Conflicts of Interests

Neither my immediate family nor I have any financial interests that would create a conflict of interest or restrict our independent judgment with regard to the content of this course.

Course Objectives

• Upon completion of this course, participants should be able to:
  • Recognize and formulate a differential diagnosis, understand the etiology and management of various oral and maxillofacial conditions.
  • Better recognize abnormalities, improve diagnostic skills for oral soft and hard tissue lesions through practice sessions utilizing the audience response devices.

CASE HISTORY

This teen Asian male has red highly vascular gingival lesions of 1 to 1 ½ year duration.

Diagnosis

Localized Juvenile Spongiotic Gingival Hyperplasia (LJSGH)
LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA (LJSGH)

- Originally described by Darling et al.\(^1\) in 2007 as juvenile spongiotic gingivitis
- 24 cases (mean age 12 years)
- Bright red, multifocal, painless lesions of the labial attached gingiva
- Duration 1 month to 2 years

LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA (LJSGH)

- Age range 7 to 39 years
- Female to male ratio 2.3:1
- Race distribution 82% Caucasian, 14 % Hispanic, 4 % Asian

LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA (LJSGH)

- Mostly single lesions
- 60% facial gingiva
- 84% anterior maxillary gingiva
- Clinical Presentation
  - 88% Bright Red
  - 94% Raised Mass
  - 35% papillary/ granular/pebbly/velvety surface
  - 19% asymptomatic and bleed easily

LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA (LJSGH)

- Distinct subtype of gingival hyperplasia
- Unclear pathogenesis
  - Viral etiology
  - Mouth breathing
  - Local irritation and dryness
  - Slight tendency of recurrence
  - Probably arises from crevicular epithelium
- Conservative surgical excision recommended
POLYANGITIS WITH GRANULOMATOSIS (WEGENER’S DISEASE)

Teen male started out with itchy crusty patch under his nose. Now spread all over his face.

CASE STUDY

IMPETIGO

• Acute superficial bacterial infection of skin
• Group A strep, S. aureus or mixture of both
• Common in children and adolescents
• Highly contagious

IMPETIGO

• Starts with small vesicle on face
• Vesicles rupture and form “honey crust”
• Spreads rapidly
• Responds to penicillinase-stable antibiotics
• Topical mupirocin or Bactroban
Elderly male with lesions present 3 months. Last 2 weeks painful ulcers dorsal tongue and floor of mouth. Significant medical history with COPD, O2 supplementation.

**HISTOPLASMOSIS**

- Most common systemic fungal infection
- *Histoplasma capsulatum*
- Acute, chronic & disseminated
- Immunocompromised patients
- Tongue, palate, & buccal mucosa
- Solitary, painful - firm, rolled margins
- Indistinguishable clinically from SCCa

**HISTOPLASMOSIS TREATMENT**

- Treated by systemic antifungals
- Patients usually gravely ill
- Amphotericin B or itraconazole given IV

**Simplified Map of the Distribution of Histoplasmosis in the United States**
CASE STUDY

20's y/o jaw broken in a bar. Jaw repaired but never returned for F/U. 2 months later noticed draining lump in neck on the same side.

ACTINOMYCOSIS

- Gram-positive anaerobic bacteria.
- Actinomycetes normal saprophytic components of oral flora.
- Locations: tonsillar crypts, plaque and calculus, carious dentin, gingival sulci, and periodontal pockets.
- Actinomyces israelii most common culprit in clinical infections.

ACTINOMYCOSIS

- **Clinical Features**
  - >50% of cases arise in cervicofacial region.
  - Suppurative reaction- discharge large yellowish flecks (colonies of the bacteria) called sulfur granules.
  - In cervicofacial region organism enters tissue through area of prior trauma, periodontal pocket, nonvital tooth, extraction socket, or infected tonsil.

LATERAL NECK

A. Fistula

Actinomycosis
• **Treatment and Prognosis**
  • In chronic fibrosing cases - prolonged high doses of antibiotics in association with abscess drainage and excision of sinus tracts.

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**ACTINOMYCOSIS**

- Middle aged female slightly raised red irregular rough eroded area dorsum of tongue.
- Mildly symptomatic, slight burning sensation
- Unknown duration, discovered during routine dental exam.
- Patient a non-smoker.
MEDIAN RHOMBOID GLOSSITIS

- Erythema due to: loss of filiform papillae and papillary atrophy of the tongue.
- Usually symmetric and appears rhomboidal in shape, hence the name.
- Result of candidal infection.
- Considered a part of the spectrum of erythematous candidiasis.
- Similar lesions on palate - “kissing lesions”

ERYTHEMATOUS CANDIDIASIS

- Several clinical presentations may be seen.
- **Acute atrophic candidiasis** (antibiotic sore mouth) - follows a course of broad-spectrum antibiotics.
- Mouth feels scalded.
DENTURE STOMATITIS (CHRONIC ATROPHIC CANDIDIASIS)

- Erythema, +/- petechial hemorrhage, denture-bearing areas of maxilla
- Rarely symptomatic.
- Patient wears denture continuously
- ?? infection by *C. albicans*
- ?? improper design of the denture.

DENTURE SORE MOUTH

PSEUDOMEMBRANOUS CANDIDIASIS

- Best recognized form
- Also known as "thrush"
- Adherent white plaques resemble cottage cheese or curdled milk
- Removed by scraping

PSEUDOMEMBRANOUS CANDIDIASIS

- Broad-spectrum antibiotics or immune suppression
- Infants affected - underdeveloped immunity
- Usually mild, burning or unpleasant taste
ANGULAR CHEILITIS

- Angular cheilitis occurs alone, pts. with reduced vertical dimension accentuated angular folds
- Saliva pools, keeping area moist
- 20% C. albicans, 60% C. albicans and Staph, and 20% S. aureus alone

CHRONIC HYPERPLASTIC CANDIDIASIS

- Presents as white patch (Candidal leukoplakia) cannot be scrapped off.
- Candidiasis superimposed on pre-existing leukoplakic (white) lesion.
- Candidal organism alone capable of inducing hyperkeratotic lesion.
- Often present on buccal mucosa.

CHRONIC HYPERPLASTIC CANDIDIASIS

- Leukoplakic lesion associated with candidal infection have red and white areas "speckled" leukoplakia.
- Increased frequency of epithelial dysplasia
- Diagnosed by presence of candidal hyphae and complete resolution after antifungal therapy.

CANDIDIASIS TREATMENT

- Antifungal therapy
  - clotrimazole (Mycex) troches 5X a day X 2 weeks
  - nystatin rinse 3-4 X a day X 2 weeks
  - Nystatin powder or ointment for angular cheilitis
- On complete resolution
  - hyperplastic tissue may require a surgical removal
- Underlying systemic diseases and immune suppression should be ruled out
  - Diabetes
  - chronic steroid use- asthma and systemic dosing
CASE STUDY
S: Right face, eye, forehead started hurting and broke out last week.
O: General dentist not tooth pathology. Lesions right palate and ridge, below right eye, cheek and lower jaw.
• First lesion under eye was treated with steroid cream and would come and go.
• Has had shingles vaccine.

HERPES ZOSTER
• Expect 30% LIFETIME RISK to develop vesicular eruptions over 1 or more dermatomes
• Almost 50% of individuals who live beyond age 80 years can expect to develop zoster.

TRIGEMINAL NERVE DISTRIBUTION

ZOSTER VACCINE EFFICIENCY
• The magnitude of these VZV-specific immune responses was greater in subjects 60–69 years old than in subjects ≥70 years old
• Zostavax is a freeze-dried, attenuated, live VZV vaccine
• Reduces incidence by 50%
• POST HERPETIC NEURALGIA BY 67%
• Shingrix (recombinant zoster vaccine) licensed by FDA in 2017.
• CDC recommends that healthy adults 50 years and older get two doses of Shingrix, 2 to 6 months apart

CLINICAL COURSE HERPES ZOSTER
• 1 to several(7) days prodromal itch, tingle pain
• 10% simultaneous itch, burn, pain and vesicles
• Crust 1-2 weeks
• Complete heal 2-4 weeks
HERPES ZOSTER COMPLICATIONS

- Hyperesthesia, facial scarring with depigmentation, loss of hearing and conjunctivitis.
- Post-herpetic alveolar necrosis and spontaneous tooth exfoliation
  - 20 cases unrelated to HIV infection.
  - Only 39 cases being reported in HIV-infected patients

CASE STUDY

40's male 2 week history of crusting ulcers lips and face. Now has tooth intensity pain in left maxillary

TWO WEEKS LATER

ONE MONTH LATER
HIV+ female painful chin. ID docs Rx several antibiotics & anti-fungals but NR. Request oral surgery consult. ?? Odontogenic infection

**TREATMENT OF HERPES ZOSTER**

- Valtrex 1 gram 3 x/day for 7 days
- Initiate treatment at earliest sign or symptom
- Most effective if begun within 48 hours of rash development
- Efficacy >>72 hours not established
- Therapy with corticosteroids is controversial
- If use steroids must also use anti-virals

**CASE STUDY**

- Middle aged female referred to a periodontist for swelling anterior mandibular vestibule of unknown duration
- Firm and freely mobile mass
- History of recent increase in size
- Medical history was non-contributory and no apparent history of trauma

Foreign body reaction to displaced dermal filler (Sculptra® poly-L-lactic acid)
DERMAL FILLER REACTION

- Multinucleated giant cell reaction is "normal" since it adds volume
- Sculptra™ consists of microspheres from polyactic acid (1 to 50 µm) suspended in methylcellulose.
- Appear to be safe and effective in larger quantities in facial defects such as facial lipodystrophy or chin and malar augmentation.
- Not permanent: giant cells resorb spherules; inflammation resolves
- Ectopic nodules are similarly resorbed eventually

CASE STUDY

- 40's female had crowns on anterior teeth for 6 years w/o any problems. Both crowns had open margins. 1 year ago developed HBP and Rx Lotrel. Immediately noticed gingival swelling associated with crowns. 6 months ago dose doubled and swelling increased noticeably.

What is the most likely diagnosis?

1. ANUG
2. Mouth breathing associated gingival hyperplasia
3. AIDS associated periodontal disease
4. Drug-induced hyperplasia
5. Plasma cell gingivitis

DIAGNOSIS

- Drug induced (Lotrel) gingival hyperplasia
- Lotrel combination drug ACE inhibitor (benazepril) and calcium channel blocker (amlodipine-Norvasc)
- Drug effects are additive and dose is important also.
- Combination of inflammation and drug needed for full development.
### DRUGS CAUSING GINGIVAL HYPERPLASIA

- Calcium Channel Blockers (Dihydropyridines)
  - Nifedipine (CCB) – 25%
  - Norvasc
- Immunosuppressive Drugs
  - Cyclosporine – 25%
  - Phenytoin – 50%

### NORVASC INDUCED GINGIVAL HYPERPLASIA

- Starts after 1-3 months of drug use
- Originate in interdental papillae and spread
- Anterior and facial most frequently involved
- Can cover portion or all of the crown
- Edentulous areas generally not affected

### CLINICAL FEATURES

- Starts after 1-3 months of drug use
- Originate in interdental papillae and spread
- Anterior and facial most frequently involved
- Can cover portion or all of the crown
- Edentulous areas generally not affected

### CYCLOSPORIN

### NIFEDIPINE AND CYCLOSPORIN
TREATMENT AND PROGNOSIS

- Discontinuation of the medication
- Substitution of one Ca channel blocker for another
- Plaque control, scaling, and gingivectomy
- Peridex rinse
- Cyclosporine hyperplasia least responsive to plaque control

A 30’s y/o female presents with a mixed lucency/opacity clustered around root apices mandibular canine-premolar teeth. PDL spaces is intact and teeth are vital.

CASE STUDY

FOCAL CEMENTO-OSSEOUS DYSPLASIA

- It is a benign fibro osseous lesion
- Seen in tooth bearing areas of the jaw
- It is the most common fibro osseous lesion seen in clinical practice
- May arise from periodontal ligament or as a result of defective remodeling of the bone & correlates to hormonal factors

FOCAL CEMENTO-OSSEOUS DYSPLASIA

- Part of spectrum between the periapical(cementoma) & florid cemento-osseous dysplasia
- Caucasian females, 4th & 5th decades
- Post mandible is the predominant site
- Invariably asymptomatic
- Detected on routine x-ray
FOCAL CEMENTO-Osseous Dysplasia

- X-ray features
  - Varies from completely lucent to densely opaque
  - Most commonly a mixed pattern
  - Shows little or no tendency for progression

PERIAPICAL CEMENTO-Osseous Dysplasia

- Seen mostly in middle aged AA females
- Very seldom seen in patients younger than 20 yrs. of age
- Asymptomatic lesions seen on routine radiographs
- Lesions seldom > 1.0 cm in size
- "Matures" over time leading to a mixed lucent & opaque appearance & fusion of adjacent lesions

45 year old AA female. All teeth tested vital.

Vital teeth ended up with RCT
MANAGEMENT

- Does not require treatment (self limiting)
- Patient should be encouraged to retain their teeth to prevent symptoms related to extractions
- Good oral hygiene encouraged to control periodontal disease

FLORID CEMENTO-Osseous Dysplasia

- Striking predilection for adult AA females
- Marked tendency to be bilateral & symmetric
- Lesions often asymptomatic & discovered on routine dental radiographs
- Occasionally low-grade discomfort
- Avoid biopsy or elective extraction of teeth
# Benign Fibro-Osseous Lesions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Age/race/sex</th>
<th>Site</th>
<th>X-Ray features</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA COD</td>
<td>4-5 decades/ AA/ females</td>
<td>Apices of vital anterior mandibular teeth</td>
<td>PA X/R, with increasing R/O as it matures</td>
</tr>
<tr>
<td>Focal COD</td>
<td>4-5 decades/ AA or Caucasian /females</td>
<td>Apices of vital teeth; usually PREMOLARS and mandibular 1st or 2nd molars</td>
<td>Same as above</td>
</tr>
<tr>
<td>Florid COD</td>
<td>4-5 decades/ AA females</td>
<td>Apices of vital teeth in multiple quadrants</td>
<td>Same as above</td>
</tr>
</tbody>
</table>

**Case Study**

- Teen aged female with large radiolucency right side mandible.

**Panorex**

- Received these images of 40 y/o hygienist. I'm planning biopsy & superficial excision. What do you think?
CENTRAL GIANT CELL GRANULOMA

- Non-neoplastic reactive lesion
- >60% before age 30
- 65% in females
- 70% in mandible, usually anterior to first molars, frequently crosses the midline
- Radiolucent defects, often multilocular
- Multinucleated giant cells identical to cherubism and hyperparathyroidism

MAXILLARY LESION

TREATMENT

- Curettage
- Surgical resection
- Steroid injections
- Salmon calcitonin—no longer acceptable black box warning
- Recurrence 11-50%

CASE HISTORY

Middle aged male with thick white and yellow lesions lateral borders and dorsum of tongue. Painful lesions present 4 months. History of plaque psoriasis recently Rx Taltz a monoclonal antibody for plaque psoriasis.
What is the most likely diagnosis?
A. Erythema multiforme
B. Mucosal drug reaction
C. Lichen planus
D. Hand foot and mouth disease
E. Psoriasis related geographic tongue

GEOGRAPHTIC TONGUE (BENIGN MIGTATORY GLOSSITIS)
• Common condition affecting 2% of US population.
• Unknown etiopathogenesis and generally goes unnoticed by patients.
• Effects anterior 2/3 of tongue as erythematous areas, surrounded by white scalloped borders.
• Erythema is due to atrophy of filiform papillae.
• Can cause slight sensitivity to hot or spicy foods.

Does psoriasis and GT have any relationship?
• Psoriasis is an inflammatory, cutaneous autoimmune disease.
• FT is found in 1/3 of these patients and 10% have GT often in combination with FT.
• Association is highly significant and double that found in the normal population.
• FT +/- GT are the oral manifestation of psoriasis due to the similarities in clinical, histologic, and genetic patterns.

PSORIASIS AND GEOGRAPHIC TONGUE
• Patients with both plaque form of psoriasis and GT more likely to have human leukocyte antigen (HLA-Cw6) group.
• This HLA subtype is associated with prolonged epithelial proliferation.
• Patients with pustular psoriasis share the IL36RN gene which has been documented to cause this specific form of psoriasis and GT as well.
• GT is likely a form of oral psoriasis but much more often caused by other gene mutations that involve similar gene loci to those that cause psoriasis.
PSORIASIS AND GEOGRAPHIC TONGUE

• Importantly, GT often seen in patients with severe psoriasis, and is a marker of psoriasis severity

GEOGRAPHIC TONGUE

• Geographic tongue is often seasonal
• Often associated with other conditions such as seborrheic dermatitis and atopy or allergy

CASE HISTORY

Middle aged male with fleshy lesion on his upper lip

CONDYLOMA ACUMINATUM (Venereal Wart)

• Sexually transmitted lesions of genitalia, perianal region, mouth and larynx
• Associated with HPV-6, -11, -16, &-18
• Lesions develop at sites of sexual contact or trauma
• Most common clinical manifestation of HPV infection
• 20% of all STDs
CONDYLOMA ACUMINATUM

- May be extensive but usually self-limiting
- Patients can self infect, must be removed
- Prevalence 1% US 10% Scandinavia
- Treat surgically but often recur

CASE HISTORY

- Young female presented with profound lip swelling and cracked lips in 2015.
- Also had gingival overgrowth of maxillary anterior teeth.
- The gingival overgrowth persisted for 2 years but lip swelling subsided.
- Still has growths in her mouth and cracked lips.
- Incisional biopsy of the hyperplastic gingiva done in February 2017
**HISTOPATHOLOGIC FEATURES**

- Microscopic examination of tissue from intestine or oral mucosa shows non-necrotizing granulomatous inflammation.

**CROHN’S DISEASE**

- Often associated with oral manifestations: hyperplastic gingiva and swelling of lips with vertical fissures
- In almost ½ of pediatric patients, oral manifestations precede GI changes
- Oral sarcoidosis and nutritional deficiencies should also be included in the differential diagnosis for this patient

**TREATMENT AND PROGNOSIS**

- Sulfasalazine or prednisone, depending on the degree of involvement.
- New biologic agents: TNF-alpha inhibitors

**CASE HISTORY**

- Teen female presents for consultation concerning weird gums. Has some discomfort. Also complains of chronic diarrhea. OMFS sends me pictures and request patient travel to Shands to see me and an ID doc at Shands. I tell OMFS no need to send patient. Diagnosis ??
CASE STUDY

PYOSTOMATITIS VEGETANS

- Often associated with inflammatory bowel disease
- 25%+ not associated with GI disturbances
- Oral lesions often precede GI problems

- Starts as erythematous areas of buccal & labial mucosa and gingiva
- Becomes nodular with fissures
- Often see yellow snail tract abscesses

PYOSTOMATITIS VEGETANS

- Granulomatous inflammation seen on some biopsies
- Treat underlying bowel problems and lesions regress
- Oral lesions respond to topical and intralesional steroids temporarily
- Newest Tx Thalidomide

CASE STUDY

- Elderly female with severe burning tongue of at least 6 months duration.
- Symptoms wax and wane and gets worse with spicy foods.
- Currently treated for HTN and asthma. Non-smoker and rarely drinks alcohol.
- All other oral tissues were normal.
- No yeast was identified in smears.
PERNICIOUS ANEMIA

- Uncommon condition among elderly patients of northern European heritage
- Megaloblastic anemia caused by poor absorption of cobalamin (vitamin B12, extrinsic factor)
- Most patients lack intrinsic factor results in decreased absorption of cobalamin/vitamin B12/extrinsic factor

CLINICAL FEATURES

- Fatigue, weakness, shortness of breath, headache, and feeling faint
- Paresthesia, tingling, or numbness of the extremities
- Oral symptoms
  - Burning sensation of the tongue, lips, buccal mucosa, or other mucosal sites
  - Focal patchy areas of erythema and atrophy

CASE STUDY

Elderly male growth on the right retro-molar pad area for 6-8 weeks. Bone is cupped out.
CASE STUDY

PREPERIPHERAL GIANT CELL GRANULOMA

CLINICAL FEATURES
• Exclusively on the gingiva or edentulous alveolar ridge
• Red or reddish-blue nodular mass
• More bluish-purple than PG
• 5th and 6th decades
• “Cupping” resorption of bone in X-ray

TREATMENT AND PROGNOSIS
• Surgical excision down to bone
• Approx 10% recur, and re-excision must be performed
• Similar lesions in hyperparathyroidism –may represent “brown tumor”

CASE STUDY
• Young male noticed a blue bump on his gums shortly after he lost his deciduous maxillary incisor teeth. The lesion is painless but does bleed occasionally
CASE STUDY

Elderly male had oropharyngeal cancer a few years ago and received chemo-radiation. Now had recurrence and is having radiation a second time. Has noticed this gingival growth for the last few months.

LESION EXCISED

DIAGNOSIS POST-RADIATION OSTEOSARCOMA

- Rare and potential late complication of radiotherapy for diseases
- Uncommon, aggressive tumor that occurs 5 years or more after radiotherapy
- Treatment is radical surgery
- All patients died.
- 1-, 2-, and 3-year overall survival (OS) rates for the entire cohort of 45 patients were 53.3%, 35.6% and 13.5%, respectively

CASE STUDY

Young female with sore throat and swollen glands

DIAGNOSIS PRIMARY HERPES

- In adults can present with primarily pharyngeal involvement
- Clusters of vesicles form and coalesce into irregular shallow ulcers, Herpes=creep
- Coated tongue is constant for all primary HSV patients

DIAGNOSIS

- Primary herpetic gingivostomatitis
PRIMARY HERPES
• Vesicles occur on all mucosal surfaces and sometimes skin
• Always (almost) ulcerates marginal gingiva
• Fever, lymphadenopathy & swallowing difficulties

FUNGAL INFECTION?

PRIMARY HERPES
• Usually affects young children
• Lesions heal completely if not traumatized
• Initial lesions prefer inflamed tissues i.e. erupting thirds and palatal of max. centrals
• Often cause gingival hypertrophy (opposite of ANUG) and lip ulcers
TREATMENT PRIMARY HERPES CHILDREN
• Acyclovir elixir 200mg/5cc (banana flavored)
• 1tsp rinse 30 seconds and swallow 5x/day for 7 days

TREATMENT PRIMARY HERPES ADULTS
• Valcyclovir 1 Gram BID for 10 days
• Significantly reduces incidence of recurrences

CASE HISTORY
This female had a cleaning used Arrestin (Doxycycline) in pockets in her mouth. Now she has these weird white bumps. No meds. Allergic to penicillin and nickel. Allergic reaction?

PURPLE TORI

CASE HISTORY
Middle aged female expanding pigmented lesion in right cheek
DIAGNOSIS: POST INFLAMMATORY PIGMENTATION

- Post injury
- Post erosive lichen planus (11%)
- Post surgical (post implant)

MELANIN INCONTINENCE FROM EROSGOVE LICHEN PLANUIS

POST IMPLANT REACTIVE PIGMENTATION

CASE STUDY

SMOKING ASSOCIATED MELANOSIS

- Heavy smokers
- Females on the pill
- Anterior labial gingiva