoma

- Benign tumors of mature bone with true growth potential
- Only found in the craniofacial skeleton
- Arise on the surface of bone or within medullary bone
- Found in young adults as asymptomatic, solitary lesions
- Found in the mandible
 - If it involves the condyle, the patient may experience a midline shift or altered occlusion

171

Osteoma

- Radiographic features:
 - Circumscribed masses
 - Impossible to differentiate from small foci of sclerotic bone on initial radiographs; osteomas will exhibit continued growth
 - Usually radiopaque but can be radiolucent with central radiopacity, depending if they are compact or cancellous bone
 - Compact is radiopaque; cancellous is mixed
 - No radiolucent rim

172

Osteoma

- Large or symptomatic osteomas are treated by conservative excision
- Small, asymptomatic lesions probably do not need to be treated but should be observed and removed if lesions become large (interfere with function or esthetics) or symptomatic
- Completely benign with extremely rare recurrence
- Evaluation for Gardner syndrome is required in patients diagnosed with an osteoma

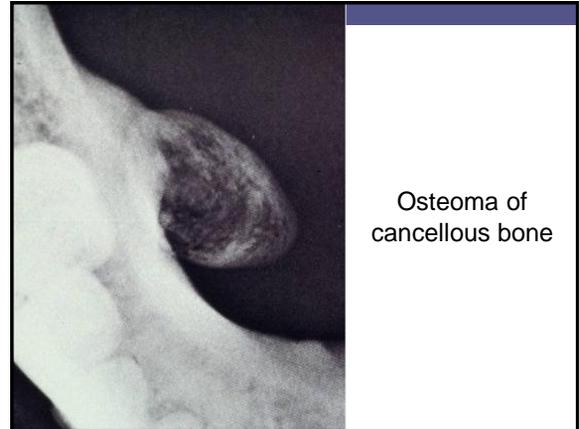
173



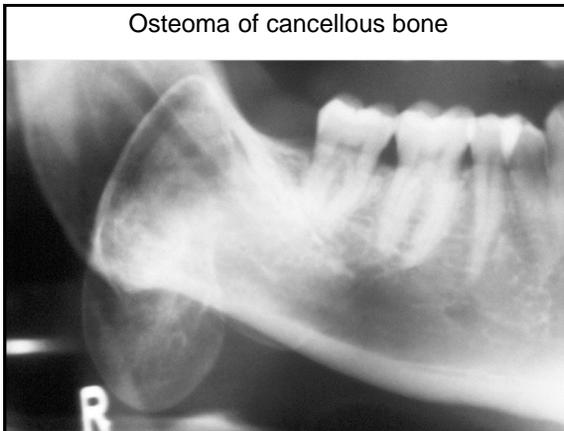
174



175



176



177

Infections - summary

- Herpetic lesions:
 - Primary lesions occur on movable and attached tissue (younger patients)
 - Recurrent herpetic lesions occur on vermillion and intraoral attached tissue
 - Rx: Acyclovir liquid for primarily; valacyclovir for recurrences
- Candidiasis:
 - Median rhomboid glossitis = clotrimazole troches or fluconazole
 - Angular cheilitis = clotrimazole cream
 - Chronic multifocal = clotrimazole troches or fluconazole with clotrimazole cream if angular cheilitis is present
 - Acute atrophic = clotrimazole troches or fluconazole
 - Denture stomatitis = clean denture + clotrimazole troches or fluconazole

178

Allergies - summary

- Movable intraoral tissue, painful, most last 7-10 days (never more than 6 weeks!)
- Treatment: Switch to SLS-free toothpaste (Biotene®, Squigle® are safe bets) & topical steroid

179

Pigmented lesions – summary

- The differential diagnosis includes melanotic macule, oral melanocytic nevus, amalgam tattoo, and melanoma
- Treatment for these types of lesions:
 1. Take a radiograph to look for tiny flecks of amalgam
 2. If no amalgam identified, biopsy is required for definitive diagnosis (yourself, oral surgery, perio)
- Treatment after definitive diagnosis:
 1. If amalgam is identified, that's the definitive diagnosis so no biopsy or further treatment is required
 2. Melanotic macule and melanocytic nevus = no treatment if excised. If incisional biopsy, follow-up to ensure it doesn't recur
 3. Melanoma = refer to oral surgeon who does these kinds of surgeries; may need to work with PCP to see who else needs to see patient for follow-up; poor prognosis

Neville B, Damm D, Allen C, et al. Oral and Maxillofacial Pathology: Fourth edition. Elsevier, Inc. - St. Louis, Missouri. Pg 281-284, 348-353, 401-407.

180

Papillary lesions - summary

- Papillary lesions require excisional biopsy with submission for histopathologic evaluation
- Once diagnosed:
 - Squamous papilloma = no further treatment (do not refer to physician or OB/GYN!)
 - Verruca vulgaris = monitor for recurrences
 - Condyloma acuminatum = monitor for recurrences. This is considered a sexually transmitted disease but has no association with HPV-driven oropharyngeal carcinoma on its own

181

Leukoplakia - summary

- Leukoplakia is the most common potentially malignant disorder
- Leukoplakia must be biopsied without exception
- Management of leukoplakia depends on the microscopic diagnosis
 - Okay to watch hyperkeratosis and occasionally mild dysplasia; moderate dysplasia or worse mandates removal
- Surgical excision decreases the risk of malignant transformation but does not eliminate it
- Long-term follow-up is required; the literature suggests a minimum of 20 years

Woo S-B, Cashman EC, and Lerman MA. Human papillomavirus-associated oral intraepithelial neoplasia. *Modern Pathology*. 2013;26:1288-1297.
 Mehanna HM, Rattay T, Smith J, et al. Treatment and Follow-Up of Oral Dysplasia – A Systematic Review and Meta-Analysis. *Head & Neck*. 2009;31(12):1600-1609.

182

Mesenchymal lesions - summary

- Fibromas require biopsy with submission for histopathologic evaluation. Excellent prognosis.
- Bumps on the gum also require biopsy with histopathologic evaluation. 10% recur.

183

Salivary lesions - summary

- Mucoceles occur most commonly on the lower lip, but think about them when patients have ventral tongue lesions too
- Any “mucocele” of the retromolar pad should be viewed with suspicion
- Manage expectations for people with xerostomia; it is difficult to treat

184

Dermatologic lesions - summary

- Lichen planus:
 - If lesions are symptomatic or unilateral, biopsy is required
 - Reticular lichen planus does not require biopsy or treatment except evaluate yearly and biopsy if it becomes symptomatic or unilateral
 - Erosive lichen planus is treated with steroids:
 - Re-evaluate and biopsy any non-migrating, persistent lesion; may need to refer out if recalcitrant to steroids
 - All lichen planus cases (including reticular) should be evaluated at least yearly (1% malignant potential)

185

QUESTIONS?

186