A Mixed Bag of Oral Lesions in Tots & Teens: Diagnostic Tips & Treatment Options, #2

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Oral Lesions in Schoolchildren
- Aphthous ulcers
- Erythema migrans
- Herpes labialis
- Fissured tongue
- Cheek-biting/linea alba
- Traumatic ulcer
- Purpura
- Candidiasis, angular cheilitis
- Commissural lip pits
- Fordyce granules
- Gingival hyperplasia
- Melanotic macule
- Mucocoele
- Tumors, NOS
- Hemangioma/vascular malformation
- Papilloma, verruca vulgaris
- Overall Prevalence: 27.5%

Soft Tissue Enlargements
- Papillary Surface Enlargements
- Acute Inflammatory Enlargements
- Reactive Hyperplasias
- Benign Submucosal Cysts & Neoplasms
- Aggressive & Malignant Neoplasms

Papillary Surface Enlargements
- Papillary or stippled surface
- Spongy to firm, rough to palpation
- Usually pink or white in color
- Moderate growth rate
- Limited growth potential
- Many caused by HPV
- May resolve spontaneously
- Common lesions

Squamous Papilloma
- Type: HPV 6,11
- Sexual, nonsexual transmission
- Incubation: 3 wks – 2 yrs
- Comprise 8% of all oral growths in children
- Site: Palate, tongue, lips
- S/S: Solitary, pink, red, or white papillary nodule
- Tx: Excise; not precancerous

Verruca Vulgaris
- Cause: HPV 2, 4
- Prevalence: 10-50% of children
- Site: Hands, face are common
- Oral Site: Lip, labial mucosa, anterior tongue
- S/S: Nodule with fingerlike projections or rough, pebbly; pink, brown or white; painless
- TX: Remission – 20% in 6 mos; 65% in 2 yr; excise, laser, cryotherapy, cimetidine, salicylic acid, duct tape, imiquimod, other
- Prognosis: Recurs, no malignant potential
Verruca Vulgaris

- Labial mucosa
- Thumbs

Note the mucocele from biting lip and nails

What Else Is In The Bag?

- Verruca vulgaris
- Squamous papilloma
- Condyloma acuminatum
- Multifocal epithelial hyperplasia
- Giant cell fibroma
- Localized juvenile spongiotic gingival hyperplasia
- Inflammatory papillary hyperplasia
- Molluscum contagiosum

Condyloma Acuminatum

- Cause: HPV 6, 11 (90%), 16, 18 and others
- Occurs in 1% of sexually active individuals
- Incubation period: 1 to 3 months
- Site: Anogenital and oral mucosa
- Oral Site: Labial mucosa, palate, ventral tongue
- S/S: Pink nodules with short, blunted projections; painless; usually multiple
- TX: Excision, laser, imiquimod cream, other
- Prognosis: Recurs, malignant potential (anogenital)

Condyloma Acuminatum

In children may indicate:
- Vertical transmission
- Direct contact
- Sexual abuse
- Sexual activity

Condyloma Acuminatum

- Cause: HPV 13, 32
- Age: Usually childhood
- Risk: Genetic susceptibility (HLA-DR4 in Mexicans), lower SES, malnutrition, vitamin K deficiency, poor hygiene; HIV infection in adults
- Site: Buccal, labial mucosa, tongue
- S/S: Multiple, soft, papules, nodules; pink or white in color; clustered or cobblestone pattern
- TX: Regression (18 mos), excision, laser, cimetidine, interferon, other
- Prognosis: Recurs, no malignant potential

Multifocal Epithelial Hyperplasia

- Cause: HPV 13, 32
- Age: Usually childhood
- Risk: Genetic susceptibility (HLA-DR4 in Mexicans), lower SES, malnutrition, vitamin K deficiency, poor hygiene; HIV infection in adults
- Site: Buccal, labial mucosa, tongue
- S/S: Multiple, soft, papules, nodules; pink or white in color; clustered or cobblestone pattern
- TX: Regression (18 mos), excision, laser, cimetidine, interferon, other
- Prognosis: Recurs, no malignant potential
Multifocal Epithelial Hyperplasia

- Infectious – HPV 13/32
- Site: Anterior oral mucosa
- Nontender, unless trauma
- Mimics: Condyloma

Mimics:
- Hamartomatous syndromes
- Crohn’s disease

Oral HPV in Children

- Detection in newborns: 4-87% when mother has HPV cervical infection
  - (Syrianen S et al, 2000)
- Overall pediatric prevalence: 2%
- Adolescents: 2.5% for HPV 16/18
  - (Flake C, et al 2012)

Acquisition of Oral HPV

- Transmission: Casual & sexual contact, vertical, and autoinoculation
- Breast milk – 4.5% (Giovannelli, 2002)
- Placental HPV = 4.5%; Cord blood HPV = 3.5%
  - Both ↑ risk for oral HPV at birth: 12.2% (Rombaldi, 2008)
- Persistent infection in mother increases risk of HPV infection in infants (OR = 5.7)
- Contaminated toys – 4% (Roman & Fife, 1986)
- Presence of oral warts in children are uncommon

HPV Vaccine

- Gardasil® (Merck): Quadrivalent vaccine to prevent cervical cancer and anogenital warts
- Protects against HPV types 6,11,16,18; cause 70% of cervical cancer and 90% of genital warts
- Gardasil® 9 (Merck): HPV 6,11,16,18,31,33,45,52,58
- Recommended for females and males, ages 11-12 with range of 9-26 yr
- Cervarix® (GlaxoSmithKline): Bivalent vaccine; Protects against HPV types 16, 18
- Protective role in oropharyngeal cancer?
- ↓ prevalence of oral HPV in vaccinated women

New Stats Pulled From The Bag

- High-risk Oral HPV: 7 million men and 1.4 million women
Focal Gingival Micropapillomatosis

- Fibroepithelial hyperplasia
- Cause: Chronic irritation, cig smoking, anatomical, lip incompetence
- Site: Attached gingiva, esp. anterior maxillary gingiva
- S/S: Pink-white to light brown pebbly attached gingiva; nontender
- TX: ID cause; mimics warts

Diffuse Micropapillomatosis of the Gingiva

- Diffuse, widespread gingival pattern
- PTEN hamartoma tumor syndrome
- Cowden syndrome
- Bannayan-Riley-Ruvalcaba syndrome
- ASD with macrocephaly
- Drug-induced gingival overgrowth
- Risk for malignancies in syndrome

Giant Cell Fibroma

- Type: Fibrous reactive hyperplasia
- Age: Children and young adults
- Cause: Unknown - not related to trauma
- Site: Unknown - not related to trauma
- Oral: Pink nodule with papillary or smooth surface; nontender
- TX: Excision
- Developmental lesion: Retrocuspid papilla

Facts:
- Not HPV-induced
- Occurs on keratinized tissues
- 50% located on gingiva
Retrocuspid Papilla

- Developmental anomaly
- Site: Lingual gingiva, canine
- Nontender swelling
- Usually regresses with age

Localized Juvenile Spongiotic Gingival Hyperplasia (LJSGH)

- Distinct, new subtype of gingival hyperplasia
- Other names: Juvenile spongiotic gingivitis or juvenile gingival papillomas
- Origin: Sulcular/junctional epithelium
- Cause: Unknown – not strong biofilm association; cervical enamel irregularities
- Factors: Orthodontics (15%), tooth eruption, lip incompetence/mouthbreathing, puberty
- Age/Gender: Ave = 12 YO (range 5-39)/ F>M

Localized Juvenile Spongiotic Gingival Hyperplasia

- Site: Anterior facial gingiva, esp. maxillary (84%); may be multifocal
- S/S: Papillary, red nodule or velvety - granular patch; bleeds easily; nontender
- Minimal response to OH
- TX & Prog: Biopsy; 6-16% recur in 1 yr; may resolve

Localized Juvenile Spongiotic Gingival Hyperplasia

- Papillary pattern

Localized Juvenile Spongiotic Gingival Hyperplasia

- Velvety pattern was tender when brushing
- Excisional biopsy – 1 month post-op
Fimbriated Fold of the Tongue
- Normal anatomy
- Bilateral and parallel on ventral tongue and adjacent to lingual veins
- Slender tissue tags may be present; may be tender if irritated
- May mimic oral warts
- No treatment

Fibrosing Parulis Mimics a Wart
- NB: Lesions on the gingiva – take a radiograph

Chronic Hyperplastic Tonsillitis
- Enlarged tonsils with multiple tonsillar tags
- Mimics oropharyngeal warts
- Large size may be associated with obstructive sleep apnea

Hyperplastic Foliate Papillae
- Benign lymphoid hyperplasia
- Posterior lateral tongue; often bilateral
- May increase in size and be tender
- Important oral cancer site
- Mimics: Abscess, soft fibroma, lipoma, pyogenic granuloma, wart

Oral Lymphoid Hyperplasia
- Oral lymphoid aggregates:
  - Floor of mouth
  - Ventral & posterior tongue
  - Soft palate

Acute Inflammatory Enlargements
- Smooth to ulcerated surface
- Red, white, blue color
- Diffuse to localized swelling
- Rapid onset (hours to days)
- Tender or painful to palpation
- Compressible, fluctuate in size
- Fluid, semisolid contents with periodic drainage
- Cause is usually apparent
- Very common lesions
**Soft Tissue Abscess (Parulis)**
- Localized infectious process
- Cause: Dental, periodontal, foreign body
- Site: Usually gingiva and alveolar mucosa
- S/S: Acute onset; painful, pink or red nodule; purulent drainage; fluctuates in size
- TX: Manage source of infection; +/- antibiotics
- Complication: Cellulitis

**Atypical Abscess**
- May be more diffuse
- May be associated with ulcer
- May be located at a distant location
- Enlargement of the buccal lymph node
- May not see obvious reason
- May require a biopsy

**Soft Tissue Abscess**
HX: Recent URI and sinusitis
Palatal space abscess
Actinomycotic infection
Recurrent HSV ulcer
Subtle radiographic findings

**Gingival Abscess due to LLHA**

**Chronic Gingivitis & Abscess**
Gingival abscess
Poor oral hygiene
Dental erosion
Slow eruption of teeth

**Cervicofacial Actinomycosis**
Extraoral drainage from nonvital molar
Difficult to treat:
- Debride sinus tract
- Long-term antibiotics
- Manage nonvital tooth
Dens Evaginatus
- Cusplike enamel in central groove or lingual ridge of buccal cusp of premolar or molar
- Bilateral mandibular premolars; rare in primary molars
- Prevalence: 1-4%
- Ethnicity: Asian, Native Amer
- Associated: Shovel-shaped incisors
- Complication: Pulpal necrosis, abscess, esp with enamelopasty

Foreign Body Lesion
- Common for children to put things in their mouth
- Material with flat or convex surface; suction effect
- Examples: Nut shells, broken toys, parts of bugs, popcorn hulls
- Site: Palate, gingiva
- May cause a foreign body reaction

Pericoronitis
- Inflammation gingival lesion
- Factors: Food, bacteria, stress, cement, resin, calculus, viral infections
- Site: Mand perm molars
- S/S: Pain, foul taste, restricted opening, referred pain, redness, swelling of gums, cellulitis, fever, lymphadenopathy
- Some cases represent a localized form of NUG

Necrotizing Pericoronitis
- Facial cellulitis, lymphadenopathy
- Crenations on buccal mucosa
- Violaceous gingival swelling
- Check contralateral side
**HSV Operculitis**
- Acute onset
- Very painful
- Clusters of vesicles and punctate ulcers
- Significant swelling
- Irrigate but do not debride the area

**Pericoronitis**
- Treatment Options: Identify and eliminate cause, antiseptic lavage, saline rinses, excise tissue, curettage, +/- extract tooth
- No antibiotics unless fever, lymphadenopathy, trismus, facial swelling
- Antibiotics:
  - Amoxicillin: good drug
  - Augmentin: beta-lactamase-producing bacteria
  - Metronidazole: alone or in combination with amoxicillin or Augmentin for broader coverage

**What Else Can Be In The Bag?**
- Abscess/Pericoronitis
- Stalololithiasis
- Subacute necrotizing sialadenitis
- Tonsillolithiasis
- Lymphoepithelial cyst
- Pyogenic granuloma
- Eruption sequestrum
- Neonatal cysts

**New Infection in US: Chagas**
- Parasitic disease: Triatoma insect (kissing bug) – Trypanosoma cruzi infection
- Transmission: bug bites, insect feces, congenital, organ and blood products, foods/beverages (rare)
- Found in Central & South America: 8-12M infected (est 300,000 in US)
- Acute symptoms: weeks - months → Chronic: years
- S/S: Acute: Swelling of eyelids, cutaneous erythematous nodule, often on face
- S/S: Chronic: 30% develop cardiac arrhythmia, congestive heart disease, dilation of esophagus, colon
- TX: Benznidazole, just approved for children

**Cat-Scratch Disease**
- Infectious disease caused by Bartonella henselae; 22,000 cases/year
- Transmitted by scratch, bite or lick; 40% of cats carry bacterium
- S/S: Regional lymphadenitis, fever, malaise, anorexia
- Lymphadenitis resolves - 2-4 mo
- Tx: Symptomatic; +/- antibiotics; azithromycin for 5 days; others
- Complications may develop

**Romana’s Sign: Marker for Acute Chagas**
- Mimics:
  - Odontogenic cellulitis
  - Acute sinusitis
  - Insect bite on face
  - Allergic reaction

www.cdc.gov
www.WHO.org
**Cat-Scratch Disease**

- Disease associated with a bacterial infection
- Common in children
- Symptoms include lymphadenopathy, rash, fever

**Eruption Sequestrum**

- Dysplastic cementum within dental follicle
- Site: First and second permanent molars
- S/S: Bony fragment in the operculum; gingiva may be inflamed and tender; may be multiple
- X-ray: Small opacity overlying crown of molar
- TX: Most spontaneously exfoliate; curettage

**Odontoma**

- Common odontogenic lesion
- Age: mean age is 14 YO
- Site: Maxilla > mandible
- S/S: Delayed eruption; +/- expansion
- X-ray: Compound: tooth-like; Complex: calcified mass; radiolucent rim; may be cystic
- Tx & Prog: Excision, do not recur
Erupted Odontoma

Mimics:
- Microdontic tooth
- Accessory cusp
- Foreign body
- Eruption or bone sequestrum

Cementicles

- Small, spherical particles of cementum of unknown cause
- Types:
  - Free: lie free in PDL
  - Attached: superficial attachment to root surface
  - Embedded: incorporated into the cementum layer
- Mimics: Small odontoma, root fx, pulp stone, enamel pearl, foreign body

Molar-Incisor Malformation

- Newly described dental anomaly
- Involves molar root malformation and incisors
- Cause: Disruption of Hertwig’s epithelial root sheath; epigenetic factors associated with systemic disease at 1-2 yr
- Maxillary incisors: cervical hypoplastic notch
- First perm molars, second perm molars and primary second molars: normal crowns, constricted cervical region, thin narrow and short roots
- Mimics isolated dentin dysplasia, I

Molar-Incisor Malformation

- Central incisors: Cervical enamel hypoplasia
- Molars: Normal crowns, short slender roots, cervical constriction, pulpal obliteration
- 1-4 molars affected

Molar-Incisor Malformation

- Symmetric multiquadrant isolated dentin dysplasia (SMIDD), a unique presentation mimicking dentin dysplasia type 1b (Qari H, et al. OOOO 2107;123(5):e164-e169)

Lymphoepithelial Cyst

- Type: Developmental lesion
- Cause: Entrapped epithelium within lymphoid tissue → cystic degeneration
- Site: Floor of mouth, tongue, soft palate, tonsillar region
- S/S: Persistent, yellowish-white nodule; discharge of contents occasionally
- TX: Observe; excisional biopsy
Lymphoepithelial Cyst

Tonsillar Crypt Plugs
- Cause: Aggregates of cells, debris, bacteria
- Factors: Anatomy of tonsils, dry mouth
- Site: Pharyngeal tonsils
- S/S: Creamy white aggregates; soft to firm; may be irritating, halitosis
- TX: Dislodge by irrigation, coughing or gargling

Tonsillar Crypt Plugs (Tonsilliths)

Mucoceles
- Type: Reactive lesion of salivary glands
- Cause: Trauma to ducts and glands
- Age: Children and young adults
- Site: Lower lip (81%), buccal mucosa (5%), ventral tongue (6%), floor of the mouth (6%)
- S/S: Translucent blue, fluid-filled swelling; fluctuates in size; may be tender
- TX: Excisional biopsy with adjacent glands; 40% spontaneously resolve; recur – 6%
- Variant: Ranula – floor of the mouth

Pedunculated Mucocele

Sessile Mucocele
**Mucocoele**
- Midline ventral tongue
- Glands of Blandin-Nuhn
- Small Mucocele
  - Mucocele is not directly associated with lip piercing, but possible secondary development due to lip swelling or playing with the oral jewelry

**Ranula**
- Involves the sublingual gland
- May be translucent pink, blue or red
- Usually not tender, but interferes with eating and speaking
- Do not incise and drain it
- May progress to plunging ranula

**Elevated Sublingual Glands**
- Anatomical variation
- Bilateral and symmetrical, bilobed with pink smooth surface
- Painless unless traumatized
- Make sure of patent ductal opening
- Rule out other diseases, especially if unilateral
- Tx: None required

**Angioedema**
- 2 categories: histaminergic, nonhistaminergic
- Usually due to mast cell degranulation or IgE-mediated hypersensitivity reaction
- Hereditary form: AD; C1-INH deficiency
- Triggers: Drugs, foods, plants, inhalants, heat, cold, latex, physical stimuli, infection, stress, sun
- Site: Extremities, face, lips, tongue, trunk, genitals, pharynx, larynx
- S/S: Rapid onset, nontender swelling, itching, erythema; single or multiple; lasts - 24-72 hrs

**Angioedema**
- DX: ID cause, allergy testing
- Mild cases: Antihistamine (Benadryl, hydroxyzine)
- Severe cases: IM epinephrine; IV steroids and antihistamines
- C1-INH deficiency: Danazol, stanozolol for prevention; ecallantide, icatibant
Angioedema & Infection

Drugs Causing Angioedema
- ACE inhibitors
- Bupropion
- PCN, Cephalosporins
- Selective serotonin reuptake inhibitors
- COX-2 inhibitors
- NSAIDs & Aspirin
- Angiotensin II receptor antagonists
- Statins

Rule out:
- Hypothyroidism
- Oral allergy syndrome

Reactive Hyperplasias
- Smooth to undulating surface
- Pale to red +/- ulcerated
- Nodular in shape
- Moderate growth rate
- Nontender
- Soft to firm to palpation
- Limited growth potential
- Recur, if cause not removed
- Very common lesions

Pyogenic Granuloma
- Cause: Exuberant response to local irritation
- Age/Gender: Children, F > M
- Site: Gingiva > lips > tongue > buccal mucosa
- S/S: Red soft nodule; ulcerated surface; bleeds; nontender
- TX: Biopsy; remove irritation
- Variants: Pulp polyp, epulis granulomatous, pregnancy tumor

Irritation Fibroma

Gingival Hyperplasia

Fibrosed Granulation Tissue
Tongue Piercing

What Else Is In The Bag?
• Pyogenic granuloma
• Irritation fibroma
• Giant cell fibroma
• Peripheral ossifying fibroma
• Peripheral giant cell fibroma
• Pericoronal odontogenic hamartoma
• Soft tissue abscess

Peripheral Giant Cell Granuloma
• Reactive hyperplasia – PDL, perioseum
• Age/Gender: 2nd decade; F>M
• Site: Attached gingiva, alveolar mucosa
• S/S: Nontender, firm nodule; red, purple and ulcerated, +/- resorb bone, displace teeth
• TX: Excision; 10% recur; rare sign of hypoparathyroidism

Peripheral Giant Cell Granuloma

Traumatic Neuroma
• Reactive growth of neural tissue following injury
• Cause: Trauma, surgery, extracted tooth, appliance
• Site: Mental foremen, tongue, lower lip
• Age: Wide age range
• S/S: Pink, smooth nodule; dysesthesia; 1/3 are painful
• TX & Prog: Excise; no recurrence

Traumatic Neuroma

Helpful hint:
Tender when palpate the nodule
Benign Cysts & Neoplasms
- Dome-shaped enlargement
- Smooth surface of variable color
- Solitary lesion with well-defined margins
- Nontender and movable to palpation
- Slow growth rate
- Unlimited but localized growth
- Distort anatomical contours
- Uncommon lesions

Infantile Hemangioma
- Vascular neoplasm
- Age/Gender: 4-10% of 1 YO; F>M
- Site: H & N = 60%; lips, tongue
- Growth period: 6-10 months
- S/S: Red or blue, flat or nodular lesion; +/- blanches; 20% are multiple; favor fusion lines
- TX: Involution begins 18 mos; 50% by 5; 90% by 9yr; steroids Hemangeal (propranolol), laser, excision

Hemangioma
- Complications: Ulcer, bleeding, infection, scar, displacement of teeth (40%)

Hemangioma
- NB: Increased vascularity may persist despite change in color

Vascular Malformations
- NB: Do not involute

Cherry Angioma
- Superficial vascular lesion
- Cause: Trauma in children
- Gender/Age: Males > 5y
- Site: Vermilion of lip
- S/S: Red, blue, purple papule; blanches
- TX: Laser, sclerosant or excise; no involution
- Cosmetic concern
Labial Cherry Angioma
- If multiple, rule out syndrome
- Hereditary hemorrhagic telangiectasia

Caliber-Persistent Labial Artery
- Abnormally dilated artery
- Age: Adolescents
- Site: Upper > Lower lip
- S/S: Tubular to nodular elevation; pink to blue; pulsatile; disappears when stretched
- TX: None required unless symptomatic
- Problem: Brisk bleeding

What Else Is In The Bag?
- Soft Neoplasms
  - Lipoma
  - Orofaciodigital syndrome
  - Hemangioma
  - Lymphangioma
  - Plexiform neurofibroma
  - Neurofibromatosis
  - Mucoepidermoid carcinoma

Lymphangioma
- Lymphatic malformation
- Age: 50% birth; 90% by 2y
- Site: 50-75% in H&N; tongue
- S/S: Pebble, pink, red or purple vesicles; diffuse swelling; “frog eggs”
- Does not blanch or involute
- TX & Prog: Excision; recurs

Lymphangioma
Complications: Macroglossia, airway obstruction, dysphagia, rapid enlargement with URI, disfigurement, malocclusion

Cystic Hygroma
**Eruption Cyst & Hematoma**
- Soft tissue analogue of dentigerous cyst
- **Cause**: Separation of dental follicle from crown of erupting tooth; surface trauma with bleeding
- **Age**: Most occur in first decade
- **Site**: Any site, especially maxillary incisor region and mandibular molar region
- **S/S**: Amber, red or blue soft tissue swelling; may be tender
- **TX**: Spontaneously resolves; simple excision if delayed eruption

**Eruption Cyst**
- Photo: Dr. Greg Whelan

**Eruption Cyst & Hematoma**
- When red, blue or purple exclude a vascular lesion
- If treat, take radiograph
- Unusual site because tooth is erupting ectopically

**Eruption of Primary Teeth**
- **Gingival erythema**: 50% of teeth
- **Gingival swelling**: 12% of teeth
- Significant signs are uncommon
- Oscillating eruption pattern
- **Time**: Mean of 2 months for tooth to erupt

**Herniated Dental Follicle**
- Eruption of part of the dental follicle
- Usually primary teeth
- **S/S**: Nontender, red, white or amber in color
- Bleeds with manipulation
- **TX**: None needed; most resolve as tooth erupts
- Mimics: Pyogenic granuloma, abscess, tooth
**Ebinyo: Infant Oral Mutilation**
- East African therapy practiced by “healers”
- Infants: 4-18 months
- Infections, diarrhea, vomiting, fever, convulsions
- Germectomy of primary canines to remove parasite - “mouth worms”
- Nonsterile, hot instruments or fingers

**Ebinyo**
ID: 8 YO Somali boy
Radiographic findings: Missing primary & permanent maxillary canines

**Complications:**
- Missing permanent first premolar,
- Malformed perm canine, primary 1st molar
- Hypoplastic lateral incisors and canine

**Herniated Buccal Fat Pad**
- Also known as traumatic pseudolipoma
- Cause: Intraoral or facial injury
- Age: Usually young children
- Site: Buccal mucosa below the parotid gland papilla, along occlusal plane
- S/S: Diffuse to localized swelling; pinkish-yellow or red and ulcerated; pedunculated extrusion of fat; mild facial swelling
- TX: Reposition if early and small defect; excise if large and necrotic

**What Else Is In The Bag?**
- **Firm Enlargements**
  - Granular cell tumor
  - Congenital epulis
  - Schwannoma & Neurofibroma
  - Rhabdomyoma & Leiomyoma
  - Benign fibrous histiocytoma
  - Pleomorphic adenoma
**Congenital Epulis**
- Benign congenital tumor
- Age/Gender: Newborn; 90% ♀
- Site: Max > Mand alveolar ridge
- S/S: Nontender, firm, pink to red polypoid mass, smooth surface; 10% are multiple
- TX: Excision; may regress

**Minor Salivary Gland Tumors**
- Prevalence: 5% of salivary gland tumors occur in children
- Higher proportion are malignant: 46% - 55%
- Age/Gender: Mean = 15 YO; F > M
- Site: Hard palate – most common site
- S/S: Slowly growing nodule; nontender
- Common benign lesion: Pleomorphic adenoma
- Common malignancy: Mucoepidermoid ca
- TX: Surgery +/- radiation and chemotherapy
- 5-year survival rate: 89% – 95%

**Melanocytic Nevus**
- Type: Benign proliferation of nevus cells
- Age/Gender: 15% of oral nevi occur in children; may be congenital (10%); F > M
- Site: Palate, buccal mucosa, gingiva, lip
- S/S: Pink, brown, blue or black macule or nodule; 85% pigmented; 70% elevated
- Most common types: Intramucosal, blue
- TX & Prog: Excisional biopsy; rare malignant transformation
Dysplastic Nevus

What Else Is In The Bag?
- Melanocytic nevus
- Melanotic macule
- Amalgam or lead tattoo
- Drug-induced pigmentation
- Physiologic pigmentation
- Inflammatory melanosis
- Smoker’s melanosis
- Late petechiae, purpura

Papillary Tip Melanosis
- Pigmented fungiform and filiform papillae
- Cause: Unknown, normal pigmentation, post-inflammatory melanosis
- Starts in childhood; may be congenital
- Ethnicity/Race: Hispanic, Black, Asian
- Tx: None

Papillary Tip Melanosis
Ref: Adibi S et al, 2011

Congenital Melanotic Macule of the Tongue
- Benign pigmented mucosal lesion
- Age: At birth
- Ethnicity: White
- Site: Dorsum
- S/S: Brown, blue-black macule, single or multiple; 1-2 cm
- Behavior: Static, grows with child

Congenital Melanotic Macule of the Tongue
- Focal increase in melanin
- TX: None required
- Mimics:
  - Papillary tip melanosis,
  - Congenital melanocytic nevus
  - Smoker’s melanosis
  - Epidermal choristoma
  - Atypical melanocytic proliferation

Savoia et al, 2015
Atypical Melanocytic Proliferation
Melanoma occurs in children
Worrisome features:
- Congenital lesion that increases in size
- Large size
- Very dark color
- Asymmetric margins
- Surface changes
- Overlap features of benign and malignant

Silver Diamine Flouride: Soft Tissue Effects
- Rare allergic reactions
- .1% gingival irritation
- Temporary discoloration on mucosa & skin (2-14d)
- Bad taste
- Prevention:
  - Apply Vaseline around the skin and lips
  - Good isolation of teeth

Minocycline Pigmentation
- Cause: Drug binds to certain types of collagen → pulp, dentin, bone, nails, dermis, sclera
- Purpose: Primarily used to treat acne
- Prevalence: 3-6% of chronic users; 15% - acne
- Develops: 1 month to several years of use
- Site: Ant alveolar mucosa, hard palate, teeth
- S/S: Diffuse blue-gray to muddy brown
- TX: DC med → soft tissue fades; permanent tooth discoloration

Minocycline Pigmentation
- Antibiotic: Minocycline, tetracycline
- Pepto-Bismol and others with bismuth (extrinsic staining)
- Antimalarial meds: chloroquine, hydrochloroquine, quinidine
- Estrogen
- Antipsychotic drug: chlorpromazine
- Chemotherapy: doxorubicin, busulfan, cyclophosphamide, 5-fluorouracil

Doxycycline for Young Children
- Teeth staining with use of tetracyclines to young children
- No evidence of teeth staining following multiple short courses of doxycycline
- When doxycycline is treatment of choice for a serious infectious disease, it should be given regardless of age.
- AAP Red Book 2018
Aggressive & Malignant Neoplasms
- Asymmetric enlargement
- Usually red and ulcerated
- Firm, indurated and fixed
- Poorly defined, infiltrative margins
- Pain, paresthesia, lymphadenopathy
- Moderate to rapid growth (weeks to months)
- Tissue destruction
- Potential for metastasis

Burkitt’s Lymphoma
- Type: Rare, B-lymphocyte malignancy
- Age/Gender: Children; M > F
- Site: Posterior mandible; may be multiple
- S/S: Lymphadenopathy, facial & gingival swelling, tenderness, tooth mobility & loss
- X-ray: Ill-defined radiolucency; floating tooth appearance
- TX & Prognosis: Multiagent chemotherapy; 75%-95% 5-yr survival rate

Burkitt’s Lymphoma
Radiographic findings
- Post maxilla & mandible
- Single or multiple quadrants
- Painful swelling
- First signs often tooth mobility
- Floating tooth appearance
- Loss of the lamina dura
- “Moth eaten” radiolucency
- Periosteal bone formation

What Else Is In The Bag?
- Leukemia
- Lymphoma
- Langerhans cell histiocytosis
- Metastatic disease
- Systemic disease
- Aggressive periodontitis

Langerhans Cell Histiocytosis
- Type: Neoplastic disease of myeloid cells - localized and disseminated forms
- Age: Young children; most are <10 yrs-old
- Site: Multisystem disease in children; any bone; skull, mandible are common; jaws are affected up to 20%; skin, lung, liver, spleen
- S/S: Ulcers, gingival masses; pink teeth
- X-ray: Periapical radiolucencies; “floating in air” appearance; internal tooth resorption
- TX: Curettage, chemotherapy
Pink Tooth & Floating Tooth

Pink teeth:
- Internal inflammatory resorption
- Trauma, idiopathic
- Dental anomalies
- Vitamin D-resistant rickets
- Tumor infiltration

Pink Tooth:
- Internal inflammatory resorption
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Dental anomalies:
- Internal inflammatory resorption
- Trauma, idiopathic
- Dental anomalies
- Vitamin D-resistant rickets
- Tumor infiltration

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Langerhans Cell Histiocytosis

Hicks J, Flaitz C. OOOOE, 2005