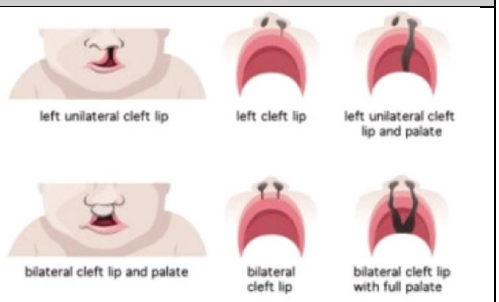
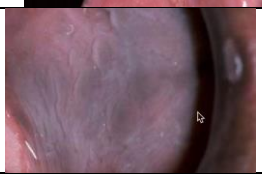
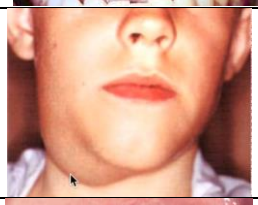
Oral Pathology Blitz

**These Notes are based on the Mental Dental Pathology Playlist:
https://www.youtube.com/watch?v=3zcuZ6U7vQA&list=PLVmK7sDA_arHJZOV12PLjTTZp6FuxxLR1&index=1

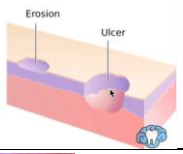
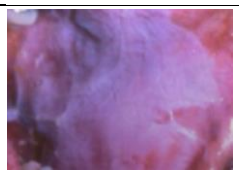
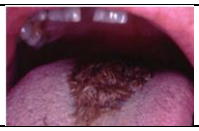
Developmental Conditions

Developmental		
Cleft Lip	- 1/1000 Births - Lack of fusion between the medial nasal process and maxillary process (which normally fuse to form the face)	
Cleft Palate	- 1/2000 births - Lack of fusion between the palatal sutures - Frequently happens in conjunction with Cleft lip	
Lip Pits	- Invaginations at the commissures or near the midline of the lip *Associated Syndrome:* - Van der Woude Syndrome: Clefts + Pits	
Fordyce Granules	- Ectopic sebaceous glands - Frequently found on buccal mucosa - Completely benign	
Leukoedema	- White/Grey edematous lesion of the buccal mucosa - Very common on buccal mucosa *When lip is stretched, the color goes away*	
Lingual Thyroid	- Thyroid tissue mass at the midline base of the tongue - This is where thyroid tissue originates during development, it normally migrates down to the neck/trachea area to form the thyroid gland - Located along the embryonic path of thyroid descent	
Thyroglossal Duct Cyst	- Midline neck swelling - Located along the embryonic path of thyroid descent - Much like the lingual thyroid, only the tissue did not midrate all the way down	
Geographic Tongue (Migratory glossitis / Erythema migrans)	- White ringed lesion surrounding central red islands that migrates over time - May be associated with certain foods - Occassionally hurts/burns - Tx: N/A	
Fissured Tongue	- Fold and furrows in the tongue dorsum *Associated syndrome:* - Melkerson-Rosenthal syndrome: Fissured tongue + Granulomatous cheilitis + Facial paralysis - "Mels Bells" -> Melkerson, Bells Palsy - "Rosy Red" -> Rosenthal + Red swollen lips	
Angiomas - Tumors of blood vessels or lymph vessels		
Cherry Angioma	= "Red Mole" - Extremely common - Completely benign, small tumor of capillaries	

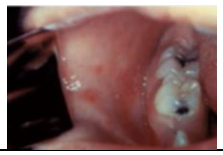
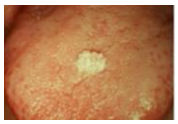
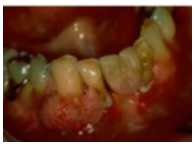
Hemangioma	= Congenital focal proliferation of capillaries - Most undergo involution as a child -> If it persists though usually get it surgically removed (mostly for esthetics)	
Lymphangioma	= Congenital focal proliferation of lymph vessels - Orally its very rare -> Purple spots on the tongue On neck = Cystic hygroma *Associated Syndrome:* - Sturge-Weber Syndrome = Angioma of leptomeninges (Arachnoid and Pia mater) + skin along the trigeminal nerve distribution	
Cysts		
Dermoid Cyst	- Mass in the midline floor of the mouth (if above the mylohyoid) or upper neck (if below mylohyoid) - Contains adnexal structures (hair, sebaceous glands) - Doughy consistency -> This is the main distinguishing feature vs a ranula	
Branchial Cyst	- Lateral neck swelling - Epithelial cyst within a lymph node of the neck	
Oral lymphoepithelial Cyst	- Epithelial cyst within the lymph nodes of the oral mucosa - Commonly Palatal or Lingual tonsils	
Stafne Bone Defect (Lingual Bone Defect)	= Radiolucency in the posterior mandible inferior to the IAN canal - Very severe lingual concavity	
Nasopalatine Duct Cyst	= Heart-shaped radiolucency in the nasopalatine canal - Caused by cystification of canal remnants Tx: Surgical Excision	
Globulomaxillary Lesion	= Clinical term for any RL between the Max. Canine and Max. Lateral - NOT a diagnosis, just a clinical description	
Traumatic Bone Cyst (Simple Bone Cyst)	= Large RL that *scallops* around tooth roots - No epithelial lining (so its like a pseudocyst) - Mostly in the mandible of teens and is associated with jaw trauma Tx: Aspirate to diagnose (will usually have blood in them) and monitor	

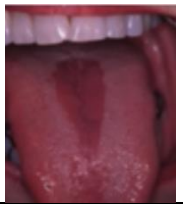
Mucosal Lesions

Reactive

Linea Alba	= White line on buccal mucosa - In line with the plane of occlusion Focal hyperkeratosis due to chronic friction on mucosa	
Traumatic Ulcer	Very Common - *Erosion* = Incomplete break of epithelium - *Ulcer* = Complete break through the epithelium (this is why these are much more painful)	 
Chemical Burn	Common from: - Aspirin (topical application) - Hydrogen Peroxide - Silver Nitrate - Phenol *White sloughing mucosa*	
Nicotinic Stomatotis	= Red dots -> *Inflamed minor salivary duct openings on hard palate* - Only considered pre-malignany if it is related to "reverse smoking" (putting the lit end of a cigarette in your mouth like an idiot)	
Amalgam Tattoo	= Traumatic implantation of amalgam particles into mucosa - Can see clinically or radiographically Don't need to biopsy or treat	 
Smoking-Associated Melanosis	= Chemicals in tobacco stimulate melanocytes to make more melanin - Brown diffuse irregular macules - Typically in the anterior gingiva (especially with smokeless tobacco AKA snuff) Tx: Reversed if smoking is stopped	
Melanotic Macule	= benign hyperpigmentation in mucous membrane (basically a freckle) **Associated syndrome:** - Peutz-Jeghers Syndrome = Freckles (lips and mouth) + Intestinal polyps	
Hairy Tongue	= Elongated *filiform* papillae	
Dentitifrice-Associated Sloughing	= Related to SLS (Sodium-lauryl sulfate) - Suggest SLS free toothpaste	
Submucosal Hemorrhage	= Extravascular lesions that ***do not blanch*** - Vascular lesions (hemangiomas, telangiectasias) do blanch *Petechiae* = 1mm hemorrhages *Purpura* = slightly large than petechiae *Ecchymosis* = 1cm or bigger *Hematoma* = mass of blood within tissue caused by trauma to oral mucosa Tx: Eliminate the cause	

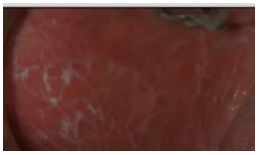
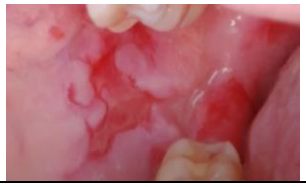
Infections

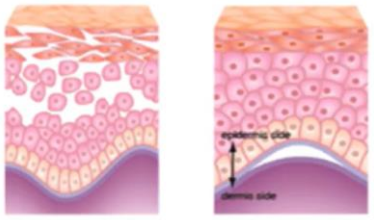
Viral		
Herpes Simplex Virus (HSV)`	**Primary** -> pan-oral, self limiting and typically in children - Tx: Palliative (symptomatic relief) - Remains latent in the Trigeminal Ganglion **Recurrent** -> *Keratinized tissue only* - *Herpes labialis* (cold sores, fever blister) = Vermilion border - *Recurrent intraoral herpes* = attached gingiva, hard palate *Reactivation is triggered by stress, sunlight, or immunosuppression* Herpetic whitlow -> Finger lesions Herpes Gladiatorum -> Head (typically in wrestlers) Tx: Acyclovir in prodromal period (before it activates)	
Varicella Zoster Virus (VZV)	**Primary** -> Varicella (AKA Chickenpox) -> self limiting, childhood - Latent in the trigeminal ganglion **Recurrent** -> Herpes Zoster (AKA Shingles) **Associated Syndrome**: Ramsay Hunt Syndrome - Herpes zoster reactivation in geniculate ganglion affecting CN VII and VIII = Facial paralysis, vertigo, deafness Tx: Acyclovir	
Coxsackie Virus	= Hand-foot-and-mouth disease Herpangina -> Posterior oral cavity (soft palate, throat, tonsils)	
Measles (Rubeola)	**= Kolik's spots** (buccal mucosa dot ulcers -> preceds skin rash) Primary Infection -> Self limiting and typically affects kids	
HPV Papilloma (Wart)	- Caused by several HPV strains - Benign epithelia pedunculated or sessile proliferations on skin or mucosa **Verucca Vulgaris** - Common skin wart **Condyloma Acuminatum** - Caused by *HPV 6 and 11* - Genital wart or from oral sex w/ someone with genital warts - Tx: Excision w/ high recurrence **Focal Epithelial Hyperplasia (Heck's Disease)** - Caused by *HPV 13 and 32* - Multiple small dome-shaped warts on oral mucosa - "whole mouth goes to heck" - Tx: Excision w/ excellent prognosis	 -  Condyloma Acuminatum  Heck's Disease
Oral Hairy Leukoplakia	- Caused by EBV - White patch on lateral tongue -> doesn't wipe off - Opportunistic infection -> associated with HIV or Burkitt's lymphoma	

Bacterial Infections		
Syphilis	Caused by Treponema pallidum (spirochete) ***Primary Lesion*** -> Chancre ***Secondary Lesion*** -> Oral mucous patch, condyloma latum, maculopapular rash ***Tertiary Lesion*** -> Gumma, CNS involvement, CV involvement ***Congenital Syphilis*** = Hutchinson's Triad (notched incisors, mulberry molars, deafness, ocular keratitis)	
Tuberculosis	Inhalation of Mycobacterium tuberculosis - Oral non-healing chronic ulcers following lung infection **Primary** -> Ghon complex (inhaled bacteria surrounded by granuloma that undergoes caseating necrosis + infected hilar lymph node draining the first lesion) **Secondary** -> More widespread lung infection w/ cavitation **Miliary** -> Systemic spread *HIV Patients are at high risk of progressive disease Tx: Multidrug therapy (isoniazid, rifampin, ethambutol)	
Gonorrhea	= Caused by Neisseria gonorrhea - Rarely has oral manifestations	
Actinomycosis	= Caused by Actinomyces israelii (filamentous) -> Not fungal - Opportunistic infection, chronic and granulomatous ***Periapical*** -> Jaw infections ***Cervicofacial*** -> Head and neck infections *Sulfur granules in purulent exudate* Tx: Long-term high dose penicillin	
Scarlet Fever	= Caused by Group A Strep (classically Streptococcus pyogenes) - When strep throat becomes systemic Classic sign: Strawberry tongue - White-coated tongue w/ red inflamed *fungiform* papillae Tx: Penicillin	
Fungal		
Candidiasis (Thrush)	***Pseudomembranous*** -> White plaque that rubs off to show erythematous mucosa ***Atrophic*** -> Red ***Median rhomboid glossitis*** -> Loss of lingual papillae ***Angular cheilitis*** -> Corner of mouth Tx: Antifungal (-Azole, -Statin)	
Deep Fungal Infections	These fungi are typically found geographically in soils *Blastomycosis* -> US Northeast, spores inhalation *Coccidiodomucosis* -> US Southwest, Valley Fever *Cryptococcosis* -> US West *Histoplasmosis* -> US midwest	

Immunological Diseases

Autoimmune or Hyperimmune responses to either known or unknown stimuli

Aphthous Ulcer (Canker Sore)	99% affects non-keratinized tissues - Herpes ulcers (recurrent) happens only on keratinized ***Minor*** -> Heals without scarring ***Major*** (AKA Suttons Disease)-> Heals w/ scarring *Associated Syndromes:* - Behcet's Syndrome = Multisystem vasculitis causing aphthous ulcers of oral and genital regions and inflammation of eye Tx: Corticosteroids for Behcets, or Salt rinse for minor	
Erythema Multiforme	Often on lips (but can really happen anywhere on the skin or mucosa) Minor -> Herpes simplex hypersensitivity Major (Steven-Johnson Syndrome) -> drug sensitivity	
Angioedema	= Allergic reaction to drug or food contact - Characteristic diffuse swelling of the lips (and/or neck and face) Mediated by *mast cell release of IgE and Histamines* Tx: Antihistamines	
Wegener's Granulomatosis	= Allergic reaction to inhaled antigen - Characteristic sign = Strawberry gingivitis Tx: Corticosteroids (prednisone) and syclophosphamide	
Lichen Planus	T-lymphocytes target and destroy basal keratinocytes - Basal zone vacuolization + ***Sawtooth rete pegs*** occur secondary to the T-cell mediated destructions Reticular (more common) -> Wickham striae, white and lacy Erosive -> Wickham striae w/ red ulceration Tx: Corticosteroids	
Lupus Erythematosus	Discoid Chronic Type - Disc-like lesions on facial skin - Oral lesions mimic erosive lichen planus Systemic Acute Type: - Multiple organ involvement - Characteristic ***butterfly rash*** over bridge of nose - Because it's systemic, it involves autoantibodies (can do an ANA test to Dx) Tx: Corticosteroids	 
Scleroderma	= Hardening of the skin and connective tissue - Restricted opening and uniform widening of the PDL Space	
Pemphigus Vulgaris	= Suprabasilar clefting - Autoantibodies against ***desmisomes*** - Multiple painful ulcers preceded by bullae - Positive Nikolsky's sign -> sloughing of the outer skin layer Tx: Corticosteroids	

Pemphigoid	"**O, Old, Ophthamologist**" - Subbasilar - Autoantibodies against Basement membrane Pemphigus = U-bove Pemphigoid = beloiw	 Pemphigus Pemphigoid

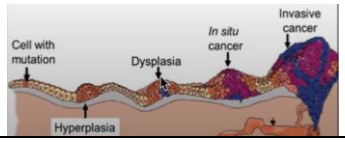
Premalignant Lesions

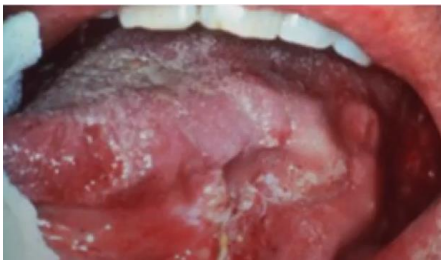
- Risk for developing Squamous Cell Carcinoma

Leukoplakia	***This is a clinical description! NOT a Dx**** - White Patch that doesn't rub off and doesn't have an obvious clinical Dx *Tx*: Biopsy mandatory	
Proliferative Verrucous Leukoplakia	***Also a clinical description**** - Recurrent and warty - May be associated w/ HPV 16 and 18 (highest risk strains for developing cervical cancer) - High risk of malignant transformation to SCC or Verrucous Carcinoma	
Erythroplakia	***Clinical Description, not a Dx**** - Red patch - Higher risk than leukoplakia for becoming malignant (Erythroleukoplakia is the highest risk) Tx: Biopsy mandatory	
Erythroleukoplakia	***Clinical Description, not a Dx**** - Red and white patch - Highest risk for transforming into malignancy Tx: Biopsy mandatory	
Actinic Cheilitis	Actinic = Solar ; Cheilitis = Lip inflammation - Due to solar damage (UV-B especially) -> UV-B*ad*	
Smokeless Tobacco-Associated Lesion	White mucosal change in vestibule b/c direct effects of smokeless tobacco and its additives	

Malignant Lesions

- Most cancers = Non-painful, non-healing, indurated ulcers
- FOM and posterior lateral tongue = #1 and #2 highest risk sites

Cancer Types	Cancer Stages
- ***Carcinoma*** -> Epithelial origin - ***Sarcoma*** -> Mesenchymal (CT) origin - ***Leukemia*** -> Blood - ***Lymphoma*** -> Lymphatic tissue	***Dysplasia*** = Pre-cancer ***Carcinoma in situ*** = All of the epithelial layers are affected ***Malignant Neoplasm*** = Cancer (invades past the basement membrane - Local invasion -> Connective Tissue - Metastasis -> Access to blood or lymph to travel around the body 

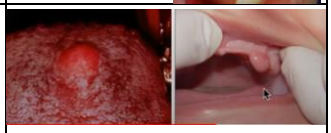
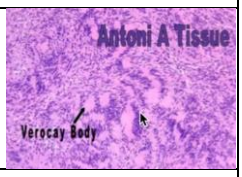
Verrucous Carcinoma (AKA Snuff dippers carcinoma)	= Tobacco and HPV 16 and 18 are the causes - Slow growing malignancy Tx: Excision	
Squamous Cell Carcinoma	= Caused by oncogene activation or inactivation of tumor suppressor genes - ↑ incidence of oropharyngeal SCC associated w/ HPV 16 and 18 - 5-year survival = 50% ☹ Tx: Excision or radiation ***Associated Syndrome:*** - **Plummer-Vinson Syndrome**: mucosal atrophy + Dysphagia + Iron deficiency anemia + ↑ risk of oral cancer	
Basal Cell Carcinoma	= Caused by sun damage - Very rarely metastasizes - The least dangerous cancer 😊 Tx: Surgery	
Oral Melanoma	= Malignancy of melanocytes - Purplish/blackish lesions - High risk sites: Palate and gingiva - 5 year survival for skin lesions is > 65%, but <20% for oral lesions ☹	

Connective Tissue

Benign Tumors (Reactive)

= Lumps or bumps

Fibroma (Traumatic fibroma, irritation fibroma, hyperplasic scar)	= Fibrous hyperplasia of oral mucosa - Caused by chronic trauma or irritation	
Gingival Hyperplasia (VERY commonly tested)	*Caused by:* - Calcium Channel Blockers (**Nifedipine**) - Anti-convulsant/epileptic (**Dilantin/Phenytoin**) - Immunosuppressant (**Cyclosporin**) Tx: Gingivectomy and discontinue drug if possible	
Denture-induced Fibrous Hyperplasia	*Epilus Fissuratum* = @ base of vestibule - Over-extended flange of the denture causes this *Papillary hyperplasia* = @ hard palate - Caused by poor denture hygiene	 
Traumatic Neuroma	= Entangled submucosal mass of neural tissue with scar formation - Caused by nerve injury - Most common at mental foramen ***Associated Syndrome***: - *Multiple Endocrine Neoplasia (MEN 2B)* = Multiple neuromas (NOT Traumatic) + Medullary thyroid cancer + Pheochromocytoma of the adrenal gland - "MEN is short for Mental foramen, which is most commonly associated with this lesion"	

Pyogenic granuloma	= Hyperplasia of capillaries (causes red colour) - Caused by chronic trauma or irritation - Very common on the gingiva	
Nodular Fasciitis	= Neoplasm of fibroblasts - Easy to eradicate and rarely recurs Tx: Surgical Excision	
Fibromatosis	= Neoplasm of fibroblasts (again) - Difficult to eradicate and often recurs (Opposite of nodular fasciitis)	
Granular Cell Tumor	= Neoplasm of Schwann Cells - Named because they have granular cytoplasm (histologically) - **Most common on dorsal tongue** - *Variant found on the gingiva = **Congenital Epulis of newborn*** ***Pseudoepitheliomatous Hypoplasia*** (PEH) within this tumor mimics SCC histologically	
Schwannoma (Neurilemmoma)	= Neoplasm of Schwann cells - Acellular Verocay bodies in Antoni A Tissue, forms a line of scrimmage	
Neurofibroma	= Neoplasm of Schwann cells + Fibroblasts ***Associated Syndrome:*** - *Neurofibromatosis Type I (Von Recklinghausen's disease)* = **Multiple neurofibromas** + multiple skin **freckles** (Café au lait spots) + **Axillary freckles** (Crowe's sign) + **Iris freckles** (Lisch spots) - "Von *Freckling*hausen" disease - Neurofibromas can transform to neurofibrosarcoma with this disease	
Leiomyoma	= Neoplasm of smooth muscle cells	
Rhabdomyoma	= Neoplasm of skeletal muscle cells	
Lipoma	= Neoplasm of fat cells - Most common on buccal mucosa	

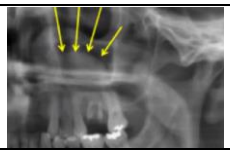
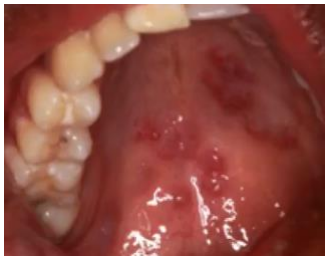
Malignant Tumors

- Most are malignant conversion of the benign tumors
- Look very similar to the benign ones

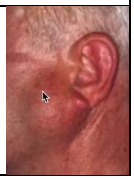
Fibrosarcoma	= Malignant proliferation of fibroblasts	
Neurofibrosarcoma (Malignant peripheral nerve sheath tumor)	= Malignant proliferation of Schwann Cells	
Kaposi's Sarcoma	= Malignant proliferation of endothelial cells - Caused by HHV8 and most commonly seen as a complication of AIDS - ***Purple lesion***	
Leiomyosarcoma	= Malignant proliferation of smooth muscles cells	
Rhabdomyosarcoma	= Malignant proliferation of Skeletal muscle cells	
Liposarcoma	= Malignant proliferation of fat cells	

Salivary Gland Diseases

Reactive Lesions

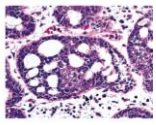
Mucous Extravasation Phenomenon	***Caused by trauma to salivary duct*** - NOT necessarily surrounded by epithelium - ***Mucocele***: Common in lower lip. Blockage of duct, typically from trauma - ***Ranula***: when found on FOM Tx: Complete excision of the minor gland (and its surrounding glands)	 
Mucous Retention Cyst	= Same as above histologically, however it is a true cyst lined by epithelium - Caused by blockage of salivary duct by a sialolith	
Necrotizing Sialiometaplasia	= Rapidly expanding ulcerative lesion - Due to ischemic necrosis of minor salivary glands (response to trauma or LA) Tx: Heals on its own in 6-10 weeks. Treat palliatively	
Sinus Retention Cyst (Antral Pseudocyst)	= Blockage of glands in the sinus mucosa Tx: None	
Sarcoidosis	*Hyperimmune* -> so there are granulomas involved - May be triggered by Mycobacteria (same at TB) Primarily a pulmonary disease, but also affects salivary glands and mucosa - Causes Xerostomia **Associated Syndromes:** - ***Lofgren's Syndrome*** = Erythema nodosum + Bilateral hilar lymphadenopathy + arthritis - ***Heerfordt Syndrome (AKA Uveoparotid Fever)*** = Anterior uveitis + parotid gland enlargement + Facial nerve Palsy + Fever Tx: Corticosteroids	
Sjogren's Syndrome	Autoimmune and lymphocyte mediated - Affects salivary and tear glands *Primary* = Keratoconjunctivitis sicca (Dry eyes) + Xerostomia (Dry mouth) *Secondary* = Primary + another autoimmune disease (usually rheumatoid arthritis) Tx: Symptomatic	

Benign Lesions

Pleomorphic Adenoma	***Most common benign salivary gland tumor**** - Composed of a ***mixture of cell types*** (Epithelial and CT) -> hence why it is AKA "Mixed Tumor" - ***Firm rubbery swelling*** (from small to large) *Location*: ***Palate*** (if minor salivary gland) ***Ear*** (if parotid gland)	
Monomorphic Adenoma	- Composed of ***single cell type*** *Includes*: Basal cell adenoma, Canalicular adenoma, myoepithelioma, oncocytic tumor Tx: Surgical Excision	
Warthin's Tumor	Composed of ***oncocytes + lymphoid cells*** - *Oncocyte* = epithelial cells w/ excessive mitochondria *Location*: Parotid of older men	

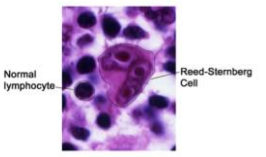
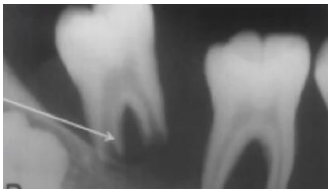
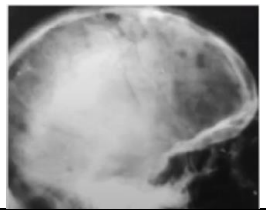
Malignant Lesions

- All of these are most common on the palate

Mucoepidermoid Carcinoma	****Most common salivary gland malignancy**** - Composed of mucous and epithelial cells	
Polymorphous Low-Grade Adenocarcinoma (PLGA)	= 2nd most common salivary gland malignancy for minor glands Adeno = gland	
Adenoid Cystic Carcinoma	*****Cribiform/Swiss cheese microscopic pattern***** 5-year survival is 70%; 15 survival is 10% -> Very lethal	 

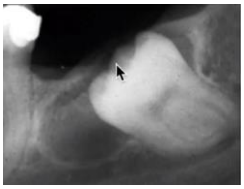
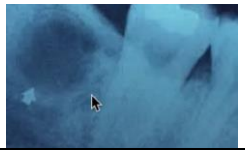
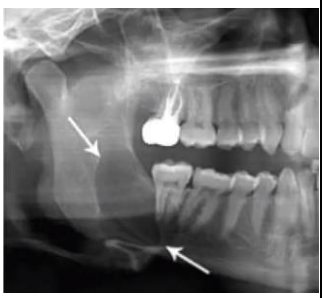
Lymphoid Neoplasms

- All lymphoid neoplasms are malignant in nature -> Because at this point they have already broken through the basement membrane etc

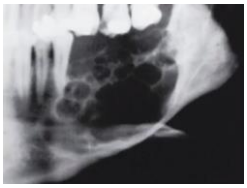
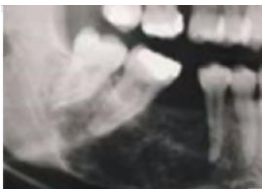
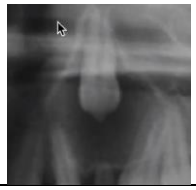
Hodgkin's Lymphoma	**Rare in the oral cavity** Involves *Reed-Sternberg cells* = **Malignant B cells** Tx: Chemo +/- Radiation	
Non-Hodgkin's Lymphoma (NHL)	= Neoplasm of either B or T cells ***Burkitt's Lymphoma*** = Type of B cell NHL w/ bone marrow involvement, swelling, pain, tooth mobility, lip paresthesia, and halted toot development **Tx**: Chemo +/- Radiation	
Multiple Myeloma (Plasma Cell myeloma)	= Neoplasm of antibody-secreting B cells ***(plasma cells)*** - *Multiple* punched out radiolucencies (usually in the skull) Amyloidosis due to accumulation of complex amyloid proteins that come from antibody light chains **Tx**: Chemotherapy, poor prognosis though ☹	
Leukemia	= Neoplasm of bone marrow cells **(Lymphocytes, NK cells, Granulocytes and megakaryocytes)** Classification based on cell lineage (myeloid or lymphoid) and acute vs chronic: - **ALL -> CML -> AML -> CLL** ^In order of age prevalence from young to old - "**ALL** Children **A**re **C**hi**LL**" *ALL*: Acute Lymphocytic Leukemia *CML*: Chronic Myelogenous Leukemia *AML*: Acute Myelogenous Leukemia *CLL*: Chronic Lymphocytic Leukemia ***Clinic Signs:*** - Bleeding (Platelets) - Fatigue (RBC) - Infection (WBC) *Even though we are seeing ↑ production of the bone marrow cells, they are immature and have less function*	

Odontogenic

Cysts

Radicular Cyst (Periapical Cyst)	****Most common odontogenic Cyst**** - Epithelial Rests of Malassez (ERM) from the Hertwig's epithelial Root Sheath (HERS) within pocket of inflammation encapsulate the lesion -> forms cyst *Radiographically:* - RL around the apex of the root of a ***non-vital*** tooth Necrotic pulp causes periapical inflammation - Acute -> Abscess - Chronic -> Granuloma Tx: RCT, Apicoectomy or Exo + curettage	
Dentigerous Cyst (Eruption Cyst)	*Accumulation of fluid between crown and ***Reduced Enamel Epithelium**** *Radiographically*: - RL attached to CEJ of impacted tooth Most common w/ Canines and 3rd molars Tx: Excision -> but may the source of future odontogenic tumors	
Lateral Periodontal Cyst	*Most common in mandibular premolar area* - Always associated with ***vital*** tooth - Not centered around the apex	
Gingival Cyst of the Adult	**Soft tissue counterpart of the Lateral Periodontal Cyst** - No RL in x-ray because not in the bone	
Gingival Cyst of the Newborn	*Rests of Dental Lamina epithelialize the small lesions* - Bohn's Nodules = Lateral Palate - Epstein's Pearls = Midline palate Tx: No tx, will involute as the children age	
Primordial Cyst	*Develops where a tooth would have formed but didnt* - Most common at mandibular 3rd molar area Tx: Complete Removal	
Keratocystic Odontogenic Tumor (KCOT)	**Aggressive and recurrent** - Thin corrugated parakeratinized epithelium histologically - Fusiform, M-D expansion (not B-L), minimal displacement of teeth or resorption *Location*: - Commonly in Posterior ascending ramus of mand. ***Associated Syndrome:*** - ***Gorlin Syndrome (Nevoid Basal Cell Carcinoma, NBCC)*** = Multiple KCOT, Multiple BCC's, Calcified Falx Cerebri, Fatal disease Tx: Aggressive enucleation	
Calcifying Odontogenic Cyst (Gorlin Cyst)	*Rare and unpredictable* Involves Ghost Cells: - Empty spaces where nucleus was and is filled with keratin. Can undergo calcification w/ little radiodensities present in X-Ray	

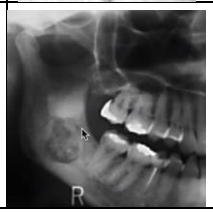
Tumors

Ameloblastoma	*****Benign, but very aggressive***** *Location:* - Posterior mandible *Radiographically:* - Multilocular expansive lesion (Beach ball B-L expansion) with erosion and displacement of roots and cortical bone *Tx*: Wide excision or resection, high recurrence if you are too conservative *Ddx*: - Ameloblastoma, KCOT, CGCG, COF	
Calcifying Epithelial Odontogenic Tumor (CEOT) (Pindborg Tumor)	*Radiographically:* - RL w/ *driven snow* calcifications (White flecks) *Histologically*: - Amorphous pink amyloid w/ concentric calcifications AKA *Liesegang Rings* *Tx*: Surgical excision w/ good prognosis	
Adenomatoid Odontogenic Tumor (AOT)	Contains epithelial duct-like spaces + enameloid material *Location*: - Mostly Anterior maxilla over impacted canines *Tx*: Surgical excision w/ good prognosis	
Odontogenic Myxoma (Myxofibroma)	Myxomatous CT (pulp-like material w/ minimal collagen) -> Slimy Stroma *Radiographically*: - Messy RL w/ unclear borders and honeycomb/tennis racket pattern *Tx*: Surgical Excision w/ moderate recurrence	
Central Odontogenic Fibroma (COF)	= Dense collagen w/ strands of epithelial woven within it *2 forms:* - *Central* = Occurs within bone, well defined multilocular RL - Peripheral = occurs in the gingiva (will not see in radiograph)	
Cementoblastoma	= Well circumscribed RO mass - Ball of cementum + Cementoblasts that replace the tooth root - **Connected to the root (surrounded by a PDL space)** Tx: Surgical excision and Exo	
Ameloblastic Fibroma	***Occurs mostly in children and teens** *Location*: - Posterior Mandible *Contents*: - Myxomatous CT *Tx*: - Surgical Excision	
Odontoma	= Opaque lesion composed of dental hard tissues - Can block eruption of teeth ***Compound*** = Mostly anterior, "Bag of teeth" ***Complex*** = Mostly Posterior, conglomerate mass of dental tissue Associated Syndromes: - Gardner Syndrome = Multiple odontomas + Intestinal Polyps	

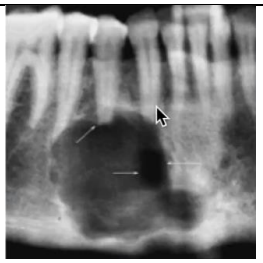
Bone Lesions

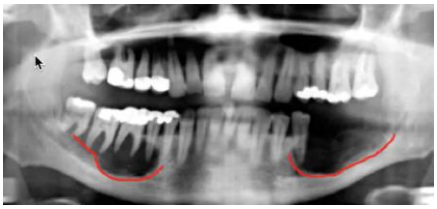
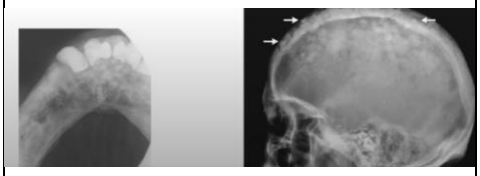
Fibro-Osseous Lesions

- Typically, more radiopaque, as these lesions are osseous

Central Ossifying Fibroma	= Fibroblastic stroma in which foci of mineralized products are formed - Similar in appearance and behaviour to cementifying fibroma (odontogenic tumor) **<u>3 Types</u>**: - ***Central*** = in bone. Well circumscribed radiolucency with ossification product in the center - ***Peripheral*** = in soft tissue, so you don't see the iconic radiographic appearance - ***Juvenile*** = Aggressive variant, rapid growth, younger patients Tx: Surgical Excision	
Fibrous Dysplasia	*****Ground Glass Appearance***** - "Fiberglass -> "Fibrous + Glass" (memory trick) - Usually stops growing after puberty -> but until then it can grow lots and cause major issues ***Associated Syndrome:*** - *<u>McCune-Albright Syndrome</u>* = Polyostotic (more than 1 bone) fibrous dysplasia + Cutaneous café au lait spots + endocrine abnormalities Tx: Surgical recontouring for cosmetics (typically after puberty)	
Periapical Cemento-Osseous Dysplasia (PCOD)	= Reactive process of unknown origin - Most common at apices of mandibular anteriors - Most common in middle-aged black females - Teeth are ***vital*** - Starts RL -> Progresses to RO (with RL halo) as the lesion matures Tx: None	
Osteoblastoma	Circumscribed Opaque mass of bone and osteoblasts Tx: Surgical Excision	

Giant Cell Lesions

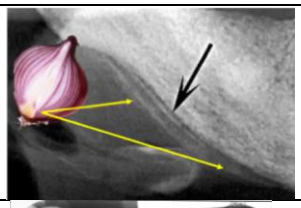
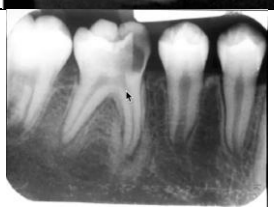
Central Giant Cell Granuloma (CGCG)	*<u>Composition:</u>* - Fibroblasts and multinucleated giant cells *<u>Location</u>*: - Anterior mandible mostly *<u>Types</u>*: - **Central (CGCG)**: in Bone, RL lesion with thin wispy septations - **Peripheral**: In Soft tissue, Red-purple gingival mass Tx: Excision	
Aneurysmal Bone Cyst	**Pseudocyst composed of blood-filled spaces** -Fine needle Aspirational Biopsy is what you need to do to determine the Dx *<u>Radiographic</u>*: - Multilocular RL - Expansile *<u>Location</u>*: - Posterior mandible favored Tx: Excision	

Hyperparathyroidism	Causes multiple bone lesions that mask as CGCG's as a result of ↑ ↑ parathyroid hormone ***Brown Tumor*** -> Forms due to excess osteoclast activity - This ↑ OC activity ↑ the amount of alkaline phosphatase ***Associated Syndrome:*** - *Von Recklinghausen's disease **of bone*** = result of this condition (**this is different from von Recklinghausen's disease/neurofibromatosis**)	
Cherubism	Autosomal Dominant inheritance pattern *Characteristic*: - Symmetrical bilateral swelling from expansile bilateral multilocular radiolucencies (fibrous dysplasia in contrast is asymmetric and unilateral) - Stops growing after puberty	
Langerhans Cell Disease (Idiopathic Histiocytosis)	Rare type of cancer - Langerhans cells (Histiocytes) normally found in skin as an antigen presenting cells -> can cause damage if they build up in the body *Radiographic*: - Punched out "ice cream scoop" radiolucencies that lead to floating teeth Tx: Excision, radiation and chemo	
Paget's Disease	= Progressive metabolic disturbance of many bones (spine, femur, skull, jaws) -> causes symmetrical enlargement - Usually in adults > 50 years - Elevated alkaline phosphatase is found b/c of ↑ bone breakdown - As bone expands, dentures and hats become too tight - Associated with Hypercementosis *Characteristic*: - Cotton wool appearance Tx: Bisphosphonates and Calcitonin	

Inflammatory

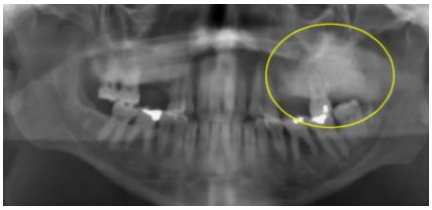
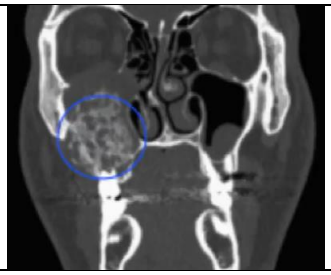
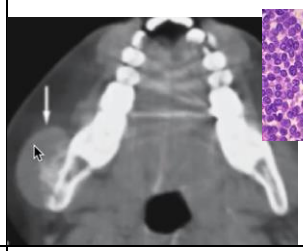
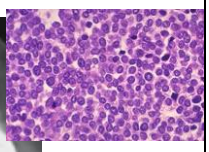
- Most lesions are an extension of either periodontal or periapical inflammation, or trauma

Acute Osteomyelitis	**Causes**: - Odontogenic infection - Trauma Infection/inflammation usually begins the medullary space involving the cancellous bone AND spreads to the cortical bone, periosteum, and soft tissues **Symptoms**: - Deep and intense pain - High or intermittent fever - Paresthesia or anesthesia of the IAN - Tooth is NOT loose (this is caused periodontitis) Tx: Antibiotics	 Yes…this is osteomyelitis in a dog, but it's good picture of it

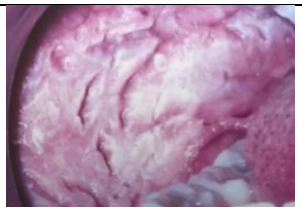
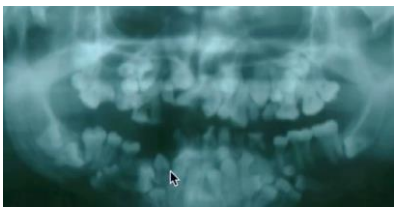
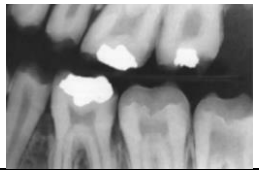
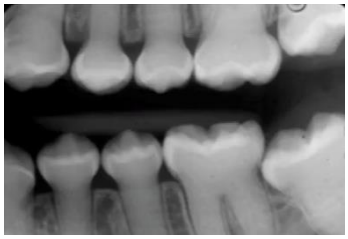
Chronic Osteomyelitis	*Diffuse mottled radiolucency* **Garre's Osteomyelitis** = Chronic osteomyelitis w/ proliferative periosteitis (onion skin) Tx: Antibiotics + debridement of infected area	
Focal Sclerosing Osteomyelitis (Condensing Osteitis)	= Bone sclerosis resulting from low-grade inflammation (like chronic pulpitis) Tx: None, address the cause of inflammation Diffuse Sclerosing Osteomyelitis: - Same as focal, but wider scale that may lead to jaw fracture	
Bisphosphonate-Related Osteonecrosis of the Jaws (BRONJ)	**IV bisphosphonates ↑ risk vs oral** - Jaw Pain - Exposed necrotic bone Tx: CHX rinse, antibiotics, conservative surgery	

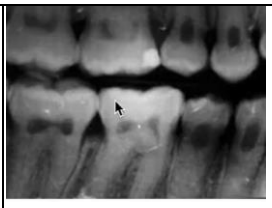
Malignant Lesions

- Numb lip/paresthesia is the most common symptom associated with malignancy

Osteosarcoma	= Sarcoma of the jaw where **new bone** is produced by tumor cells - 5-year survival is 25-40% (Pretty deadly) *Radiographic*: - Sunburst pattern of radiopacity Tx: Resection and chemotherapy	
Chondrosarcoma	= Sarcoma of the jaws where **new cartilage** is produced by tumor cells - Same presentation and Tx as the Osteosarcoma *Location*: - More common involving the condyle b/c of its separate cartilaginous origin vs the rest of the jaw	
Ewing's Sarcoma	= Sarcoma of the long bones involving **"round cells"** - Seldom affects the jaws (because long bones) - Affects children mostly - Involves swelling	 
Metastatic Carcinoma	- Pain, swelling and especially paresthesia - Posterior Mandible - Ill defined changes are noted Originated somewhere else and metastasized to the jaw: - Breast > Lung > Kidney > Colon > Prostate	

Hereditary Conditions

White Sponge Nevus	Asymptomatic spongy white lesion on the buccal mucosa -> DOESN'T wipe off - Autosomal dominant in heritance	
Epidermolysis Bullosa	Skin and mucosa is fragile and blisters easily - Widespread blistering	
Hereditary Hemorrhagic Telangiectasia (HHT)	AKA ***Olser-Weber-Rendu Syndrome*** - Abnormal capillary formation on skin, mucosa, and viscera - Associated w/ iron-deficiency anemia - Epistaxis (nose bleeds) is a frequent presenting sign Telangiectasia = red macule or papule from dilated or broken capillaries	
Cleidocranial Dysplasia (always on NDBE)	- Autosomal Dominant **Common sign:** - Missing/poorly developed clavicles -> Shoulders appear hunched in towards the midline - Supernumerary teeth Tx: - Typically lots of exo's and the dentures	
Ectodermal Dysplasia (Also always tested)	- X-linked recessive **Common Signs:** - Missing teeth - Hypoplastic hair or nails	
Osteopetrosis	AKA **Albergs-Schonberg disease or Marble bone disease** - Stone Bone -> lack of remodelling and resorption	
Amelogenesis Imperfecta	= Intrinsic alteration of the **ENAMEL** (dentin and pulp are normal) in both the primary and permanent teeth - Autosomal dominant, recessive or x-linked inheritance Tx: Full-coverage crowns for cosmetics	
Dentinogenesis Imperfecta	= intrinsic alteration of **DENTIN** affecting both primary and permanent teeth - Autosomal dominant inheritance **<u>Characteristics</u>**: - Short roots, bell-shaped crowns and ***obliterated pulps*** - Bulbous crowns in radiographs (b/c constricted DEJ) - ***Blue sclera*** Tx: Full coverage crowns	

Dentin Dysplasia	= Intrinsic alteration of dentin affecting primary and permanent teeth - Autosomal dominants - Two Types (Type 1 and Type 2) **Characteristics**: - Chevron pulps and short roots **Not good candidates for restoration (short root = poor C;R ratio; Chevron pulps ↑ risk of pulp exposure)	
Regional Odontodysplasia	= Quadrant of teeth exhibit short roots, open apices, and enlarged pulp chambers *Radiographic*: - **Ghost teeth** -> Pulps are so huge they make the teeth look almost completed RL (common NDBE term) Tx: - Extract affected teeth	
Fusion and Gemination	***Fusion*** 2 Tooth buds merging into 1 tooth - Tooth count is 1 less than the normal ***Gemination*** 1 root buds into 2 crowns - Tooth count is normal