Commonly Encountered Oral Lesions & Biopsy Techniques

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I have no disclosures
Commonly Encountered Lesions of the Oral Mucosa

**Goals:**

1. Review a sample of commonly encountered oral lesions & discuss the clinical characteristics, etiology, risk factors & recommended management
2. Discuss indications for biopsy and biopsy technique
3. Explain biopsy workflow—what happens to your specimen—and dental codes/billing
ORAL CANDIDIASIS
Oral Candidiasis

- **Etiology:** *C. albicans*

- Opportunistic infection

<table>
<thead>
<tr>
<th>Condition</th>
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<tbody>
<tr>
<td>Diabetes</td>
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<tr>
<td>Anemia</td>
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<tr>
<td>Immunosuppression</td>
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<tr>
<td>Systemic or topical steroids</td>
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<tr>
<td>Systemic antibiotics</td>
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<tr>
<td>Dentures</td>
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<tr>
<td>Xerostomia</td>
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<tr>
<td>Loss of vertical dimension</td>
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<tr>
<td>(angular cheilitis)</td>
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• Sloughing from superficial chemical burn – Colgate total is a common culprit

• Pt complains of pulling “strings” out from mouth in am
Oral Candidiasis

- Diagnostic Key
  - Plaques are removable/wipe-able
    - Exception being: erythematous & hyperplastic variants
      - take smear or culture
100 for ~ $6

~$4 each
Oral Candidiasis

• Treatment:
  ▫ Rx antifungal treatment
    ● Nystatin
    ● Mycelex troches
    ● Diflucan
    ● Mycolog II Cream

Also treat the denture
HERPES LABIALIS
Herpes Labialis aka “Cold Sore”

- **Etiology:** Reactivation of HSV
- **Stimuli** that can reactivate the virus

<table>
<thead>
<tr>
<th>Stimuli</th>
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<tbody>
<tr>
<td>fever</td>
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<tr>
<td>a high-stress event</td>
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<tr>
<td>hormonal changes</td>
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<tr>
<td>fatigue</td>
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<tr>
<td>upper respiratory infection</td>
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<tr>
<td>supressed immune system</td>
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<tr>
<td>extreme temperature</td>
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<tr>
<td>recent dental work or surgery</td>
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Herpes Labialis

• The lifetime prevalence in U.S. is estimated at 20-45% of the adult population
  ▫ 1/3 experience recurrent outbreaks

• Prodromal symptoms

• Although the fluid-filled vesicles are most infectious, all stages can be contagious
  ▫ Must decide whether it is wise to treat a pt with an active infection, the dentist must avoid spreading the virus to other areas of the pt’s mouth and/or face
Herpes Labialis

- Treatment
  - OTC antiviral
    - Abreva cream 10% (docosanol)
  - Rx antiviral cream
    - Zovirax Ointment 5% (acyclovir)
  - Rx systemic antiviral
    - Valtrex (valacyclovir)
  - Laser
RECURRENT INTRA-ORAL HERPES
Impetigo

- Infection from **staph** or **strep**
- Can last for many weeks
- Contagious

- **Rx:** topical or systemic antibiotics
  - 7-10 day course of an oral antibiotic (ie erythromycin, cephalexin)
  - strong topical antibiotic, such as mupirocin (Bactroban)

- Wash (do not scrub) the skin several times a day with antibacterial soap to remove crusts
APHTHOUS ULCER
Aphthous Ulcers/“Canker Sore”

- Occurs most frequently in children & young adults
- Etiology = unknown
  - Reported Triggers/Predisposing Factors
    - Allergies/hypersensitivity
    - Stress
    - Trauma
    - Nutritional deficiency
    - Hormones
    - Immunological factors
    - Hematological abnormalities
    - Genetic predisposition
Major

Herpetiform
Aphthous Stomatitis
Aphthous Ulcers

• Diagnosis: Clinical

• Treatment:
  ▫ No treatment
  ▫ OTC anesthetic
  ▫ Topical corticosteroid
  ▫ Topical Apthasol
  ▫ Cauterization
  ▫ Systemic steroid (for multi-focal outbreak)
  ▫ Laser CO2 or YSGG Er

R/o systemic disorder

Rx: Fluocinonide Gel 0.05%
Disp: 15g
Sig: Apply a thin layer to lesion 4 times per day until resolved
If a patient presents with cc of multiple recurrences, you should rule out the following systemic conditions:

<table>
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<tr>
<th>Immunocompromised Conditions</th>
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<tbody>
<tr>
<td>Celiac Disease</td>
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<tr>
<td>Nutritional Deficiency</td>
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<tr>
<td>IBS/Chrohns</td>
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<tr>
<td>IgA Deficiency</td>
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<tr>
<td>Cyclic Neutropenia</td>
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Herpangina

- Most often caused by coxsackie virus A (aka "herpangina virus")
  - Can also be caused by coxsackievirus B or echoviruses
- Most cases of herpangina occur in the summer
- Mostly affects children, occasionally occurs in adolescents and adults
- Self limiting, palliative care
Deep Fungal Infection

- Usually in immunocompromised
- Clinical mimics
  - SCC
  - Wegner’s Granulomatosis
  - Oral TB
  - Syphilitic gumma
  - Sarcoidosis
- Biopsy and/or fungal culture required for diagnosis
TUGSE

- Traumatic ulcerative granuloma with stromal eosinophilia
- Unknown etiology
- Most common oral location: tongue
- May resemble a traumatic ulcer clinically
TUGSE (Traumatic Ulcerative Granulation with Stroma Eosinophilia)
• Key histology finding—numerous eosinophils within the CT and extending into muscle
Necrotizing Sialometaplasia
• Often hard palate following trauma
  ▫ Ex) from injection of local anesthesia
• Local ischemia and infarction of minor salivary glands
• Early lesions = palatal swelling
• Late lesions = ulcer or defect in palate
• “A piece of my palate fell out”
• Usually occurs over a course of weeks
• Clinical mimic = SCC
PRIMARY HERPETIC GINGIVOSTOMATITIS
PRIMARY HERPES
Acute Herpetic Gingivostomatitis

- **Diagnostic Keys**
  - Ulcers occur on BOTH keratinized & non keratinized tissue
  - Gingiva is puffy, painful, & erythematous
  - Pt currently has or recently had fever, sore, throat, malaise
  - Pt has never had a “cold sore”
Acute Herpetic Gingivostomatitis

- Diagnosis: Clinical
- Treatment: Self limiting, palliative
Lichen Planus

- Chronic, muco-cutaneous condition thought to be the result of a cell-mediated immune response of unknown origin
- Affects ~2% of the adult population
- Presents intraorally as white striae on an erythematous background
  - &/or white patches, erosions & desquamative gingivitis
Lichen Planus

• An association w/ Hep C has been reported
  ▫ More recalcitrant to Tx ???

• A slight increase risk for OSCCa has been reported
  ▫ Keep LP patients on follow-up indefinitely
  ▫ *** Document that Pt was informed of risk & need for long-term follow-up
Lichen Planus

• Features to Aid in Clinical Diagnosis
  ▫ Lesions should be *multifocal & bilateral*
  ▫ Lesions *wax & wane*
  ▫ *Whickhams striae*
  ▫ Any skin lesions
  ▫ Family Hx
  ▫ Medical Hx
Lichen Planus

- **Mimickers**
  - **Lichenoid reactions associated with medications**
    - Gold salts, beta blockers, antimalarials, thiazide diuretics, furosemide (Lasix), spironolactone (Aldactone) and penicillamine, Metformin, & others
  - **Lichenoid reactions associated with dental materials**
  - **Systemic or discoid LE**
  - **GVHD**
Lichen Planus

- Other mimickers if erosive LP
  - Erythema multiforme
  - Pemphigoid
  - Pemphigus
Lichen planus

• Management
  ▫ Biopsy to establish a diagnosis
  ▫ Treat only if symptomatic
  ▫ Long-term clinical follow-up

• Treatment
  ▫ Topical or systemic steroids
    1. Dexamethasone Elixir
    2. Fluocinonide Gel 0.05%
    3. Clobetasol Ointment 0.05%
    4. Prednisone 30g (1wk), 15g (1wk), 5g (1wk)

  ▫ Secondary fungal infection
Erythema Multiforme

- Spectrum of lesions:
  - EM Minor—EM Major—Stevens Johnson Syndrome—Toxic Epidermal Necrolysis
- Most often a reaction to an infectious agent (TB, HSV) or an offending drug
- Clinical buzzwords: “black crusted lips,” “bullseye” or “targetoid” skin lesions
Erythema Multiforme
Mucosal Membrane Pemphigoid

- Autoimmune condition causing vesiculobullous lesions of skin and oral mucosa
- Autoantibodies against BP180, laminin-5 in the basement membrane zone
- Causes subepithelial clefting
- DIF: Linear band of IgG and complement along BMZ
Mucosal Membrane Pemphigoid
Patients may have ocular lesions—symblepharon
- Plaques of bulbar conjunctiva
- If untreated, progression to blindness
Pemphigus Vulgaris

- Intraepithelial clefting
- Autoantibodies against Desmoglein 1 and Desmoglein 3
  - Desmoglein 3 = seen in oral cavity
  - Desmoglein 1 = seen in upper layers of epidermis (skin)
- Histology: acantholysis with “tombstone” appearing cells
- DIF: “Chickenwire” pattern of IgG and Complement
Pemphigus Vulgaris
Desquamative Gingivitis

- Clinical term
  - Mucosal membrane pemphigoid
  - Lichen planus
  - Pemphigus vulgaris
  - Others less likely
    - Systemic lupus erythematosus
    - Linear IgA disease
    - Chronic ulcerative stomatitis
“Butterfly Rash”
Oral findings: often non-specific
Lupus Chelitis
Skin: scaling, atrophy, pigmentary disturbances
• Systemic Manifestations:
  ▫ Renal: ESRD
  ▫ Cardiac: Libman-Sacks endocarditis
Diagnosis

- DIF: Shaggy or granular band of IgG, IgM, c3 at BMZ
- Positive lupus band test
- Positive ANA
  - Anti-dsDNA
  - Anti-Sm (small nuclear RNA)
GEOGRAPHIC TONGUE
Geographic Tongue

- **Diagnosis:** Clinical
- **Treatment:**
  - No treatment
HAIRY TONGUE
Hairy/Coated Tongue

- **Diagnosis:** Clinical

- **Treatment:**
  - Gentle tongue brushing or scraping
  - Increase water consumption
  - Avoid certain food/beverages (i.e., coffee), bismuth containing medications, chlohexidine, etc.
LEUKOPLAKIA
Leukoplakia

- “A white patch or plaque that cannot be characterized clinically or pathologically as any other disease” WHO
  - Strictly a clinical term, does not imply a specific histological diagnosis

Leukoplakia

- Keratosis
- Benign epithelial hyperplasia +/- hyperkeratosis
- Dysplasia
- SCC
Leukoplakia

- Considered a “pre-malignant” lesion
  - Even though histologic features of dysplasia not always present
    - Dysplasia in 4-15%
    - Tongue & FOM = high risk

- Management:
  - Any leukoplakia that is present for +2 wks and for which a cause can not be identified & removed should be biopsied
Not all leukoplakias are the same!

Lichen planus

Contact stomatitis - cinnamon

Frictional Hyperkeratosis
Leukoedema

toothbrush hyperkeratosis

Chronic cheek bite

hyperkeratosis from sharp tooth structure

Photos: Dr. C.D. Johnson, University of Texas Dental Branch at Houston
Lichen planus
Smokeless tobacco keratosis

© Photo(s): Dr. C.D. Johnson, University of Texas Dental Branch at Houston
Cocaine Keratosis at site of chronic cocaine placement

Chemical burn from aspirin placement
Hyperplastic Candidiasis
Osteonecrosis of the Jaw (ONJ)

• Formerly bisphosphonate-related (BRONJ), now referred to as medication-related (MRONJ)

• Required features for diagnosis:
  ▫ Current or previous treatment with antiresorptive or antiangiogenic agent
  ▫ Exposed bone for longer than 8 weeks
  ▫ No history of radiation therapy or obvious metastatic disease to the jaws
• Most strongly associated with nitrogen containing bisphosphonates (aminobisphosphonates) and denosumab
  ▫ Usually for treatment of multiple myeloma (rare in patients treated for osteoporosis)
• IV administration > oral administration
• Mandible > maxilla
• Often occurs following local trauma (dental extraction)
Treatment

• #1 treatment is prevention!
  ▫ Promote good oral hygiene
  ▫ Conservative treatments when applicable/practical (RCT vs. exo)
• Managing exposed bone □ managing patient symptoms
  ▫ Smooth roughened edges
  ▫ Gentle curettage
  ▫ Chlorhexidine rinse
• Timing is key
  ▫ If larger dental procedures indicated, try to schedule for when drug half life is at its lowest
• ? Role of hyperbaric oxygen therapy
INDICATIONS FOR BIOPSY

- Any lesion that **cannot** be diagnosed clinically, including the following:
  - Lesions with no identifiable etiology that **persist for >14 days**, despite local therapy

- Any lesion that is felt to have **malignant or premalignant characteristics**, including the following:
  - Any lesion that has grown or is growing **rapidly for no obvious reason**
  - Any lesion that feels firmly attached or **fixed to adjacent structures**
  - Any unknown lesion in a **high-risk area**

- Confirmation of clinical diagnostic suspicions

What to biopsy

• Soft tissue
  ▫ Any clinically suspicious leukoplakic or erythroplakic lesion
  ▫ Pigmented lesions
  ▫ Non-healing ulcer (present after two weeks)
  ▫ Soft tissue masses

• Intraosseous
  ▫ Tissue curetted from extraction sockets/periapical debridement
Pigmented lesions

• Concern is melanoma
• Consider biopsying all pigmented lesions to definitively rule out melanoma
  ▫ Even innocuous appearing pigmented lesions may be melanoma in situ!
  ▫ Exception—racially pigmented gingiva/mucosa need not be biopsied
Soft tissue masses

- Numerous soft tissue/salivary lesions, most common of which clinically encountered include:
  - Fibroma
  - Lipoma
  - Papilloma
  - Mucocele
  - Pyogenic granuloma/peripheral ossifying fibroma/peripheral giant cell granuloma
  - Denture polyp
Periapical Pathology

Clinical Diagnosis: Periapical pathology

Microscopic Diagnosis:

99% PAP (797 out of 805 cases; periapical granuloma, radicular cyst)

1% non-PAP (8 out of 805 cases)

• 2 CGCG
• 1 nasopalatine duct cyst
• 1 lateral periodontal cyst
• 1 benign fibro-osseous lesion
• 1 Pindborg tumor
• 1 odontogenic myxoma
• 1 Multiple myeloma
Periapical Pathology—A note on residual cysts

- Residual cyst = radiolucency that remains in an area after extraction of the infected tooth
- Majority of SCC occurring within cystic jaw lesions are in residual cysts!
Dental Extractions

- Impacted teeth
  - Should consider submitting curetted tissue for pathologic analysis, especially if there is a large radiographic lucency associated with the tooth
  - Most likely a dentigerous cyst, but need to rule out odontogenic keratocyst, ameloblastoma
Q1. Does the lesion require a biopsy?
Q2. What is your differential diagnosis
Q3. Does the patient have any contraindications for biopsy?
Q4. Will it be Excisional vs. Incisional

- Differential Dx *
- Size of lesion < or > 5mm
- Awareness of regional anatomy/significant anatomic structures (ie labial artery)
- Awareness of potential esthetic compromise as a result of scarring

Small, pedunculated, exophytic masses (ie papilloma, fibroma) in accessible areas are excellent candidates for excisional biopsy
Incisional Biopsy

* Site selection  
  Want to acquire the most representative sample

- The minimal requirements for an adequate specimen vary
  - Want to have at some connective tissue in all specimens, should have bleeding
    - Ulcerated vs. non-ulcerated lesions

- A small amount of local anesthetic infiltrated at 4 points around the lesion
  - Anesthetic should not be injected directly into lesion
Biopsy Armamentarium for Mucosal Biopsies

- Blade handle with a No. 15 blade, +/- punch
- Tissue forceps with teeth
- Local anesthetic (preferably w/ epi) and syringe
- Silk suture for traction & silk or chromic gut suture for closure, if needed
- Needle holder
- Fine-tipped scissors
- Silver-nitrate sticks
- Gauze sponges
- Ruler or perio-probe for measuring
- Specimen bottle containing formalin and biopsy requisition form
36 yo HIV+ male
74 yo female, asymptomatic
Ulcerated lesions

• When biopsing ulcerated lesions INCLUDE ADJACENT NON-ULCERATED/NORMAL TISSUE
Biopsy paperwork and workflow

Please remember to label formalin bottle with patient’s name!
Name of patient (type/print)

Date of birth (NYS Law Mandate)  Sex

Address of patient

City  State  Zip Code

MRN at CUMC, if known:

Submitted by Dr.  NPI

Address of Dr.

City  State  Zip Code

Telephone  Fax
Date of surgery/procedure

Duration of lesion

Location of biopsy

Clinical diagnosis and history

Do you have medical insurance? □ Yes □ No
If yes, fill out form below or provide photocopy of insurance ID
Patient Medical (not dental) Insurance billing information or Medicare ID information

Medical insurance carrier

Address

Policy ID number

Group number

Effective date

Policyholder name

Patient relationship to insured □ Self □ Spouse □ Child □ Other
Quick notes on paperwork:
1) Fill out the clinical info to the best of your ability
2) Please provide a radiograph/clinical photograph if available/applicable
3) The actual biopsy procedure is a dental code/billed through dental insurance, but the lab tissue processing is billed through medical insurance—put this one on the form you send to us, but the regular dental codes/fees apply to your office charts/EMR!

*Please detach and give to the patient*

**To the patient**
Your doctor is following sound medical principals in submitting excised (removed) tissue for laboratory examination. Some additional information you should know follows:

1. The laboratory is allowed to give the report of the tissue only to the doctor/surgeon treating you. The report is not given directly to the patient.

2. The fee for laboratory examination is separate and independent of the fee charged by the doctor/surgeon treating you. When multiple separate specimens from a single patient are submitted, the fee is higher.

3. NY State Law (Section 394-E) requires that clinical laboratories bill patients or their insurers directly. The bill you receive for the tissue removed by your doctor/surgeon, is paid by your *dental* insurance. The bill you receive for processing the tissue specimen, is paid by your *MEDICAL* insurance.
Biopsy workflow—what happens to your specimen

1) Mailed requisition form and formalin bottle are received by our lab (fedex shipping labels and mailing envelopes are included in the biopsy kits)
2) Tissue is processed, embedded, and fixed on a slide (by lab techs)
3) Oral pathologist (us) receive the slide and render a diagnosis
4) Report with diagnosis is faxed and mailed to your office. Biopsy reports are also available through an online portal
Biopsy workflow

• Normal turnaround time is one day after we receive the specimen (needs to fix overnight)
  ▫ Possible exception—if diagnosis requires additional stains/workup
  • In this case we will contact you and let you know
  
• If you have any questions about the diagnosis or how to relay results to the patient, just give us a call!
## Biopsy Coding

<table>
<thead>
<tr>
<th>Dental Procedure</th>
<th>Dental Code</th>
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<tbody>
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<td>Excision of oral hard tissue</td>
<td>D7285</td>
</tr>
<tr>
<td>Excision of oral soft tissue</td>
<td>D7286</td>
</tr>
<tr>
<td>Excision of oral hard tissue</td>
<td>D7285</td>
</tr>
<tr>
<td>Excision of oral soft tissue</td>
<td>D7286</td>
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</tbody>
</table>
The Biopsy Report & what to do next

• Evaluating, documenting and following up oral pathological conditions: A suggested protocol


   JADA, Vol. 132, March 2001
THANK YOU
ANY QUESTIONS?

I LIKE THEM, BUT THE LEATHER IS KIND OF STIFF... I'LL HAVE TO CONSULT MY DENTIST...