73rd Annual Meeting
& Continuing Education Program

June 7 – 12, 2019

Miami, Florida

Program Schedule, Hotel Floor Plan, Abstracts, Clinical Pathologic Conference
On behalf of the AAOMP, it is with great enthusiasm that I welcome you to sunny Miami, FL for the 2019 Annual Meeting at the InterContinental Miami Hotel.

The scientific educational sessions are always a highlight of the meeting and this year is no exception. These programs highlight some of the latest advances in the practice of Oral and Maxillofacial Pathology. As we know, the past several years have seen significant advances in the classification and diagnosis of conditions affecting the maxillofacial region and our meeting provides a great opportunity to stay abreast of these findings.

For the always popular AAOMP Seminar, Dr. Bhattacharyya has put together a Florida-centric program to start things off and this year’s distinguished presenters include Drs. D’Souza (Johns Hopkins), Wenig (Moffitt Cancer Center), Medeiros (MD Anderson) and Bishop (UT Southwestern).

This year, thanks to the efforts of our University of Minnesota colleagues, the Gorlin Lecture is incorporated into the program for the first time. Dr. Rudolf Happle, famous German Dermatologist, will present the lecture. In addition, there will be a slide exchange for Residents only. The lecture and slide exchange promise to meet our highest expectations of research and scholarship.

The meeting also provides a number of social events to help foster friendships and the camaraderie that is such an integral part of our specialty. There are ample opportunities to catch up with old friends and colleagues, and to meet new members and Fellows of the Academy. Please make plans to attend the Welcome Reception, the Residents’ Reception, and the President’s Reception along with the various alumni reunions and the Rest of Us Reunion. In addition, there will be a reception for spouses on Monday afternoon, and the Spouse/Guest Hospitality Room with continental breakfast on Sunday, Monday, and Tuesday.

Don’t forget to enjoy Miami, while you are in town. Nearby attractions to the city’s business center and famous beachfronts, include the Perez Art Museum, Museum Park, Bayfront Park and Bayside Market Place. South Beach is a 15-minute ride away. Baseball fans should know that the Marlins have home stands against the Braves and Cardinals during the meeting. Needless to say, Miami is one of the world’s most popular vacation spots. Though destinations often are said to offer something for everyone, the Miami area does indeed offer multiple enticements for everyone, from nightlife to outdoor recreation.

Welcome to Miami!

Robert Foss
AAOMP President
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<td>1948</td>
<td>Nester R. Cahn*</td>
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<td>1950</td>
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<td>Ronald A. Baughman</td>
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GENERAL INFORMATION

All of the scientific programs and continuing education programs will be held at the InterContinental Miami in Miami, Florida. The meeting is open to all interested individuals.

Information regarding social programs, points of interest and restaurants will be available at the Registration Desk.

The Registration Desk will be in the Trianon Foyer. The Registration hours are as follows:

- Saturday, June 8: 7:30 am – 5:00 pm
- Sunday, June 9: 7:30 am – 5:00 pm
- Monday, June 10: 7:30 am – 5:00 pm
- Tuesday, June 11: 7:30 am – 5:00 pm
- Wednesday, June 12: 7:30 am – 10:30 am

CONTINUING EDUCATION PROGRAM

Two continuing education courses will be held on Saturday, two will be held on Sunday, one will be held on Monday and one will be held on Tuesday. Pre-registration is required.

**ADA CERP**

The American Academy of Oral and Maxillofacial Pathology is an ADA CERP Recognized Provider.

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

The American Academy of Oral and Maxillofacial Pathology designates this activity for 36.5 continuing education credits.

**WIFI ACCESS – case sensitive**

Network Name: ICConnect
Password: Miami2019

CONTINUED COMPETENCY ASSURANCE PROGRAM (CCA)

The AAOMP is again offering a Continued Competency Assurance Program. The CCA slides are available daily from **7:00 am to 8:00 pm** in the Sandringham Room Saturday through Tuesday and until 10:30 am on Wednesday. Microscopes will be available for the slide review and informal consultations.

SPOUSE/GUEST HOSPITALITY

A continental breakfast will be available Sunday, June 9th thru Tuesday, June 11th from 8:00 am – 10:00 am located in the Raphael Room for registered spouses/guests.

MESSAGE BOARD and QUESTIONS

Attendees having questions during non-registration hours should leave a message on the message board located by the Registration Desk.

If you wish to leave a message for another attendee, you may leave it on the message board or use the Whova app. The AAOMP does not guarantee receipt and/or delivery of the message.

NO SMOKING PLEASE

There is no smoking in any meeting rooms in the InterContinental Miami.

OUR SPONSORS/EXHIBITORS AT THIS YEARS MEETING INCLUDE:
### Friday, June 7

<table>
<thead>
<tr>
<th>Time</th>
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| 7:00 am – 8:00 am | **Fellowship Examinee Breakfast**  
  *Michelangelo Room* |                                                   |
| 8:00 am – 5:00 pm | **Fellowship Examination**  
  *Escorial/Alhambra Room* |                                                   |
| 8:00 am – 5:00 pm | **Fellowship Committee Meeting**  
  *Raphael Room* |                                                   |
| 12:00 pm – 1:00 pm | **Fellowship Examinees and Committee Luncheon**  
  *Michelangelo Room* |                                                   |
| 12:00 pm – 6:00 pm | **Council Meeting**  
  *Balmoral Room* |                                                   |
| 6:30 pm - 8:30 pm | **AAOMP Council Dinner**  
  *Balmoral Room* |                                                   |

### Saturday, June 8

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<th>Time</th>
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| 7:00 am – 8:00 pm | **CCA Room**  
  *Sandringham Room* |                                                   |
| 7:30 am – 5:00 pm | **Registration and Coffee Service**  
  *Trianon Foyer* |                                                   |
| 7:30 am – 5:00 pm | **Table-top displays**  
  *Trianon Foyer* |                                                   |
| 8:30 am – 11:30 am | **AAOMP Seminar**  
  Moderator: Dr. Indraneel Bhattachryya  
  Speakers: Drs. Roman Carlos, Ashley Clark, Nadim Islam, Kelly Magliocca, Molly Smith, Tina Woods  
  *Trianon Ballroom* |                                                   |

### Sunday, June 9

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| 7:00 am – 8:00 pm | **Program Directors Breakfast**  
  *Escorial Room* |                                                   |
| 7:30 am – 5:00 pm | **Registration and Coffee Service**  
  *Trianon Foyer* |                                                   |
| 7:30 am – 5:00 pm | **Table Top Displays**  
  *Trianon Foyer* |                                                   |
| 7:30 am – 8:30 am | **Program Directors Breakfast**  
  *Escorial Room* |                                                   |
8:00 am – 10:00 am
Spouse/Guest Breakfast
Raphael Room

8:30 am – 11:30 am
CE Program #3
Dr. Bruce Wenig
“Head and Neck Pathology”
Trianon Ballroom

12:00 pm – 1:00 pm
Speaker/Education Committee Luncheon
Raphael Room

2:00 pm – 5:00 pm
CE Program #4
Dr. L. Jeffrey Medeiros
“Challenging Lymphoid Lesions of the Head and Neck”
Trianon Ballroom

6:00 pm – 7:30 pm
Welcome Reception
Pool Terrace – 5th Floor

Monday, June 10

7:00 am – 8:00 pm
CCA Room
Sandringham Room

7:30 am – 5:00 pm
Registration and Coffee Service
Trianon Foyer

7:30 am – 5:00 pm
Table Top Displays
Trianon Foyer

8:00 am – 10:00 am
Spouse/Guest Breakfast
Raphael Room

8:00 am – 12:00 pm
Oral Essays Program
Trianon Ballroom

12:15 pm – 2:15 pm
Gorlin Lecture (lunch being served)
Dr. Rudolf Happle
“Genetic Disorders Involving the Oral and Maxillofacial Region: A Dermatologist’s View”
Trianon Ballroom

Tuesday, June 11

7:00 am – 8:00 pm
CCA Room
Sandringham Room

7:30 am – 5:00 pm
Registration and Coffee Service
Trianon Foyer

7:30 am – 5:00 pm
Table-top displays
Trianon Ballroom

8:00 am – 10:00 am
Spouse/Guest Breakfast
Raphael Room

8:30 am – 9:30 am
Lab Directors Meeting
Escorial/Alhambra Room
8:30 am – 11:30 am
**Poster Program**
*Presenters must be at their posters from 9:30 am- 11:30 am*
*Biscayne Ballroom*

11:30 am – 1:00 pm
**Lunch on own**

11:30 am – 1:00 pm
**CAOMPOM Scientific Session**
(by invitation only)
*Michelangelo Room*

11:30 am – 1:00 pm
**Past Presidents’ Luncheon**
*Escorial/Alhambra Room*

1:00 pm – 5:00 pm
**Founders Seminar**
Dr. Justin Bishop
“Defined (and Recently Refined) Head and Neck Tumors”
*Trianon Ballroom*

6:00 pm – 8:00 pm
**President’s Reception & Award Ceremony**
*Chopin Ballroom*

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**Wednesday, June 12**

7:00 am – 10:30 am
**CCA Room**
*Sandringham Room*

7:30 am – 10:30 am
**Registration and Coffee Service**
*Trianon Foyer*

8:00 am – 10:30 am
**Clinical Pathology Conference**
*Trianon Ballroom*
Oral Essay Program
Monday, June 10, 2019
8:00 am – 12:12 pm
Monday, June 10 - 8:00 am
COMPREHENSIVE GENOMIC ANALYSIS IDENTIFIES HIGH PREVALENCE OF PTCH1 MUTATIONS AND CDK4 AMPLIFICATION IN AGGRESSIVE KERATOCYSTIC ODONTOGENIC TUMORS

Mr. Macarius Abdelsayed (Augusta University, Dental College of Georgia), Dr. Rafik Abdelsayed (Augusta University, Dental College of Georgia), Dr. Ravindra Kolhe (Augusta University, School of Medicine)

Introduction: PTCH1 gene mutation is the etiology of KCOT, Gorlin syndrome and basal cell carcinoma. Clinically, KCOT demonstrates a range of biological behavior. Some KCOTs are small, and indolent; while others exhibit aggressive behavior with extensive bone destruction. The intent of this study is to report on DNA sequencing of 8 cases of KCOTs, and demonstrate the genomic profiles that distinguish between aggressive and indolent lesions. Method & Materials: 8 KCOTs were selected from the archives of institutional surgical pathology, and were further classified into 2 groups. Group 1) 4 cases, all males, 3 mandible, 1 maxilla that were ≤2 cm radiolucencies, asymptomatic, or discovered on routine radiographic examination. Group 2) 4 cases, 3 males, 1 female, all in mandible, and radio-graphically ≥5 cm radiolucencies. Next-generation sequencing (NGS) targeted 170 cancer genes including PTCH1 & others was performed on sporadic KCOTs. DNA/RNA [T1] samples were retrieved from KCOTs for sequencing on a NGS platform. The variant and fusion calls were recorded and interpreted on software provided by Illumina & IBM. Results: The 4 KCOTs of group 1 exhibited PTCH1 alterations, including missense, nonsense, frameshift, and splice site mutations. The 4 KCOTs of group 2 also exhibited PTCH1 alterations as seen in group 1. Additionally, CDK4 amplification was found in 3 of the 4 cases in this group. Conclusions: All KCOTs showed PTCH1 mutations in contrast to previously reported 30% in sporadic KCOTs. Genetic profiling in this study seems to identify two biologically distinct groups of KCOTs, aggressive and indolent. Amplification of CDK4 was noted in 75% of KCOTs in group 2 which demonstrated clinically aggressive behavior. The coexistence of PTCH1 mutation and CDK4 amplification may exert a synergistic action to promote aggressive behavior of some KCOTs. PTCH1 mutation and CDK4 amplification may provide a rational target for bioavailable antiproliferative drugs.

Monday, June 10 - 8:12 am
EVALUATING NOD2 IN ORAL CROHN DISEASE USING FLUORESCENCE IN SITU HYBRIDIZATION

Dr. Rekha Reddy (University of Florida College of Dentistry), Dr. Elizabeth A Bilodeau (University of Pittsburgh School of Dental Medicine), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Paras Patel (Texas A&M University College of Dentistry)

Introduction: Crohn disease (CD) is an inflammatory bowel disease that can affect any part of the gastrointestinal (GI) tract. Familial clustering of cases and twin studies have suggested a genetic contribution to the etiology of CD. NOD2 on chromosome 16 is the first gene to be associated with CD susceptibility. Oral manifestations of CD are well-documented and may precede GI lesions in up to 40% of cases, especially in children. The purpose of this study is to investigate if an amplification or deletion of the NOD2 gene can be detected using fluorescence in situ hybridization (FISH) analysis in oral biopsies of patients with a confirmed diagnosis of CD.

Materials and Methods: An IRB-approved retrospective search for CD, pyostomatitis vegetans, and chronic granulomatous stomatitis was performed within the archives of the University of Florida (UF), Texas A&M University (TAMU), and the University of Pittsburgh (Pitt) oral pathology biopsy services between the years 1994-2018. Cases of patients who did not have a confirmed diagnosis of CD were excluded. Tissue blocks and slides from 17 patients were retrieved. Unstained sections of each case were sent to the University of Pittsburgh Medical Center for FISH analysis. The ratio of NOD2 and chromosome 16 control (CEP16) signals was calculated for each case.

Results: The ratio of the NOD2 and CEP16 signals ranged from 0.95 to 1.57, with an average ratio of 1.08.

Conclusion: Neither amplification nor deletion of NOD2 was identified in oral lesions of patients who have a history of CD. Evaluation of additional genetic markers that have been implicated in CD and employing further research to identify a reliable ancillary test that distinguishes oral granulomatous inflammation due to CD is warranted.
Monday, June 10 - 8:24 am
MECHANISM OF INTERLEUKIN 4-INDUCED MULTINUCLEATED GIANTCELL FORMATION AND ITS ROLE IN GIANT CELL-CONTAINING LESIONS
Dr. Patricia Brooks (University of Toronto), Dr. Yongqiang Wang (University of Toronto), Dr. Chunxiang Sun (University of Toronto), Dr. Michael Glogauer (University of Toronto), Dr. Christopher McCulloch (University of Toronto)

Introduction: Multinucleated giant cells (MGCs) are found in a number of pathological lesions including reactive (foreign body granulomas), neoplastic (giant cell tumour and osteosarcoma), and genetic processes (cherubism). MGCs derive from fusion of monocytic precursors, however the molecular determinants that specify the formation and function of these cells in specific MGC-containing lesions are unknown. Notably, the morphology of MGCs in different MGC-rich lesions is strikingly similar. Accordingly, identification of a fusion-associated protein could improve characterization of MGCs and facilitate the diagnosis of MGC-containing lesions. We propose that C-type lectin domain family 10 member (CD301) is required for interleukin-4-induced MGC formation and is a marker for specific giant cell lesions. Materials & Methods: Tandem Mass Tag (TMT) Spectrometry was used to identify differentially expressed proteins in monocytes cultured under various pro-fusogenic conditions. We identified CD301 as a candidate protein and used immunolocalization, fusion assays with CD301 inhibition, and lectin bead-binding experiments. Three CRISPR/Cas9 knockout monocyte cell lines were generated in which isoforms a, b, or both isoforms were deleted. Statistical analysis was performed using Student’s t-test. Results: TMT revealed that CD301 was differentially expressed by monocytic cells exposed to the pro-fusogenic cytokine interleukin-4. CD301 expression was confirmed by qRT-PCR, immunoblotting and immunolocalization. Function-inhibiting antibodies to CD301 and deletion of CD301 isoforms a and b inhibited interleukin-4-induced MGC formation by ~2.3 fold and binding of lectin-bound beads by ~4 fold (both tests, r < 0.05). Conclusions: In cultured monocytes, interleukin-4 strongly increases CD301 expression, which when inhibited, decreases MGC formation. Therefore, CD301 is required for the formation of MGCs involving lectin-CD301-mediated intercellular adhesion. CD301 holds the potential to act as a diagnostic marker for specific giant cell-containing lesions in human biopsy specimens.

Monday, June 10 - 8:36 am
THE INHIBITORY EFFECT OF SEMAPHORIN 3F IN NEUROPIelin 2-EXPRESSING ORAL SQUAMOUS CELL CARCINOMA: PRECLINICAL STUDIES.
Dr. Asma Almazyad (Department of Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine/Vascular Biology Program, Boston Children’s Hospital), Dr. Allison Gartung (Center for Vascular Biology Research, Cancer Center, Beth Israel Deaconess Medical Center), Dr. Lufei Sui (Vascular Biology Program, Boston Children’s Hospital/Department of Surgery, Harvard Medical School), Dr. Randy Wannick (Vascular Biology Program, Boston Children’s Hospital/Department of Surgery, Harvard Medical School), Dr. Dipak Panigrahy (Center for Vascular Biology Research, Cancer Center, Beth Israel Deaconess Medical Center), Dr. Rosalyn Adam (Department of Urology Research, Boston Children’s Hospital/Department of Surgery, Harvard Medical School), Dr. Diane Bielenberg (Vascular Biology Program, Boston Children’s Hospital/Department of Surgery, Harvard Medical School)

Introduction: The majority of oral malignancies (90%) are oral squamous cell carcinomas (OSCC) and (67%) of the patients present with disseminated disease. Enhanced tumor lymphangiogenesis correlates with increased lymph node metastasis. Neuropilin 2 (NRP2) is a cell surface receptor expressed in neonatal lymphatic endothelium and down-regulated after birth. The lymphangiogenic factor, VEGF-C binds both NRP2 and VEGFR3 in complex to stimulate the proliferation of lymphatic endothelial cells in developmental lymphangiogenesis. Another ligand of NRP2 is Semaphorin-3F (SEMA3F), which competes with VEGF-C for binding. Objective: To characterize NRP2 expression in normal oral tissue, oral dysplasia and OSCC and to explore the effect of SEMA3F as a therapeutic anti-tumor and anti-metastatic drug. Methods and results: Immunohistochemical studies show adult human and mouse normal tongue tissue sections lack NRP2 expression in the epithelium and the lymphatic endothelium. However, NRP2 is up-regulated in late oral dysplasia in the epithelium and the subjacent lymphatic vessels. Additionally, tissue sections of mouse tongue injected orthotopically with human OSCC xenografts in nude mice demonstrated high NRP2 expression that correlated with increased tumor-associated lymphatic vessel density. The growth of syngeneic OSCC xenografts were compared between wild-type and Nrp2-deficient mice. Lastly, anti-tumoral effect of SEMA3F protein was tested in vitro and in vivousing slow-release osmotic pumps. SEMA3F inhibited the migration and invasion of NRP2-expressing 4NQO-induced OSCC cells in a dose-dependent manner. Conclusion: NRP2 up-regulation in both epithelium and lymphatic vessels correlated with tumor progression in OSCC. Our data highlights the importance of the NRP2 axis in tumor lymphangiogenesis in OSCC. SEMA3F appears to be a promising inhibitor to target this pathway. Ongoing studies in K14-creERT2; NRP2-floxed mice using the 4NQO carcinogenesis model will further elucidate the role of NRP2 in OSCC tumorigenesis.
Monday, June 10 - 8:48 am
PD-1/PD-L1 EXPRESSION IS A PREDICTOR OF PROGRESSION IN ORAL EPITHELIAL DYSPLASIA (OED)

Dr. Kanan Dave (University of Toronto), Dr. Marco Magalhaes (University of Toronto, Cancer Invasion and Metastasis Laboratory, Faculty of Dentistry, University of Toronto, Toronto, ON, Sunnybrook Health Sciences Centre, Toronto, ON)

Background: The immune checkpoint system is essential for immune homeostasis and is frequently activated in cancer to suppress anti-tumor immune responses. Programmed cell death protein 1 (PD-1) regulates T cell activity in the tumor microenvironment. Interaction of PD-1 with its ligands PD-L1/PD-L2 inhibits T cell activation effectively suppressing anti-tumor immunity.

Hypothesis: Increased PD-1 and PD-L1 expression can be detected in Oral Epithelial Dysplasia (OED) before transformation into Oral Squamous Cell Carcinoma (OSCC) and can be used as predictive markers of malignant transformation.

Methods: Analysis of 50 oral biopsy samples, including 25 cases that transformed to OSCC and 25 non-transforming cases was done. Cases with a diagnosis of hyperkeratosis (HK), OED (including mild, moderate and severe dysplasia) and OSCC were selected from the archives of the Toronto Oral Pathology service. FFPE sections were stained with monoclonal antibodies for PD-1 and PD-L1 followed by conventional peroxidase reaction (IHC) and fluorescent immunohistochemistry (FIHC) method. Images were acquired using a spinning disk confocal microscope (FIHC) or a conventional light microscope (IHC) and analyzed. PD-1/PD-L1 staining was assessed in the epithelium and inflammatory cells in lamina propria.

Results: Using conventional IHC, we showed a small progressive increase in expression of PD-1/PD-L1 from dysplasia to OSCC. In contrast, FIHC showed 2-3-fold increase in PD-L1 expression in basal epithelial cells and PD-1 expression in inflammatory cells in progressing dysplasia compared to non-progressing dysplasia.

Conclusion: We developed a novel FIHC-based quantitative method to study PD-1/PD-L1 expression in FFPE oral biopsy samples and showed that PD-1/PD-L1 are highly expressed in progressing dysplasia. Our results indicate that immunomodulation via PD-1 pathway occurs prior to malignant transformation.

Significance/Impact: The expression of PD-1 and PD-L1 may be used as predictive markers of transformation and the data may be used to develop early intervention in OED using PD-1/ PD-L1 inhibitors.

Monday, June 10 - 9:00 am
ASSESSMENT OF MDM2 AMPLIFICATION BY FLUORESCENCE IN-SITU HYBRIDIZATION IN JUVENILE ACTIVE OSSIFYING FIBROMA

Dr. Faraj Alotaiby (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Dianne Elizabeth Torrence (University of Florida)

Introduction: Juvenile active ossifying fibroma (JAOF) is an uncommon benign fibro-osseous lesion (FOL) of the maxillofacial bones with locally aggressive behavior and a high recurrence potential. Murine Double Minute 2 (MDM2) is an oncogene located at chromosome 12 (12q13-15) which inhibits tumor suppressor gene TP53. The presence of MDM2 gene locus amplification is a useful molecular diagnostic adjunct in the evaluation of some sarcomas including low grade intramedullary osteosarcoma and liposarcoma. JAOF and low grade intramedullary osteosarcoma may have some overlapping clinical and histomorphological features. The aim of this study is to evaluate a series of JAOF for the presence of MDM2 gene locus amplification using fluorescence in-situ hybridization (FISH).

Materials and Methods: With IRB approval, a search of the institutional files of the Department of Oral Pathology and the Department of Pathology at the University of Florida Shands Hospital was performed and 9 cases of JAOF were retrieved. The diagnosis of JAOF was confirmed by a group consisting of a senior resident in oral pathology, a board certified oral and maxillofacial pathologist, and a bone and soft tissue pathologist. Testing for MDM2 protein expression by FISH testing for MDM2 gene locus amplification was performed for all cases. Results: All cases were negative for MDM2 amplification via FISH testing. Conclusion: In our small series of cases, JAOF did not demonstrate the MDM2 gene locus abnormality characteristic of low grade intramedullary osteosarcoma, indicating the likelihood of a separate distinct underlying pathogenesis. If confirmed in a larger series, these findings may be a useful adjunct to microscopy in distinguishing these two entities, especially in cases with confounding and overlapping features or inadequate sample submissions.
Monday, June 10 - 9:12 am
DIFFERENTIAL EXPRESSION OF PROGRAM DEATH LIGAND 1 IN PROLIFERATIVE VERRUCOUS LEUKOPLAKIA
Dr. Si On Lim (The University of North Carolina at Chapel Hill Adams School of Dentistry), Dr. Ricardo Padilla (The University of North Carolina at Chapel Hill Adams School of Dentistry), Dr. Paul Googe (The University of North Carolina at Chapel Hill School of Medicine), Dr. Donna Culton (The University of North Carolina at Chapel Hill School of Medicine)

**Introduction:** Upregulation of program cell death ligand 1 (PD-L1) in some cancers allows immune surveillance evasion and proliferation of the cancer cells. Expression of PD-L1 is currently utilized as a biomarker for anti-program death 1 (PD-1) therapy in many cancers. Thus far, investigation of PD-L1 expression in precancerous conditions has been minimal. We explored the expression of PD-L1 in precancerous lesions from patients with proliferative verrucous leukoplakia (PVL).

**Materials and Methods:** The residual formalin-fixed, paraffin embedded tissue of oral mucosal biopsies diagnosed as hyperkeratosis, dysplasia, verrucous hyperplasia, and carcinoma in-situ from patients with PVL were searched in the University of North Carolina at Chapel Hill School of Dentistry Oral and Maxillofacial Pathology Service. Patients with at least one low-risk group lesion (hyperkeratosis and low-grade dysplasia) and at least one high-risk group specimen (high-grade dysplasia) and their specimens were retrieved. The number of high- and low-risk group specimens were matched for each patient. Amalgam tattoo specimens were selected as control. Immunohistochemistry was performed on tissue sections using PD-L1 antibody. The proportion of epithelial cells expressing PD-L1 in epithelium was scored by three observers.

**Results:** Seven female and one male patients were selected. The average ages at the time of biopsy were 57, 55, and 59 years for the control, low-risk, and high-risk groups, respectively. The agreement between the observers in scoring PD-L1 expression was very good (ICC=0.94). All 16 control specimens showed 0% PD-L1 expression. Of 12 low-risk specimens, 1 specimen showed ≥1% PD-L1 expression (8.3%). Of 18 high-risk specimens, 15 specimens showed ≥1% PD-L1 expression (83%). There was significant association between the risk groups and PD-L1 expression (χ²=8.3, df=1, p=0.004), and the odds of high-risk lesions having PD-L1 expression ≥1% was 54.

**Conclusion:** Our results suggest that anti-PD-1/PD-L1 therapy may be beneficial for patients with PVL who have developed high-risk lesions.

Monday, June 10 - 9:24 am
SJÖGREN-LIKE SYMPTOMS IN PATIENTS WITH IDIOPATHIC PULMONARY FIBROSIS.
Dr. Maram Bawazir (College of Dentistry, University of Florida, Gainesville), Dr. Seunghee Cha (College of Dentistry, University of Florida, Gainesville), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (College of Dentistry, University of Florida, Gainesville), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry)

**INTRODUCTION:** Idiopathic pulmonary fibrosis (IPF) is a chronic lung condition characterized by a progressive diminution in lung function. Certain forms of interstitial lung disease have been reported secondary to Sjögren syndrome (SS). However, IPF-related oral symptoms mimicking SS have not been reported. This study is the first retrospective case series of patients diagnosed with IPF with symptoms mimicking SS.

**METHODS:** An IRB approved retrospective chart review encompassing years 2005 to 2018, available through the University of Florida (UF) Oral Pathology Biopsy Service and the Center for Orphaned Autoimmune Disorders, was performed. Inclusion criteria included patients referred for a labial salivary gland biopsy with a diagnosis of IPF and Sjögren-like symptoms. Demographics, clinical data, laboratory test result, and microscopic diagnoses were reviewed and analyzed.

**RESULTS:** A total of 12 cases were included in the study. The mean age was 67.2 years (range 55-76) with a female to male ratio of 1:3. About 25% of patients had a history of occupational exposure to asbestos or chemicals and 66.7% had a smoking history. All patients reported symptoms of dry mouth and 9/12 patients reported dryness of eyes as well. About 75% of the patients were negative for anti-SSA and 71.9% were negative for anti-SSB. Positive ANA was seen in two patients and an additional two had a positive rheumatoid factor. Only one of the biopsies demonstrated positive focal lymphocytic sialadenitis (focus score ≥1 per 4 mm²). Overall, 91.7% of the IPF cases did not meet the 2002 American-European Consensus Criteria for SS.

**CONCLUSION:** IPF patients may present with SS-like symptoms with positive autoantibodies. However, the majority of the IPF patients did not fulfill the current diagnostic criteria for SS. Future investigations are essential to delineate commonality, causality, and distinctions in the pathogenesis of both conditions to clarify diagnosis and management.
Monday, June 10 - 9:36 am
SATB2 EXPRESSION IN MYOFIBROBLASTIC AND MYOFIBROBLASTIC PROLIFERATIONS OF THE HEAD AND NECK
Dr. Sarah Aguirre (The Ohio State University College of Dentistry), Dr. Kristin McNamara (The Ohio State University College of Dentistry), Dr. Justin Bishop (University of Texas Southwestern Medical Center), Dr. John Kalmar (The Ohio State University College of Dentistry)

Objectives: To characterize the expression of special AT-rich sequence-binding protein 2 (SATB2) in myofibroblastic and fibroblastic proliferations of the head and neck.

Methods: Following IRB approval, 14 cases diagnosed as myofibroma (MF), 5 cases of myofibroblastic proliferation (MFP), 4 cases of inflammatory myofibroblastic tumor (IMT), 12 cases of nodular fascitis (NF), 9 cases of solitary fibrous tumor (SFT), and 12 cases of leiomyoma (LM) were retrieved from archives of the Oral Pathology Consultants at The Ohio State University College of Dentistry between the years of 1998 and 2017. SATB2 immunohistochemical probe was used to analyze all samples. Staining was initially evaluated by manual scoring followed by image software analysis. SATB2 expression was also examined in twenty-five additional cases from the University of Texas Southwestern Medical Center (UTSMC) representing both benign and malignant myofibroblastic/fibroblastic entities, as well as their histologic mimics.

Results: Moderate to strong SATB2 nuclear expression was seen at least focally in 13/14 MF, 4/4 IMT, 4/5 MFP, 6/12 LM, and 3/12 NF. Weak, focal positivity was noted in 1/14 MF and 3/12 NF. Lack of SATB2 expression was observed in 1/14 MF, 6/12 LM, 6/12 NF, and 8/9 SFT. The UTSMC cases showed positivity for SATB2 in 3/3 MF, 5/5 NF, 1/2 IMT, 2/3 radiation fibroblastic proliferations, 1/2 low-grade fibromyxoid sarcomas, 2/3 low-grade myofibroblastic sarcomas, 1/2 biphenotypic sinonasal sarcomas, 0/2 leiomyosarcomas, and 0/3 spindle cell squamous carcinomas.

Conclusions: Although originally described as a marker of osteoblastic differentiation, SATB2 appears to be expressed with high sensitivity in myofibroma and other myofibroblastic proliferations. Given its lack of specificity across a broad range of both benign and malignant spindle cell lesions, the use and interpretation of SATB2 for diagnostic purposes may warrant caution.

Monday, June 10 - 9:48 am
T CELL LYMPHOMA OF THE ORAL CAVITY: CASE SERIES AND REVIEW OF THE LITERATURE
Dr. Shraddha Kamat (New York Presbyterian Queens), Dr. Paul Freedman (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens)

Introduction: T cell lymphomas (TCL) are rare neoplasms within the oral cavity. We present a series of intraoral TCLs and describe their clinical presentations, histologic and immunohistochemical features.

Materials and Method:
Our archives were searched from 2007-2019 yielding 22 cases diagnosed as TCL. Immunohistochemical analysis was performed on all cases. 11 cases underwent PCR analysis for T-cell receptor gene rearrangements.

Results: The 22 cases were noted in 20 patients, 2 patients had 2 lesions. Clinical presentations varied and included leukoplasias, ulcerations, and masses. One patient was HIV +, one had a history of TCL of the skin, another had a history of liposarcoma. A male predilection and a mean age of 61.9 years were identified. The tongue was the most common site. The histologic findings varied, however, an infiltrate of histiocytes, eosinophils and occasionally neutrophils was frequently admixed with the atypical T lymphocytes. IHC analysis revealed that CD 8 expression was noted in the majority of cases, as was CD4 and CD3. Down regulation or loss of CD7 was common. CD30 positivity of large atypical cells was often seen. PCR analysis for T-cell receptor gene rearrangement was performed on 11 cases. 7 demonstrated T cell gene rear- rangement.

Conclusion: Oral TCL are rare and can show a wide range of clinical presentations. TCL should be included in the differential diagnosis particularly when a paucity of B lymphocytes is identified in an atypical and mixed inflammatory infiltrate.

An immunohistochemical profile demonstrating loss of CD 7 expression in conjunction with CD8, CD4 and CD 3 positivity with or without CD 30+ cells is helpful. Immunohistochemistry should be used to confirm a diagnosis of TCL. T-cell receptor gene rearrangement can be helpful but not definitive in establishing the diagnosis. The results must be interpreted in the setting of appropriate clinical, histologic and immunologic findings.
Monday, June 10 - 10:00 am
A RETROSPECTIVE STUDY OF BUCCAL MUCOSAL SALIVARY NEOPLASMS
Dr. Saja Alramadhan (University of Florida College of Dentistry), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry)

Introduction: Salivary gland neoplasms of the buccal mucosa are relatively rare and often present with an unusual profile when compared with the same neoplasms seen in more common locations such as the hard palate and upper lip. We present a series of minor salivary gland neoplasms of the buccal mucosa and discuss demographics, clinical presentation, and histologic findings. Materials and Methods: With IRB approval, the archives of the University of Florida Oral Pathology Biopsy Service was retrospectively searched from 1994-2018 and all benign and malignant salivary gland neoplasms of the buccal mucosa were identified. Age, gender, clinical presentation, diagnosis, and category of neoplasm were recorded. Results: 68 cases were included. Most patients were female (71.6%). Patient age at presentation ranged from 11 to 93 years with a mean of 62.8 years. Clinical impression in descending order of frequency included: mucocele, papilloma, salivary tumor, sialolith, lipoma, fibroma, and sebaceous cyst. Benign neoplasms represented 57.4% of overall cases, while malignant lesions comprised 42.6%. Mucoepidermoid carcinoma was the most common neoplasm (26/68, 38.2%), followed by monomorphic adenoma (18/68, 26.5%), ductal papilloma (10/68, 14.7%), cystadenoma (9/68, 13.2%), pleomorphic adenoma (2/68, 2.9%), and 1(1.5%) each for mammary analogue secretory carcinoma, adenoid cystic carcinoma and adenocarcinoma NOS. Conclusion: Our patient demographics and percentage of benign and malignant buccal mucosal salivary gland neoplasms aligned with previously published studies. However, benign neoplasms occurring in the buccal mucosa were more diverse than those found in other minor salivary gland locations. In addition, lesions in this location are less likely to be recognized as possible salivary gland neoplasms. Both benign and malignant salivary gland neoplasms should be included in the differential diagnosis of submucosal buccal masses. Additional large studies with more detailed treatment and outcome data would assist in further understanding the behavior of these neoplasms.

Monday, June 10 - 10:12 am:
CAMTA1 AND TFE3 CONFIRMATION OF ORAL CAVITY EPITHELIOID HEMANGIOENDOTHELIOMA
Dr. Abdulaziz Banasser (University of Florida College of Dentistry), Dr. Molly Housley Smith (University of Kentucky), Dr. Donald Cohen (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Nadim Islam (University of Florida College of Dentistry)

Introduction: Epithelioid hemangioendothelioma (EHE) is an unusual vascular neoplasm of indeterminate biologic behavior, classified as intermediate between benign and malignant. It may microscopically mimic other vascular and spindle cell lesions, and definitive diagnosis is paramount owing to its potential for local recurrence and infiltrative nature. Recently, WWTR1-CAMTA1 (CAMTA1) fusion gene has been described in EHE allowing for a more definitive diagnosis. Moreover, a subset of cases have also been found to be positive for YAP1-TFE3 translocation (TFE3) which may be associated with more aggressive behavior. The purpose of this study is to evaluate archived oral cavity cases of EHE for immunohistochemical expression of CAMTA1 and TFE3, and to confirm the diagnosis and evaluate utility of these markers in diagnosing oral EHE. Materials and methods: With IRB approval cases diagnosed as EHE were retrieved from the archives of the oral pathology biopsy services at University of Florida and Kentucky Colleges of Dentistry from 1994-2018. The slides were reviewed in order to assure diagnostic agreement, and case demographic and diagnostic information was aggregated. All included cases were submitted for immuno-histochemical (IHC) testing for both CAMTA1 and TFE3 antibodies. Results: A total of 6 cases were included. The mean age was 35.8 years (range 14-69). Three of 6 cases were found to affect the gingiva. Other affected sites were mandible (2) and buccal mucosa (1). All cases had previous IHC demonstrating positive vascular markers. CAMTA1 expression in all the six cases exhibited diffuse positive nuclear staining. However, positive TFE3 expression was found in only one case. Conclusion: CAMTA1 appears to be of diagnostic value in confirmation of diagnosis of oral EHE. However, expression of TFE3 in oral EHE appears to be rare, and since TFE3 positivity may affect prognosis, additional studies are warranted.
Monday, June 10 - 10:24 am
GINGIVAL LEUKOPLAKIA: PREVALENCE, HISTOLOGIC FEATURES AND COMPARISON WITH OTHER KERATINIZED TISSUE SITES
Dr. Lama Alabduaaly (Harvard School of Dental Medicine), Dr. Asma Almazyad (Harvard School of Dental Medicine), Dr. Sook-Bin Woo (Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine)

Introduction: The gingiva is the third most common location for leukoplakia, after the tongue and the buccal mucosa, but with a high recurrence rate after treatment. The aim of this study is to review the histopathology of keratotic lesions on the gingiva and determine the proportion of reactive versus nonreactive keratoses.

Materials and methods: Cases that were submitted with a clinical diagnosis of hyperkeratosis or leukoplakia located on the gingiva or alveolar mucosa from January 2018 to December 2018 were evaluated, demographic and clinical data were abstracted, and histopathology reviewed. Cases of lichen planus were excluded.

Results: There were 110 biopsies from 99 patients with 67 males (61%); 5 patients had proliferative leukoplakia (PL). The median age was 66 years (range 30-88). The most common location was the gingiva (43%) followed by the hard palatal mucosa (24%), retromolar pad (16%) and alveolar ridge mucosa (15%). Reactive keratoses constituted 58 (53%) cases. Of these, 66% were nonspecific and 34% were benign alveolar ridge keratosis. Non-reactive keratoses constituted 47% of cases. Of these, 33% were epithelial dysplasia (ED), 10% were atypical verrucous hyperplasia (AVH), and 56% were keratoses of uncertain significance (KUS), without obvious dysplasia. The highest prevalence of non-reactive keratoses occurred on the gingiva (60%) followed by hard palatal mucosa (24%), alveolar ridge mucosa (10%), and retromolar pad (6%); 80% of VH cases occurred on the gingiva. The 5 patients with PL had a total of 11 biopsies, of which 80% were from the gingiva. The most common diagnosis was KUS (64%), and 36% were ED and 36% had lichenoid features.

Conclusions: Reactive and nonreactive keratoses constituted 33% and 67% respectively of keratotic lesions on the gingiva. Of the nonreactive keratoses, 47% were ED or AVH, while the remaining were KUS.

Monday, June 10 - 10:36 am
PROGRAMMED CELL DEATH LIGAND 1 IN MORPHOLOGICALLY NORMAL EPITHELIAL MARGINS OF HEAD AND NECK SQUAMOUS CELL CARCINOMA RESECTION TISSUE
Dr. Manar Elnaggar (Department of Oral Oncology and Diagnostic Sciences at University of Maryland Baltimore and Oral pathology Department, Faculty of Dentistry, Alexandria University, Egypt), Prof. Risa Chaisuparat (Chulalongkorn University), Dr. Ioana Ghita (University of Maryland Baltimore), Prof. Joshua Lubek (University of Maryland Baltimore), Prof. Rania Younis (University of Maryland Baltimore)

INTRODUCTION: Programmed cell death ligand 1 (PD-L1) is an immune-checkpoint regulator. Expression of PD-L1 in a subset of the head and neck squamous cell carcinoma (HNSCC) tumor islands has been shown to have an increasing survival benefit to patients undergoing immunotherapy. The objective of this study was to investigate the potential role of PD-L1 as a biomarker for tumor progression in HNSCC.

MATERIALS AND METHODS: We investigated the expression of PD-L1 in the morphologically normal epithelial margins (MNEM) of HNSCC resection tumor tissue. Thirty three HNSCC cases were obtained prospectively under institutional review board approval. PD-L1 [clone 28-8] immunohistochemical staining was carried out and analysed both subjectively and digitally using aperio image scope. Membranous PD-L1 expression was considered positive. RESULTS: Twenty seven cases proved to have MNEM (0.5 cm to 1.5 cm margin). All cases were of the oral and mobile tongue. Two cases were form the base of the tongue and one case was of tonsillar origin. One case was HPV-associated. Our data showed that the MNEM were negative for PD-L1 in 12 out of the 27 cases (44%). 11 (40%) showed PD-L1 positivity. The MNEM of the base of the tongue lesions showed basal and parabasal PD-L1 positivity. MNEM of the dorsum tongue showed PD-L1 focal positivity especially where foci of inflammation were observed in the stroma. PD-L1 expression in only prickle layers as it approached the tumor was observed in 2 cases. 4 cases showed transition from MNEM to dysplasia to malignancy, the PD-L1 expression was remarkably increased in dysplastic areas.

CONCLUSIONS: To our knowledge, this is the first study to investigate the expression of PD-L1 in MNEM of HNSCC resection specimens. We conclude that PD-L1 expression can vary according to the location of the MNEM, with increased expression in dorsum and base of tongue.
Monday, June 10 - 10:48 am

**ACTIVATION OF MULTIPLE MYD88-DEPENDENT TLR SIGNALING PATHWAYS MEDIATES LOCAL AND SYSTEMIC INFLAMMATION IN A MOUSE MODEL OF PRIMARY SJÖGREN’S SYNDROME**

Dr. Jill Kramer (State University of New York at Buffalo), Mr. Jeremy Kripolowsky (State University of New York at Buffalo), Ms. Eileen Kasperek (State University of New York at Buffalo), Dr. Guan Yu (State University of New York at Buffalo)

**Introduction:** Primary Sjögren’s syndrome (pSS) is an autoimmune disease characterized by exocrine gland dysfunction and immune hyperactivity. The adaptor Myd88 is critical for immune function, as most TLRs utilize Myd88 for signal transduction. Previous work by our group found Myd88 is required for pSS disease. Our objective was to identify the specific Myd88-dependent TLR pathways that mediate salivary and systemic inflammation in pSS.

**Materials and Methods:** We used the pSS mouse model NOD.B10Sn-H2b/J (NOD.B10), Myd88-deficient NOD.B10 mice (NOD.B10<sup>Myd88<sup>-/-</sup></sup>), and Myd88-deficient or sufficient C57BL/10 controls. We isolated spleens from NOD.B10 mice and age and gender-matched C57BL/10 controls and performed RNA-sequencing. We then harvested salivary tissue and spleens from NOD.B10, NOD.B10<sup>Myd88<sup>-/-</sup></sup>, C57BL/10, and C57BL/10<sup>Myd88<sup>-/-</sup></sup> mice. We performed quantitative PCR and flow cytometry to assess expression of Myd88-dependent TLRs in B cells derived from splenic tissue and salivary glands. Next, we cultured splenocytes with TLR2 and TLR4 agonists, harvested the supernatants, and performed IL-6 ELISAs to determine whether cells derived from NOD.B10 animals were hyper-responsive to TLR ligation. Finally, we cultured salivary tissue from NOD.B10 and NOD.B10<sup>Myd88<sup>-/-</sup></sup> mice and performed cytokine multiplex arrays on the supernatants.

**Results:** We identified dysregulation of numerous TLR-related networks in pSS splenocytes, particularly those employed by TLR2 and TLR4. We found altered expression of TLR1, TLR2, TLR6 and TLR4 in both the spleens and salivary tissue from NOD.B10 mice. Moreover, splenocytes from NOD.B10 females with clinical disease were hyper-responsive to TLR2 ligation as compared to C57BL/10 controls. Finally, salivary tissue from Myd88-sufficient NOD.B10 females exhibited spontaneous inflammatory cytokine secretion and this was diminished in that derived from NOD.B10<sup>Myd88<sup>-/-</sup></sup> animals.

**Conclusion:** Our data demonstrate that Myd88-dependent pathways contribute to the inflammatory landscape in pSS, and inhibition of such will likely have therapeutic utility.

Monday, June 10 - 11:00 am

**IMMUNE CHECKPOINT INHIBITOR SICCA (ICIS): A NEW, POTENTIALLY SEVERE IMMUNE RELATED ADVERSE EVENT (irAE).**

Dr. Blake Warner (National Institute of Dental and Craniofacial Research), Dr. Daniel Barber (National Institute of Allergy and Infectious Diseases), Dr. Shunsuke Sakai (National Institute of Dental and Craniofacial Research), Ms. Margaret Bearch (National Institute of Dental and Craniofacial Research), Ms. Eileen Pelayo (National Institute of Dental and Craniofacial Research), Dr. Mayank Tandon (National Institute of Dental and Craniofacial Research), Dr. Ilias Alevizos (National Institute of Dental and Craniofacial Research), Dr. Alan Baer (National Institute of Dental and Craniofacial Research), Dr. John Chiorni (National Institute of Dental and Craniofacial Research)

**Introduction** Immune checkpoint inhibitors (ICI), biologic agents that augment the immune system to establish tumor immunity, are breakthrough cancer therapeutics. However, adverse effects from an augmented immune response, termed “immune-related adverse events” (irAEs), have been reported in up to 60% of patients. We published the first comprehensive description of ICI-induced sicca (ICIS) however the mechanism remains unknown. Presently, we sought to gain mechanistic insight into ICIS pathogenesis focusing on immune dysregulation in the salivary complex.

**Methods:** Patients (N=26) with ICIS and healthy volunteers (N=9) underwent comprehensive evaluations including salivary assessments (sialometry, ultrasonography) and minor salivary gland (MSG) biopsies. MSG were used for histopathology, immunohistochemistry, RNA sequencing, and ex vivo functional and immunological assays.

**Results:** ‘Dry mouth’ was reported by all subjects; 97% had objective salivary hypofunction. Microscopically, MSG demonstrated mild-to-severe chronic sialadenitis with fibrosis and atrophy; a third of cases exhibited lymphocytic aggregates (focus score ≥1) and three exhibited severe sialadenitis (focus score >8). Immunohistochemical immunophenotyping exhibited a nearly exclusive CD<sup>+</sup>CD<sup>8+</sup> T-lymphocytic infiltrate with a predominance of CD<sup>4+</sup> cells and a paucity of B cells. T cell infiltrates were PD-1<sup>+</sup>, epithelial PD-L1<sup>+</sup> was present in severe sialadenitis cases. Ex vivo MSG functional studies demonstrated deficits in agonist-stimulated fluid secretion and impaired calcium release and influx. Flow cytometry on MSG exhibited increased cytotoxicity of infiltrating T lymphocytes. MSG RNAseq confirmed profound immune dysregulation in a subset of ICIS patients with severe sialadenitis with enrichment of immunoregulatory interactions between lymphoid and non-lymphoid cells, interferon (gamma and alpha/beta), the PD-1 pathways.

**Conclusions:** ICI therapies can elicit severe and long-lasting effects on salivary secretion. We illustrate that the immune activation and resultant salivary gland hypofunction is distinct from other immune-related conditions affecting the salivary complex (e.g., Sjögrens syndrome). These data provide insight into targetable pathways for prevention and treatment of this potentially severe irAE.
Monday, June 10 - 11:12 am
NANOPHOTONICS FOR IN VIVO TARGETING AND DETECTING ORAL CANCER
Dr. Shiran Sudri (Tel-Aviv University), Prof. Dror Fixler (Bar Ilan university), Dr. Iris Allon (Barzilai University Medical Center Ashkelon and Ben-Gurion University of the Negev), Prof. Abraham Hirshberg (Tel-Aviv University)

Introduction: Nanophotonics has emerged as a revolutionized way in the field of medicine to detect and treat cancer. We present a novel non-invasive cancer-detection technique that utilizes the unique absorption properties of gold-nanorods (GNRs) in the near-infrared region. The method is based on diffusion reflection (DR) measurement of gold-nanorods bio-conjugated (C-gold-nanorods) to anti-epidermal growth factor receptor (EGFR) monoclonal antibodies exclusively attached to OSCC cells. The ability to specifically deliver systemically and target high concentration of GNRs exclusively to the tumor, significantly change its optical properties, enabling the discrimination between cancerous and non-cancerous tissues.

Objective: To investigate the targeting potential of systemically injected C-gold-nanorods to OSCC cells in a rat model of oral carcinogenesis and to develop a methodology for in-vivo detection of oral cancer by using DR optical method.

Methods: DR measurements of C-gold-nanorods injected systemically were recorded from the surface of the rat tongue where OSCC has been induced by the carcinogen 4-nitroquinoline-N-oxide (4NQO). 26 Wistar-derived male rats were used, divided into experimental (20 rats) and control (6 rats) groups. C-gold-nanorods were injected systemically to the tail vein. DR measurements were taken from the surface mucosa of the tongue following washout time of 96 hours. The results of the DR measurements were compared with the histologic diagnosis.

Results: OSCC was detected in the posterior dorsum of the tongue in all experimental rats after week 22. Following systemical injection of C-gold-nanorods, significant high DR values were recorded in all rats in the area corresponding to carcinoma compare with the unaffected tip of the tongue and with the control healthy rats.

Conclusion: the present study clearly demonstrates the specific property of systemically injected C-gold-nanorods to target cancer cells in the oral cavity and the detection sensitivity using Nanophotonic optical method.

Monday, June 10 - 11:24 am
BIALLELIC PTCH1 INACTIVATION IS A DOMINANT GENOMIC CHANGE IN SPORADIC KERATOCYSTIC ODONTOGENIC TUMORS
Dr. Ivan Stojanov (CASE WESTERN RESERVE UNIVERSITY SCHOOL OF DENTAL MEDICINE), Dr. Inga-Marie Schaefer (Brigham and Women’s Hospital), Dr. Reshma Menon (Harvard School of Dental Medicine), Dr. Jay Wasman (University Hospitals Cleveland Medical Center), Dr. Hamza Gokozan (University Hospitals Cleveland Medical Center), Dr. Elizabeth Garcia (Brigham and Women’s Hospital), Dr. Dale Baur (CASE WESTERN RESERVE UNIVERSITY SCHOOL OF DENTAL MEDICINE), Dr. Sook-Bin Woo (Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine), Dr. Lynette Sholl (Brigham and Women’s Hospital)

Introduction: Keratocystic odontogenic tumors (KCOTs) are locally aggressive odontogenic neoplasms with recurrence rates up to 60%. Less than 10% of KCOTs are associated with nevoid basal cell carcinoma (Gorlin) syndrome and up to 85% of these show PTCH1 inactivation. Sporadic KCOTs show PTCH1 mutations in ~30% of cases but previous studies have been limited by low DNA yield. The absence of consistent genomic alterations prompted reclassification to odontogenic keratocyst in 2017 by the WHO. The aim of this study was to analyze sporadic KCOT for recurrent genomic aberrations, specifically those impacting the SHH signaling pathway.

Materials and Methods: 44 KCOTs diagnosed between 2013-2018 and containing at least 30% neoplastic cells were retrieved from institutional archives. DNA extracted from FFPE tissue was subjected to targeted next-generation sequencing (NGS) interrogating the exonic sequences of 447 cancer-associated genes for mutations and copy number variations, and 191 introns across 60 genes for gene rearrangements.

Results: Sporadic KCOTs occurred in 23 female and 21 male patients with a median age of 50 (range, 10-82) years. 33 cases were located in the mandible, 11 in the maxilla. NGS identified loss of function PTCH1 mutations in 41/44 (93%) cases; 21 cases harbored 2 concurrent PTCH1 mutations and 14 cases showed 9q copy neutral loss of heterozygosity involving the PTCH1 locus, for a total of 35 (80%) cases with evidence for PTCH1 biallelic inactivation. 1 case showed a pathogenic SMO missense mutation and 1 case showed GLI1/2 missense mutations; no mutations were detected in SUFU.

Conclusion: We identify inactivating PTCH1 mutations in 93% of sporadic KCOTs, indicating that SHH pathway alterations are a near-universal event in these benign but locally aggressive neoplasms. The high frequency of biallelic PTCH1 loss of function may provide a rational target for SHH pathway inhibitors to be explored in future studies.
Monday, June 10 - 11:36 am
DMBT1 SUPPRESSES TUMOR PROGRESSION IN HEAD AND NECK CANCER.

Dr. Priyanka Singh (University of Michigan), Dr. Rajat Banerjee (University of Michigan), Dr. Songlin Piao (University of Michigan), Dr. Dilha Damodaran (University of Michigan), Ms. Min Liu (University of Michigan), Dr. Ligia Schmidt (University of Michigan), Ms. Emily Light (University of Michigan), Prof. Nisha D’Silva (University of Michigan)

Introduction: Invasion is a critical phenotype in progression of head and neck squamous cell carcinoma (HNC). Deleted in malignant brain tumors 1 (DMBT1) is a tumor suppressor that is downregulated in brain and lung cancers. In previous in vitro studies, we showed that DMBT1 expression is suppressed in HNC and it inhibits invasion in vitro. Goals: We investigated the in vivo effects of modulation of DMBT1 on tumor progression in HNC and the mechanistic basis of its effects. Materials and Methods: Clinical outcome of low DMBT1 was investigated in a HNC dataset. HNC cell lines with stable overexpression and downregulation of DMBT1 were generated for gain-of-function and loss-of-function studies. The impact of DMBT1 expression on tumor growth and invasion were investigated in vivo using two different models. Results: Low DMBT1 is correlated with reduced metastasis-free survival of patients. Overexpression of DMBT1 reduced tumor growth in a murine model of HNC. The histopathologic features were less aggressive when DMBT1 was overexpressed whereas control tumors with low DMBT1 exhibited an aggressive, invasive phenotype. In the chick chorioallantoic membrane in vivo model of HNC, overexpression of DMBT1 in HNC cells suppressed invasion and metastasis, and downregulation of DMBT1 had the reverse effect. Suppression of DMBT1 leads to a mesenchymal phenotype. Conclusion: Elucidation of the mechanism of suppression of DMBT1 in HNC could provide a treatment target to suppress invasion in HNC. (This work was supported by NIH/NIDCR grant DE027551).

Monday, June 10 - 11:48 am
VALIDATION OF AN ORAL CANCER AND PAIN MOUSE MODEL

Dr. Keyur Naik (NEW YORK UNIV. COLLEGE OF DENTISTRY), Dr. Nguyen Huu Tu (NEW YORK UNIV. COLLEGE OF DENTISTRY), Mr. Branden Brar (NEW YORK UNIV. COLLEGE OF DENTISTRY), Mr. Jason Chen (New York University), Ms. Khadijah Cheema (NEW YORK UNIV. COLLEGE OF DENTISTRY), Mr. Daniel Bandary (NEW YORK UNIV. COLLEGE OF DENTISTRY), Dr. Brian L Schmidt (NEW YORK UNIV. COLLEGE OF DENTISTRY), Dr. Donna G Albertson (NEW YORK UNIV. COLLEGE OF DENTISTRY), Dr. Aditi Bhattacharya (NEW YORK UNIV. COLLEGE OF DENTISTRY)

Introduction: Oral cancer patients report severe function related pain. Not all oral cancers are painful. Patients with oral dysplasia do not experience pain. We use the 4-nitroquinoline-1-oxide (4NQO) rodent carcinogenesis model that recapitulates oral cancer progression to study nociception (the animal equivalent of pain). Carcinogen treated animals develop multiple tongue lesions, including field changes, dysplasias, papillomas and invasive cancers. Cancers are present in 30-40% of animals. Dysplasia, without cancer is seen in the remaining mice. The 4NQO-treated animals display quantifiable nociceptive behavior. We are examining the association of histopathology with nociceptive behavior.

Methods: Mice (C57BL/6 female mice, n=40) were offered 4NQO (100µg/ml) in the drinking water for 16 weeks. Nociceptive behavior is being measured with the dolognawmeter device. The assay measures time to escape from confinement in a tube by gnawing through a dowel blocking exit from the tube (gnaw time). At 28 weeks after initial exposure to 4NQO, tongues and lymph nodes will be harvested for histologic review. The nociception score (average percent change in gnaw time above baseline) will be compared with histopathology. Analysis of variance (ANOVA) will be used to test for differences between groups (nociception score, pathologic lesion type).

Results: Mice have been trained on the device for 21 weeks. All experimental animals display stable gnaw times. Behavior testing continues twice weekly. In a pilot study of eight mice (invasive squamous cell carcinoma (SCC), n=4; microinvasive SCC (n=2); papillomas only, n=2), nociception scores ranged from 65 to 259% of baseline.

Conclusions: Pilot data indicate that mice with oral lesions display a range of nociception scores. The larger on-going study will determine whether the 4NQO model recapitulates variation in pain experienced by oral cancer patients. A validated oral cancer pain mouse model has potential for evaluation of therapies and improved understanding of oral-cancer pain.
Monday, June 10 - 12:00 pm

POTENTIAL UTILITY OF HISTOLOGY-GUIDED MASS SPECTROMETRY FOR THE DIAGNOSIS OF PROLIFERATIVE VERRUCOUS LEUKOPLAKIA

Dr. Zoya Kurago (Augusta University, Dental College of Georgia), Dr. Susan Muller (Atlanta Oral Pathology), Dr. Katy Smoot (NRL), Dr. Matt Powell (NRL), Dr. Erin Seeley (NRL)

Proliferative verrucous leukoplakia (PVL) is a relentless, slowly-progressing oral mucosal potentially malignant disorder with a very high rate of malignant transformation. Timely diagnosis is difficult in part because early lesions are clinically and pathologically similar to other white or red lesions. The objective of this pilot study was to determine if MALDI mass spectrometry could identify a proteomic profile in early-intermediate stages of PVL that separates it from non-PVL hyperkeratosis and lichen planus (OLP). Methods and Results: We performed histology-guided mass spectrometry (HGMS) profiling on 149 samples derived from early (24) and intermediate PVL (25), hyperkeratosis with minimal to no atypia (25), OLP (25), normal epithelium (24), and squamous cell carcinoma (SCC, 26). Representative areas of the epithelium and connective tissue were evaluated using a Bruker MALDI-TOF mass spectrometer, followed by statistical analysis and classification algorithm generation using ScILS Lab software. We show that early-intermediate PVL can be differentiated from non-PVL hyperkeratosis and OLP with an accuracy of 92% when performing a leave-10% out repeated subsampling internal cross validation. A total of 508 peaks were used to build the model, of which, 369 peaks were found to be statistically significant between the two groups after applying a Bonferroni correction (p-value <9.8x10^-5). A total of 16/508 peaks corresponding to 10 unique peptides had areas under Receiver Operating Characteristic (ROC) curves greater than 0.8 indicating these peptides were significantly more abundant in PVL. Five of these peptides were also more highly expressed in PVL than in SCC. Comparisons of PVL and normal epithelium resulted in a total of 152/508 peaks with areas under ROC curves >0.8 indicating significantly higher expression in PVL. Conclusion: HGMS technology may be a powerful tool for differentiating PVL from selected non-PVL lesions. Validation studies are underway.

Acknowledgements: We thank histotechnologist Regina Hand for the preparation of tissue sections.

Monday, June 10 - 12:12 pm

ENDOGENOUS EXPRESSION OF DNA CYTOSINE DEAMINASE APOBEC3B IS UPREGULATED IN ORAL MUCOSAL MELANOMA

Dr. Prokopios Argyris (University of Minnesota), Mr. Matthew Jarvis (University of Minnesota), Dr. Ioannis Koutras (University of Minnesota), Dr. Rajaram Gopalakrishnan (University of Minnesota), Dr. Reuben Harris (University of Minnesota)

Introduction: Oral mucosal melanoma (OMM) exhibits aggressive behavior, dismal prognosis (5-year survival rate 10-25%) and is characterized by elevated mutation loads. The molecular mechanisms responsible for the high genomic instability observed in OMM remain elusive. DNA cytosine deaminase APOBEC3B (A3B) is a major endogenous source of mutation in a wide variety of cancers. A3B-driven signature mutations in tumors are identified through C-to-T and C-to-G base substitutions in 5’-TCA/T trinucleotide motifs. We hypothesized that A3B is overexpressed in OMM inflicting a heightened state of somatic mutations.

Materials and Methods: A3B levels were assessed in OMM (N=10) by immunohistochemistry using a custom rabbit monoclonal antibody (5210-87-13) developed by our group. Benign oral melanocytic nevi (N=13) served as a control group. Nuclear A3B immunoreactivity in all lesions was visualized with the Aperio ScanScope XT and quantified using the Aperio Nuclear Algorithm. Non-parametric Mann-Whitney U test was utilized for statistical analysis. Additionally, published molecular data sets focusing on whole genome landscapes of major melanoma subtypes were further analyzed to assess the impact of A3B in mucosal melanomas.

Results: Among OMMs, 6 cases involved the palate and 1 case each the maxillary gingiva, floor of the mouth and upper lip (mean age: 67.4 years, range 54-84, M:F ratio=5:4). One case represented locoregional recurrence 2 years after initial diagnosis. Strong, focal to diffuse, nuclear A3B immunopositivity was observed in 9/10 OMMs (median H-Score=38.9), whereas oral nevi were mostly A3B negative (median H-Score=5.6). Overall, A3B protein levels were significantly higher in OMMs (p<0.0001). Genomic analysis showed that the overall mutation load, number of C-to-T transitions and proportion of A3B-related mutation signatures 2 and 13 were higher in head and neck mucosal melanomas than melanomas developing in other mucosal sites.

Conclusions: These preliminary immunohistochemical and genomic data implicate the mutagenic factor A3B in the pathogenesis of OMM.
Poster Program
Tuesday, June 11, 2019
8:30 am – 11:30 am
#1 CLEAR CELL ODONTOGENIC CARCINOMA: A CASE REPORT AND DIAGNOSTIC WORK UP

Dr. Felipe Nor (The University of Iowa, College of Dentistry), Dr. Sherry Timmons (The University of Iowa, College of Dentistry), Dr. Emily Lanzel (The University of Iowa College of Dentistry and Dental Clinics), Dr. John Hellstein (The University of Iowa, College of Dentistry), Dr. Juan Pablo Castro (The University of Iowa College of Dentistry and Dental Clinics), Dr. Wattawan Wongpattaraworakul (The University of Iowa College of Dentistry and Dental Clinics), Dr. Scott Steward-Tharp (University of Iowa), Dr. Nidhi Handoo (The University of Iowa, College of Dentistry)

**Background:** Clear cell odontogenic carcinoma (CCOC) is an exceptionally rare malignancy affecting the jaws, pre-dominantly the mandible. As the name suggests, the presence of clear cells is usually a striking histologic feature. This fact may lead to a diagnostic confusion with other odontogenic (e.g. ameloblastoma, calcifying epithelial odontogenic tumor) and non-odontogenic lesions (e.g. salivary gland carcinoma, melanoma, and metastatic renal cell carcinoma) that can also present a clear cell component. In this scenario, the presence of a specific gene rearrangement (EWSR1) in about 80% of CCOC constitutes an important diagnostic tool. **Case description:** We report a case of an 84 year old man presenting with a localized radiolucent lesion involving the left maxilla, extending from the central incisor to the first molar. The floor of the left maxillary sinus appears to be superiorly displaced without any apparent evidence of destruction. The clinical impression was odontogenic myxoma. An incisional biopsy was performed, showing islands of epithelial cells with focal clear cell change. Nuclear hyperchromatism, pleomorphism, multinucleated giant cells, and mitotic figures were also identified. The aforementioned epithelial islands were positive for cytokeratin-19, indicating an odontogenic origin. Tumor cells were also positive for pancytokeratin, Ki-67 (>30%), and mucicarmine (focally). TTF1, PAX8, and PSA were negative, ruling out a metastatic lesion. Additional imaging analysis using positron emission tomography–computed tomography (PET-CT) confirmed a solitary lesion involving only the maxilla. The presence of the EWSR1 (22q12) gene rearrangement was proven by fluorescent in situ hybridization (FISH). **Conclusion:** Given the fact that clear cell salivary gland carcinoma may also harbor the same gene rearrangement, the present case emphasizes the importance of a comprehensive strategy (i.e. microscopic, genetic and imaging studies) to properly establish the diagnosis of clear cell odontogenic carcinoma.

#2 ADENOID AMELOBLASTOMA WITH DENTINOID OF MANDIBLE: A CASE REPORT

Dr. Wattawan Wongpattaraworakul (The University of Iowa College of Dentistry and Dental Clinics), Dr. Sherry Timmons (The University of Iowa College of Dentistry and Dental Clinics), Dr. Emily Lanzel (The University of Iowa College of Dentistry and Dental Clinics), Dr. John Hellstein (The University of Iowa College of Dentistry and Dental Clinics), Dr. Felipe Nor (The University of Iowa College of Dentistry and Dental Clinics), Dr. Scott Steward-Tharp (The University of Iowa College of Dentistry and Dental Clinics), Dr. Veeratrishul Allareddy (The University of Iowa College of Dentistry and Dental Clinics), Dr. Nidhi Handoo (The University of Iowa College of Dentistry and Dental Clinics)

**Background:** Adenoid ameloblastoma with dentinoid is a rare variant (to the best of our knowledge, only 16 cases have been reported) of ameloblastoma showing histopathological features of ameloblastoma with areas of ductal pattern and dentinoid formation resembling adenomatoid odontogenic tumor (AOT). Although ameloblastoma and AOT have distinct histologic feature, Adenoid ameloblastoma with dentinoid sometimes predominantly demonstrate AOT-like areas, which may overshadow the features of ameloblastoma. As a result, Adenoid ameloblastoma with dentinoid often goes underdiagnosed/misdiagnosed and treated conservatively leading to recurrence.

**Case Description:** A 65-year-old, healthy male patient presented with grade 3 mobility of right mandibular first premolar. Clinically, cortical expansion in region of interest was noted. CBCT reveals root resorption of right mandibular first premolar, buccal and lingual cortical perforation in area of right mandibular canine and right mandibular first premolar. Also noted was a well circumscribed radiolucent which had been previously treated twice in 2006 and 2014. The previous two biopsies had diagnoses of AOT with a recommendation of close follow-up due to the presence of focal areas suggestive of plexiform ameloblastoma. After reviewing slides from the previous biopsies and current biopsy, a final diagnosis of Adenoid ameloblastoma with dentinoid was rendered.

**Conclusion:** Adenoid ameloblastoma with dentinoid has some microscopic features that are unusual to ameloblastoma, thus suggesting the diagnosis of AOT. Ultimately, the accurate diagnosis of Adenoid ameloblastoma with dentinoid is important in determining the treatment of choice, enucleation vs resection.
#3 BENIGN FIBROUS HISTIOCYTOMA OF THE JAWBONES. REPORT OF 5 CASES WITH REVIEW OF THE LITERATURE

Dr. Robert Feliciano (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens), Dr. Chelsea Wilson (New), Dr. Paul Freedman (New York Presbyterian Queens)

Introduction: Benign fibrous histiocytomas (BFH) are mesenchymal tumors composed of a mixture of fibroblasts and histiocytes arranged in a storiform pattern. This benign neoplasm most often occurs in the skin of the lower extremities and rarely affects bone. BFH of bone occur most frequently in the femur, pelvis and tibia comprising approximately 1% of all benign bone tumors. Jawbone involvement is extremely rare with only 13 cases having been reported in the literature as of 2016. In 2017, we presented two new cases at the AAOMP annual meeting. Here we present an additional 3 cases.

Materials and Methods: The files of our biopsy service and consultative service were searched from 1984 to 2019 for cases with the diagnosis of benign fibrous histiocytoma of the jawbone. Three additional cases of BFH of the jawbones were identified. These three cases and the two cases presented in 2017 were analyzed for their histologic, immunohistochemical and demographic features.

Results: Of our five cases of BFH of the jawbone, four involved the mandible and one occurred in the maxilla. There was no sex predilection. The age range was 17 to 48 years. The tumors presented as expansile painless radiolucent lesions. Histologically, the tumors consisted of spindle shaped cells arranged in a storiform pattern. Secondary elements were present consisting of inflammatory cells and foamy histiocytes. Immunohistochemical studies revealed CD10, Factor XIIIa and CD68 positivity for three of the five cases.

Conclusions: BFH of the jawbones are rare tumors. The addition of our five cases brings the total to 18 cases in the literature. The lesions cause painless expansion and appear histologically as spindle cells arranged in a storiform pattern. Secondary elements may be evident. Staining for CD10, CD 68 and Factor XIIIa may be useful in distinguishing these tumors from other spindle cell lesions.

#4 A CASE REPORT OF LINGUAL BRONCHOCYCT

Dr. Zahra Aldawood (Department of Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine), Dr. Sook-Bin Woo (Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine)

Bronchogenic cysts are foregut-derived developmental anomalies found along the developmental pathway of the foregut. The putative theory of pathogenesis is abnormal budding or branching of epithelial cells during the development of tracheobronchial tree. The most common sites are mediastinum and lung (75% and 25% of case respectively) while the head and neck are affected in less than 1% of cases with only rare cases reported in the oral cavity. It is usually asymptomatic but if it becomes large, it may cause feeding and breathing difficulties. This is a report of a case of a bronchogenic cyst arising in a 6-year-old male. The lesion presented as deep mucosal mass in the midline of ventral tongue, measuring 1.1 × 0.7 × 0.7 cm. Microscopically, the cyst was lined by pseudostratified columnar epithelium exhibiting many ciliated and mucous cells. A focus of cartilage and discontinuous bundles of smooth muscle (smooth muscle actin positive) were present adjacent to the lining. Where there was cyst rupture, there was granulation tissue associated with many foamy macrophages and acute and chronic inflammation. Three other cases, two in the tongue and one in the lower lip vestibule with cutaneous extension, all in the midline, have been reported in a 1 day-old, 4 year-old and 3 year-old; all were males. There was no recurrence after excision and this is in keeping with the behavior in previous reports. Other developmental cysts including foregut cysts may be focally lined with respiratory epithelium but the presence of cartilage is the sine qua non for the diagnosis of a bronchogenic cyst.
#5 GENERATIONAL STUDY OF TWO FAMILIES WITH NEVOID BASAL CELL CARCINOMA (GORLIN) SYNDROME

Dr. Carleigh Canterbury (Columbia University College of Dental Medicine), Dr. Austin Shackelford (Columbia University College of Dental Medicine), Dr. Kevin Lee (Columbia University College of Dental Medicine), Dr. Lawrence Holtzman (Columbia University College of Dental Medicine), Dr. Elizabeth Philippone (Columbia University College of Dental Medicine), Dr. Scott Peters (Columbia University College of Dental Medicine)

Objectives: Nevoid basal cell carcinoma syndrome (NBCCS), also known as Gorlin syndrome, is a disorder of autosomal dominant inheritance pattern with high penetrance and variable expressivity. It is diagnosed using a widely agreed upon set of major and minor criteria along with genetic testing. Most cases for which genetic testing has been performed express PTCH1 and SUFU germline mutations, with a subset demonstrating no identifiable variant of these genes. In cases with clear clinical and radiographic evidence of NBCCS, genetic testing is not mandatory for diagnosis. Of note, however, is that patients with mutations in the SUFU gene generally show milder clinical features, but have an increased risk for the development of childhood medulloblastoma when compared to those with PTCH1 mutations. This highlights the potentially important role that genetic testing can serve for those diagnosed with NBCCS, as well as in risk assessment for potential offspring. A comparison of genotype and corresponding phenotype through generations may shed light on the interplay between genetic variants of disease and expressivity.

Findings: We present two generational studies of families known to be affected by NBCCS. For each, we discuss genetic variants when available, along with the clinical and radiographic characteristics that satisfy diagnostic criteria for disease in each patient. Previous medical records, imaging studies, as well as patient interviews have been conducted to obtain the necessary data to construct a detailed pedigree.

Conclusions: Our study highlights the variable expression of NBCCS as it is inherited through multiple generations. The variability in expression among patients in the same family demonstrates the importance of major and minor criteria for diagnosis. More frequent genetic testing and further study may help draw stronger connections between genotype and phenotype in patients with this disorder.

#6 A RETROSPECTIVE CASE SERIES OF SECRETORY CARCINOMA OF THE ORAL CAVITY: ANALYSIS OF 4 CASES

Dr. Shanker Venkat (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida College of Dentistry), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Yanel De Los Santos (University of Florida College of Dentistry), Dr. Mark Kavesh (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry)

Introduction: Secretory carcinoma (SC) is a salivary gland neoplasm uncommon in the oral cavity. Oral cavity SC has in the past been misdiagnosed as acinic cell carcinoma (ACC) or mucoepidermoid carcinoma (MEC). In this study we describe the spectrum of clinical and histologic presentation of a series of oral cavity SC. Methods: An IRB-approved retrospective search for cases of secretory carcinoma (SC), previously known as mammary analogue secretory carcinoma, was performed within the archives of the University of Florida Oral Pathology and Surgical Pathology Biopsy services between 2010 and 2017. Demographic, clinical, histologic, immunohistochemical, and molecular findings were aggregated for the cases. Results: A total of 4 cases were included in the study. 2 cases were male and 2 cases female. Age ranged from 30 years to 60 years with an average of 45 years. Two cases were located in the lip, followed by 1 case each on the hard and soft palate. Immunohistochemical (IHC) staining showed mammaglobin positivity in all cases, GATA3 positivity in 2 cases, S100 positivity in 3 cases, and SOX10 positivity in 1 case. Fluorescence in situ hybridization was performed in 1 case demonstrating positivity for ETV6-NTRK3 fusion. Conclusion: Though oral SC is rare, pathologists should be cognizant of the histologic overlap of SC with other salivary gland neoplasms especially ACC and MEC and to use IHC staining to aid in diagnosis. This entity should be considered in the differential diagnosis for intraoral salivary gland tumors.
POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019

#7 GIGANTIFORM CEMENTOMA: CASE REPORT AND REVIEW OF THE LITERATURE
Dr. Ronald Faram (New York Presbyterian Queens), Dr. Paul Freedman (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens)

Gigantiform cementoma is a rare subtype of a benign fibro-osseous lesion. To date, only a handful of cases have been reported. Because it is often inherited as an autosomal dominant trait it is also known as Familial Gigantiform Cementoma. However, examples of cases without a family history have been described supporting a sporadic inheritance pattern as well. The condition is believed to have a high penetrance but variable phenotypic expression. Gigantiform cementoma has a propensity for early onset, typically in the first and second decades of life, and demonstrates rapid and extensive osseous expansion of all four quadrants of the jaws which can lead to severe disfigurement. The microscopic features of gigantiform cementoma are similar to other cemento-osseous lesions of the jaws. Clinical features aid in distinguishing gigantiform cementomas from other fibro-osseous diseases. We describe a case of a 17-year-old male with a prior diagnosis of fibrous dysplasia and marked bilateral maxillary expansion. We present this case to help clarify the diagnostic criteria for the differentiation of gigantiform cementoma from other cemento-osseous lesions.

#8 ORAL VERRUCIFORM XANTHOMA: A SERIES OF 212 CASES AND REVIEW OF THE LITERATURE
Dr. Austin Belknap (University of Florida), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Indraneel Bhattacharyya (University of Florida College of Dentistry), Dr. Donald Cohen (University of Florida College of Dentistry), Dr. Sarah Fitzpatrick (University of Florida)

Background: Verruciform xanthoma (VX) of the oral cavity is an uncommon, reactive lesion with unknown etiology. To the best of our knowledge, this is the largest series of oral VX with a focus on demographics, clinical appearance, and histologic presentation. Material and Methods: Following IRB approval, all diagnosed cases of VX found in the archives of the University of Florida Oral Pathology Biopsy Service (1994-2018) were included. Age, gender, location, clinical appearance, clinical impression, and duration of lesion was collected for each lesion. Results: A total of 212 cases were included in our database and the mean age was 61 years (range of 9-94), with a female: male ratio of 1.06:1. The most common location in descending order was the gingiva (n=104 49.1%), palate (n=46, 21.7%), buccal mucosa (n=21, 9.9%), tongue (n=20, 9.4%), vestibule (n=13, 6.1%), lip (n=4, 1.9%), floor of mouth (n=3, 1.4%), and not specified (n=1, 0.5%). The lesions were most frequently pink in color, and most often described as bumpy, rough, verrucoid and/or papillary. Clinical impressions in descending order were papillary lesion (n=67, 31.6%) followed by not specified or unknown (n=41, 19.3%), hyperkeratosis (n=24, 11.3%), fibroma (n=20, 9.4%), leukoplakia (n=17, 8.0%), dysplastic lesion (n=13, 6.1%), pyogenic granuloma (n=7, 3.3%), granulomatous reaction (n=5, 2.4%), lichen planus and VX (n=4 each, 2.0%), pigmented and other lesions (n=3 each, 1.4%), and salivary and periapical lesions (n=2 each, 0.9%). Three of the reported lesions were recurrences. Conclusion: The demographics and clinical parameters of this series were generally in concordance with that of previously published reports. In this series, only 4 cases were clinically suspected as VX, demonstrating clinicians unfamiliarity of this lesion. This case series demonstrates the need for more effective clinical education of oral health care professionals to expand differential diagnosis of papillary lesions of the oral cavity.
#9 COMPARISON OF SPINDLE CELL LESIONS OF ORAL MUCOSA AND JAWBONES-A RETROSPECTIVE PATHOLOGICAL ANALYSIS

Dr. Letizia Mamber (Tel- Aviv University), Prof. Marilena Vered (Tel- Aviv University), Prof. Abraham Hirshberg (Tel- Aviv University), Prof. Ilana Kaplan (Tel- Aviv University)

**Introduction:** Lesions composed microscopically of spindle cells can be reactive, benign or malignant tumors, derived from a variety of origins. There is sparse specific literature regarding oral lesions.

**Objectives:** To investigate the spectrum of spindle cell lesions with comparison between oral soft tissue and jaw bones.

**Materials & Methods:** Retrospective analyses, archives of oral pathology, 1996-2018.

**Results:** 18,897 biopsies were searched. 877 (4.6%), cases were included, 70% in soft tissues, 30% in jaws. Over 90% of these were benign, with 9 (1%) malignant in soft tissues and 15 (7%) malignant in jawbones. In soft tissues the most prevalent lesions were peripheral ossifying fibroma 271 (44%), peripheral giant cell granuloma 234 (39%), benign nerve sheath tumor 22 (3%), peripheral odontogenic fibroma 20 (3%), oral focal mucinosi

14 (2%) and nodular fasciitis 8 (1%). 86% of soft tissue lesions were reactive, 14% were neoplastic.

9 (1%) cases of malignant soft tissue tumors included 3 melanomas, 3 Kaposi’s sarcoma and 1 each spindle cell carcinoma, metastatic rhabdomyosarcoma and malignant histiocytoma.

In the jaws lesions included central giant cell granuloma 79 (30%), fibro-osseous lesions 64 (26%), central ossifying fibroma 38 (15%), central odontogenic fibroma 33 (13%), cemento-osseus dysplasia 18 (7%), odontogenic myxoma 7 (2%) and desmoplastic fibroma 3 (1%). Malignant jaw lesions 19 (7%) were all sarcomas.

86% of soft tissue lesions were of odontogenic or periodontal ligament origin and only 33% of central lesions were of odontogenic origin.

**Conclusions:** Over 90% of all cases were benign, with a higher prevalence of spindle cell malignancies in the jawbones. The majority (86%) of the soft tissue lesions were reactive. In the jaws, 33% were clearly neoplastic, whereas the remainder were of undetermined nature. Odontogenic/periodontal ligament origin was significantly more prevalent in soft tissue lesions than in jaw lesions.

#10 EBV-POSITIVE ATYPICAL LYMPHOCYTIC PROLIFERATION IN AN IMMUNOSUPPRESSED PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS: A DIAGNOSTIC DILEMMA

Dr. Stephen Roth (Long Island Jewish Medical Center at Hofstra/Northwell Zucker School of Medicine), Dr. John Fantasia (Long Island Jewish Medical Center at Hofstra/Northwell Zucker School of Medicine)

**Objectives:** Immunosuppressed patients, such as those having an autoimmune disease, transplant recipients, acquired immunodeficiencies, and elderly patients exhibiting immunosenescence, are at risk of both lupus and infection. Ulcerated lesions in these patient populations with an atypical lymphocytic proliferation and Epstein-Barr virus (EBV) positivity are problematic; the differential diagnosis includes EBV-related lymphomas and EBV-related mucocutaneous ulcers. Often, EBV-related mucocutaneous ulcers resolve with the withdrawal of immunosuppressive agents or restored immunocompetence. However, many patients require the causative immunosuppressive therapy, thus discontinuance of such therapy can be problematic. Stopping immunosuppression to allow confirmation of the suspected diagnosis of EBV-related mucocutaneous ulcer and ruling out a lymphoma is challenging. We hope to highlight the difficulty in differentiating these entities and in counselling these patients to pursue appropriate care, presenting one such case in a patient with systemic lupus erythematosus.

**Patients and methods:** We describe a case of a palatal ulcer in a 27-year-old female with systemic lupus erythematosus. The histologic exam of the ulcer revealed an atypical and large B cell population that was EBER positive in both perivascular and nested patterns admixed with extensive necrosis. The differential diagnosis includes an EBV-positive diffuse large B-cell lymphoma vs. an EBV-related mucocutaneous ulcer resembling a diffuse large B-cell lymphoma.

**Conclusion:** Differentiating between an EBV-related lymphoma and an EBV-related mucocutaneous ulcer is difficult from a histologic and molecular standpoint. The WHO describes EBV-related mucocutaneous ulcers that mimic diffuse large B-cell lymphomas, polymorphic post-transplant lymphoproliferative disorders, and Hodgkin-like morphology. Clinical considerations and course must be weighed before advising the best route of care for a patient presenting with an ulcerative lesion and the described histologic and molecular features. Consideration must be given to the patient’s underlying conditions that require immunosuppression in planning the best course of action.
#11 IN VITRO AND IN VIVO CHARACTERIZATION OF CANDIDA ALBICANS AND STREPTOCOCCUS MUTANS INTERACTIONS ON ORAL MUCOSAL AND DENTAL SURFACES

Dr. Zaid H Khoury (University of Maryland Baltimore), Dr. Taissa Vila (University of Maryland Baltimore), Dr. Ahmed Sultan (University of Maryland Baltimore), Dr. Mary Ann Jabra-Rizk (University of Maryland Baltimore)

Introduction: The oral cavity is a complex environment harboring diverse microbial species that co-exist often within biofilms formed on oral surfaces. Within biofilms, inter-species interactions can be synergistic in that the presence of one organism generates a niche for another enhancing colonization. Among these species are Candida albicans and Streptococcus mutans, the etiologic agents of oral candidiasis and dental caries, respectively. Recent studies have reported enhanced prevalence of C. albicans in children with early childhood caries indicating that this fungal-bacterial interaction may have clinical implications. In this study, in vitro and in vivo studies were designed to validate the hypothesis that the presence of C. albicans in the oral cavity augments S. mutans colonization. Methods: Using various C. albicans mutant strains and a GFP-producing S. mutans, metabolic and fluorescent biofilm assays were performed to assess S. mutans recovery from mixed biofilms and to elucidate the mechanisms of interactions. Additionally, to visualize the architecture of formed biofilms confocal scanning laser fluorescent and electron scanning microscopy were used. Importantly, a clinically-relevant mouse model of oral co-infection was developed to demonstrate C. albicans-mediated enhanced S. mutans colonization in a host. Results: The findings demonstrated significantly higher recovery of S. mutans from biofilms with C. albicans. Images revealed a strong bacterial affinity to C. albicans and secreted fungal cell wall polysaccharides were identified as the key factor mediating biofilm formation. Importantly, analyses of harvested tissue demonstrated significantly higher S. mutans recovery from teeth and tongues of co-infected mice compared to mice with S. mutans alone. Conclusion: The findings strongly indicate that the presence of C. albicans in the oral environment may impact the development of dental caries and should be considered as a factor in evaluating risks of caries. Animal studies using a rat model of dental caries are currently underway in our laboratory.

#12 BURKITTLYMPHOMAPRESENTINGASBILATERAL PARADENTAL RADIOLUCENCIES

Dr. Chelsea Wilson (New York Presbyterian Queens), Dr. Paul Freedman (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens), Dr. Kathleen Higgins (New York Presbyterian Queens)

Burkitt lymphoma is a high grade B-cell malignancy first described in African children. In endemic areas, the mean age is 7 and jaw lesions are characteristic. In contrast, sporadic cases in the US, patients are slightly older and abdominal lesions are typical with jaw involvement seen only 25%. Here, we present an unusual case of sporadic Burkitt lymphoma presenting as bilateral paradental cysts of the mandible. A 31-year-old male was admitted with a complaint of abdominal and leg pain. An abdominal mass with a necrotic center was found. A biopsy was performed with a diagnosis of Burkitt lymphoma. One week later, the patient complained of right mandibular tooth mobility and pain. The oncologists believed the dental pain was likely an abscess and the patient was referred for a dental consultation. The panoramic radiograph demonstrated bilateral radiolucencies distal to partially erupted teeth 17 and 32. The lesions were semilunar in shape with smooth borders and no expansion. Both radiolucencies were smaller than 2 cm, findings typical of paradental cysts. Upon examination, tooth #32 had grade 2 mobility in addition to the paradental radiolucency. No erythema, sinus tracts or drainage were noted. It was determined that #32 would be extracted. Upon extraction, a small amount of tissue was identified and submitted to oral pathology. The findings demonstrated sheets of undifferentiated lymphocytes with pleomorphic, mitotically active nuclei. Immunohistochemical analysis revealed positivity for CD20, CD10 and c-MYC supporting a diagnosis of Burkitt lymphoma.

Prior to the oral biopsy, the patient had imaging procedures that did not suggest the presence of extra-abdominal Burkitts. Based on the intraoral biopsy, the patient’s treatment regimen was altered. The tissue submitted from the extraction of #32 yielded an incidental finding of Burkitt’s lymphoma and demonstrates the necessity to submit all oral tissues removed during the course of dental procedures.
POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019

#13 ORAL PATHOLOGY INCIDENCE IN U.S. VETERAN POPULATION FROM 1990-2015: THE SAN FRANCISCO VA HEALTH CARE SYSTEM EXPERIENCE.
Mr. Carl Provenzano (University of San Francisco School of Dentistry), Dr. Jill White (San Francisco VA Health Care System), Dr. Stephen Connelly (University of California, San Francisco, School of Dentistry), Dr. Rishi Gupta (San Francisco VA Health Care System), Dr. Rebeka Silva (University of California, San Francisco, School of Dentistry)

Objectives: The Veterans Health Administration (VHA), is the largest integrated healthcare system in the United States. The predominantly male patient population has been exposed to multiple risk factors, and thus are predisposed to a variety of systemic conditions including oral cancer. The literature exploring the range of head and neck lesions seen within the VA system is scarce. Our objectives were to catalog all oral maxillofacial biopsy diagnoses obtained at a busy VA dental clinic over a 25-year period, determine the incidence of malignant and premalignant lesions, and gain information concerning malignant transformation of premalignant lesions.

Methods: A retrospective review was performed for all patients who underwent biopsy at the San Francisco VA Medical Center Dental Clinic. Data was obtained by review of the computerized patient record system (CPRS) and organized based on several criteria including pathologic classification, gender, and age at the time of biopsy.

Results: A total of 1,169 biopsies from 742 unique patients (96% male) were obtained from 1990 to 2015. The age range was 24-88 years (mean 59.3 years). The most frequent diagnosis was squamous cell carcinoma (10.4% of all lesions). There were 181 malignant lesions in 96 patients, and 91 premalignant diagnoses in 73 patients. The most common malignancy was squamous cell carcinoma (66.8%) followed by basal cell carcinoma (11.6%), and the most common premalignancy was epithelial dysplasia (51.6%). Malignant transformation occurred in 30.0% of those with premalignant lesions over an average of 14.7 months.

Conclusions: Our results display the scope of oral maxillofacial diagnoses and suggest that there may be a high incidence of oral malignancy and malignant transformation in veterans. Early recognition and diagnosis may reduce morbidity and mortality and improve patient outcomes. The role of dental professionals in identifying a wide variety of oral pathology, including potentially malignant disorders is emphasized.

#14 CHALLENGES IN THE VALIDATION OF DIGITAL MICROSCOPY FOR PRIMARY DIAGNOSIS IN ORAL PATHOLOGY.
Dr. Alan Santos-Silva (University of Campinas (UNICAMP)), Prof. Paul Speight (The University of Sheffield), Dr. Felipe Fonseca (Federal University of Minas Gerais (UFMG)), Dr. Ana Carolina Prado-Ribeiro (Cancer Institute of Sao Paulo State (ICESP), Faculty of Medicine, Sao Paulo University (USP)), Mr. Gleyson Amaral-Silva (University of Campinas (UNICAMP)), Ms. Natalia Palmier (University of Campinas (UNICAMP)), Prof. Marcio Lopes (University of Campinas (UNICAMP)), Prof. Oslei Almeida (University of Campinas (UNICAMP)), Prof. Pablo Agustin-Vargas (University of Campinas (UNICAMP)), Ms. Anna Luiza Araujo (University of Campinas (UNICAMP))

Introduction: The first digital pathology platform receiving FDA approval is leading the development of whole slide imaging systems (WSI) for diagnoses across a variety of diseases. However, concerns about how the introduction of these computational tools will impact the pathologists were raised. To address current challenges in the validation of digital microscopy for primary diagnosis in Oral Pathology and review the main reasons for the occurrence of diagnostic discordancess, limitations and pitfalls for WSI primary diagnoses. Material and methods: This was a cross-sectional, retrospective study based on the College of American Pathologists Pathology and Laboratory Quality Center guidelines for validation of WSI systems. The sample consisted of H&E-stained glass slides of oral biopsies including a large range of subspecialty specimens, such as potentially malignant disorders, epithelial malignant neoplasms, benign and malignant salivary glands neoplasia, odontogenic cysts and tumors. The glass slides were scanned using the Aperio Digital Pathology System (Aperio Technologies Inc., Vista, CA, USA) with automated focusing and magnification at x20. Two pathologists blindly analyzed, in an independent way, cases with a conventional light microscope (CLM), and after 90 days of washout, with WSI. Results: The rate of diagnostic discrepancies was low (κ > 0.8), however, pathologists pointed out several technical problems including the presence of artifacts and folds, quantity of tissue, stain patterns, blurred focus and color fidelity issues, ranging from 20%-35% for CLM and 18%-24% for WSI. Absence of diagnostic hypotheses was also considered a limitation in the diagnostic validation process. Discrepant diagnoses were mainly due to challenging cases and inadequate tissue quantity. Outlier time values to render diagnoses occurred more frequently in oral dysplasia and malignant salivary gland tumors cases. Conclusions: Given the highly specialized nature of Oral Pathology, additional training on WSI may be necessary to overcome limitations in methods of preparation and cases interpretations.
POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019

#15 MULTIPLE INTRAOSSEOUS SCHWANNOMAS OF THE MANDIBLE
Dr. Victoria Woo (University of Nevada, Las Vegas), Dr. Jeff Moxley (University of Nevada, Las Vegas), Dr. Jesse Falk (University of Nevada, Las Vegas), Dr. Jill Ono (Aurora Diagnostics LMC Pathology Services), Dr. Ronald Knoblock (Aurora Diagnostics LMC Pathology Services), Dr. Steven Saxe (University of Nevada, Las Vegas)

Schwannomas, also known as neurilemmomas, are benign neoplasms that derive from the myelin sheath-forming cells that encompass neuronal axons. The majority of tumors occur within the soft tissues of the head and neck and extremities. Intraosseous schwannomas are distinctly uncommon and have been postulated to arise de novo or from nerve fibers in pre-existing nutrient canals. We describe a 14-year-old female with a two-year history of asymptomatic mandibular lesions noted on routine examination. Panoramic and cone beam computed tomography imaging revealed a well-defined, multilocular radiolucency of the symphysis and a second, radiographically-similar lesion of the right posterior mandible. No cortical expansion was seen and the right mandibular canal appeared intact. The lesions were completely enucleated through multiple buccal cortical fenestrations and clean dissection from the canal and mental foramina was achieved, allowing preservation of the inferior alveolar nerve. Microscopic examination of both lesions showed a proliferation of palisaded, spindle-shaped cells and Verocay bodies alternating with more disorganized, hypocellular regions. Strong and diffuse staining with S-100 was observed, supporting the diagnoses of intraosseous schwannomas. The patient is currently two months post-surgery and exhibits right-sided mandibular paresthesia which is progressively resolving. Gnathic schwannomas are rare, intraosseous neoplasms that most frequently affect the posterior mandible of patients in their third to fourth decades of life. Although features such as paresthesia and mandibular canal distention may suggest a neural origin, the nonspecific clinicoradiographic presentation of most lesions can pose diagnostic challenges. Histopathologic examination with appropriate immunohistochemical studies is necessary to establish a definitive diagnosis. Surgical excision is indicated and can be achieved through a variety of approaches, ranging from conservative enucleation to segmental mandibulectomy. Factors influencing the choice of therapy include lesion size and location, presence of cortical perforation, and anatomic restrictions that hinder surgical access.

#16 BRAF-V600E AND UNICYSTIC AMELOBLASTOMA: A PRELIMINARY IMMUNOHISTOCHEMICAL STUDY
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Introduction: unicystic ameloblastoma (UA) is considered a less aggressive subtype compared with solid/multicystic ameloblastoma and sometimes it can present clinical and radiographic similarities with dentigerous and radicular cysts. Although the UA presents a less infiltrative clinical behaviour, mural invasion of the capsule may occur and, in this case, there is an association with local recurrence. Studies have demonstrated a high frequency of mutated BRAF protein in association with ameloblastoma but only a few focus on the unicystic variant. Thus, the objective of this study was to investigate the presence of the BRAF-V600E mutation by immunohistochemistry in unicystic ameloblastoma by correlating clinical and imaging data on the cases studied. Methods: Nineteen cases diagnosed as UA were selected for analysis. The specimens were submitted to immunohistochemistry for detection of BRAF-V600E mutated protein. Clinical-pathological data such as age, gender, location and subtypes (luminal, intraluminal and mural) were collected. The clinical-pathological parameters were categorised and analysed according to BRAF V600E detection. Results: Of the 19 patients, 84.2% (16 cases) demonstrated positivity for anti-BRAF-V600E antibody, whereas 3 were negative (15.8%). All cases were observed in jaws. The correlation between BRAF expression and variables showed no statistical significance for location (posterior versus anterior, P = 1.00) and subtypes (7 luminal, 7 intraluminal and 5 mural, P = 0.80), neither for gender (9 female and 10 male, P = 0.58) and age (mean age was 22.6 y.o for women and 38.3 y.o for men, P = 0.08). Conclusion: BRAF-V600E mutation is common in unicystic ameloblastomas. In addition, this mutation can occur regardless of histological subtype of the tumour, age and gender. The association between clinical-pathological features and BRAF-V600E mutation in unicystic ameloblastomas may provide directions for precise diagnosis of this neoplasia.
#17 BRAF(V600E) MUTATION AS AN EARLY EVENT IN THE PATHOGENESIS OF AMELOBLASTOMA—OBSERVATION FROM A UNICYSTIC AMELOBLASTOMA DERIVED FROM DENTIGEROUS CYST CASE

Dr. Pei Hsuan Lu (National Taiwan University Hospital), Dr. Jang-jaer Lee (National Taiwan University Hospital), Dr. Julia Yu Fong Chang (National Taiwan University Hospital)

Ameloblastoma is the most common odontogenic neoplasm, which is thought to arise from the cells of dental lamina. Recent studies show SMO mutations in sonic hedgehog (SHH) pathway and activating mutations in MAPK(FGFR-RAS- BRAF) pathway play important roles in the pathogenesis of ameloblastomas. In our previous studies in Taiwan, high prevalence of BRAF(V600E) mutation, more than 80%, and frequent coexistence of Gli1 overexpression and BRAF(V600E) mutation in ameloblastomas revealed by real-time PCR and Sanger sequencing in spite of no detectable SMO mutation were noted. However, it is controversial whether activation of SHH pathway function as secondary events while activating mutations in MAPK pathway being the essential driver of pathogenesis. We reported a case of mural type unicystic ameloblastoma derived from previous dentigerous cyst involving an un-erupted mandibular third molar. Enucleation of the lesion with peripheral ostectomy was performed. The ameloblastic epithelium in cystic lining and the tumor nests in cystic wall showed cytoplasmic staining of BRAF(V600E) mutated protein in immunohistochemical study. The residual non-keratinized squamous epithelium of dentigerous cyst is negative for BRAF(V600E) staining. Interestingly, some remnant of odontogenic epithelium in the cyst wall without ameloblastic differentiation also showed BRAF(V600E) cytoplasmic staining. This result suggested that BRAF(V600E) mutation may occurred in early stage of tumorigenesis and is an essential event in the pathogenesis of ameloblastoma.

#18 GHOST CELL ODONTOGENIC CARCINOMA ARISING IN A PREVIOUS CALCIFYING ODONTOGENIC CYST—A CASE REPORT AND REVIEW OF LITERATURE

Dr. Ioana Ghita (University of Maryland Baltimore), Dr. Michael Nagai (University of Maryland Baltimore), Prof. Kristen Stashek (University of Maryland Baltimore), Prof. John Papadimitriou (University of Maryland Baltimore), Prof. Joshua Lubek (University of Maryland Baltimore), Prof. Donita Dyalram (University of Maryland Baltimore), Prof. Rania Younis (University of Maryland Baltimore)

Introduction: Ghost Cell Odontogenic Carcinoma (GCOC) is a rare malignancy of odontogenic origin. It is characterized by ghost cell aberrant keratinization, dentinoid deposition in variable quantities, and evidence of malignant cellular features. It has unpredictable prognosis due to the wide variety of growth patterns and the limited number of reported cases.

Materials and methods: The clinical, histological and immunohistochemical (IHC) features of a rare case of GCOC are presented, in addition to a summary of literature review.

Results: A 36y/o AA male presented with a long-standing history of right sided facial swelling, difficulty with speech and right sided nasal obstruction. Clinical examination revealed a large mass encompassing the right maxilla with significant palatal expansion and ulcerated overlying palatal mucosa. An incisional biopsy of the lesion was performed which showed a Calcifying Odontogenic Cyst (COC). The patient underwent right subtotal maxillectomy and reconstruction of maxillary defect with fibula-osteocutaneous free flap. The excisional biopsy revealed odontogenic epithelium proliferating in the form of broad sheets and strands with columnar ameloblast-like peripheral cells, central large cells with vesicular nuclei, areas of ghost cell keratinization, in addition to malignant cellular features of abnormal mitotic figures, hyperchromatism, pleomorphism and areas of comedonecrosis. Margins showed invasion into the maxillary alveolar bone and nasal septum. A small area of classic COC was noted on one of the examined sections. The IHC profile showed lesional cells to be strongly positive for beta-Catenin, Ki-67 (proliferative index of ~75%) and focal areas of diffuse nuclear staining of p53. A diagnosis of GCOC arising in a previous COC was determined based on H&E and IHC review.

Conclusion: It is important to recognize this entity to avoid possible underdiagnoses since it is an extremely rare tumor that may arise in otherwise innocuous COC. This case represents less than 50 reported cases in literature.
#19 GHOST CELL ODONTOGENIC CARCINOMA ARISING IN A PREVIOUSLY CALCIFYING ODONTOGENIC CYST - A CASE REPORT AND REVIEW OF LITERATURE

Dr. Ioana Ghita (University of Maryland Baltimore), Dr. Michael Nagai (University of Maryland Baltimore), Prof. Kristen Stashek (University of Maryland Baltimore), Prof. John Papadimitriou (University of Maryland Baltimore), Prof. Joshua Lubeck (University of Maryland Baltimore), Prof. Donita Dyalram (University of Maryland Baltimore), Prof. Rania Younis (University of Maryland Baltimore)

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Conclusion: It is important to recognize this entity to avoid possible underdiagnoses since this is an extremely rare tumor that may arise in otherwise innocuous COC. This case represents less than 50 reported cases in literature.

#20 ATYPICAL PERIPHERAL AMELOBLASTOMA WITH LIKELY MALIGNANT TRANSFORMATION

Ms. Y.W. Stacy Cho (Harvard School of Dental Medicine), Dr. Sook-Bin Woo (Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine), Dr. Reshma Menon (Harvard)

Peripheral ameloblastoma (PA) is a rare odontogenic tumor, arising from either the basal cell layer of surface epithelium or dental lamina rests. PA presents as an exophytic growth in the soft tissues overlying tooth-bearing areas, with a predilection for the mandibular premolar region (32.6%). PA, unlike intraosseous ameloblastoma, exhibits innocuous biological behavior and requires only conservative surgical excision. This is a case of PA that presented in lingual gingiva of teeth #27 and 28 in a 17-year-old female with marked cytologic atypia. A periapical radiograph of the quadrant was unremarkable. Histologic examination revealed a basaloid neoplasm adjoined with surface epithelium. The tumor islands had two distinct cell populations. In one, the islands consisted of basaloid cells with overlapping nuclei that were pleomorphic and hyperchromatic, with many mitotic figures. The peripheral cells exhibited slight reverse nuclear polarization while other areas had squamous differentiation. The second population of cells was organized as interlacing narrow cords with small, round, regular nuclei with dispersed chromatin, minimal nuclear crowding and no mitotic activity. These cells were also in continuity with the surface epithelium and transitioned into the first population of atypical cells. The immunohistochemical study for CK 19 was strongly positive within all tumor cells while the studies for Ber-EP4, BCL-2 and smooth muscle actin were negative. The Ki-67 index varied from <1% in the benign-appearing superficial cords of tumor cells to >80% in the hypercellular areas with cytologic atypia. The final diagnosis was that of an atypical PA with marked cytological atypia, suspicious for malignant transformation. Currently, there are three cases of malignant transformation of PA, all of which occurred in males in the 4<sup>th</sup>-8<sup>th</sup> decades and in the maxillary canine-premolar region. Two of the three cases showed no recurrence after a year following excision, similar to our patient.
#21 EXPANDING THE CLINICAL PRESENTATION OF SEGMENTAL ODONTOAXILLARY DYSPHASIA BY REPORTING MANDIBULAR INVOLVEMENT

Dr. Tanya Gibson (University of Missouri - Kansas City), Dr. Ioannis Koutlas (University of Minnesota)

Introduction: Segmental odontomaxillary dysplasia (SOD) was first described by Miles et al (Oral Surg Oral Med Oral Pathol 1987: 445) and its clinicopathologic characteristics further defined by Danforth et al. (Oral Surg Oral Med Oral Pathol 1990:81). Subsequent articles have reported on various cutaneous homolateral lesions and zygomatic involvement as part of the condition. Herein, involvement of the mandible is described to further expand the clinical features of this disorder.

Materials and Methods: An 8-year-old female presented with a two-year history of expansion of the left maxilla and mandible in the area of maxillary and mandibular premolars. A bone biopsy was performed in the mandible. Also, soft tissue biopsy was obtained for molecular evaluation of genes related to overgrowth using next generation sequencing.

Results: A panoramic radiograph revealed congenitally missing left maxillary and mandibular first and second pre- molars and both mandibular canines. All third molars were also congenitally missing. In the area of the contiguous congenitally missing left maxillary and mandibular teeth, ill-defined granular radiopacities highlighting abnormal trabeculation were evident. Biopsy from the mandibular radiodense area revealed woven bone with prominent reversal lines essentially similar to the osseous lesions of SOD. Currently, the soft tissue sample is evaluated for mutations in PIK3CA, AKTI, AKT3, GNAQ, GNA11, MTOR, PIK3R2 and the results will be presented and discussed.

Conclusions: Although most frequently presenting with maxillary involvement, patients with SOD may present wider clinical homolateral manifestations including cutaneous, facial and mandibular lesions. The term segmental odontofaciognathic dysplasia (SOFGD) may be better defining this entity.

#22 A DESTRUCTIVE NASAL CAVITY MASS WITH FEATURES OF GHOST CELL ODONTOGENIC CARCINOMA AND CTNNB1 MUTATION

Dr. Yen Chen Kevin Ko (Stanford University Medical Center), Dr. Koah Vierkoetter (John A Burns School of Medicine, University of Hawaii), Dr. Susan Hsiao (Columbia University), Dr. Helen Fernandes (Columbia University), Dr. Catherine Poh (The University of British Columbia), Dr. Gerald Berry (Stanford University Medical Center)

Ghost cell odontogenic carcinoma (GCOC), defined as an odontogenic carcinoma with ghost-cell aberrant keratinization and destructive growth, is one the rarest of the odontogenic lesions. All reported cases have been intraosseous with approximately 40% of cases confirmed to arise from pre-existing calcifying odontogenic cyst or dentinogenic ghost cell tumor. CTNNB1 mutation has been reported as a common target for the pathogenesis of odontogenic ghost cell tumors. Here, we report a case of sinonasal ghost cell odontogenic carcinoma with CTNNB1 mutation.

The patient is a 44-year-old woman with 3-year history of nasal congestion. A CT scan showed a left nasal cavity mass deforming the medial wall of the left maxillary sinus and opacification of the left maxillary, ethmoid, and frontal sinuses. No intracranial tumor extension or connection to the skull base was identified. An initial nasal biopsy was diagnosed as a poorly differentiated squamous cell carcinoma. The patient subsequently received a left medial maxillectomy. Intraoperatively, the mass was noted to be pushing through the tissues of the nasal bone. No teeth or intraosseous involvement of the maxilla was seen. Histologic sections show nests and sheets of medium sized cells with round to ovoid nuclei, prominent nucleoli, and dense eosinophilic cytoplasm intermixed in a pink amorphous stroma. Frequent abrupt aberrant keratinization morphologically identical to “ghost cells” are noted. The tumor cells are positive for CK5/6, MCK, LEF-1 (nuclear), and beta-catenin (nuclear) but negative for NUT, INSM1, and CD99. The tumor cells have shown CTNNB1 D32Y mutation.

We reported an unusual sinonasal ghost cell odontogenic carcinoma developing from a possible remnant of dental lamina from nasal cavity. This case highlights the rarity of nasal cavity presentation and the importance for clinicians to be familiar with this entity.
#23 THE RARE RADIOGRAPHIC SUNRAY APPEARANCE OF ODONTOGENIC MYXOMAS: A CASE REPORT AND REVIEW OF THE LITERATURE

_Dr. Jamie White (Mount Sinai Hospital), Dr. Naomi Ramer (Mount Sinai Hospital), Dr. Todd Wentland (Mount Sinai Hospital), Dr. Molly Cohen (Mount Sinai Hospital)_

**Introduction:** Odontogenic myxomas often have distinctive radiographic presentations, many of which are well known and have been termed “soap bubble”, “tennis racket”, and “honeycomb” patterns, while others are less common such as “sunray” or “sunburst” patterns. The rare radiographic sunray or sunburst appearance of odontogenic myxomas has been infrequently reported in the literature with only 20 cases reported to date.

**Objective:** The objective of this paper is to report a case of an odontogenic myxoma presenting with a radiographic sunray appearance and present a review of the literature on this uncommon presentation.

**Clinical presentation:** A 34-year-old male presented with mild expansion of the left posterior mandible. A panoramic radiograph displayed a sunray appearance of the lesion. Surgeons included osteosarcoma in their differential diagnosis due to this distinct radiographic appearance. An incisional biopsy was performed and received a diagnosis of odontogenic myxoma.

**Intervention and Outcome:** The patient underwent segmental resection of the mandible and the excisional biopsy confirmed the diagnosis of odontogenic myxoma.

**Conclusion:** Although the radiographic sunray or sunburst appearance is not the most common presentation of odontogenic myxomas, undoubtedly, it is necessary for clinicians and pathologists to be cognizant of it. Very often, the sunray appearance has been associated with a malignant process and prompts a differential diagnosis that gravitates toward malignant entities; therefore, there is value in the awareness that the benign odontogenic myxoma can present in the same manner. 20 cases of odontogenic myxoma in the English literature have presented with this radiographic pattern. To the best of the author’s knowledge, this additional case brings the number of cases reported to 21.

#24 DESMOPLASTIC FIBROBLASTOMA OF THE PALATAL MUCOSA: A RARE INTRAORAL PRESENTATION WITH IMMUNOHISTOCHEMICAL ANALYSIS

_Dr. Aparna Naidu (University of Missouri - Kansas City), Dr. Steven Prstojevich (University of Missouri - Kansas City), Dr. Bruce Barker (University of Missouri - Kansas City)_

**OBJECTIVE:** Desmoplastic fibroblastoma (DF) is a benign, slow-growing, fibroblastic proliferation that was first described by Evans in 1995. DF most commonly affects the subcutaneous tissues of the limbs, back, and neck. Only 9 cases in the oral cavity have been reported thus far in the English literature. The peak incidence of DF is in the fifth and sixth decade. While 80% of cases affect males, females represent 80% of reported cases in the oral cavity. Cytogenetic studies have shown a consistent gene rearrangement at 11q12, resulting in a higher expression of FOSL1 when compared to desmoid-type fibromatoses. Histopathologically, DF often has a well-delineated periphery, and is composed of sparsely distributed, medium to large spindle to stellate-shaped fibroblastic cells, with rare mitoses, interspersed between dense collagen fibers. The proliferating cells usually express reactivity with vimentin and, focally, with smooth muscle actin (SMA), suggesting their myofibroblastic origin. It is questionable whether DF represents a reactive or neoplastic proliferation.

**CLINICAL PRESENTATION:** A 37-year-old female was referred to an oral and maxillofacial surgeon for evaluation of a smooth surfaced soft tissue mass of the midline palate that had been slowly increasing in size for 5 years. The mass was firm to palpation, measuring 4.7 x 3.8 x 2.2 cm in size. Radiographic evaluation and a computerized tomography scan confirmed the mass was contained within soft tissue. An excisional biopsy was performed.

**RESULTS:** Histopathologic examination revealed a well-defined proliferation of stellate shaped fibroblasts in a densely fibrous stroma. Immunohistochemical studies resulted in positivity with vimentin, and focal positivity with SMA. Negative reactivity was seen with CKAE1/3, EMA, S100, desmin, GLUT-1, CD34, SOX-10, Claudin1, p63, and GFAP.

**CONCLUSION:** The histopathologic features and immunohistochemical studies were compatible with a diagnosis of desmoplastic fibroblastoma. Postoperatively, the patient healed adequately and no recurrence was seen at ten months.
#25 FLORID CEMENTO-OSEOUS DYSPLASIA IN CRANIOMETAPHYSEAL DYSPLASIA – FIRST REPORTED CASE

Ms. Makayla Gresham (West Virginia University School of Dentistry), Dr. Jerry Bouquot (West Virginia University School of Dentistry), Dr. Hiba Qari (West Virginia University School of Dentistry)

Background: Craniometaphyseal dysplasia (CMD) is a rare autosomal dominant (5p15.2-p14.1) disorder resulting in progressive hyperostosis and abnormal shaping of craniofacial and long bones secondary to osteoclastic dysfunction. Cemento-osseous dysplasia (COD) has a quite different physiology and presentation.

Objective: To report a CMD patient with a focally expansile mandibular lesion consistent with florid COD and review differences between the two diseases. Methods: A 25 year old African American female, previously diagnosed with CMD (prominent forehead, broad nasal bridge, and ocular hypertelorism) was evaluated for multifocal mandibular radiolucencies inconsistent with CMD. Results: The patient had noticed slow expansion of the facial cortex of her anterior mandible causing tooth mobility and local tenderness. CBCT imaging showed multiple large, well-demarcated, unilocular and multiloculated radiolucencies, some in apical positions, with centrally located, globular radiopacities in several areas. Biopsy of a lesion showed an uninflamed, cellular, fibroblastic stroma with scattered irregular islands of immature bone with occasional osteoblastic activity and few missing osteocytes; focal areas showed globular cementum-like structures with minimal cellularity. A dense fibrous capsule was noted. A diagnosis of florid cemento-osseous dysplasia, unrelated to CMD, was made. Conclusion: We report the first case of florid COD in a patient with a generalized bone dysplasia, in this case CMD. It is important in such cases to assess all radiographic and microscopic features to ensure a correct diagnosis, since COD lesions have a biological behavior which differs from that of CMD and are managed differently. Distinguishing clinical, radiographic and microscopic features are discussed.

#26 MOLECULAR CHARACTERIZATION OF FIBROOSSEOUS LESIONS AFFECTING ORAL AND MAXILLOFACIAL REGION

Dr. Deepika Mishra (All India Institute of Medical Sciences, New Delhi), Dr. Asit Ranjan Mridha (All India Institute of Medical Sciences, New Delhi), Dr. Aanchal Kakkar (All India Institute of Medical Sciences, New Delhi), Dr. Sunny Kala (All India Institute of Medical Sciences, New Delhi), Dr. Rahul Yadav (All India Institute of Medical Sciences, New Delhi), Prof. O.P. Kharbanda (All India Institute of Medical Sciences, New Delhi)

Introduction: Fibro-osseous lesions of the craniofacial complex are a group of developmental bone disorders and neoplasms that share clinical, radiological, and morphological features. Since, the treatment strategies are varied in nature with regard to the wide variety of fibro-osseous lesions, there is need to identify novel specific markers which will contribute to the accuracy of their diagnosis. Hence, the study aims to identify specific immunohistochemical marker, which can improve the accuracy of diagnosis of fibro-osseous lesions.

Materials and Methods: Total of 100 histopathologically diagnosed cases of fibroosseous lesions (25 cases of ossifying fibroma (OF), 25 cases of fibrous dysplasia (FD), 25 cases of osteosarcoma(OS) and 25 cases of fibrous hyperplasia) were collected from the archives of Division of Oral Pathology and Microbiology, CDER and Department of Pathology, AIIMS. Histological sections of these samples were subjected to immunoperoxidase procedures. Immunostaining was performed for the panel of MDM2, CDK4 and BCL2 expression and slides were evaluated. The percentage of positive tumor cell nuclei were evaluated and immunostaining positivity was defined: ≤10, 11–25, 26–50 and >50%.

Results: MDM2 positivity was seen in 47% of osteosarcomas, 11% of OF and 0% of FD. CDK4 positivity was seen in 60% OS, 21% of OF and 9% of FD. BCL2 was seen in 33% OS, 24% of OF and 15% of FD. Controls did not show positivity for any of these markers except for CDK4 positivity in one case.

Conclusions: Present study concludes that MDM2 and CDK4 are better markers than BCL2 in differentiating osteosarcomas from benign fibroosseous lesions like fibrous dysplasia and ossifying fibroma, thus they can be used for improving accuracy of diagnosis of fibro-osseous lesions.
#27 AN ANALYSIS OF UTAH'S MOST COMMON ORAL LESIONS

**Mr. Carter Bruett** (University of Utah School of Dentistry), Dr. Bryan Trump (University of Utah School of Dentistry)

**Introduction:** Data gathered from the inception of a new oral pathology biopsy database located at the University of Utah (the only oral pathology service in Utah) was used to demonstrate the frequency of submitted lesions and the resultant diagnoses. The main objective was to compare the biopsy data of Utah to nationwide reported data. It could be used to guide clinical presumptive diagnoses.

**Materials and Methods:** The database was analyzed by cross-sectional comparison of 4,032 submitted biopsies. These biopsies came largely from Utah, with surrounding states also contributing. Results were compiled relative to age, ethnicity, gender, and biopsy location. Prevalence rates per 1000 were also calculated to help guide clinical presumptions.

**Results:** Fibroma was the most common histopathological diagnosis, followed by hyperkeratosis and then chronic apical periodontitis. Biopsies were most commonly taken from the maxillary alveolar ridge. The contrast between females and males is minor. When compared by age, mucoceles dominate the first two decades of life. This is followed by a rise in dentigerous cysts, which is then followed by a rise in periapical granuloma and fibroma diagnoses. In the last two decades of life, hyperkeratosis, squamous cell carcinoma, and ulcerations become most common.

**Conclusions:** This ebb and flow of pathology tells an interesting story and can be used to help set expectations clinically. Certainly, the prevalence of cancer warrants a thorough head and neck exam that should be conducted at every visit with a patient and, following appropriate clinical guidelines, biopsied for a definitive histopathological diagnosis. Based on patient age, various atypical tissue types should be closely monitored, and vigilance is of the utmost importance. Importantly, clinicians should submit for histopathological analysis any excised tissue to a board certified oral and maxillofacial pathologist in order to receive an accurate histopathologic diagnosis.

#28 ORAL SQUAMOUS CELL CARCINOMA IN FANCONI ANEMIA: REPORT OF FOUR CASES

**Mr. Grayson Cole** (University of Minnesota School of Dentistry), Dr. John Wagner (University of Minnesota Medical School), Dr. Margaret MacMillan (University of Minnesota Medical School), Ms. Karla Olesen (University of Minnesota School of Dentistry), Dr. Shanti Kaimal (University of Minnesota School of Dentistry), Dr. Rajaram Gopalakrishnan (University of Minnesota School of Dentistry)

**Introduction:** Fanconi anemia (FA) is a rare predominantly autosomal recessive condition characterized by progressive bone marrow failure, congenital anomalies, and increased risk of cancer. FA patients have demonstrated a >500 fold increase risk of developing head and neck cancers including oral squamous cell carcinoma (OSCC). These rates increase in FA patients treated by allogeneic hematopoietic cell transplantation (HCT). Risk factors include graft-versus-host disease (GVHD), a common complication that causes immunodeficiency and tissue injury in the oral cavity. The incidence of cancer in such patients is estimated to be >80% by age 50 years with few long-term survivors. The main objective of this study is to describe the clinical presentation and histological characteristics of OSCC lesions in 4 cases that illustrate the diagnostic challenges. **Materials and Methods:** Four FA patients who are seen regularly at the University of Minnesota Medical Center and subsequently developed OSCC were selected. Clinical and histological features of oral lesions were systematically documented over time. **Results:** Two males and 2 females with FA successfully underwent a HCT for severe aplastic anemia (n=3) and advanced myelodysplastic syndrome (n=1). OSCC diagnosis was made 1, 4, 13 and 14 years after transplant. In 3 of 4 cases, abnormal lesions were monitored for a prolonged period of time before SCC was considered. SCCs were found in the sublingual space (n=1), lateral tongue (n=2), and gingiva (n=1). Two had metastatic disease at diagnosis and died rapidly. No patient had evidence of HPV and none had typical OSCC risk factors. **Conclusions:** FA patients develop oral cancer at an extremely high rate and at a much younger age than non FA patients. Lower threshold for biopsy and histological evaluation should be considered. Considering the high incidence, chemoprevention strategies might be considered well before the development of dysplasia.
#29 OVEREXPRESSION OF THE MUTATING ENZYME APOBEC3B CHARACTERIZES THE PROGRESSION OF ORAL CARCINOGENESIS

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**Objectives:** Oral squamous cell carcinoma (OSCC), a subset of head and neck cancer (HNC), is characterized by increased morbidity and poor patient survival. The molecular events causing OSCC remain poorly defined. The DNA cytosine deaminase APOBEC3B causes C-to-T and C-to-G base substitutions and intratumor heterogeneity in multiple human malignancies, including HNC. Global gene expression analyses have associated APOBEC3B over-expression and dysregulation of the RB/E2F cell proliferation pathway. Herein, we aimed to investigate whether APOBEC3B protein levels change during multiple stages of oral carcinogenesis and whether its expression correlates with the proliferation marker Ki67.  

**Methods:** APOBEC3B and Ki67 levels were assessed by immunohistochemistry in serial sections of formalin fixed, paraffin-embedded (FFPE) specimens of oral epithelial hyperplasia (OEH, n=12), low-grade oral epithelial dysplasia (OED, n=20), high-grade OED (n=15), and invasive OSCC (n=38). Immunoreactive proteins were visualized with the Aperio ScanScope XT system and quantified with the Aperio Nuclear Algorithm. APOBEC3B H-score and percentage of Ki67(+) cells were calculated for each specimen. Statistical analysis was performed using non-parametric Kruskal-Wallis test. **Findings:** APOBEC3B nuclear immunopositivity increased during the continuum of oral carcinogenesis; high-grade OED and OSCC showed significantly increased APOBEC3B H-scores compared to low-grade OED (p<0.001 and p<0.01, respectively) and OEH (p<0.0001 and p<0.001, respectively). Overall, stronger APOBEC3B staining was observed at the basal, suprabasal, and bottom spinous layer of the dysplastic epithelium. In OSCC, APOBEC3B staining was heterogeneous among neoplastic cells. As anticipated, Ki67 expression progressively increased from epithelial hyperplasia to high-grade dysplasia (p<0.05) and invasive cancer (p<0.0001). Interestingly, the majority of Ki67(+) cells also stained positive for APOBEC3B. A positive linear correlation is evident between the percentage of Ki67(+) cells and APOBEC3B nuclear H-scores (Pearson r=0.54). **Conclusions:** Levels of the mutating enzyme APOBEC3B increase during advanced stages of oral cancer development and correlate with elevated expression of cellular proliferation markers (Ki67).

#30 EFFECTS OF EXTRACELLULAR MICROVESICLES DERIVED FROM ORAL SQUAMOUS CELL CARCINOMA ON TUMORIGENESIS ASSOCIATED GENE EXPRESSION IN MYOEPIHELIAL CELL CULTURES

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**Introduction:** Carcinoma ex pleomorphic adenoma (CXPA) is a rare malignant salivary gland tumor derived from a pre-existing pleomorphic adenoma (PA). Many factors can be involved during the malignant transformation of PA, such as cytokines and growth factors, produced by both epithelial and myoepithelial cells. A great interest has emerged regarding the mechanism of cell-to-cell communication through extracellular microvesicles (MV). These structures are produced by many different cell types and can modulate cellular activity by induction of epigenetic alterations. Among the biological mechanisms modulated by MV, the tumorigenesis process of different neoplasms has been highlighted in recent studies. In this context, the aim of the present study was to evaluated the effects of MV derived from oral squamous cell carcinoma (OSCC) on the expression of genes associated with tumorigenesis in myoepithelial cell cultures. **Materials and Methods:** For this purpose, MV from OSCC cultures were collected and then myoepithelial cell cultures were exposed to them. Myoepithelial cell cultures not exposed to MV were used as control. After 24 h, the total RNA of myoepithelial cells was extracted and submitted to PCR array analysis. The cutoff for the fold-change in gene expression was 3, and the level of significance was set at 5 %. **Results:** The results indicated that myoepithelial cells exposed to MV from OSCC over-expressed genes involved in proliferation and migration (EREG), cell survival (IL-1A, IL-1B, and SSP1) and immune response (CSFandCXCLI); and under-expressed pro-apoptotic (FGF) genes. **Conclusion:** The results suggested that MV of OSCC can modulate the expression of a group of genes associated with tumorigenesis and, consequently, contribute to the establishment of CXPA.
#31 CELL CYCLE PARAMETERS IN DYSPLASTIC LESIONS OF THE ORAL MUCOSA

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Introduction: Risk assessment of oral potentially malignant disorders (OPMD) using ploidy analysis is based on cell cycle parameters, such as the proportion of cells in G1, S-phase, G2, as well as the percentage of cells with a DNA content beyond G2. Although aneuploidy has been associated with a high risk of malignant transformation, little is known about the contribution of individual cell cycle parameters to the prognosis of OPMD. The aim of this study was to compare the distribution of the aforementioned cell cycle parameters between grades of dysplasia (OED) and carcinoma (SCC). Methods: Nuclei suspensions were enzymatically prepared from formalin-fixed paraffin-embedded tissue and stained with propidium iodide for flow-cytometry. Histograms were analysed for the proportion of nuclei in G1, S-phase, G2 and 5c-exceeding rate (5cER), according to published criteria. Epithelial dysplasia was graded prior to preparing the suspensions and DNA ploidy was established for each OED (none, mild, moderate and severe) as well as SCC (positive control).

Results: A positive correlation was observed between the degree of OED and ploidy, with higher degrees of dysplasia tending to be aneuploid (Spearman r= 0.54, 95%CI 0.35 - 0.68, p <0.0001). Severe dysplasias showed the highest elevations in fractions of S-phase, G2 and 5cER (ANOVA and Tukey tests, p<0.05) when compared to the lesions without dysplasia, which were very similar to SCC (p>0.05). G2 and 5cER were the most relevant parameters, though the highest S-phase fraction was observed in mild and severe OED. Conclusion: Individual cell cycle parameters, especially S-phase fraction, may be able to identify different risk levels between lesions. Follow-up data to establish sensitivity and specificity are currently underway.

#32 ORAL MUCOSAL MELANOMA IN PREDOLESCENT IDENTIFIES LI-FRAUMENI SYNDROME.

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Introduction: Li-Fraumeni Syndrome (LFS) is a rare entity leading to cancer development at a young age with the potential for multiple primary cancers, caused by TP53 mutation. Typically, in children, LFS is characterized by adrenocortical carcinoma, brain tumors, and sarcomas.

Clinical Presentation and Pathology Findings: An 11-year-old female presented with a pigmented right maxillary gingival enlargement. Biopsy showed mucosal melanoma (ovoid to spindled tumor cells, positive for S100, HMB45, MelanA, Ki67 proliferation index=60%). Next generation sequencing (NGS) of tumor (somatic) and peripheral blood mononuclear cells (constitutional) revealed TP53 mutation. Parents sought alternative therapy for oral tumor. Approximately 6 months later, patient returned with intraoral tumor progression and bilateral cervical lymphadenopathy. Right posterior maxillectomy and bilateral lymph node dissection showed primary intraoral melanoma with lymph node metastases. One lymph node showed microscopic focus of metastatic papillary thyroid carcinoma (PTC). A 3cm right thyroid nodule showed PTC on fine needle biopsy. Total thyroidectomy was performed. Oncologic management for melanoma was completed. Left ovarian mass was noted 3 years later with oophorectomy demonstrating melanoma (positive for S100, HMB45, MelanA). Oncologic management was completed. Two years later, a right femur mass was diagnosed as chondroblastic osteosarcoma (COS) on biopsy. Following oncologic management and limb salvage, tumor had a poor histologic response (35% tumor necrosis) and chemotherapy was intensified. Two years later, right lung single 0.5 cm nodule, left femur 0.6 cm intramedullary nodule, and L5 vertebral lamina lesion were identified on radiologic examination. Resection proved to be COS, and the child underwent oncologic management.

Conclusion: Mucosal melanoma is rare in the pediatric population. NGS utility in identifying TP53 somatic and constitutional mutations and in the diagnosis of LFS is demonstrated with the current case. LFS diagnosis allowed for close surveillance and oncologic management of multiple primary and metastatic tumors.
#33 MACROPHAGE MIGRATION INHIBITORY FACTOR (MIF) AS A POTENTIAL ORAL MUCOSITIS BIOMARKER.

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**Introduction:** This study aimed to characterize the salivary proteomic profile of patients treated for oral squamous cell carcinoma (OSCC) and to further correlate it with the risk of developing severe radiation-related oral mucositis (OM). **Material and methods:** 41 OSCC patients submitted to adjuvant radiotherapy (RT) or chemoradiotherapy (CRT) were included in this study. OM and OM-related pain were daily evaluated during RT and graded according to the Common Toxicity Criteria for Adverse Events (NCI, Version 4.0, 2010) and the Visual Analogue Scale (VAS). For the molecular analysis, whole saliva was collected immediately prior to RT and subjected to proteomic by means of liquid chromatography coupled to mass spectrometry (LC-MS/MS) (LTQ Orbitrap Velos MS/Thermo Fisher Scientific, Bremen, Germany) and label-free protein quantification. The results obtained from the targeted proteomic analysis were compared to OM clinical outcomes. Statistical analysis was performed using the Wilcoxon test. **Results:** 58% of the patients were submitted to CRT protocols with a mean RT dose of 66 Gy; 44% of the patients presented grade 2 and 32% presented grade 3 as highest OM grade during RT, with a mean highest reported VAS of 3.53. For the target proteomics analysis, a total of 65 proteins were observed mostly related to biological processes, such as immune responses, peptidase inhibitor activity, and inflammatory system. The Macrophage migration inhibitory factor (MIF HUMAN) was statistically significant when correlated to OM grade. MIF was observed in higher abundance for OM grades 3/4 when compared to grades 1/2 (p=0.04). **Conclusions:** This seems to be the first study to describe MIF as a potential salivary marker of high-grade OM in OSCC patients. Additional future studies are needed to validate these results and to better understand the role of MIF in the pathogenesis of OM.

#34 IS PHOTOBIOMODULATION THERAPY USE FOR PREVENTION AND TREATMENT OF TOXICITIES INDUCED BY CANCER TREATMENT SAFE? A SYSTEMATIC REVIEW.

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**Introduction:** Photobiomodulation therapy (PBMT) also known as low-level laser therapy has been increasingly used for the treatment of toxicities related to cancer treatment. One of the challenges for the universal acceptance of PBMT use in cancer patients is whether or not there is a potential for the light to stimulate the growth of residual malignant cells that evaded oncologic treatment, increasing the risk for tumor recurrences and the development of second primary tumors. Current science suggests promising effects of PBMT in the prevention and treatment of oral mucositis and breast cancer-related lymphedema among other cancer treatment toxicities. Nevertheless, this seems to be the first systematic review to analyze the safety of the use of PBMT for the treatment of cancer-related toxicities. **Material and methods:** This study aimed to evaluate the current literature regarding the safety of PBMT use in the prevention and/or treatment of complications related to antineoplastic therapies. Scopus, MEDLINE/PubMed, and Embase were searched electronically. The protocol for this systematic review was registered in the International Prospective Register of Systematic Review (PROSPERO) database (registration number CRD42018094364) to avoid duplicate publications of systematic reviews and to enable comparison among methods as they are reported in the review protocol. **Results:** A total of 27 articles met the search criteria. Selected studies included the use of PBMT for prevention and treatment of oral mucositis, lymphedema, radiodermatitis, and peripheral neuropathy. Most studies showed that no adverse events were observed with the use of PBMT. **Conclusions:** The results of this systematic review, based on current literature, suggest that the use of PBMT in the prevention and treatment of cancer treatment toxicities does not lead to the development of safety issues.
#35 “RING AROUND THE COLLAR” (CIRCULAR MARGINAL GINGIVAL LEUKOPLAKIA) IS ASSOCIATED WITH PREMALIGNANT AND EARLY MALIGNANT CHANGES

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**Introduction:** Premalignant and malignant lesions of the gingiva frequently present as a white ring or cuff initially involving the crevicular gingival margin of the tooth. This phenomenon is not well-recognized or documented in the literature. The objective of this study is to report a case series of premalignant and malignant lesions presenting as peri-gingival leukoplakic cuffing - “ring around the collar” so as to raise awareness of this phenomenon.

**Materials and Methods:** An IRB approved retrospective search of UF Oral Pathology Biopsy Service, from 1994 – 2018, for diagnoses of premalignant or malignant lesions of the gingiva that had accompanying clinical images was performed. Inclusion criteria comprised of cases (a) with premalignant or malignant diagnosis, and (b) exhibiting clinical presentation of peri-gingival cuffing. Cases that lacked accompanying clinical image were excluded.

**Results:** A total of 18 cases involving the marginal gingiva, especially the buccal aspect, were included. Patient age ranged from 46 years to 90 years, with equal distribution between males and females. Duration of the lesions varied from a few months to 10 years. A large majority of the cases presented as asymptomatic lesions, with 2 patients reporting tenderness or soreness in the area. All lesions clinically presented as a distinct thick white peri-gingival cuff on band around the cervical collar of involved teeth. Three patients had recurrent lesions. The surgeon’s clinical impression included: benign traumatic lesion, hyperkeratosis, leukoplakia, verrucous carcinoma and squamous cell carcinoma. The histologic diagnoses ranged from verruco-papillary hyperkeratosis (VPHK), atypical verrucoid epithelial proliferation, with or without dysplasia, to verrucous carcinoma.

**Conclusion:** This study aims to raise awareness that peri-gingival leukoplakic cuffing - “ring around the collar” phenomenon may be a clinical warning sign of premalignant or early malignant lesions of the gingiva. Because of their asymptomatic nature, biopsy and close clinical follow-up are necessary.

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#36 ERP57 EXPRESSION IN LOCAL ADVANCED LARYNGEAL CELL CARCINOMA

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**Introduction:** Laryngeal Squamous Cell Carcinoma (LSCC) is a malignant neoplasm with high morbidity and mortality, which often proceeds silently to advanced stages. As a consequence, there exist diverse therapeutic protocols with different results and effectiveness; currently there are no predictive biomarkers which could help to guide these therapeutic protocols. ERp57 has been recently associated with the more aggressive biological behavior of some cancers. Here, we explore ERp57 expression on advanced LSCC.

**Materials and Methods:** Analytical cross-sectional study approved by Centro Médico Nacional de Occidente (R- 2018-1301-47) and Universidad de Guadalajara (CI-00819) on patients older than 18 years with diagnosis of primary LSCC, selected by a consecutive non-probabilistic sampling. We retrieved 16 cases of stage III and IV LSCC over a period of six years (2010-2016). Clinicopathological data collected included: gender, age, laryngeal site, smoking history, and treatment modality. On histological sections from laryngectomies; immunohistochemistry to detect ERp57 was performed. The expression was subjectively evaluated by three specialists: two in Surgical Pathology and one in Oral Pathology in an independent, calibrated, and blind manner.

**Results:** 94% of the cases were men, with an average age of 60 (SD ± 9 years). The transglottic extension was the most frequent presentation (88%), and 2, 7 and 7 cases were well, moderately and poorly differentiated, respectively. 7 cases presented an intense/high smoking index. ERp57 was positive in 11 cases (7+, 4++); however, no correlation was identified with clinical variables analyzed and ERp57 level expression (Chi square and Fischer’s exact tests).

**Conclusions:** Although no association could be identified in this study, there is evidence in the literature that supports ERp57 as a potential biomarker. The number of cases in this work should be increased, in order to either establish an accurate relationship or discount one.
#37 EFFECT OF FOUR CARDIAC HORMONES ON ORAL SQUAMOUS CELL CARCINOMA PROLIFERATION

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Introduction: In addition to its vascular efforts, the human heart is a refined endocrine gland, synthesizing four naturitic peptide hormones: long-acting natriuretic peptide (LANP), vessel dilator (VDL), kaliuretic peptide (KP) and atrial natriuretic peptide (ANP), via the ANP gene. These cardiac hormones are known for blood pressure regulation and maintenance of plasma volume in animals and humans. They have also shown ability to control the growth of several solid tumors including human pancreatic adenocarcinoma, human breast cancers, and small-cell lung cancer, in vitro and in vivo. The growth-regulatory properties of ANP peptide hormones have been studied in vitro and in vivo and are suggested to have broad anti-cancer effects.

Materials and Methods: Dose-dependent experiments were carried out using two oral squamous cell carcinoma (OSCC) cell lines (SCC9 and SCC25). Triplicates of each cell line were seeded in 96-well plates, allowed to attach for 24h, starved overnight and then treated with the four hormones at concentrations of 1μM, 10μM, 100μM and 1000μM. Proliferation assay, using MTS, was performed at an incubation time of 24h in order to determine the effect of each peptide on the OSCC cells.

Results: For all tested hormones, 1,000μM was the most effective concentration. Results showed that VD, LANP, KP and ANP were able to reduce, respectively, 42%, 48%, 34% and 53% of SCC9 cells and 36%, 41%, 27% and 33% of SCC25 cells, compared to untreated cell lines.

Conclusions: All four tested cardiac hormones were able to control proliferation of OSCC cell lines. Future experiments are ongoing to assess the effect of these cardiac hormones on apoptosis and cell cycle in order to provide more insight about their mechanisms of action and possible use as therapeutic agents in OSCC.

#38 MINOR SALIVARY GLAND SECRETORY CARCINOMA. A CASE REPORT

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Objective: To present the case of a minor salivary gland origin secretory carcinoma with heterogeneous histological pattern and review of the literature.

Case report: We report the case of 33 YO male patient with a nodule in the upper labial mucosa on the right side; in the macroscopic study, a solid tumor was observed with small cystic areas covered by mucosa. The histologic analysis revealed a heterogeneous proliferation of polygonal cells with moderate and granular cytoplasm, the formation of cystic spaces with pseudopapillary projections was predominantly filled with eosinophilic-protein content; nodular-solid areas and pseudotubular structures was observed. A comprehensive panel of immunohistochemistry reactions was performed only with significant positivity for S-100 protein and mammaglobin; the tumor sent for molecular studies.

Discussion: The secretory carcinoma (SC) of the salivary gland origin is a rare entity that frequently affects the major salivary glands. These tumors have a higher incidence in the fifth decade of life, and similar distribution among men and women. The cases reported in minor salivary glands is uncommon, furthermore, the histologic appearance is similar to the mammary secretory carcinoma, the immunophenotype corresponds to positivity for mammaglobin, S-100 protein, STAT3α and GCDFP-15 markers, with negative reaction to DOG-1; molecularly the SC harbors a recurrent translocation t (12; 15) (p13; q.25) which results in fusion of the ETV6 gene.

Conclusion: The SC is a low-malignant cancer of the salivary glands; this neoplasm have histologic similarities with the acinic cell carcinoma because its variety in histologic patterns and cytologic features, the morphologic appearance in addition with the immunohistochemical analyses is necessary to confirm the diagnosis of SC. When the morphologic and immunophenotype are unspecific, molecular studies are necessary to confirm the translocation.
#39 PRIMARY INTESTINAL-LIKE ADENOCARCINOMA OF THE MINOR SALIVARY GLANDS: CLINICOPATHOLOGIC AND IMMUNOHISTOCHEMICAL CHARACTERISTICS OF 2 CASES

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Objective: Intestinal (colonic)-like adenocarcinoma (ILAC) of salivary gland (SG) origin represents a rare type of salivary gland tumor with remarkable histopathologic similarity to intestinal-type adenocarcinoma of the sinonasal tract and base of the tongue with examples reported in the major salivary glands. Immunohistochemically, intestinal-type adenocarcinoma features strong positivity for CK20, CDX-2 and variable reactivity for CK7, whereas ILAC is CK7(+), CDX-2 and CK20 negative. We report two ILACs affecting intraoral minor SGs.

Findings: Case 1: A 79-year-old male presented with a 1.2-cm submucosal mass of the right posterior buccal mucosa. Histopathologically, the neoplastic cells were high columnar or cuboidal, characterized by large nuclei with prominent nucleoli, nuclear pleomorphism and rare mitoses, and formed cystic or cribriform structures. Case 2: A 60-year-old male presented with a firm, asymptomatic, deep submucosal, nodular lesion of left upper lip, measuring 1.5x1.0 cm. Microscopic examination revealed a cyst-like space lined by columnar, intestinal-type, epithelium. Mucinous differentiation was also seen. The neoplastic epithelium demonstrated intraluminal papillary folds. Neoplastic cells featured cellular pleomorphism with hyperchromatic enlarged nuclei and prominent nucleoli. Both patients did not have history of colonic adenocarcinoma. By immunohistochemistry, both cases of ILAC were strongly and diffusely positive for CK7, β-catenin and e-cadherin, focally or rarely positive for CK5/6, CK8/18 (in areas with apocrine features), and negative for CDX-2, CK20, EMA (MUC-1), S100, calponin, α-SMA, p40, mammaglobin, TTF-1, CD34 and mitochondria. Interestingly, notwithstanding the absence of nuclear staining, fine and granular CDX-2 paranuclear staining was noticed in one case. Ki67 nuclear index was 15% for the first case and 30% for the second.

Conclusions: ILAC is a rare type of salivary gland neoplasm exhibiting intestinal features, prominent nuclear pleomorphism and increased proliferation rates mimicking high-grade intestinal-type adenocarcinomas of the head and neck. Ancillary CDX-2, CK20 and CK7 immunostains can aid in the diagnosis.

#40 CANALICULAR ADENOMA WITH A UNICYSTIC MORPHOLOGY. REPORT OF A RARE CASE AND REVIEW OF THE LITERATURE.

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Objectives: Canalicular adenoma (CA) represents a benign salivary gland tumor, which usually appears as a slowly growing submucosal nodule with a clear predilection for the upper lip. Histopathologically, it is typically characterized by monomorphic cuboidal or columnar cells, forming anastomosing or beading structures arranged in a highly vascular, loose stroma. However, peculiar histopathologic findings and significant overlap with other similar entities, such as basal cell adenoma (BCA), may be observed complicating the diagnostic process. Herein, we present a rare case of CA with histopathologic similarities to BCA, exhibiting a solitary cystic morphology. Also, the literature on unicystic CA is reviewed.

Findings: A 74-year-old female patient with unremarkable medical history presented for evaluation of a painless mass on the upper lip. The clinical examination revealed a soft, fluctuant submucosal nodule, covered by normal appearing mucosa. With a provisional diagnosis of benign salivary gland tumor, excisional biopsy was performed. Histopathologic examination demonstrated an encapsulated solitary cystic formation, lined by monotonous basaloid or cuboidal cells, arranged in solid or trabecular patterns. Differential diagnosis included BCA or unicystic CA and immunohistochemical positivity for S-100, CD117 and CK7, as well as negativity for GFAP, SMA and p63, was noted. A final diagnosis of unicystic CA was rendered, which, to our knowledge represents only the 11th case reported to this date.

Conclusions: Cystic morphology has been described in various benign or malignant salivary gland tumors and is associated with clinical aspects, as well as the biologic behavior of certain neoplasms. Regarding CA, the presence of multiple cystic spaces has been observed in several cases; however, the occurrence of a true unicystic lesion is considered extremely rare.
#41 SECRETORY CARCINOMA OF THE MINORSALIVARY GLAND IN A 9-YEAR-OLD: REPORT OF A CASE

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**Introduction:** Secretory carcinoma (SC), previously known as mammary analog secretory carcinoma of the salivary glands, is a recent addition to the WHO Classification of Head and Neck Tumors and is a distinct salivary gland malignancy characterized by a morphological resemblance to mammary secretory carcinoma of the breast and an \textit{ETV6-NTRK3} gene fusion. SC typically presents in adults (mean patient age of 46.5 years, range: 10-86 years) as a painless, slow growing mass, with an equal sex distribution. The most common site of occurrence is the parotid gland, followed by the minor salivary glands, and submandibular gland. **Case Report:** A firm movable nodule adjacent to the first molar was noted in the left mandibular bucal vestibule of a nine-year-old male. The clinical differential diagnosis included mucocele, mucous retention cyst and salivary gland tumor. Microscopic examination revealed a non-encapsulated tumor composed of medium-sized, round-to-polygonal cells with moderate amounts of pale, eosinophilic, bubbly cytoplasm arranged in solid, microcystic, macrocystic, tubular, and focally papillary growth patterns. S-100, mammaglobin, and SOX-10 stains were positive, supporting a diagnosis of SC.  

**Conclusions:** The histological differential diagnosis of SC includes acinic cell carcinoma, low-grade cribriform salivary duct carcinoma, and mucoepidermoid carcinoma. Acinic cell carcinoma is negative for S-100 and mammaglobin. Low-grade cribriform salivary duct carcinoma, like SC, is positive for S-100 and mammaglobin, but is an intraductal tumor. Mucoepidermoid carcinoma contains epidermoid and mucous cells, but is S-100 negative and positive for \textit{MECT1/3-MAML2}. All entities on the histological differential, other than SC, are negative for \textit{ETV6-NTRK} gene fusion. This case highlights SC occurring in a pediatric patient.

#42 PLASMACYTOID MYOEPITHELIOMA OF THE HARD PALATE: TWO CASES

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**Background:** Myoepitheliomas are benign salivary gland tumors that comprise approximately 1-1.5% of all salivary gland tumors. These tumors commonly involve the parotid glands or the minor salivary glands of the palate. There are no known age or gender predilections noted with myoepitheliomas and the risk factors are poorly understood. Over the past twenty years, the Diagnostic Pathology Laboratory at New York University College of Dentistry (NYUCD) has signed out 27,416 cases, with 28 cases of benign salivary gland tumors and 45 cases of malignant salivary gland tumors. Two cases of myoepitheliomas were identified, a localized prevalence of 2.73% of all salivary gland tumors at NYUCD.  

**Cases:** The first case of plasmacytoid myoepithelioma from 2015 was in a 79-year-old African-American male, and the second case from 2018 was in a 63-year-old African-American female. The tumor locations for both cases were on the hard palate, with the 2015 case being left of the midline and the 2018 case being right of the midline. Both myoepitheliomas were of the plasmacytoid subtype, a rare form. The microscopic features shared for both tumors included collections of plasmacytoid myoepithelial cells supported with a markedly myxoid stroma and adipose tissue. The microscopic description from the 2015 case noted a localized area of salivary gland ductal structures (less than 5% is acceptable for the diagnosis of myoepithelioma). The description from the 2018 case noted no ductal structures and focal atypia including enlarged nuclei and pleomorphism. The tumors were excised in both patients and there has been no report of recurrence throughout their follow-up.  

**Conclusion:** It is important for clinicians to be aware of the myoepithelioma as a variant of a benign salivary gland tumor. Due to their rarity, additional investigation is required to document their clinical, histological and immunological features.
#43 RENAL CELL CARCINOMA METASTASIS TO THE PAROTID GLAND.

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**Introduction:** Renal cell carcinoma [RCC] is the most common kidney malignancy in adults, representing 3% of malignancies. The clear cell variant comprises up to 70% of all RCCs. The tumor often exhibits an unpredictable behavior. While approximately 20-30% of patients present with evidence of metastasis at initial diagnosis, late metastasis-up to 20 years following curative nephrectomy- is also well documented. We report an example of late metastasis of a clear cell RCC to the parotid gland 11 years following initial diagnosis and management.

**Materials & Methods:** A 52 year old female presented with a complaint of 4 month history of an asymptomatic left parotid swelling. Review of his medical history revealed a previous diagnosis of clear cell RCC that was managed with total nephrectomy 11 years prior. A CT scan with contrast delineated an irregular, enhancing 1.2x0.9 cm mass within the left parotid gland. The mass was excised and demonstrated CD10, RCC and PAX-2-positive malignant epithelial cells with clear cytoplasm and an admixture of compact-alveolar (nested) and acinar growth patterns in an intricate, arborizing vascular background.

**Discussion:** It has been reported that 40% to 50% of RCC exhibit distant metastasis. The most common metastatic sites include lung, regional lymph nodes, liver and bone. Between 14- 16% of RCC patients may develop supraclavicular metastases, including to thyroid, cervical lymph nodes, paranasal sinuses, tongue, mandible, facial muscles, larynx and the salivary glands. We describe the clinicopathologic and radiographic features of a metastatic clear cell RCC to the parotid gland.

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#44 REFLECTANCE MEASUREMENTS OF GOLD NANORODS BIO-CONJUGATED TO ANTI-EGFR MONOCLONAL ANTIBODY DISCRIMINATE BENIGN FROM MALIGNANT SALIVARY GLAND TUMORS

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**Objective.** Epidermal growth factor receptor (EGFR) has been found to be dysregulated in malignant salivary gland tumors (MSGT) and can be served as an ideal target for nanoparticle-based contrast agents using gold nanoparticles (GNPs) bio-conjugated to anti-EGFR monoclonal antibodies. We aimed at evaluating the detection sensitivity of reflection measurements of gold nanorods (GNRs) bio-conjugated to anti-epidermal growth factor receptor (GNRs-EGFR) monoclonal antibodies in discriminating benign from MSGT.

**Methods.** Tissue sections of 20 cases of MSGT and 10 cases of benign tumors were incubated with GNRs-EGFR and the reflectance spectrum was measured using hyperspectral microscopy.

**Results.** Reflectance intensity was significantly higher in cases of MSGT compare with those of pleomorphic adenoma. Add numbers.

**Conclusion.** The GNRs reflection measurements were able to discriminate benign from MSGT suggesting an objective, non-technique-sensitive method that is not dependent on the qualification of a technician and with fewer interpretation errors in comparison to what.
#45 A CASE OF A RECTAL NEUROENDOCRINE CARCINOMA METASTASIZING TO THE PAROTID GLAND
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We report a case of a neuroendocrine carcinoma of the rectum that metastasized to the parotid gland of a 48-year-old male. The patient presented with a parotid mass. The patient had a history of squamous cell carcinoma of the forehead, a neoplasm of uncertain behavior of the head of the pancreas, and a neuroendocrine carcinoma of the rectum. Attempts were made to obtain the slides for the rectal neuroendocrine carcinoma without success. The parotid tumor was divided into lobules by fibrous connective tissue bands. The neoplastic cells were predominantly polyhedral with abundant eosinophilic cytoplasm, often plasmacytoid in appearance. The nuclei ranged from small hyperchromatic and pyknotic to more vesicular. Stains for chromogranin, creatinine kinase, muscle (MCK), insulinoma-associated protein 1 (INSM1), S100, and synaptophysin were positive. Alpha-1 antitrypsin (A1AT), cytokeratin (CK) 7, melanoma antigen (melanA), tumor protein 63 (p63), smooth muscle actin (SMA), and smooth muscle myosin (SMM) stained negatively. There was a low Ki-67 proliferative index of approximately 5%. The report of the rectal neuroendocrine adenocarcinoma showed that the tumor cells were positive for Cytokeratin (CK) AE1/AE3 and synaptophysin and had patchy positive staining for prostatic acid phosphatase (PSAP). Staining was negative for CK7, CK20, Caudal Type Homeobox Type 2 (CDX2), thyroid transcription factor 1 (TTF-1), chromogranin, prostate specific antigen (PSA), and Prostate-specific membrane antigen (PSMA). The Ki-67 was reported as low. The diagnostic challenges of this rare metastatic neuroendocrine carcinoma will be presented as well as a discussion of primary versus metastatic neuroendocrine carcinomas of the parotid.

#46 DIATOM-ASSOCIATED FOREIGN-BODY REACTION MIMICKING AN INFLAMMATORY ODONTOGENIC LESION: A REPORT OF TWO CASES
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Foreign body reactions in the oral cavity are common and are often the result of exogenous material introduced following either iatrogenic or traumatic injury provoking a distinctive immune response. To the best of our knowledge we describe the first two cases of a granulomatous foreign-body reaction to diatoms, single-celled algae belonging to the taxonomic phylum Bacillaraphyta, involving the jaws. In both instances the clinical presentation mimicked a lesion of inflammatory odontogenic etiology. The morphologic features of diatoms and a comprehensive literature review are provided. The diagnosis of a diatom-associated foreign body reaction necessitates familiarization with the histopathologic features, a sufficient degree of suspicion, and clinicopathologic correlation.
Intraneural Perineurioma of the Mandible: A Case Report

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Perineuriomas are neural lesions that rarely occur in the oral cavity. Once considered reactive, a neoplastic process is favored now based on the finding of cytogenetic abnormalities involving chromosome 22 and other sites. Depending on the presentation of the lesions, they are classified as either intraneural (developing within nerves) or extraneural. Overall, in the oral cavity, only 22 cases of extraneural and 17 cases of intraneural perineuriomas have been reported in the literature. To our knowledge, we present only the fifth reported case of intraosseous, intraneural perineurioma presenting within the jawbones, and all in the mandible. A 71-year-old male patient complaining of right-sided paresthesia presented with a large, well-circumscribed, unicocular radiolucent lesion involving the posterior right mandible. There was also evidence of mild regional root resorption. An incisional biopsy was performed and the specimen was submitted for microscopic evaluation. The sections revealed a relatively well-circumscribed mass composed of short, interlacing fascicles and whorls of spindle cells with serpentine- and fusiform-shaped nuclei with inconspicuous cytoplasm. Large nerve bundles were noted mostly at the periphery of the tumor. Immunohistochemical studies revealed strong and diffuse reactivity of the lesional cells with epithelial membrane antigen and scattered positivity for S100, compatible with the profile of perineurial cells. The lesional cells also showed positivity for CD163, SSTR2, STAT6, CD34, β-catenin and muscle markers were either negative or stained only appropriate internal controls, thereby ruling out potential mimics such as neurofibroma, schwannoma, extracranial meningioma, solitary fibrous tumor, desmoplastic fibroma, and myofibroma. Based on the cumulative findings, a final diagnosis of perineurioma was rendered. A recommendation was made to have the residual tumor completely excised. As the case is relatively recent, follow-up has been limited but the patient has had no apparent complaints.

Mesenchymal Chondrosarcoma of the Maxilla with HEY1-NCOA2 Fusion

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Introduction: Mesenchymal chondrosarcoma (MC) represents up to 10% of all chondrosarcomas. It may involve craniofacial bones including the jaws as well as soft tissues in the head and neck region. MC presents with pain and swelling as a poorly demarcated lytic lesion with calcifications. MC is characterized by small, round to ovoid cells with malignant chondroid. MC tumor-defining fusion (HEY1-NCOA2) has been identified recently.

Clinical Presentation and Pathology Findings: A 15 year-old female presented with progressive left posterior maxillary swelling of 4 months’ duration. Her general dentist prescribed antibiotics for suspected infection associated with prior tooth extraction. With no improvement, a biopsy was performed that demonstrated ovoid to slightly spindled malignant cells, focal hemangiopericytoma-like areas, and focal malignant chondroid. Tumor cells immuno-histochemical profile showed: diffuse NKX2.2 (nuclear), diffuse SOX9 (nuclear), diffuse S100 (nuclear), retained INI-1 (nuclear, tumor and non-tumor cells), infrequent to rare MyoD1 (nuclear), rare Desmin (cytoplasmic), and rare Myogenin (nuclear). Tumor cells were negative for Pancytokeratin (AE1/AE3), TLE1 and CD99. Based upon histopathological features and immunoprofile, a diagnosis of MC was rendered. Tumor fusion panel identified HEY1- NCOA2 fusion, further confirming MC diagnosis. Oncologic management consisted of ifosfamide and doxorubicin, followed by left posterior hemimaxillectomy with radiation therapy 2 months after diagnosis. No significant clinical or histopathologic response occurred. Patient is disease free 10 months following initial diagnosis.

Conclusion: MC tends to be an aggressive malignancy with a protracted, relentless clinical course and distant metastases that may occur even after 2 decades, necessitating long-term follow-up. Jaw MCs have more indolent behavior with survival of 80% at 5 years and 55% at 10 years, compared with survival of 50% at 5 years and 25% at 10 years for MCs at other sites. Children, adolescents and young adults also tend to have better prognosis.
49 CLINICOPATHOLOGICAL FEATURES AND PREVALENCE OF ORAL SOFT TISSUE SARCOMAS: A SINGLE-CENTER EXPERIENCE OF 80 CASES

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Introduction: Sarcomas are rare malignant and usually aggressive neoplasms that rarely involve the soft oral tissues. They are solid tumors of mesenchymal cell origin and exhibit a variety of clinical and pathologic characteristics. They correspond to less than 1% of all oral cancers and comprise only around 10% of all sarcomas of the body. However, it is known that rhabdomyosarcomas are more frequent in the head and neck region than in any other part of the body. Objective: the aim of the present study was to analyze the prevalence and clinicopathological features of soft tissue sarcomas. Patients and methods: Data of the patients and of their tumors were obtained from the records of the histopathological diagnosis requirement and included patient data (sex, age, and race) and tumor data (site, clinical aspect, size, time of evolution). Cases of bone and cartilage sarcomas were excluded. Results: One-hundred and ninety-five cases diagnosed as sarcomas were retrieved from a total of 54,561 biopsies between January/2002 and December/2018 of which 80 cases were soft tissue oral sarcomas. All hematoxylin-eosin stained slides were reviewed for all cases. Male patients were the most affected (60%) and white patients comprised 46.25%. The mean age was 35 years (range: 1-86). The palate was the most common site (27.5%), followed by gingiva (13.75%), buccal mucosa (11.25%), tongue (10%), upper and lower alveolar ridge (7.5%). Clinical presentation varied among a nodule or solid mass (35%), ulcer (5%) and a color change (3.75%) and lesions were asymptomatic in 23.75% of the cases. Kaposi sarcoma, rhabdomyosarcoma, leiomyosarcoma and liposarcoma made up 70% of the cases with 84.61% diagnosed as Kaposi Sarcoma. Conclusions: Oral soft tissue sarcomas are rare lesions representing only <1% of all oral lesions diagnosed in the studied period. Kaposi sarcoma was the most frequent followed by rhabdomyosarcoma and leiomyosarcoma.

#50 SOLITARY FIBROUS TUMOR IN FLOOR-OF-MOUTH: A CASE REPORT AND REVIEW OF LITERATURE

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Objective: Solitary fibrous tumors (SFTs) are rare proliferations of mesenchymal derivation which may develop in the oral cavity, but seldom present in the floor of mouth. The goal of this case study is to report and review the literature regarding the rare appearance and surgical management of an SFT occurring in the floor of mouth with lingual frenum involvement.

Methods: An Electronic PubMed search of the English language literature was performed using keywords “solitary fibrous tumor” AND “floor of the mouth”, “oral cavity”. References were selected from systematic reviews, reviews, and case reports. Eleven cases satisfied the selection criteria.

Results: A 76-year old male patient was referred to the OMFS Department due to an exophytic tissue formation interfering with his prosthetic rehabilitation. The lesion spontaneously appeared approximately 3 years ago without a history of trauma and has been gradually increasing in size over the past 3 months. The painless, mobile and spherical- shaped mass was located in the midline of the anterior mandible between a prominent lingual frenum and the alveolar ridge. The lesion was covered with normal non-ulcerated mucosa. An excisional biopsy along with a frenectomy was performed. Based on histopathological and immunohistochemical evaluation, a final diagnosis of SFT was established.

Conclusion: SFT with involvement of the midline lingual frenum has rarely been reported in the literature. An immunohisto-chemical examination is essential for the definitive diagnosis of this pathological entity. Excisional biopsy is the curative treatment of choice. Recurrence rates are extremely low for oral cases of SFT.
#51 ORAL LYMPHOMATOID PAPULOSIS: REPORT OF A CASE

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Introduction: Lymphomatoid papulosis (LyP) is one of the three primary cutaneous CD30+ T-cell lymphoproliferative disorders. This group also includes primary cutaneous anaplastic large cell lymphoma (PC-ALCL) and borderline CD30+ lesions. Differentiation between these disorders may be difficult due to overlapping clinical and histologic features. LyP is characterized by chronic, recurrent, papulonodular lesions of cutaneous surfaces, which spontaneously regress. Oral involvement of LyP is uncommon, but well-documented, and is a diagnostic challenge. Case Report: A 59-year-old Caucasian female with a history of spontaneously resolving papulonodular cutaneous lesions, presented with an extensive ulceration of the right anterior palatal mucosa. At a two week re-evaluation, no resolution was noted, necessitating an incisional biopsy. Histologic examination revealed ulcerated and intact mucosa with an underlying proliferation of large, atypical lymphocytes in a perivascular pattern. Marked stromal eosinophilia with an admixture of neutrophils was also observed. Neoplastic cells were positive for CD2, CD3, CD4, CD5 (partial), and CD30. Molecular studies showed a clonal T-cell population. A diagnosis of LyP was established pending resolution of the lesion. Gradual improvement occurred over a two month period supporting the diagnosis of LyP.

Conclusions: LyP, PC-ALCL and borderline CD30+ lesions represent a continuous spectrum of lesions that may not be clearly defined by clinical or histologic appearance. The differential diagnosis of oral LyP also includes secondary lesions of systemic ALCL, mycosis fungoides, angiolymphoid hyperplasia with eosinophilia, and atypical histiocytic granuloma. The prognosis of LyP is excellent, however, patients require long-term follow up due to increased risk of developing a cutaneous or nodal lymphoid malignancy, including cutaneous or nodal ALCL, mycosis fungoides and Hodgkin lymphoma.

#52 A CD30+ ATYPICAL LYMPHOPROLIFERATIVE LESION OF THE ORAL MUCOSA ASSOCIATED WITH FINGOLIMOD TREATMENT.

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Introduction: Fingolimod is an antagonist of sphingosine-1-phosphate type 1 receptor and prescribed for multiple sclerosis (MS). Recently, primary cutaneous CD30+ lymphoproliferative disorders (anaplastic large cell lymphoma and lymphomatoid papulosis) have been reported as a rare side effect of fingolimod use. Microscopic and immunohistochemical preparations of an incisional biopsy of a rapidly growing ulcerated proliferative lesion on the right maxillary vestibule in a 55 year old female were reviewed. A comprehensive medical history was also obtained.

Results: The patient presented with a 22-year history of MS. She has been treated with oral fingolimod (FTY720) for the last 2 years. Besides the oral lesion there were no other lesions. There was no prior history of malignancy. Microscopically the ulcerated lesion revealed proliferation of large cells with abundant eosinophils, giant cells and irregular vesicular nuclei with angiocentric arrangement and insinuating in between skeletal muscle. Abundant eosinophilic were present and necrosis was noted. Immunohistochemically, lesional cells were T-cells decorated by CD2, CD3, CD4, CD5, CD8, CD30 and CD45. Lesional T-cells showed partial loss of CD7 expression. Lastly, the cells were negative for EBER. Clonal T-cell rearrangement was confirmed by molecular studies. The rendered diagnosis was CD30+ lymphoproliferative disorder probably related to oral fingolimod use. The lesion regressed spontaneously without discontinuation of fingolimod. Conclusions: a) We report, to the best of our knowledge, the first intraoral case of mucosal CD30+ lymphoproliferative disorder associated with fingolimod. b) Contrary to reports of cutaneous lesions associated with the use of fingolimod, in our case spontaneous regression without discontinuation of the medication.
CD30-POSITIVE T-CELL LYMPHOPROLIFERATIVE DISORDER: A CHALLENGING DIAGNOSIS OF A COMPLEX ENTITY

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CD30-positive lymphoproliferative disorder is an enigmatic entity that consists of a spectrum of pathologic processes that span from self-healing mucocutaneous nodular ulcerations to lymphoma. Combined clinical, histopathological, and molecular features are necessary to further subclassify this disease process. We report a case of a 49 year-old Caucasian male who presented with recent onset of oral mucosal ulcerations. Clinical examination revealed multiple large indurated ulcers affecting the tongue as well as buccal and labial mucosal surfaces. The patient’s medical history was significant for type II diabetes, hypertension, hypercholesterolemia; and the patient admitted to tobacco, alcohol, and marijuana use. Incisional biopsies were taken from the lower labial mucosa and ventral tongue. The histologic findings revealed ulcerative lesions with an atypical inflammatory cell infiltrate consisting of clusters of large cells, occasional mitoses, and infiltration deeper within the skeletal muscle. Special stains for AFB and PAS, along with immunohistochemical studies for CD30 as well as in-situ hybridization (ISH) for EBER were performed. AFB and GMS revealed no evidence of causative organisms, and EBER ISH was negative within the inflammatory cell population. However, CD30 was positive in the large atypical cells. Therefore, a hematopathology consult was requested and the case was subsequently referred to the National Cancer Institute for further classification. Further immunohistochemical studies revealed that the atypical cells were positive for CD2, CD3, CD4, CD5, CD30, TIA1, Granzyme B, and Perforin. Additionally, molecular analysis for T-cell receptor gene rearrangements were performed and revealed a significant clonal T-cell population. A final diagnosis of CD30-positive T-cell lymphoproliferative disorder was rendered. The patient was referred to a medical oncologist for further evaluation. Interestingly, all of the lesions showed evidence of healing during the patient’s post-operative visits, without initiation of therapy. Herein, we discuss CD30-positive T-cell lymphoproliferative disorder, the diseases it encompasses, their histopathologic features, and their prognoses.

EXTRANODAL PALATAL MANIFESTATION OF A FOLLICULAR LYMPHOMA: A CASE REPORT

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Background: Follicular lymphoma (FL) is a low-grade subtype of Non-Hodgkin’s lymphoma (NHL), making up approximately 20% of all lymphomas. Follicular lymphomas predominantly affect adults and are named for the follicular growth pattern of the cells. While FL is an indolent variant of non-Hodgkin’s lymphoma, transformation into a more aggressive, high-grade subtype, typically diffuse large B-cell lymphoma (DLBCL), is seen in approximately 30% of cases. As with most cancers, FL may be assigned a grade of 1, 2, or 3 based on the number of centroblasts identified under the microscope at highest power. FL most commonly involves the lymph nodes, with presentation in the oral cavity being rare. When present in the soft tissues of the oral cavity, lesions typically occur on the hard palate, soft palate, tongue, buccal mucosa, and gingiva. Current treatment options, depending on the grade, include: immunomodulators, immunotherapy with or without chemotherapy, and involved-site radiation therapy.

Case: An 89-year-old male presented to his oral surgeon with a right palatal swelling measuring 3.5 x 3.0 cm. The patient reported this swelling to be present for greater than five months and had been told previously by an ENT that “it’s not cancer”. The lesion was firm to palpation. Upon obtaining a CBCT, no bone lysis was noted, confirming the lesion was confined to the soft tissue. Scalpel biopsy results confirmed the diagnosis to be follicular lymphoma, follicular pattern, grade 1-2 of 3.

Conclusion: This case emphasizes the need for proper diagnosis including medical history and appropriate biopsy techniques. Since follicular lymphoma has a risk of transformation into more aggressive types of lymphomas, early diagnosis is imperative. Clinicians should be aware of the various extranodal presentations of lymphomas and unusual lesions and swellings should not be ignored/prematurely dismissed.
#55 ANGIOLYMPHOID HYPERPLASIA WITH EOSINOPHILIA IN THE UPPER LIP: A CASE REPORT WITH IMMUNOHISTOCHEMICAL ANALYSIS

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Angiolymphoid hyperplasia with eosinophilia (ALHE) is a cutaneous tumor uncommon in the oral region. Its etiopathogenesis remains unknown although some studies suggest abnormal vascular proliferation with secondary inflammatory response. Clinically, it appears as a red-brown subcutaneous swelling mostly in patients aged 20–50 years in Asian and Caucasian populations. Here a 52-year-old man was referred for treatment of a painless mass on the lip. Clinical examination showed a slow-growing, nontender, mobile, well-defined nodule, located in the upper lip and measuring 1 cm in diameter. Microscopically, the excised lesion showed proliferation of small blood vessels surrounded by eosinophils, lymphocytes, and plasma cells. Negative immunostaining for CD1a and absence of lymphoid follicular structures discarded Langerhans cell histiocytosis and Kimura’s disease, respectively. No recurrence was noted in 1-year follow-up. Here, we present a case of ALHE in the upper lip and a review of 22 cases of ALHE in the oral cavity.

#56 ORAL MANIFESTATIONS OF LEUKEMIA: A RETROSPECTIVE CASE SERIES

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Introduction: Oral manifestations of leukemia are rarely seen, often subtle and overlap with numerous entities. The varied nature and general lack of familiarity of clinicians with oral presentations of leukemia makes the diagnosis challenging. We present a case series of leukemias manifesting in the oral cavity.

Methods: Upon IRB approval, the University of Florida Oral Pathology Biopsy Service archives spanning 1994-2018 was queried for oral biopsies diagnosed as atypical hematological proliferation compatible with leukemia. Cases with insufficient diagnostic information and/or extraoral manifestations were excluded. Demographic, clinical, and histological findings were analyzed. Results: Ten cases with 12 biopsy sites were included from 4 female and 6 male patients, mean age of 58.4 years (range 17-88). The most common biopsy sites were the gingiva (50%), palate, tongue, and buccal mucosa. Fifty percent of the cases had no prior diagnosis of leukemia, and 50% of lesions were present for unknown duration. Typical oral manifestations of leukemia included: spontaneous gingival hemorrhage, with diffuse, boggy, non-tender enlargement, unusual ulcerations, petechial hemorrhage, diffuse candidiasis and generalized herpetic ulcers. In our case series, mass formation, white lesions with erythema as well as non-healing extraction site were seen. The clinical impression of submitting clinicians included gingival hyperplasia, pyogenic granuloma, granulation tissue, deep fungal infection, ANUG, and leukemic infiltrate. Immunohistochemical stains including those for B and/or T cells, myeloperoxidase, plasma cells and leukocyte common antigen marker were performed on some cases. Myeloperoxidase and LCA yielded positive results in most cases whereas studies delineating B, or T- lymphocytes and plasma cells yielded mostly negative results. Conclusions: This study documents the clinical and immunohistochemical findings of leukemia in the oral cavity. Clinicians and pathologists should be aware of these findings in order to ensure prompt, accurate diagnosis and likely save lives.
#57 MARJOLIN’S ULCER INVOLVING THE UPPER LIP: A CASE REPORT

Dr. Devaki Sundararajan (Boston University), Dr. Vikki Noonan (Boston University), Dr. Steven Caldroney (Boston University School of Dental Medicine), Dr. Andrew Salama (Boston University)

Marjolin’s ulcers are uncommon and represent malignant transformation of scar tissue. Such ulcers tend to develop mainly in burn scars but have also been reported at other traumatized tissue sites such as vaccination scars, amputation stumps, and chronically traumatized wounds. A majority of Marjolin’s ulcers represent squamous cell carcinoma at biopsy and less commonly basal cell carcinoma. Rarely, Marjolin’s ulcers can represent a melanoma or sarcoma. The most common location for squamous cell carcinoma arising from a burn scar is the extremities followed by the head and neck area. Although most patients are adults at the time of diagnosis, Marjolin’s ulcers can develop in any age group. Burn injury that is left to heal by secondary intention without skin graft, incompletely-healed burn wounds, or repeated trauma to a burn scar resulting in ulceration are considered to be some of the risk factors for development of a Marjolin’s ulcer. We present a case of a Marjolin’s ulcer involving the left upper lip in a 49-year-old male with a history of burn at that site and with a histopathologic diagnosis of poorly differentiated squamous cell carcinoma. The etiopathologic factors, clinical presentation, treatment, and prognosis of this uncommon lesion are discussed.

#58 PALE (CLEAR) CELL ACANTHOMA OF THE PALATE

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Objective: Clear Cell Acanthoma (CCA), also known as pale cell acanthoma, represents a rare benign epidermal tumor with strong predilection for the lower extremities of middle-aged and elderly individuals (50-70 years of age), and no frank gender preference. The etiology of CCA is poorly understood, although recent clinical and immunohistochemical evidence favors a localized psoriasiform reaction. Well-documented intraoral CCAs are scarce with only one previously reported example, affecting the vermilion mucosa of the lower lip. Herein, we report the clinicopathologic and immunohistochemical features, and HPV status of an ostensible example of oral CCA. Findings: A 58-year-old female presented with a well-circumscribed, asymptomatic, exophytic, pedunculated and erythematous nodule of the right hard palate, measuring 0.7 cm in greatest dimension. The clinical differential diagnosis included papilloma and verruca vulgaris. Microscopically, the lesion featured parakeratosis and acanthosis with neutrophilic microabscesses and broad elongated rete pegs. In areas, epithelial cells within the spinous cell layer exhibited pale or clear cytoplasm without nuclear pleomorphism, mitoses or cytologic atypia. The supporting connective tissue revealed mild chronic inflammation with few scattered neutrophils. P.A.S histochemical stain with and without diastase disclosed the presence of cytoplasmic glycogen in the pale cells. Additionally, glycogen-rich epithelial cells stained strongly for EMA and were negative for podoplanin (D2-40). Ki-67 immunostaining was confined to the basal cell layer of the epithelium. A diagnosis of CCA was rendered. The lesion was negative for human papillomavirus (HPV) infection, as assessed by HPV-DNA PCR using the MY09/11 primers for the L1 conserved region.

Conclusions: CCA is an uncommon probably reactive cutaneous lesion with distinctive histopathologic features. Intraoral involvement is rare, although the possibility of underdiagnosis seems plausible. Transcriptionally active HPV infection does not appear to contribute to the pathogenesis of oral CCA.
**POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019**

#59 ORAL LESIONS IN MUCOCUTANEOUS LEISHMANIASIS

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Mucocutaneous leishmaniasis is an infectious disease transmitted by protozoa of the genus *Leishmania*, which causes ulcers in the skin and mucous membranes of the upper airways. The aim of this study is to report on 2 cases of oral mucocutaneous leishmaniasis. The first case is from a healthy 17-year-old caucasian male, presenting with a 4-month history of an ulcerative erythematous lesion in the lower lip, which was bleeding, swollen and painful at presentation. The differential diagnoses were carcinoma or infectious disease. The second case was a 35-year-old male, who was HIV+, smoker, presenting with an erythematous ulcerative lesion in the gingival mucosa of the lower right anterior alveolar ridge, similar to moriform stomatitis, with intense burning symptoms. The diagnostic hypothesis was paracoccidioidomycosis. In both cases, an incisional biopsy was taken. Histopathological evaluation revealed macrophages containing particles resembling amastigote forms of *Leishmania* in the connective tissue of the oral mucosa. The patients were referred for treatment and subsequent tests confirmed the diagnosis of leishmaniasis. The cases reported herein presents two cases of mucocutaneous leishmaniasis manifesting solely in the oral cavity, thus highlighting difficulties with diagnosis.

#60 THERAPEUTIC EVALUATION OF A NOVEL TOPICAL ANTIMICROBIAL FORMULATION AGAINST CANDIDA-ASSOCIATED DENTURE STOMATITIS IN AN EXPERIMENTAL RAT MODEL

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**Introduction:** Oral candidiasis caused by the fungal opportunistic pathogen *Candida albicans* is a common pathological condition affecting oral mucosal surfaces. *Candida*-associated denture stomatitis (DS) specifically, is the most prevalent manifestation which tends to be recurrent and refractory to antifungal therapy due to the ability of *C. albicans* to adhere to dentures and form persistent biofilms. However, there are currently no effective therapeutic strategies for the prevention of this recurrent condition. Antimicrobial peptides have attracted significant attention as alternative therapeutics due to their lack of toxicity and potent antimicrobial and anti-inflammatory properties. Specifically, Histatin-5 (Hst-5) has demonstrated potent activity against *C. albicans* including strains resistant to traditional antifungals. However, since we previously identified potential vulnerability for Hst-5 to proteolysis by *C. albicans* proteases, we engineered a variant with double amino-acid mutations (K11R-K17R) which proved to be highly resistant to proteolysis. **Materials and Methods:** A bioadhesive polymer-based hydrogel was designed as a peptide delivery system in order to develop a therapeutic topical formulation for prevention of DS. To evaluate in vivo efficacy, state-of-the-art 3D digital imaging and printing technology was utilized to design and fabricate an acrylic intraoral device for rats. **Results:** Evaluation of the novel animal model demonstrated its suitability for developing DS mimicking the clinical manifestations in humans. Importantly, the 3D-printed device was specifically digitally designed for precise universal fit on all rat palates. Based on clinical, microbiological and histopathologic analysis of infected animals receiving oral treatment, our findings established the efficacy of the formulation in inhibiting *C. albicans* adherence and biofilm formation on denture acrylic, and importantly, in protecting the associated palatal tissue against infection. Further, we showed that the formulation lacks toxicity to mammalian cells. **Conclusion:** Collectively, these findings establish the clinical utility of the newly developed antimicrobial bioadhesive oral topical formulation for the prevention of DS development.
**POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019**

**#61 HISTOPATHOLOGIC SPECTRUM OF INTRAORAL IRRITANT AND CONTACT HYPERSENSITIVITY REACTIONS: CASE REPORTS AND REVIEW OF THE LITERATURE**

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**INTRODUCTION:** Contact hypersensitivity stomatitis (CHS) and irritant contact stomatitis (ICS) are often caused by flavoring agents and additives in dentifrices and foods.

**CASE REPORTS:** We report 7 cases of CHS and ICS that exhibited distinct histopathologic patterns, although two were from the same contactant. Case 1 from a diffuse erythematous and fissured lesion of the buccal mucosa that began after professional teeth-whitening, and that continued to be in contact with Sensodyne Extra-whitening™ toothpaste exhibited sheets of polyclonal plasma cells with scattered eosinophils within the lamina propria typical for plasma cell stomatitis. Case 2 from a white plaque on the buccal mucosa in contact with cinnamon-flavored gum showed peri- and paravascular lymphoid nodules and a lymphocytic band at the interface. Case 3 from a maxillary vestibule in contact with mint-flavored gum revealed a lichenoid and diffuse granulomatous inflammation at the interface, and deep peri- and paravascular nodular lymphoplasmycatic infiltrates with focal germinal center formation and rare eosinophils. Case 4 from a diffuse keratotic plaque on the hard palatal mucosa in contact with Listerine Fresh Breath Strips™ exhibited a mild lymphohistocytic infiltrate and subtle non-necrotizing granulomas in the superficial lamina propria. Refractile foreign material was not identified. Case 5 from a white plaque on the buccal mucosa in contact with Nicorette™ gum revealed lichenoid mucositis with subtle non-necrotizing peri- and para-vascular granulomatous inflammation. Case 6 from a white plaque of the lateral border of the tongue in contact with Nicorette™ lozenges exhibited prominent keratinocyte edema and acanthosis, similar to changes seen in smokeless tobacco lesions. Case 7 from white plaques on the ventral tongue in contact with Tums™ revealed coagulative necrosis, intraepithelial microabscesses, spongiotic pustules and a mild lymphocytic infiltrate.

**CONCLUSION:** There are a spectrum of histological patterns of CHS and ICS associated with oral contactants.

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**#62 HEMIORFACIAL ASYMMETRY (HYPERPLASIA/HYPOPLASIA) WITH ASSOCIATED PERINEURIAL HYPERPLASIA AND PERINEURIOMATOUS PSEUDO-ONION BULB PROLIFERATIONS IS A SEGMENTAL OROFACIAL VARIANT OF THE PIK3CA-RELATED OVERGROWTH SPECTRUM (PROS).**

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**Introduction:** Somatic PIK3CA mutations have been encountered in a group of conditions characterized by combinations of skeletal and soft tissue overgrowth, vascular malformations, epidermal nevi, megalencephaly and skin lesions. They are collectively referred to as PIK3CA-related overgrowth spectrum (PROS). Patients with facial infiltrating lipomatosis with hemifacial overgrowth, macrodactyly and hemimacroglossia (clinical variant of PROS) have been reported to also have “multiple mucosal neuromas” (Couto et al. Pediatr Res. 2017). The purpose of this study was to investigate the possibility of PIK3CA mutations in hemifacial asymmetry with associated perineurial hyperplasia and perineuriomatous pseudo-onion bulb proliferations.

**Materials and Methods:** Five unrelated female patients, ages 3-27 at the time of first encounter presented with unilateral segmental orofacial asymmetry of soft and hard tissues, characterized by soft tissue and bony over-growths, occasional tissue atrophy, dental abberations, and, histopathologically, perineurial hyperplasia and multiple pseudo-onion bulb neural proliferations (oral pseudoperineuriomas, OP).

**Results:** Two patients evaluated for PIK3CA mutations revealed point mutation PIK3CA c.3140A>G; p.H1047R and in-frame PIK3CA c.1353_1364del, g.Glu453_Leu456del, respectively.

**Conclusions:** 1) The diagnosis of PROS-orofacial asymmetry can be histopathologically established or at least supported by the presence of perineurial hyperplasia and/or OP in the appropriate clinical setting. 2) Two other patients reported in the literature by Siponen et al (OOOE 2007) and Vargo et al (Head and Neck Pathol 2016) as having multiple orofacial intraneural perineuriomas with hemifacial hyperplasia, and hemimandibular hyperplasia and intraoral pseudo-onion bulb intraneural proliferations, respectively, should also have PROS. The histopathologic differential diagnosis of neuromas includes multiple endocrine neoplasia syndrome, type 2B (MEN2B) which, however, has different clinical presentation and causative gene mutation. Clinically, PROS-related hemifacial asymmetry should be differentiated from PTEN-related overgrowth syndromes and Proteus syndrome, an AKT-somatic disorder. Such conditions do not reveal perineurial hyperplasia or OP to the best of our knowledge.
POSTER ABSTRACTS - TUESDAY, JUNE 11, 2019

#63 PERSISTENT HYPERKERATOTIC LESIONS IN ORAL PEMPHIGUS VULGARIS: REPORT OF 4 CASES.
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Objective: Pemphigus Vulgaris (PV) is a mucocutaneous autoimmune disorder characterized by intraepithelial blistering that commonly affects the oral cavity. Oral PV manifests clinically with short-lived vesicles that rupture forming extensive ulcerations. Herein, we report our observation that occasionally cases of oral PV with typical clinical presentation may exhibit white hyperkeratotic lesions that persist despite remission of ulcerations, still showing microscopic features of intraepithelial cleft formation. Pertinent to these findings, we review the dermatology literature correlating excessive keratinization and blistering disorders due to alterations of molecular signaling.

Findings: Four female patients with a diagnosis of oral PV, confirmed by histopathologic examination and direct immunofluorescence, developed white hyperkeratotic plaques over the course of their disease. The lesions most commonly involved the gingiva and persisted despite overall disease remission achieved by systemic corticosteroid treatment. The possible overlap of blister formation and white plaque development was underlined in a patient with a gingival hyperkeratotic lesion that desquamated after application of pressure to the affected area. Additionally, in two patients, incisional biopsy of non-wiped off white plaques was performed with histopathologic features of epithelial hyperplasia along with intraepithelial clefting.

Conclusions: To the best of our knowledge, the presence of keratotic lesions in patients with oral PV has not been explicitly described. We hypothesize that PV autoimmun e deregulation, in addition to typical desmosome targeting destruction and blister development, could evoke specific molecular signaling/regenerative processes to epithelial cells, causing hyperplasia, especially during phases of diminished disease activity typically induced by pharmacologic treatment. Future investigations in the field of keratinizing and blistering disorders are required, to identify possible complex relationships and provide further understanding of PV pathogenesis.

#64 ORAL MANIFESTATION OF PYODERMA GANGLEROSUM: A REPORT AND REVIEW OF THE LITERATURE
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Objectives: Pyoderma gangrenosum (PG) is a rare ulcerative condition that affects the skin and mucosa. While any body site can be affected, the ulcers tend to develop on the lower extremities or around surgical sites. PG can occur at any age, but most commonly affects individuals in their 4th and 5th decades of life. Although the exact cause is unclear, a majority of cases are associated with an underlying systemic condition, most frequently inflammatory bowel diseases or autoimmune processes. Rarely, PG can manifest as ulcers involving cutaneous and mucosal surfaces of the head and neck. Herein we present the case of a 63-year-old female with oral manifestations of PG.

Findings: A 63-year-old female patient was referred to the Oral and Maxillofacial Surgery Clinic at the Columbia University Irving Medical Center for evaluation of an ulceration of the right maxillary vestibule. The patient’s medical history was significant for recent onset PG. Extraoral examination revealed a deep, indurated ulcer of the right cheek skin measuring 3x2 cm in size. Intraorally, a red to tan-yellow, partially exophytic soft tissue lesion was identified in the right maxillary vestibule. Based on the clinical presentation, the most likely diagnosis was an intraoral manifestation of the patient’s PG via direct extension from the skin lesion of the right cheek. An incisional biopsy of the intraoral lesional tissue was performed which confirmed this diagnosis.

Conclusions: PG represents an uncommon, albeit important mucocutaneous ulcerative condition. Oral involvement is infrequent, with only approximately 20 reported cases to date. After exclusion of infectious and neoplastic entities has been performed, patients with a diagnosis of PG should be evaluated for any associated underlying systemic conditions. Management of PG requires an interdisciplinary approach, in which the dental practitioner may serve an important role.
#65 INFLAMMATORY FIBROID POLYP OF THE ORAL MUCOSA: UNDER-REPORTED LESION OR NOVEL PRESENTATION OF A BENIGN GASTROINTESTINAL TUMOR?  
**Dr. Caroline Bissonnette (The Ohio State University College of Dentistry), Dr. John Kalmar (The Ohio State University College of Dentistry), Dr. Kristin McNamara (The Ohio State University College of Dentistry)**

Inflammatory polyps have been described in a number of anatomic locations including the gastro-intestinal (GI) tract, sinonasal region and larynx. Their prevalence within the lower GI tract of adults (including non-neoplastic and adenomatous variants), is approximately 30%. Among the recognized subtypes, inflammatory fibroid polyps have occurred in various segments of the GI tract, particularly the stomach antrum and colon, and rarely the esophagus. Cases affecting the oral cavity; however, have not previously been reported. We present a 61-year-old male with a six year history of a slowly enlarging, asymptomatic, pedunculated, pink, 1.2 cm nodule of the left buccal mucosa. Following excisional biopsy, histopathologic examination revealed a uniform, hypocellular proliferation of bland spindle to dendritic-shaped cells admixed with delicate strands of collagen and dilated vascular channels as well as patchy aggregates of inflammatory cells including plasma cells, lymphocytes and neutrophils. Prominent perivascular lamellar collagen deposition was frequently observed. Immunohistochemical analysis revealed the lesional cells to be positive for expression of calponin, SMA and Factor XIIIa. Overall, the microscopic and IHC findings were considered unusual for the oral cavity and most consistent with inflammatory fibroid polyp of the GI tract. While unique in our experience, similar oral lesions may have been observed by others but remain under-reported. Further studies are needed to elucidate the true prevalence, distribution and patient characteristics associated with oral cases of inflammatory fibroid polyp.

#66 GRANULAR CELL TRAUMATIC NEUROMA  
**Dr. B. Jason Kyles (New York Presbyterian Queens), Dr. Paul Freedman (New York Presbyterian Queens), Dr. Renee Reich (New York Presbyterian Queens)**

Granular cell traumatic neuroma is a rarely described lesion. To date, two cases have been reported in postsurgical mastectomy scars, and one additional case located in the parotid gland was described in a letter to the editor. Here we present the first case of granular cell traumatic neuroma found within the oral cavity. This lesion was described as an exophytic mass of the buccal mucosa in an otherwise healthy 16-year-old male. The lesion was asymptomatic with an intact overlying mucosa. The histologic findings of this lesion resemble a neuroma composed of numerous small nerve trunks which contained intraneural collections of granular cells. Additional collections of granular cells were also found in the fibrous stroma of the lesion. Granular cell traumatic neuromas have the combined histology of two rather common lesions, granular cell tumors, and traumatic neuromas, but when found intermingled compose a more elusive entity. The etiologies of both traumatic neuromas and the granular cell variant have been linked to local tissue trauma such as surgery or other injuries. Granular cell tumors were originally thought to have a myoblastic origin, however, a Schwann cell origin is now generally accepted. Granular cells can be found in a range of tumors, and have been noted associated with traumatized tissue in surgical sites. Traumatic neuromas develop when tissue is injured (e.g. surgery), nerves are severed and the nerve attempts to regenerate via the proliferation of Schwann cells which form tubes for the axon to grow through. Fibrous scar tissues resultant from the injury allows the development of small masses of nerve bundles. *Our case, like the previously reported lesions, revealed positivity with S-100, CD68, and PAS staining.* Identification of both elements of the lesion as well as knowledge of this unusual entity will help one establish the correct diagnosis.
#67 THE LINK BETWEEN ORAL LICHEN PLANUS AND SYSTEMIC DISEASES

Ms. Anjali Dave (Columbia University College of Dental Medicine), Dr. Elizabeth Philipone (Columbia University College of Dental Medicine)

**Introduction:** Oral lichen planus (OLP) is a chronic inflammatory disease that is seen in 2% of the general population and presents clinically as white striations and plaques or as erythematous or erosive lesions. Although the pathologic mechanism of OLP is not yet established, it is accepted that immune dysregulation plays a critical role. Various researchers have reported associations between OLP and systemic conditions including: thyroid disease, hepatitis C infection, hypertension, dyslipidemia, diabetes mellitus, and a genetic predisposition to cancer. The goal of this study was to investigate the association between OLP and the following systemic conditions: thyroid disease, hepatitis C infection, hypertension, dyslipidemia, diabetes mellitus, and cancer prevalence.

**Methods:** This retrospective case-control study was based on patients diagnosed with OLP at Columbia University from 2000-2013. 156 OLP patients matched the selection criteria. An odds ratio with a 95% confidence interval was calculated to determine the association between OLP and the systemic diseases examined.

**Results:** The OLP subjects were 2.77 times more likely to have thyroid disorders than the controls (95% CI 2.23 to 3.31). An association between the occurrence of OLP and prevalence of any type of cancer was observed. Specifically there was a strong association between OLP and head and neck squamous cell carcinoma. The other systemic diseases showed no positive association with OLP.

**Conclusions:** To the best of our knowledge, this is the only study correlating thyroid disorders and OLP on a U.S. population. Our findings confirmed that thyroid disorders had a higher association with OLP than that of the control group. The results from this study suggest there is a correlation between OLP and the occurrence of oral cancer and all types of cancer in general. We speculate that immune dysregulation plays a role in this association. Further research with larger sample size is needed.

#68 LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA - REPORT OF SEVEN CASES AND REVIEW OF THE LITERATURE

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**INTRODUCTION:** Localized juvenile spongiotic gingival hyperplasia (LJSGH) is an entity of unknown etiology that presents clinically as a red papillary lesion of the attached gingiva. This gingival pathology was first described by Darling et al. in 2007 as “juvenile spongiotic gingivitis”. They noted the prevalence of LJSGH in children and young adults, as well as the characteristic histopathology of epithelial hyperplasia with prominent spongiosis, neutrophilic exocytosis, and increased vascularity of the lamina propria. Subsequently, Chang et al reported 52 additional cases and proposed the term LJSGH. The pathogenesis remains to be elucidated, but origin from gingival sulcular epithelium has been proposed as CK19 immunohistochemical stain, a marker of sulcular epithelium, demonstrates full-thickness positivity. This article presents 7 new cases of this entity, discusses our immunohistochemical findings, and reviews the current available literature.

**METHODS:** 7 Cases of LJSGH were retrieved from the files of the Mount Sinai Oral Pathology Biopsy Service. A review of the literature found an additional 158 cases. Clinical and demographic data were collected and recorded in a database. RESULTS:

All seven of our cases were localized. 165 total cases were reviewed with 28 multifocal cases noted and the remainder(83%) being solitary. No significant sex predilection was noted in our cases or in the literature. Similar to the literature we noted a predilection for the anterior maxilla. Four of our cases involved children under 20-years-old while 3 were adults. In the literature, 90.3% of cases affected children under 20. CK19 stain demonstrated full-thickness, diffuse positivity in our seven cases and all were excised with no recurrence at follow-up of 1-27 months.

**CONCLUSION:** We present seven new cases of LJSGH and reviewed 158 cases reported in the literature to date. Interestingly, multiple cases that were neither localized nor juvenile were noted.
Read By Title
READ BY TITLE ABSTRACTS

ATYPICAL ORTHOKERATINIZED ODONTOGENIC CYST IMPERSONATING AS A PERIODONTAL LESION

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A 61-year-old female with an atypical orthokeratinized odontogenic cyst masquerading as rapidly progressing periodontitis associated with maxillary right lateral incisor (tooth #7). The patient underwent extraction and immediate implant placement with bone grafting. Four months later, the implant was removed due to recurrent infection. Granulation-like tissue was curetted but not reviewed microscopically. At 3.5 months, infection persisted. A periapical radiograph revealed a cystic lesion. Computed tomography showed extensive bone loss from area #7 to the mesial aspect of the second premolar. Histopathologic examination demonstrated lamellated orthokeratinized stratified squamous epithelium, subjacent prominent granular cells, lack of basal cell organization, intense inflammatory infiltrate in the fibromyxoid connective tissue, containing scattered nonviable bone aggregates with ragged borders, and epithelial cell rests. The diagnosis was OOC. The canine was extracted and bone grafting was performed. At 4 months, the right first premolar was extracted due to severe bone loss and a whitish globule was enucleated. Microscopically, stratified squamous epithelium with abundant orthokeratin production with minimal focal parakeratin and a basement membrane with squamoid to low cuboidal basal cells with occasional budding, and lack of atypia or nuclear pleomorphism was noted. Immunohistochemistry demonstrated Ki-67 positivity limited to basal cells, representing normal proliferation. P63 positivity was observed in the basal, parabasal and a few spinous cell layers. The lesion was negative for Bcl-2. Several mural dystrophic calcifications were noted. Ultra-structurally, uniform layers of keratin squames without nuclei, underlying keratohyaline granules admixed with tonofilaments, and several nuclei with membrane infolding and chromatin clumping were noted. That immediate placement of a dental implant within the site of an apparent preexisting and unrecognized OOC can result in prosthetic failure, necessitating the need for CT imagery prior to immediate implant placement and submission of harvested tissue from any implant failure site to rule out presence of occult disease or malignancy.

INVASIVE ORAL MUCOSAL MELANOMA ARISING FROM LENTIGINOUS MUCOSAL MELANOMA IN SITU: A CASE REPORT

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Primary oral mucosal melanoma (OMM) is a rare subtype of melanoma that is generally more aggressive and associated with greater morbidity and mortality as compared to conventional melanoma subtypes. The majority of reported OMM cases occur on palatal or maxillary mucosa or gingiva, and precursor in situ lesions have not been well-defined in this context as compared to other melanoma subtypes. Herein we present a rare case of primary OMM occurring on the buccal mucosa of an otherwise healthy 57-year-old male with a history of cigarette smoking and no family history of melanoma. While the clinical presentation was largely consistent with diffuse oral smoker’s melanosis, the presence of non-healing leukoplakic lesions on the right buccal mucosa were of concern and prompted biopsy. Histologic examination, however, revealed an invasive melanoma arising from the background of lentiginous mucosal melanoma in situ. Immunohistochemistry for SOX-10 and Melan-A were positive in the lesional cells, confirming the diagnosis. Treatment by head and neck oncology is currently planned for wide excision with lymph node dissection, and adjuvant chemoradiation as needed.
MULTIPLE MYELOMA RECURRENCE PRESENTING AS A GINGIVAL MASS: A CASE REPORT OF UNUSUAL HISTOLOGICAL FINDINGS IN A RARE ENTITY.

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Multiple myeloma is the second most common hematologic malignancy. This disease, characterized by a clonal proliferation of terminally differentiated plasma cells, exhibits a strong localization to the bone marrow microenvironment, with infrequent extramedullary spread. Myeloma is most common in those aged 55 and older, with less than 1% of new diagnoses coming in individuals < 35. We present a case of multiple myeloma recurrence manifesting as a gingival soft tissue enlargement in a 29-year-old male; the patient was reported to be in full remission 2 years post stem cell transplantation. Clinically, a red/purple, dome-shaped mass localized to the mandibular marginal gingiva. The clinical impression was benign reactive process vs neoplasm. Excisional biopsy revealed no gross bony involvement. Microscopic examination revealed a neoplastic proliferation taking on a “thyroid-like” follicular architecture at low power with multiple, variably sized cystic spaces being closely packed and filled with homogenous, dense, brightly eosinophilic, bubbly material. At higher power, the cells lining these cystic cavities were morphologically recognizable as plasma cells, with occasional eosinophilic intracytoplasmic inclusions. Immunohistochemical stains showed membranous CD138 positivity of the neoplastic population with kappa immunoglobulin light chain restriction. The patient was referred to hematology-oncology for subsequent workup. Although thyroid follicle-like architecture has been reported in a number of diverse pathologic entities, to the best of our knowledge, this represents only the second report of this histological appearance in plasma cell neoplasms.

FIRST ARCH SYNDROMES: A CHALLENGE IN ORAL HEALTH CARE

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Introduction: First arch syndromes (FAS) are congenital craniofacial disorders that occur during early embryonic development. Examples of FAS include Treacher Collins syndrome (TCS), Pierre Robin sequence (PRS) and agnathia-otocephaly (AO). TCS occurs in about 1 in every 50000 live births, and genetic mutations in TCOF1, PPLR1d, or POLARIC have been recognized in most cases. Clinical manifestations of TCS include hypoplastic facial bones, ear deformities, and cleft palate. PRS is characterized by micrognathia, glossopitosis, respiratory distress, and occasionally cleft palate. AO is another congenital disorder that is characterized by agnathia and often associated with other craniofacial abnormalities. In all FAS, the mortality rate approaches 30%, mainly due to respiratory tract obstruction. Providing dental treatment to FAS patients can be challenging due to several factors including the risk of aspiration via the oropharynx or sites of un repaired clefts.

Case Report: A 30-year-old female presented to Penn Dental Medicine for comprehensive care. The patient’s medical history was significant for PRS, TCS, congenital deafness, gastrointestinal ulcers, and depression. Her surgical history included reconstructive procedures, placement of tracheostomy and gastrostomy tubes, and placement of bone-anchored hearing aids. Extraoral and intraoral examination revealed a complete absence of the mandible, protruded maxilla and incompetent upper lip, ear and orbital deformities, and cleft palate. Cone beam computed tomography scan revealed a cleft palate in the skull base, a palatal cleft, and the presence of a fibular graft in the mandible area. In planning dental treatment, the primary consideration was preventing aspiration. This included the use of hand instruments over piezoelectric devices for periodontal treatment, use of rubber dam, and covering the areas of palatal defects during procedures.

Conclusion: FAS possess a high risk of life-threatening complications associated with oral health care. Management of FAS patients requires special treatment modifications to prevent serious complications and ensure successful outcomes.
SARCOMATOID VARIANT OF A SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY: A CASE REPORT.

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Introduction: Sarcomatoid squamous cell carcinoma (SSCC) is a histological variant with a poorer prognosis than its conventional form. SSCC of the oral cavity comprises less than 1% of all tumors of the oral cavity. Regarding its histopathology, it is a solid tumor composed of spindle cells which follow a short fasciculated pattern. It may feature hypocellular and hypercellular zones, as well as ulcers and necrosis areas.

Case presentation: A 33 year old male patient, with a complaint of a right maxillary mass with a 2-year evolution. Upon the radiographic assessment, a solid lesion that affected the associated gingiva, the right palatal bone, the maxillary sinus and adjacent structures, was observed. The Pathology department received a sample of a right maxillectomy, with a 6.5 x 5.4 x 4.8 cm solid, firm, brown-white lesion. The histologic findings revealed a malignant neoplasm of spindle and pleomorphic cells, with invasion of bone structures and blood vessels. Immunohisto-chemistry was performed and the following results were obtained: CKAE/AE3 showed a diffuse positivity; positive vimentin; EMA, CD56, CD99 y pS100 markers were negative. A SSCC was determined, with ulcers and lymphovascular invasion.

Discussion: Literature reports that this is a rare variant of squamous cell carcinoma, with a predominant male predilection. These data are consistent with the current case report. Regarding the location, it has a site predilection for the upper lip and tongue, whereas the present case occurred in the maxilla. Among the differential diagnoses, tumors like sarcoma are usually confused with this variant and must be ruled out.

Conclusions: The SSCC is a rare variant of the most common malignant neoplasm of the oral cavity, which possesses a poorer prognosis than the conventional squamous cell carcinoma. Given its histopathologic features, a classification according to the level of differentiation and immunochemistry are mandatory to confirm the diagnosis.

PSEUDOGOUT OF THE TEMPOROMANDIBULAR JOINT: CASE REPORT AND REVIEW OF THE LITERATURE

Dr. Ibrahim Akeel (Harvard School of Dental Medicine), Dr. Chia-Cheng Li (University of Michigan), Dr. Hao-Sheng Chang (Kaohsiung Veterans General Hospital), Dr. Chun-Feng Chen (Kaohsiung Veterans General Hospital)

Introduction: Calcium pyrophosphate dihydrate (CPPD) deposition disease, also known as pseudogout, is a metabolic disorder causing noninfectious inflammation of the joints. CPPD deposition disease typically affects fibrocartilage, such as the knee and wrist joints. Temporomandibular joint (TMJ) is an uncommon location affected by CPPD deposition, with only 64 cases reported in the English literature to date. To increase the awareness of this condition, we report one case of CPPD deposition disease in the TMJ.

Case Report: A 57-year-old male presented with dull pain and a progressive swelling of the left TMJ for a week. Upon extraoral examination, the patient exhibited a mild facial asymmetry with no limitation of mouth opening. Radiographically, there was flattening, erosion and sclerosis of the left condyle with multiple radiopaecities in the joint space. Left condylectomy was performed and reconstructed with the coronoid process and temporalis muscle pedicle graft. The microscopic examination demonstrated fragments of mature lamellar bone and woven bone with marked synovial hyperplasia and an inflammatory infiltrate, consistent with an inflamed condylar head. Numerous scattered polarizable, rhomboid crystalline depositions, consistent with calcium pyrophosphate dehydrate, were identified. It was uneventful at the 5-month follow-up.

Discussion: CPPD deposition disease is an inflammatory arthropathy caused by an imbalance metabolism of phosphate, leading to an increased deposition of calcium pyrophosphate crystals within the joint space. A wide spectrum of clinical symptoms can be present in CPPD deposition disease of the TMJ, including orofacial pain, preauricular swelling, trismus, hearing loss, otalgia, and limitation of mouth opening. Histopathologically, calcium pyrophosphate dihydrate crystals exhibiting birefringence under polarized light are present. According to the clinical presentations, treatment options for CPPD deposition disease range from the nonsurgical intervention, primarily with nonsteroidal anti-inflammatory drugs, to TMJ arthroscopy or condylectomy.
UNCOMMON MALIGNANT TRANSFORMATION OF THE EPITHELIAL COMPONENT OF A WARTHIN TUMOR. REPORT A CASE.
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In 1929, pathologist Aldred Warthin described for the first time a tumor called “papillary cystadenoma lymphomatosum”. Warthin’s tumor is a benign salivary neoplasm occurring mainly in the parotid gland, and has an epithelial component and a lymphoid stroma. However, rarely, either the epithelial or the lymphoid component of Warthin’s tumor can undergo malignant transformation. Malignant transformation of the lymphoid component is relatively common but the epithelial malignancy is very rare. We report a case, male 79-year-old with an asymptomatic right parotid mass that had been enlarging slowly over 5 years. Histopathological examination shows one part of characteristic bilayered oncocytic epithelium, transitional zones to frankly malignant transformation and dense lymphocytes background. The patient underwent a complete work-up, and no other primary malignant lesions were found.

CASE REPORT OF DISSEMINATED HISTOPLASMOSIS REVEALED BY NASAL SEPTUM INVOLVEMENT.
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Histoplasmosis is an opportunistic infection caused by inhalation of spores of the dimorphic fungus Histoplasma capsulatum, which is endemic in Latin America and other tropical countries. It is a saprophyte fungus found in soil contaminated by bird droppings. The development of the disease depends on the immunity of the patient, the number of organisms inhaled and the microorganism strain. The clinical presentation consists of a spectrum of manifestations, from fatal acute respiratory failure secondary to pulmonary infiltrates, shock, coagulopathy and multiorgan failure, to a subacute disease with poor general condition, fever, weight loss coupled with lymphadenopathy, heparoplenomegaly, digestive symptoms such as diarrhea, pancytopenia and skin lesions. In healthy individuals the primary infection is self-limited and characterized by mild symptoms. The disseminated disease is more prevalent in immunosuppressed individuals, when a reactivation of an infection earlier acquired might occur. This case report aims to present an unusual case of disseminated histoplasmosis diagnosed by a biopsy of the nasal septum ulcer of an immunosuppressed patient after a-bone marrow transplant due to leukemia. A 57-year-old man, originated from Brazil, who was on chemotherapy for leukemia, was admitted for nasal septum lesion for 3 months. A biopsy of the nasal septum ulcer was performed and revealed an angioinvasive fungal infection, which was later diagnosed as histoplasmosis. He had no upper respiratory tract symptoms but he underwent a chest and an abdominal computed tomography scan in a multi-detector device of 64 channels. The imaging exams revealed pulmonary involvement with ground glass opacity surrounding a pulmonary mass (halo sign), which represents hemorrhage, typically seen in angioinvasive infections, in addition to mediastinal and abdominal lymphadenopathy and splenomegaly with splenic infarct. The patient was treated with amphotericin B for 2 weeks and itraconazole for 12 months with clinical and imaging improvement.
ORAL MANIFESTATION OF NEUROFIBROMATOSIS TYPE 2: A CASE REPORT

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Neurofibromatosis 2 (NF2) is a rare syndrome characterized by unilateral or bilateral vestibular Schwannomas, and meningiomas or other tumors involving central or peripheral nervous systems. While the oral findings for neurofibromatosis 1 are well documented, the oral features in NF2 patients are mostly unknown. To the best of our knowledge, there have been only two reports describing oral findings in NF2. We report a case of NF2 who showed two benign plexiform nerve sheath neoplasms in the oral cavity. A 22-year old African American female with a history of NF2 presented with two asymptomatic lump lesions in the oral cavity. Oral examination revealed one soft tissue mass in the left buccal mucosa; and the other in the right lower lip. Her recent spine and brain MRI studies reported bilateral vestibular schwannomas, intracranial meningiomas, cervical cord ependymomas and multiple schwannomas along the cervical nerve roots. The patient also reported mild decrease in hearing, and neck pain in the morning. In addition, the patient had scalp and facial skin biopsies which were diagnosed as schwannomas. Both lumps were biopsied and showed similar histologic features consisting of a benign non-encapsulated spindle cell neoplasm in which the spindled cells were arranged in bundles and showed a plexiform growth pattern. No obvious Antoni A tissue or Verocay body was noted. S100 immunohistological staining demonstrated diffuse positivity of the spindle cells. Immunohistochemical stain for neurofilament highlighted the presence of neurons in the spindle cell proliferation. The clinical, histological and immunohistochemical findings of the oral neoplasms in this NF2 patient will be discussed.

SYNONASAL ANGIOMATOUS POLYPS CAN SIMULATE MALIGNANT NEOPLASMS IN IMAGING EXAMS: REPORT OF TWO CASES.

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Introduction and Objectives: The most frequent benign synonasal expansive formations are inflammatory polyps and papillomas. In imaging exams, the destruction of anatomical structures suggests greater aggressiveness and, among the benign lesions, such behavior is more common in papillomas. However, among the inflammatory polyps, the angiomatous variant has been considered more destructive than the conventional lesion. Considering that this hypothesis has been based on rare studies of this variant, the objective of the present study is to describe the imaging and morphological findings of two synonasal angiomatous polyps (SNAP). Material and methods: Computed tomography scans were performed in a multi-detector device of 64 channels and slides stained by hematoxylin and eosin of 2 cases of SNAP were reviewed. Findings: Tomographic exams of both cases showed an expansive and heterogeneous synonasal mass, with bone destruction compromising the walls of the maxillary sinus, ethmoid, lamina papyracea, nasal septum and also with invasion of the pterygopalatine fossa in one of the cases. Histologically, in addition to the areas with conventional aspect, the polyps often presented dilated blood vessels containing thrombosis at different stages of organization and extensive deposit of fibrinous/hemorrhagic material. Conclusion: The SNAP are distinguished from the inflammatory polyps by the dilated vessels, which determine thrombosis and hemorrhages, causing great expansion of the lesion and, consequently, bone destruction. The knowledge about the destructive aspect of this benign lesion is important and stresses the importance of biopsy for proper treatment planning.
A DENTIGEROUS CYST WITH SQUAMOUS ODONTOGENIC TUMOR-LIKE AND MYOFIBROBLASTIC PROLIFERATION: A CASE REPORT

Dr. Julia Yu Fong Chang (National Taiwan University Hospital), Dr. Yi-Ping Wang (National Taiwan University Hospital)

Various changes in dentigerous cyst have been reported, such as ameloblastomatous changes and squamous odontogenic tumor-like proliferation. In contrast to ameloblastomatous changes, squamous odontogenic tumor-like proliferation seems to be indolent and does not affect the prognosis based on few case reports. Moreover, some dystrophic calcifications and slightly stromal cell proliferation in the dentigerous cyst wall are not uncommon. But prominent myofibroblastic proliferation is rare. Here, we reported a case of dentigerous cyst with both foci of squamous odontogenic tumor-like proliferation and foci of myofibroblastic proliferation. This was a 63-year-old female patient complained of intermittent dull pain at lower right retromolar area for 2 months. A well-defined radiolucency at distal side of a vertically impacted tooth 32 was noted in panoramic x-ray. Tooth 32 odontectomy and cyst enucleation were performed. The pathologic examination showed a focally inflamed dentigerous cyst with squamous odontogenic tumor-like and myofibroblastic proliferation. After 3 months of follow-up, the wound healing was fair and no recurrence was noted. Due to the rarity of these cases, it is important to be familiar with these alterations and to avoid misdiagnosis as an odontogenic tumor.

CONVENTIONAL VS. EXTRAOSSEOUS AMELOBLASTOMA: UNUSUAL CLINICAL AND HISTOLOGIC PRESENTATION OF A MAXILLOFACIAL AMELOBLASTOMA

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Objective: To describe the unusual clinical and histopathological presentation of an Ameloblastoma affecting the right maxillary sinus, nasal cavity and maxilla, and discuss the dilemma in the clinical classification based on the WHO 2017 classification.

Findings: A 74 year old male patient presented to the Oral Surgery Clinic for surgical management of a non-healing palatal tumor, with a clinical impression of an Oral Squamous Cell Carcinoma. Histopathological assessment of the biopsied specimen revealed multiple patterns demonstrating cords and strands of bilayered and interlacing columnar cells with mild evidence of reverse polarization, nests of epithelial islands with dyskeratotic cells, and moderate mitotic activity. Given the wide diversity in the histologic presentation, multiple considerations of the specimen representing a tumor of odontogenic origin, or benign or malignant non-odontogenic origin, were considered. Immunohistochemical staining with CK 19 and CK 5/6 demonstrated uniform positivity of the lesional cells, further supporting an Ameloblastoma. A CBCT was subsequently requested, which demonstrated a defined, rounded homogeneous hyperdensity in the right maxilla, and extension into the maxillary right sinus and nasal fossa up to the nasal septum. The mass extended superiorly to the floor of right orbit. Assessment of the surgical resection specimen confirmed our initial histopathological suspicion of an Ameloblastoma.

Conclusion: Maxillary Ameloblastomas have been occasionally reported to extensively expand into the paranasal sinuses and nasal cavity. However, primary sino-nasal ameloblastomas with extension into the maxilla have also been reported. This report demonstrates the dilemma in appropriate classification of the Ameloblastoma, as the primary origin is unclear. In cases of extensive involvement of the sino-nasal region and maxilla, a clinical diagnosis of a “Maxillofacial” Ameloblastoma is suggested. The surgical management, however, remains unchanged.
CEMENTOBLASTOMA: AN UNUSUAL PRESENTATION

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Cementoablastoma is a rare neoplasm of odontogenic origin that comprises 1-6.2% of all odontogenic tumors. Cementoblastoma consists of a large mass of cementum or cementum-like tissue which continues with the cemental layer of the apical third of the tooth root. Clinically, Cementoblastomas are usually associated with mandibular first molar (50%), where pain and expansion being the most common clinical symptoms. Radiographically, Cementoblastoma present as a well-defined radiopaque or mixed density mass attached to the tooth root with surrounding radiolucent rim. Extraction of the involved tooth, with or without curettage of the surrounding bone, is the preferred and most conservative treatment option. On gross examination, Cementoblastomas are present as nodular hard tissue mass attached to one or more tooth roots. Histologically, Cementoblastomas are composed of acellular cementum or cementum-like tissue which continues with the cemental layer of the apical third of the tooth root; proliferation of cementoblasts might be present. At the periphery of the solid mass, radiating columns of cementum or cementum-like material is observed. Reversal lines and root resorption might be present. Case report: 27-year-old female presented to the diagnostic science department at Kuwait University dental clinic complaining of pain associated with maxillary right first molar. Root canal treatment was performed on the tooth three months prior to her current appointment without any improvement in symptoms. The patient reported sharp pain upon palpation the buccal aspect of the tooth. A periapical radiograph was ordered where no pathologic findings were noted. CBCT examination revealed a round radiopaque mass with partial radiolucent surrounding rim located in the furcation of the maxillary right first molar. The maxillary right first molar was extracted one week later where a nodular hard tissue mass was noted in the furcation. Histopathologic examination revealed symmetric hard tissue proliferation attached to the root. The hard tissue proliferation is composed of acellular cementum-like material with radiating columns at the periphery. In Conclusion, Cementoblastoma could be the cause of painful vital posterior teeth where CBCT should be utilized for further examination.

RISK OF MULTIPLE PRIMARY MALIGNANCIES AFTER RADIATION THERAPY IN ADENOID CYSTIC CARCINOMA

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Radiation therapy is aimed to eliminate cancer, yet, it is known to be able to result in second or third primary malignancies as well at the locally affected region. The majority of multiple primary malignancies (MPMs) occur in the region of the first primary tumor with oral malignancies arising in the oral cavity and salivary gland malignancies occurring in the salivary gland. Here, we present a case of a secondary primary squamous cell carcinoma (SCC) at the post-operative palatal defect and a potential third primary high-grade precancerous lesion at the nasal mucosa arising after radiation therapy for adenoid cystic carcinoma (ACC) at the palate. This case emphasizes the need for local examination of adjacent structures, such as the nasal cavity or sinus, additional to periodic oral examination after radiation therapy in the maxilla.

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ORAL NEUROTIZED NEVUS. REPORT OF A RARE CASE AND REVIEW OF THE LITERATURE

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Objective: Neurorized nevus (NN) is a subtype of melanocytic nevus characterized by organized proliferations of nevus cells that mimic Meissner corpuscles. Histopathologically, the resemblance to neurofibroma, especially in its histopathologic resemblance to neurofibroma. Immunohistochemical examination, especially for NN, was performed in only one additional case presented in the literature.

Findings: A 41-year-old female patient presented for evaluation of a 0.3 cm nodule of 4 months duration involving the right buccal mucosa. With a provisional diagnosis of salivary gland lesion, excisional biopsy was performed and histopathologic examination revealed a well-circumscribed, subepithelial proliferation of cells with morphologic features of nevus cells; scattered deposition of melanin and areas resembling neural structures were also discerned. With a microscopic differential diagnosis of NN vs. neurofibroma, immunohistochemical evaluation was performed: S100 and Melan-A were positive, while CD34 was focally positive and HMB-45 was negative, leading to a final diagnosis of oral NN. An English language literature review was conducted revealing a total of 9 oral NN cases, including the present case. Females seemed to be exclusively involved with a mean age of 42.6 years. Clinically, a small nodule with or without signs of pigmentation was observed, without specific site predilection. Histopathologically, either partial or complete neurotization was seen. Melan-A, the main marker distinguishing NN from neurofibroma, was performed in only one additional case presented in the literature.

Conclusions: Oral NN is a peculiar and underreported entity that could cause diagnostic difficulties due to its histopathologic resemblance to neurofibroma. Immunohistochemical examination, especially for Melan-A, can solve diagnostic problems.

VASCULAR CHANGES IN A CASE OF PERIPHERAL GIANT CELL LESION: AN IMMUNOHISTOCHEMICAL STUDY

Prof. Eneida Vencio (Federal University of Goias), Ms. Stephany Carvalho (Federal University of Goias), Mr. Ricardo Silva (Federal University of Goias), Mr. Wilson Mariano Jr (Federal University of Goias), Prof. Nadia Costa (Federal University of Goias)

A 47-year-old woman was referred for the management of a painful swelling in the canine region with a recent history of tooth removal. A slight asymmetry was seen in the upper lip. Intraoral examination showed a purplish-red nodule, pediculated lesion on the anterior right alveolar crest, associated with an unstable dental prosthesis. Periapical radiography revealed superficial bone resorption. The lesion was surgically excised, followed by curettage. Microscopically, several MGCs were seen in a background of spindle-cells and areas of hemorrhage. Interestingly, some vessels in the periphery exhibited transendothelial migration of MGC positive for macrophage fusion marker CD44 and MMP-9. Serum calcium, alkaline phosphatase, and parathormone levels were normal. No recurrence was detected in 1 year. Clinical significance of vascular changes and MGC transendothelial migration, as well as its origin must be further clarified.
READ BY TITLE ABSTRACTS

GRANULOCYTIC SARCOMA IN THE MAXILLA AFTER MEDULLAR RELAPSE OF ACUTE LEUKEMIA IN HCT PEDIATRIC PATIENT: A CASE REPORT
Prof. Fabio Coracin (University Nove de Julho, School of Medicine), Dr. Adriana Seber (Hospital Samaritano Sao Paulo Americas), Dr. Valeria Cortez Ginani (Hospital Samaritano Sao Paulo Americas), Dr. Jussara Bianchi Castelli (Grupo Fleury Medicina e Saude, Sao Paulo, Brasil), Ms. Juliana Francielle Marques (Hospital Samaritano Sao Paulo Americas), Dr. Walmyr Ribeiro de Mello (Hospital Samaritano Sao Paulo Americas)

Objective: to relate a case of a granulocytic sarcoma in maxilla arising from maxillary sinus in a pediatric patient underwent to non-related hematopoietic stem cell transplantation after medullary relapse of leukemia. Findings: a 7yo female patient suffered of acute myeloid leukemia (M5) by byphenotypic features underwent to non-related allogeneic HSCT. Conditioning regimen comprised total body irradiation plus etoposide and engraftment with hematopoietic recovery was at D+22. GVHD prophylaxis comprised cyclosporine plus methotrexate. Severe mucositis occurred between D+5 and D+12. Complete chimera was accessed in D+40. On D+50, 13.8% of blasts immature cells were accessed in bone marrow and immunofluorescence showed 2% of anomalous cells leading to bone marrow relapse of acute myeloid leukemia. On D+65, an expansive mass in maxilla was seen described as hipodensities and erosions involving the alveolar ridge of the maxilla on the left that presents diffuse bone loss with cortical ruptures in the floor of the maxillary sinus and corresponding nasal fossa associated to an increase in soft tissue volume with thickening of the gingival mucosa of the maxilla and small retromaxilar extension mimicking a tumoral infiltrative lesion related to the underlying disease. A incisional biopsy was performed under general anesthesia due clinical conditions and the microscopic features showed mucosa lined by squamous epithelium, with preserved maturation and connective tissues showed an intense infiltration mononuclear cell with marked stretching artifact (maybe the needle biopsy artifact), observing possible atypical cells with nuclei of size intermediate and indistinct cytoplasm leading to granulocytic sarcoma diagnosis. A new chemotherapeutic approach was done and, after a treatment failure, she died due to leukemia relapse. Conclusion: after a maxillary possible relapse of a systemic disease, a complete approach between physicians, oral medicine and oral pathology was necessary to a better diagnostic approach trying a more intensive treatment to relapse of leukemia.

CLINICOPATHOLOGICAL ANALYSIS OF ORAL LESIONS FROM A TERTIARY HEALTH CARE CENTER IN NEPAL
Dr. Pratibha Poudel (Kathmandu University School of Medical Sciences), Dr. Nadim Islam (University of Florida College of Dentistry), Dr. Ritesh Srij (Kathmandu University School of Medical Sciences)

Objective: To analyze the clinicopathological details of oral lesions diagnosed in a tertiary health care center in central, east of Nepal within a period of two years and to assess the concordance between clinical and histopathological diagnosis of these lesions. Findings: A total of 237 cases were analysed in the present study. Among them, 52.7% were males and 47.3% were females. Most of the patients were from 21-30 years age group with the mean age of 36.84±18.75 years. Buccal mucosa and mandible were the most common sites for soft tissue and hard tissue lesions respectively. Odontogenic cysts (20.7%) were the most common category followed by benign lesions (17.3%) and malignant lesions (16.9%). However considering the frequency of individual lesion, mucocele (13.1%) was the commonest lesion followed by squamous cell carcinoma (12.7%). Total concordance between clinical and histopathologic diagnosis was found in 56.5% cases. The most clinicopathological agreement was seen for benign lesions followed by malignant lesions. Conclusion: The findings suggests that a wide variety of oral lesions are seen in this part of Nepal and also, that the cases of OSCC’s are on a rise with each subsequent year. At present, though it is the second most common entity, it can be hypothesized that OSCC may be higher up on the list. Therefore, oral healthcare awareness is paramount and this may be the only way to reduce the oral cancer incidence rates and lowering the healthcare management burden. This is a single institution based data and further larger studies encompassing multiple institutions is warranted to procure better epidemiological data and improve oral healthcare and outcomes vis-à-vis quality of life.
MOLARINCISORMALFORMATION:ANUNUSUALDENTAL DEVELOPMENTAL ANOMALY

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Introduction: Dental developmental defects are often hereditary, and can occur at or around birth, and have been linked to epigenetic changes, trauma, illnesses and unfavorable environmental stimuli. Commonly recognized dental defects include molar-incisor hypomineralization and chronologic hypoplastic enamel defects. An unusual pattern of dysmorphic crown and root development have been identified in permanent molars and incisors and primary second molars, characterized by thin or shortened roots, cervical constriction of the molar crown and a cervical notch in the incisors. Clinical exam is often negative. Molar- Incisor Malformation (MIM) represents a newly identified dental developmental defect.

Case description: A healthy 11 year old female presented to Cohen Children’s Medical Center for comprehensive pediatric dental care. Radiographs demonstrate alterations of permanent maxillary incisors, maxillary canines and permanent first molars, characterized by pulpal, dentin, root and cervical crown abnormalities, thin, spindly molar roots and a cervical notch of the maxillary central incisors. Prior dental history included extraction of dysmorphic, periapically involved mandibular right first permanent molar, leading to mesial migration of the second molar and unfavorable malocclusion, and root canal therapy of right maxillary permanent canine. The treatment plan includes space maintenance and long term follow up of dysmorphic dentition.

Conclusion: Negative sequelae of aberrant dental development includes caries, pulpal necrosis, periodontal instability, premature exfoliation and secondary effects due to management of these conditions, including mesial migration, supraeruption and dental malocclusion. The majority of patients exhibiting MIM have been reported to have neurologic diseases such as meningitis, stroke, meningomyelocle, as well as other significant medical conditions, necessitating hospitalizations and invasive medical treatment within the first year of life. Identifying this condition in a patient highlights a need for a comprehensive review of the medical history. Similarly, patients with complex medical conditions in early childhood should be followed for possible development of dental morphologic defects.

ORAL PYOGENIC GRANULOMA: A 18-YEAR RETROSPECTIVE CLINICOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL STUDY

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INTRODUCTION: Pyogenic granuloma (PG) is a non-neoplastic lesion that occurs frequently in the skin and oral cavity. There are two histological types of PG in the mouth: the lobular capillary hemangioma (LCH), characterized by vessels organized in lobular aggregates, and the non-LCH (NLHC) type, characterized by vascular proliferation similar to granulation tissue. The purpose of the present study is to compare the frequency, demographic, clinical, histopathological and immunohistochemical features of the two types of PG. MATERIAL AND METHODS: Retrospective study was performed on our archives from January 2000 to October 2018 (total 8,755 cases), comprising 197 cases diagnosed as PG. Gender, age, site of lesion and previous history of trauma data were collected; histologic sections of all cases were reviewed and immunohistochemical reactions (GLUT-1, CD34, SMA and mast cell tryptase) were performed in 11 LHC and 11 NLHC cases. Number of CD34-positive microvessels and SMA-positive area were evaluated. Data were submitted to appropriate statistical analyses (α=0.05). RESULTS: After review, 62 cases of LHC and 107 of NLHC PG were included in our study. Mean age of patients was 38.59±16.96 years, 55.62% were females (18% pregnant), 39.64% of cases occurred in gingiva, 76% of nodules were pedunculated, and 13.02% of the patients reported history of previous trauma. LCH occurs in younger individuals than the NLHC PG, and in the lips, while NLCH PG is more prevalent in gingiva (p<0.05). Atrophic epithelium, number of microvessels and SMA-positive area are more prevalent in LCH PG (p<0.05). Number of mast cells does not differ significantly between PG histological types. GLUT-1 was negative in all cases.

CONCLUSIONS: PG corresponds to 2.25% of the lesions submitted to our service, and the majority of them is of NLHC type. HLC and NHLC PG present clinicopathological differences regarding age, site, epithelium atrophy and vascularization.
CIRCUMORIFICAL PLASMACYTOSIS OF THE ORAL CAVITY. REPORT OF TWO RARE CASES

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Objectives: Plasma cell infiltrates of the oral mucosa might be the sequela of neoplastic processes (e.g. extramedullary plasmacytoma or multiple myeloma), hypersensitivity reactions (e.g. plasma cell gingivitis) or infectious diseases (like syphilis). Another uncommon cause of oral plasmacytic infiltration is Circumorificial Plasmacytosis (CP). CP represents a rare plasma cell disorder of the orificial mucous membranes with unknown etiopathogenesis. In the oral cavity, it presents with atypical lesions, histologically demonstrating a dense plasma cell infiltrate. Herein, we report two cases of CP involving the oral mucosa of elderly male patients.

Findings: Two male patients, 79 and 80 years old respectively, presented for the evaluation of ulcerated cobblestone or florid papillomatous areas in their buccal vestibules, in addition to diffuse erythema and swelling of their vestibular gingiva. None of the patients had a history of autoimmune or immune-mediated disorders. A broad differential diagnosis was formulated, including orofacial granulomatosis, plasma cell gingivitis and hematologic malignancies. Incisional biopsies were performed from the buccal vestibules and gingiva of both patients. Histopathologic examination revealed an extensive and diffuse infiltration of the connective tissue by cells with morphologic characteristics of plasma cells, in addition to epithelial hyperplastic changes. Immunohistochemical examination for kappa and lambda chains, as well as CD20, CD3 and CD43, revealed a predominant cell constituency of polyclonal plasma cells, while Ki-67 proliferation marker was <10%, rendering a final diagnosis of CP in both cases.

Conclusion: Even though a benign process, CP exhibits clinical and histopathologic features that may overlap with other entities and mimic malignancy, causing significant diagnostic dilemmas. Immunohistochemical confirmation of plasma cell polyclonality is essential for the final diagnosis, while treatment is challenging with various proposed therapeutic agents showing controversial results.

MUCOUS MEMBRANE PLASMACYTOSIS – REPORT OF TWO CASES AND REVIEW OF THE LITERATURE

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Introduction: Mucous membrane plasmacytosis (MMPL) is a rare condition of the mucosa characterized by a dense plasma cell infiltrate. Although the etiology remains elusive, it is believed to be a nonspecific inflammatory response to an unknown exogenous stimulus. After the initial description in 1952, multiple authors have described similar lesions typically in genital skin or mucosa, gingiva, lips, tongue, palate, buccal mucosa, epiglottis, nasal cavity, and larynx. Clinical presentations vary, and the lesions may be erosive, nodular, generalized swelling, or painful plaques. Microscopically, MMPL is characterized by sheets of polyclonal plasma cells in a cobblestone arrangement, resembling a neoplasm, without evidence of microorganisms, granulomatous or foreign bodies. Several entities are included in the differential diagnoses, as primary or secondary syphilis, prominent plasma cell component of the host response directed against squamous cell carcinoma, or basal cell carcinoma (cutaneous cases), and plasmacytoma.

Case Presentation: We present two cases of MMPL in two older males. Both presented with nodular ulcerated enlargement of the anterior gingiva. Microscopic examination revealed a polyclonal plasma cell population arranged in a cobblestone fashion. Kappa and Lambda studies showed physiologic ratios, and negative relationship to Epstein-Barr Virus was seen. Also, no evidence of microorganisms or granulomatous inflammation was present. Neither of our patients had a history of exposure to agents known to produce mucosal plasmacytosis.

Conclusions: Anecdotally, a conservative approach has been considered appropriate treatment for MMPL, and although the prognosis is favorable, this entity has been reported in association with chronic lymphocytic leukemia and squamous cell carcinoma. Although the possible association could be explained by inflammation as a cofactor of carcinogenesis, the possibility of unrelated synchronous coexistence cannot be ruled out. Therefore, close clinical follow-up is recommended.
PLEXIFORM SCHWANNOMA: AN UNUSUAL CLINICAL ENTITY

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Objectives: An 18-year-old male presenting with asymptomatic, pale yellow nodules on the dorsal tongue of 2 years duration with biopsy resulting in with an unusual diagnosis. The principal goal of this presentation is to discuss the difficulty encountered in distinguishing plexiform schwannoma from plexiform palisaded encapsulated neurona. Findings: An 18-year-old Hispanic male presented with non-painful “tongue blisters” of 2 years duration without significant change in clinical appearance. His past medical and family histories were not significant. He reported no other lesions on his skin. He was not on any medications nor did he have any drug allergies. He did not smoke or chew tobacco.

An oral examination revealed three, asymptomatic submucosal nodules, 0.6 x 0.6, 0.7 x 0.5, and 0.6 x 0.5 cm on the left mid-dorsal tongue. The nodules were soft and non-tender. The differential diagnosis included multiple lipomas or granular cell tumors. Biopsy of one nodule was performed. Microscopy revealed a multinodular, submucosal, benign tumor composed of haphazardly arranged spindle cells exhibiting serpentine nuclei in a fibrillar stroma. Focally, disorganized areas representing Antoni A and B areas were seen. Immunoperoxidase staining for S-100 protein and glial fibrillary acidic protein (GFAP), a marker for Schwann cells, was positive. Epithelial membrane antigen (EMA) immunoreactivity was noted in the tumor capsule. A final diagnosis of plexiform schwannoma was established. The patient had no outward manifestations of neurofibromatosis type 2.

Conclusions: The histological differentiation between plexiform schwannoma and plexiform encapsulated neurona is difficult. Review of literature confirmed the complexity of the diagnosis. A diagnosis of plexiform schwannoma was made based on the staining of Schwann cells by GFAP. An infrequent association with neurofibromatosis, type 2 is documented in literature reviews.

ORAL PSEUDOMYOGENIC HEMANGIOENDOTHELIOMA: A CASE REPORT AND REVIEW OF THE LITERATURE

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Objective: The pseudomyogenic hemangioendothelioma (PMH) is an uncommon malignant vascular neoplasm that was first introduced into the World Health Organization (WHO) classification of bone and soft tissue tumors in 2013. It is most often seen in young males with a predilection for the extremities, where it presents as either a solitary or multiple nodule(s). Although considered a malignancy, the clinical course of PMH is indolent; this marks an important distinction from the epithelioid sarcoma, a malignant neoplasm that shares many histologic features of PMH, but is clinically aggressive. Treatment of PMH is typically limited to local surgical excision, although larger lesions or instances of disseminated disease may require adjuvant therapy. Oral PMH is exceedingly rare, with only one documented case in the literature to date. Herein, we present a case of oral PMH occurring in the mandibular gingiva of a 31-year-old female. To the best of our knowledge, this represents only the second reported case of oral PMH.

Findings: A 31-year-old female patient initially presented to a local periodontist for evaluation of an inflamed area of the right mandibular gingiva. The clinician debrided the area and removed what was thought to be a “fishbone” from the site. No tissue was submitted for pathologic examination at this time. After the area failed to heal, the patient was placed on a corticosteroid ointment. At this point, the patient was referred to Columbia University Department of Oral and Maxillofacial Surgery for evaluation and biopsy. Based on the morphologic and immuno-histochemical findings, a diagnosis of PMH was rendered and the patient underwent a wide local excision of the site.

Conclusion: PMH is a rare, albeit important malignant vascular neoplasm with only one previously reported oral manifestation. Enhanced awareness of this entity may help avoid diagnostic pitfalls and lead to improved clinical outcomes.
READ BY TITLE ABSTRACTS

ORAL LICHEN PLANUS AND WORSENING OF PERIODONTAL PARAMETERS
Dr. Raisa Catunda (University of Alberta Faculty of Medicine and Dentistry), Dr. Carlos Figueredo (University of Alberta Faculty of Medicine and Dentistry), Dr. Seema Ganatra (University of Alberta Faculty of Medicine and Dentistry), Dr. Monica Gibson (University of Alberta Faculty of Medicine and Dentistry)

Introduction: Few sources of data on periodontal parameters in patients with OLP are documented in the literature. Both OLP and periodontitis are chronic diseases that require given periods of follow-up to be investigated, and no studies have analyzed the association of these conditions with a longitudinal approach thus far. The objective is to review the literature systematically to determine if there is an association between oral lichen planus and worsening of periodontal parameters.

Methods: A vast systematic search of the following databases was performed up to October 2018: PubMed, Medline, Embase and Google Scholar. Cross-sectional, case controls and cohort studies in humans that assessed correlation of oral lichen planus (OLP) with periodontal status. Periodontal parameters were: gingival index (GI), bleeding on probing (BOP), clinical attachment loss (CAL) and pocket depth (PD).

Results: 686 records were identified from 4 databases and 50 articles from partial grey literature. After screening steps, 9 eligible articles were included. Not all used the four specified parameters. GI values for OLP patients were 1.13 (±1.62) vs 1.04 (±1.99) in healthy controls (p=0.12); BOP 6.25% (±7.68) vs 1.59% (±1.73) (p=0.0369)*; CAL 2.28mm (±1.57) vs 2.11mm (±1.93) (p=0.6589) and PD 2.31mm (±0.94) vs 2.09mm (±0.49) (p= 0.8197). The only periodontal parameter that was increased in a statistically significant manner was BOP.

Conclusion: Within the limitations of our study, we concluded that there is a positive correlation between increased BOP and the presence of OLP, as would be expected due to gingival inflammation. Therefore, an effect of OLP on periodontitis progression may be plausible because both share an immune-inflammatory mechanism of pathogenesis, giving value to further investigation of this association.

INTRAOSSEOUS SOLITARY INFANTILE MYOÉBROMA: CASE REPORT.
Dr. María del Rosario Castañeda-Gómez (Universidad de Guadalajara, Centro Universitario de Ciencias de la Salud, Department of Microbiology and Pathology, Laboratory of Pathology.), Dr. Daniel González-Hernández (Hospital Civil de Guadalajara “Juan I. Menchaca” OPD, Maxillofacial Surgery Service.), Dr. Raúl Dueñas-González (Universidad de Guadalajara, Centro Universitario de Ciencias de la Salud, Department of Integral Dental Clinics, Specialty of Maxillofacial Prosthesis), Dr. Ana Graciela Puebla-Mora (Universidad de Guadalajara, Centro Universitario de Ciencias de la Salud, Department of Microbiology and Pathology, Laboratory of Pathology), Dr. Mario Nava-Villalba (Universidad de Guadalajara, Centro Universitario de Ciencias de la Salud, Department of Microbiology and Pathology, Laboratory of Pathology)

Myofibroma is a solitary benign neoplasm that frequently affects the head and neck region of young patients, and which in some cases may present an aggressive behavior. A 13-year-old girl was brought to the maxillofacial surgery service owing to a mass affecting the left mandibular body and ramus, with cortical thinning. In tomographic slices and three-dimensional reconstruction, intralesional septa were observed, as well as the displacement of the second molar. A biopsy revealed a biphasic mesenchymal neoplasm composed of a population of round/oval cells grouped into hypercellular areas, and spindle cells associated with fibrous areas. Additionally, it was accompanied by a rich network with a hemangiopericytoid pattern and intralesional hemorrhage (intralesional venous lakes were revealed in an angiotomography). The cells were negative to CD34 and S-100, and positive for SMA with a Ki67 <1%; a diagnosis of Myofibroma was established. The patient was subjected to hemimandibulectomy with wide margins and microvascular fibular graft. Myofibroma can be misdiagnosed as a result of its wide diversity of histopathological patterns; thus, clinical, imagenological, histopathological and immunohistochemical integration is fundamental for a precise diagnosis.
KAPOSI SARCOMA AS THE FIRST MANIFESTATION OF HIV. A CASE REPORT.


Introduction: Kaposi sarcoma is a malignant, angioproliferative and multi-center neoplasm, with an endothelial origin. It is associated to VHH-8 and it generally appears in immunocompromised patients, such as those suffering from HIV infection, or following a transplant or have been infected by the Human Immunodeficiency Virus. It may clinically have a slow, progressive and indolent behavior, usually limited to the skin or mucosae, but it may also appear as an aggressive and rapidly progressive disease.

Presentation to the case: 31-years-old male patient, who lives and comes from the State of México. He comes to consultation because he has numerous red-violet lesions, some of them in patches and some of them a nodular morphology, located in maxillary vestibular gingiva and hard palate. With the clinical findings a presumptive clinical diagnosis is issued, which refers to Kaposi Sarcoma. An incisional biopsy is then performed and an ELISA test required, which turned out to be positive. In the histological cuts that were examined, neoplastic proliferation was observed, in blood vessels of different caliber and of cells tapered with chromatin, which present cellular and nuclear pleomorphism and a great number of aberrant mitosis. Recent profuse hemorrhage is identified. The sample is covered by flat hyperparakeratinized stratified epithelium. The diagnosis made was of a Kaposi Sarcoma.

Discussion: In 22% of the case, the first clinical manifestation of Kaposi sarcoma occurs in the oral cavity of HIV positive patients, and up to 71% of the patients carriers of HIV might develop Kaposi sarcoma.

Conclusions: Within the context of an HIV infection, the incidence of Kaposi sarcoma has diminished drastically following the introduction of the antiretroviral therapy. However, the lesions can be observed in mucosae or skin are most commonly associated to the patients with AIDS. And might be the guideline for the systemic diagnosis as it was in the presented here.

OSTEOSARCOMA IN THE MAXILLA, FIBROBLASTIC VARIANT. REPORT OF CASE

Dr. Karla Leonor Robles Calzada (UNAM), Dr. Javier Portilla Robertson (Department of Oral pathology, Maxillofacial and Oral Medicine. Division of Postgraduate Studies and Research. National Autonomous University of Mexico. UNAM. School of Dentistry.), Dr. Ana María Cano valdez (InCan), Dr. Claudia Haydee Sarai Caro-Sánchez (InCan), Dr. Carla Monserrat Ramírez Martínez (Department of Oral pathology, Maxillofacial and Oral Medicine. Division of Postgraduate Studies and Research. National Autonomous University of Mexico. UNAM. School of Dentistry.)

Introduction: Osteosarcoma is a malignant neoplasia derived from mesenchymal cells that produce osteoid or immature bone. In head and in neck it accounts for 6% of all tumors. It’s main localization is maxillary bones, more frequently in the jaw, with a better prognosis than the maxilla. Being more common in males, in the third and fifth decades of life. In the oral cavity it’s usually symptomatic, may manifest with symptoms like: pain, displacement of teeth, paresthesia and nasal obstruction, according to its localization, development time and size.

Case presentation: A 83 years old female presented to our Oral Medicine Clinic with a progressive lesion increasing in size in the right maxillary region of approximately 10 cm in diameter, within the last two years. CT showed mixed lesion in left jaw region with destruction of maxillary antrum and obstruction of the airway. The tumor measured 8x8x6cm, solid and hyperdense with an osteoid matrix deposit. An incisional biopsy was made showing as a malignant lesion producing osteoid matrix with fibroblastic areas.

Discussion: In Mexico, we do not have a head and neck National Registry of Tumors of. In 2010 Kuauhyama et. al. published a series of 21 cases, where incidence in men was higher, with a mean of 37.5 years. Because of its low frequency diagnosis is difficult, other entities must be discarded in this location, which includes: fibrous dysplasia, osteomyelitis and Paget’s disease of bones. Its differentiation from other entities is of great importance to establish an appropriate treatment.

Conclusion: Early diagnosis of osteosarcoma is fundamental. In these cases the recommended approach consists of well planified surgeries, adjuvant radio or chemotherapy considering that the clinical behavior of maxillary osteosarcomas is different in long bones. Early diagnosis is fundamental for patients survival.
READ BY TITLE ABSTRACTS

PRIMARY SYPHILIS PRESENTING ON THE TONGUE
Dr. Mohammed Bindakhil (University of Pennsylvania, School of Dental Medicine), Dr. Faizan Alawi (University of Pennsylvania, School of Dental Medicine), Dr. takako tanaka (University of Pennsylvania, School of Dental Medicine)

Introduction: Syphilis is an uncommon sexually transmitted disease caused by Treponema pallidum. It is characterized by the development of chancres at the site of inoculation. Only 14% of primary syphilis lesions occur extra-genitally, and the oral cavity is usually affected due to oro-genital contact. Oral chancres typically involve the lips; however, the tongue and palate can be affected. We present a rare case of a syphilitic chancre of the tongue.

Case report: A 52-year-old male presented with a one-month history of a non-healing ulceration on the tongue. The patient reported it felt like a pizza burn, but mostly painless with only occasional discomfort. He self-described as homosexual, and generally in good health without taking any medications. Extraoral examination was unremarkable. Intraoral examination revealed a deep ulceration measuring about 1cm on the right lateral tongue and surrounded by lichenoid-appearing inflammation. Differential diagnosis included traumatic ulceration, deep fungal infection, and malignancy. Excisional biopsy demonstrated ulcerated mucosa overlying lamina propria containing a dense, deep and perivascular lymphoplasmacytic inflammatory infiltrate. Periodic acid–Schiff stain was negative for fungi. Immunohistochemical studies for T. pallidum revealed numerous spirochetal organisms. Serologic studies confirmed rapid plasma reagin titers (RPR) and T. pallidumantibodies. The cumulative findings were consistent with the diagnosis of primary syphilitic chancre. After learning of the diagnosis, the patient reported multiple painless penile lesions. A single intramuscular injection of Benzathine penicillin G 2.4 million units was administered. At a follow-up visit three weeks later, the tongue appeared to be healed. Although RPR was planned to be retested six months later, the patient was subsequently lost to follow-up.

Conclusion: Oral primary syphilis can mimic many conditions that affect the oral cavity. Early detection and treatment can significantly decrease the disease complications. Although rare, primary syphilis should be considered in the differential diagnosis of non-healing oral ulcerations.

DECOMPRESSION MAY SERVE AS A RELIABLE INITIAL TREATMENT METHOD FOR GLANDULAR ODONTOGENIC CYSTS: A REPORT AND RETROSPECTIVE STUDY
Dr. Austin Shackelford (Columbia University College of Dental Medicine), Dr. Carleigh Canterbury (Columbia University College of Dental Medicine), Dr. Joy Chen (Columbia University College of Dental Medicine), Dr. Garrick Alex (Columbia University College of Dental Medicine), Dr. Sidney Eisig (Columbia University College of Dental Medicine), Dr. Alia Koch (Columbia University College of Dental Medicine)

Objectives: The Glandular Odontogenic Cyst (GOC) is a developmental odontogenic cyst which commonly presents as a painless mandibular swelling. It often has an aggressive clinical course, with a tendency to recur in approximately one third of documented cases. While the diagnostic criteria of GOCs has been well established, treatment protocols for this entity remain contested. Treatment typically has been correlated with lesion size and ranges from curettage to bloc resections. One novel approach is decompression followed by enucleation. In this way, the GOC can be reduced in size, allowing for a more conservative surgical approach. Herein we present a case of a GOC that occurred in the left posterior mandible of a 63-year-old male, which was treated by decompression followed by enucleation. In addition, we have conducted a review of the cases treated with this method over the past five years at the Columbia University Irving Medical Center (CUIMC).

Findings: A 63-year-old male presented to CUIMC for evaluation of a large radiolucent lesion in the left mandible extending from the subcondylar region to the body of the mandible. At the time of initial biopsy, a surgical drain was placed. The drain was maintained for over twelve months during which regular clinical and radiographic follow-up was performed. The patient then received definitive treatment of enucleation and has shown successful results with no evidence of recurrence. Our review of previous cases showed similar results as this case.

Conclusions: Despite their clinically aggressive behavior, GOCs may respond well to decompression followed by enucleation. In this way, the patient can be spared larger surgical procedures. Retrospective analysis of cases at CUIMC demonstrate that this initial approach can have potentially beneficial effects on treatment outcomes.
TWO RARE EXTRACTION CASES OF UNSUSPECTED AND SUSPECTED CONCRÉSCENT MOLAR EXTRACTIONS. CASE REPORTS WITH POST-SURGICAL SPECIMEN RADIOLOGY
Ms. Daniela Boldikova (NYU College of Dentistry)
Concrecence is a rare developmental anomaly of dental hard tissues, characterized by the union of adjacent teeth by cementum. The etiology is widely disputed – studies have linked it to instances of trauma, infection, and crowding in the developing dentition. The incidence varies between deciduous and permanent teeth, with deciduous teeth exhibiting concrecence in 0.2-3.7% upon extraction, while permanent teeth exhibit concrecence at about 0.8%. The highest observance is typically found between maxillary second and third molars, and early diagnosis may be complicated by crowding or superimposition of teeth in the posterior maxilla. Identification of concrecence prior to surgical procedures can facilitate more effective extraction of affected teeth – however, surgical planning may be limited by the diagnostic quality of radiographic images. This presentation is a literature review of concrecence and the implications of the etiology on oral surgical patient management. This presentation also highlights two case reports with post-surgical specimen radiography of patients who exhibited concrecence when presenting to NYU College of Dentistry. Early detection and identification of concrecence amongst dental hard tissues is imperative for effective surgical planning, as is understanding the potential etiology of such rare developmental anomalies.

JAWS, THE MOST UNIQUE BONES IN THE HUMAN SKELETON – MORE THAN 20 DIFFERENCES REVIEWED.
Dr. Jerry Bouquot (University of Texas, Houston), Dr. Steven Whitaker (West Virginia University School of Dentistry), Dr. Ashley Clark (University of Texas, Houston), Dr. Firoozeh Samim (McGill University)

Introduction: The jawbones, especially the mandible, are without a doubt the most unique bones of the human skeleton. They have more total numbers and types of pathologies, by far, than any other bones. Additionally, the mandible is more liable to chronic ischemia and inflammation than any other bone. Unique pathophysiologic aspects explain some features, while others remain poorly understood; overall they allow dental/osseous treatments that could not possibly be successful in extragnathic bones. Objective: To characterize the unique physiological, anatomical and pathological uniqueness of the maxilla and mandible. Methods & Materials: A four-decade-long literature review of the dental and orthopedic literature was undertaken, commencing with a Bone Pathology Fellowship by one of the authors (JEB) and including more than 5,000 papers and textbook chapters. Results: A total of 22 different and unique features of the jawbones were identified, suggesting that, compared to long bones, the jaws: are routinely ischemic or inflamed; experience more infection, more trauma, more implants, more exposed bone, more and more varied cortical masses, more focal osteoporosis, more internal fibrous scar tissue, more varied neoplasms, more varied cysts and more osteocavitations (voids); have a much faster turn-over rate; are closer to the surface and have more “stuff” (spicy candies, tobacco, cocaine, etc.) placed next to them; are the only bones with large sensory nerves and lymphatic vessels internally; are the only bones with teeth embedded, resulting in incomplete epithelial covering; have much more frequent acute diminution of blood flow (vasoconstriction) than any other bones; and strongly influence recognition (facial recognition) of other humans. Conclusion: The jawbones, especially the mandible, are, by far, the most unique and different bones in the human skeleton.
ARCHEGONOUS CYSTIC ODONTOMA, A CASE PRESENTATION

Dr. Beatriz Aldape (UNAM), Dr. Jesús Everardo Ochoa Zavala (ORAL AND MAXILLOFACIAL SURGERY)

Introduction: Archegonous cystic odontoma (cystic odontoma) is an unusual cystic lesion characterized by ameloblastic epithelial lining and areas of dental hard tissue formation. Herein, we describe a maxillary example occurring in a 5-year-old female.

Methods and Materials: The 5 years old female patient presented with a slow-growing, asymptomatic lesion in the left side of the anterior maxilla. The lesion was excised and histologic preparations and immunohistochemical stains were performed for diagnostic purposes.

Results: Radiographic evaluation revealed radiolucency with calcifications in the cystic cavity. The lesion was displacing adjacent teeth. The patient also presented with missing both permanent maxillary lateral incisors and malformation of the left first premolar. Macroscopically, the specimen consisted of a semi-translucent cystic lesion 2.2x1.5x1 cm with accompanying hard tissue. Microscopically, the cystic cavity was lined thin epithelium characterized by cuboidal and polygonal cells featuring palisading of the basal cell layer and subjacent fibroblastic zone with hyalinized dentinoid induction which lacked dentinal tubules. Immunohistochemically, the epithelium was negative for calretinin. Component cells of the connective tissue wall were negative for S100, CD34 and EMA.

Conclusions: a) A rare example of archegonous cystic odontoma is reported. b) This variant should be appropriately included among odontogenic tumors.

HEAD AND NECK RELATED QUALITY OF LIFE AMONG HEAD AND NECK CANCER PATIENTS IN SOUTH WESTERN NIGERIA

Dr. Bamidele Kolude (UNIVERSITY OF IBADAN/ UNIVERSITY COLLEGE HOSPITAL)

AIM: To evaluate the impact of HNCs and therapy on the quality of life of patients in a tertiary health facility in South Western Nigeria.

METHODS: Cross sectional descriptive study that utilized a structured questionnaire comprised of items from two HN-QOL instruments: University of Washington – Quality of Life (UW-QOL) & European Organization for Research and Treatment of Cancer (EORTC) questionnaires.

RESULTS: Study comprised 55 respondents (55 males (84.6%) & 10 females (15.4%) and mean age was 52.4±10.7 years. TNM stages at presentation were stage I (15.4%); stage II (18.4%); stage III 32.3% & stage IV (33.8%). Overall mean score was 61.95±15.5. Difference in the mean QL scores according to age group, educational status, treatment type and risk habits was insignificant but difference in mean scores according to socioeconomic status and TNM stage was significant.

CONCLUSION: Early presentation & Adequate/ Qualitative health care (depicted by early stage tumors and high socioeconomic status respectively) were the main determinants of respondents QL in this study.
Clinical Pathology Conference

Wednesday, June 12, 2019
8:00 am – 10:30 am

Dr. Ellen Eisenberg
Moderator

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<td>Dr. Anna Trzcinska&lt;br&gt;Mount Sinai Medical Center&lt;br&gt;New York, NY&lt;br&gt;<a href="mailto:Anna.trzcinska@moundsinai.org">Anna.trzcinska@moundsinai.org</a></td>
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<td><strong>Case 6</strong></td>
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<td>Dr. Kevin Torske&lt;br&gt;U.S. Navy&lt;br&gt;Suffolk, VA&lt;br&gt;<a href="mailto:Khtorske@gmail.com">Khtorske@gmail.com</a></td>
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Case 1
A 48-year-old white male presented with a complaint of a rapidly growing mass on the right lower lip, present for 5 weeks. The patient’s medical history was positive for Diabetes Mellitus, Type II, hypothyroidism, and acid reflux. Clinical examination revealed a 1.5cm exophytic, ulcerated mass with firm borders.
Case 2
An 89-year-old man presented to his dentist with a firm erythematous swelling from which thick, purulent material could be expressed. Standard dental radiographs were unremarkable. Following incisional biopsy, a cone beam was obtained.
Case 3

This 8½ year old girl presented to the pediatric dentist with a complaint of asymptomatic swelling of the right mandible. She was then referred to the oral surgeon who proceeded to obtain imaging studies. At time of biopsy the oral surgeon noted a multilocular cavity without much tissue.
Case 3 (continued)
Case 4
A 49-year-old HIV-positive man presented with a painless, firm palatal mass that rapidly increased in size over the previous 4 months. The large mass had been compromising speech and mastication, so that the patient reported a weight loss of over 10 pounds in the interval since its onset. The maxillary anterior teeth were markedly mobile. There was slight blanching with the application of pressure. The remaining oral soft tissue examination was within normal limits. There was no palpable cervical lymphadenopathy and no perioral abnormality was noted.
Case 5

This 87 year old woman reports a history of “canker sores” that are so painful, she is unable to eat. Large ulcers are present on the right buccal mucosa, left ventral tongue, left hard palate and the right soft palate. Recently she developed 3 scalp lesions. The patient’s medications include Synthroid, Protonix, Lasix, and Carafate.
Case 5 (continued)
Case 6

This 38 year old African American woman presents with a rapidly growing mass in the right posterior mandible. The lesion arose prior to the extraction of tooth #31, which was removed approximately 3.5 months previously. Now there is an expansile mass in the former extraction site.

The patient has a history of Type I, insulin-dependent diabetes mellitus and obesity.
Case 6 (continued)
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