POSTER ABSTRACT PRESENTATIONS

#1

DERMATOLOGIC LESIONS SUBMITTED TO AN ORAL AND MAXILLOFACIAL PATHOLOGY BIOPSY SERVICE: AN ANALYSIS OF 2487 CASES

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Objective: Skin lesions are commonly submitted to oral and maxillofacial pathology practices. However, the range of dermatologic lesions within an oral pathology biopsy service is not well studied. The purpose of this study is to evaluate the variability and composition of dermatologic lesions in a large oral pathology biopsy service. Methods: An IRB-approved retrospective search of skin lesions was performed within the archives of the UF Oral Pathology Biopsy Service (1994-2015). Results: A total of 2487 cases were included in the study. Gender was reported in 2466 cases, of which 1456 (59%) were male and 1010 (41%) female. Age was provided in 2367 cases and ranged from 2 weeks to 96 years with an average of 55 years. Location was indicated in 2473 cases. Lips were the most common 1032 (41.7%), followed by face 625 (25.3%), neck 183 (7.4%), ear 101 (4.1%), and scalp 95 (3.8%). The 2487 cases included in this study were comprised of 1902 (76.5%) epidermal lesions, 419 (16.8%) melanocytic lesions, 66 (2.7%) reactive/granulomatous/histiocytic lesions, 32 (1.3%) pilar neoplasms, 31 (1.3%) soft tissue/mesenchymal lesions, 19 (0.76%) sebaceous lesions, and 9 (0.36%) sweat gland neoplasms. Only 69 (2.8%) of 2487 cases resulted in dermatopathologic consult prior to final reporting. Overall, skin lesions accounted for approximately 1% of all lesions submitted to an oral pathology biopsy service. For example, they comprised 1.66% of total cases in 2009, 1.38% in 2010, 1.12% in 2011, 1.30% in 2012, 0.95% in 2013, and 0.96% in 2014. Conclusion: With the results of this study, oral and maxillofacial pathologists can better understand the magnitude and variability of dermatologic lesions submitted to their service, and realize the significant challenge they present.

#2

LICHENOID CHARACTERISTICS IN PREMALIGNANT VERRUCOUS LESIONS AND VERRUCOUS CARCINOMA OF THE ORAL CAVITY

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Introduction: Presence of lichenoid features in verrucous hyperkeratosis (VH) and verrucous carcinoma (VC) may be misleading to pathologists and clinicians. The purpose of this study is to evaluate and categorize the frequency and the histopathologic pattern of lichenoid features in these lesions. Materials and

methods: With IRB approval cases of VH and VC were retrieved from the archives of UF Oral Pathology Biopsy Service from 1994 to 2014. A panel of board-certified oral and maxillofacial pathologists reviewed each case and scored the presence or absence of 5 lichenoid features: band-like infiltrate (BLI), saw tooth rete ridges (STRR), interface stomatitis (IS), Civatte bodies (CB), and basal cell layer degeneration (BCLD). Cases with insufficient tissue, large ulcerations, and those diagnosed as benign alveolar keratosis were excluded. A total of 70 cases of VH and 56 cases of VC were included. Results: Approximately 25% of both VH and VC cases exhibited 3 or more lichenoid features. By chi square testing, BLI, IS, and CB were significantly more common in VC over VH with BLI (p=0.000), IS (p=0.005), and CB (p=0.026). Also, gingival lesions had significantly less BLI (p=0.004) and IS (p=0.024) versus other sites. STRR exhibited an inverse relationship with, significantly higher presence in VH over VC (p=0.000) and on the gingiva over other sites (p=0.002). However, when analyzed by binary logistic regression, the only significant association that remained valid was the increased presence of band like infiltrate in VC over VH (p=0.001). Conclusion: Lichenoid features are common in both VH and VC and in many cases may represent a nonspecific inflammatory response to the dysplasia or malignancy rather than an overlapping lichenoid disease.

#3

CLINICAL AND HISTOPATHOLOGICAL FEATURES OF ORAL NEURAL LESIONS, A RETROSPECTIVE STUDY

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Introduction: Intraoral neural lesions though unusual may be clinically significant. The aim of this study was to evaluate oral neural lesions in a large biopsy service. Materials and Methods: With IRB approval a retrospective search of all neural lesions in the oral cavity in the archives of the University of Florida Oral Pathology Biopsy Service spanning 1994-2015 was performed. Extraoral cases as well as cases with insufficient patient information were excluded. Results: A total of 393 cases were included with a mean age of 47.4 years (range: 7- 89), and 44% male and 56% female. The most commonly affected locations were: tongue (24%), lip and labial mucosa (22%), palate (20%) and gingiva (15.5%). Majority of the reported clinical presentations (76%) were of a raised smooth nodule or mass, either sessile or pedunculated. The usual clinical impression described ranged from fibroma (54%), neural lesions (18%) to papilloma (15%). The microscopic diagnoses rendered, in descending order of frequency, were: traumatic neuromas: 159 (40%), neurofibromas (NFs): 123 (31%), schwannomas: 61 (16%), palisaded encapsulated neuromas: 39 (10%), benign neural lesion not otherwise specified: 8

(2%), subgemmal neurogenous plaque: 2 (0.5%), and mucosal neuroma c/w MEN2B syndrome: 1 (<0.5%). Immunohistochemical stain (mainly S-100) was performed on 22% of those lesions and most were positive. Conclusions: Neural lesions though uncommon in the oral cavity, should be considered in the differential diagnosis of oral masses and consideration of syndromic lesions is paramount as this may impact patient management.

#4

TOBACCO RELATED ORAL CANCER IN NEPAL: SMOKED VS SMOKELESS TOBACCO

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Tobacco is one of the most important risk factors for oral squamous cell carcinoma (OSCC). A 2007 WHO survey reveals that 35.3% of men and 15% of women in Nepal smoke tobacco and 31.2% of men and 4.6% of women use smokeless tobacco. The purpose of this study was to characterize OSCC lesions in Nepalese patients who used different forms of tobacco. We reviewed the 54 OSCC cases received in our institution during 2014-2016 and excluded 19 due to compounding risk factors. Of the 35 cases included in the study, 22 were male (age 53-83) and 13 female (age 55-72). Sixteen had smoking habit only, 11 used smokeless only, and 8 used both forms. Lesion sites were 15 buccal mucosa, 8 labial sulcus, 5 gingiva, 3 tongue, 3 labial mucosa, and 1 hard palate. Buccal mucosa was the most common site in the smokers only, while the majority of lesions in the smokeless only occurred on the labial mucosa or labial sulcus. All 3 tongue lesions occurred in patients who used both. The grade of the lesions was 28 well differentiated, 5 moderately differentiated, and 2 poorly differentiated. Both poorly differentiated lesions and 2 of the moderately differentiated lesions occurred in patients who used both forms of tobacco. Our data suggests that OSCC in Nepalese patients may differ significantly from that described in western populations, particularly the percentage of cases associated with smokeless tobacco use and the more common site of lesions in smokers. Larger studies are needed to further explore these differences.

#5

A SURVEY OF 57 CASES OF METASTASES TO THE ORAL CAVITY

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OBJECTIVE: Metastatic disease in the oral cavity, albeit uncommon, holds vital implications for patient treatment and prognosis. Previous studies indicate an average time of 7 months between time of diagnosis and death in cases of oral metastases. METHODS: We compiled 57 cases of tumors metastasizing to the oral cavity over a period of 18 years (1998-2016) from the Western Pennsylvanian

population. We seek to analyze the important diagnostic features of metastatic oral tumors and to describe its characteristics in our patient population. RESULTS: The sites of highest prevalence for oral metastases are mandible (35%), gingiva (23%), tongue (14%), buccal mucosa (10%), and palate (6%). For females, the mean age at presentation was 65.5 years; the most common primary sites were lung (25.6%), breast (22.2%), and colon (11.1%). For males, the mean age at presentation was 64.5 years; the most common primary sites were liver (23%), lung (16.6%), and kidney (13.3%). Importantly, in the majority of our cases (56.8%), no previous history of malignancy was reported, indicating that oral lesions can be the first sign of metastatic disease. CONCLUSION: Metastatic tumors to the oral cavity are extremely rare. While we report lung as the most prevalent primary for women and liver as the most prevalent primary for men in oral metastasis, other studies have outlined breast as the most common primary for women and lung as the most common for men. In addition, we found a tendency for certain malignancies, such as breast cancer, to appear in the oral cavity with a previous history of a primary whereas in other cancers, such as renal cell carcinoma, there is a propensity to present as a tumor of unknown origin without a previous history of malignancy in the patient.

#6

LICHENOID REACTION WITH GRANULOMATOUS STOMATITIS: A RETROSPECTIVE REVIEW

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Introduction: Lichenoid infiltration with granulomatous reaction is uncommon, and this phenomenon has been reported under the term of lichenoid granulomatous stomatitis/dermatitis (LGS/LGD). LGS/ LGD has been speculatively linked to infection, drug effects, hepatobiliary disease, baboon syndrome, and other conditions. We present 49 new cases of LGS by demography, clinical presentation, and histological pattern: the largest case series of LGS reported to our knowledge. Methods: With IRB approval, we retrieved all cases of lichenoid reaction with granulomatous stomatitis between 2000 and 2016 from the Oral Pathology archives at the University of Florida. Sections were stained with CD68, AFB, GMS and PAS. Results: The mean age was 64.3 years (range 35-88). Females were more affected (n=30) than males (n=17). The majority were Caucasians (n=30), followed by African Americans (n=2), and Hispanics (n=2). Site affected by descending order: gingiva (35%, n=17), buccal mucosa/vestibule (31%, n=15), tongue (15%, n=7), lip (15%, n=7), palate (2%, n=1), and diffuse/multifocal (2%, n=1). Clinical description was n=16 white, n=11 red, and n=17 mixed red and white. Pain was reported in about half the patients. The clinician differential diagnoses included leukoplakia, dysplasia, squamous cell carcinoma, oral lichen planus,

vesiculobullous lesions, trauma, and allergy. Several histologic patterns were represented. On direct immunofluorescence the cases were mainly positive for fibrinogen (n=11), with negative results (n=2) but the majority (n=35) were not tested. LGS cases were uniformly positive for CD 68 and negative for AFB, GMS and PAS. Conclusion: This distinctive histological pattern should be recognized and more detailed clinical history and lab tests maybe indicated.

#7

ODONTOAMELOBLASTOMA: A CASE REPORT AND REVIEW OF THE LITERATURE

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Objective: Odontoameloblastoma (OA) is a rare mixed odontogenic tumor with both ameloblastic (epithelial) and odontoma-like (ectomesenchymal) features. It presents as a unilocular or multilocular radiolucent to mixed lesion with root resorption, boney expansion, and/or jaw pain. Microscopically, the epithelial component often resembles a follicular or plexiform variant of a conventional ameloblastoma. In contrast to an ameloblastoma, however, the surrounding mesenchyme consists of dental hard tissue in the form of a compound or complex odontoma. OAs behave similarly to conventional ameloblastomas and are treated by wide surgical excision. Due to the scarcity of reported cases, however, little information exists regarding this lesion. Here, we report a case of OA occurring in the mandible of a 51-yer-old African American female. Clinical Presentation: The patient presented to her general dentist with a chief complaint of right lower jaw pain. Radiographic examination revealed a multilocular radiolucency around teeth #27-28. No swelling or boney expansion were evident clinically. Intervention and Outcome: The teeth were extracted and the periapical tissue was curetted by the general dentist. Following diagnosis of OA, the patient was referred to an oral surgeon for further treatment and subsequently underwent a marginal resection of the right mandible. Of note, curettage appeared to have been curative in this case, as no residual tumor was identified in the marginal resection specimen. Conclusion: In addition to the case report, we review the past and current literature available on OA. To the best of our knowledge, this represents only the 25th documented case of OA in the English-language literature fulfilling the WHO classification criteria for this entity.

#8

ODONTOGENIC MYXOMA OF THE MANDIBULAR CONDYLE

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Odontogenic myxomas (OM) comprise about 3-6% of all odontogenic tumors. The World Health Organization (WHO) defines OM as an intraosseous neoplasm

consisting of spindle/stellate cells embedded in an abundant mucoid matrix. OMs are benign, locally aggressive, and occur almost exclusively in tooth-bearing areas of mandible and maxilla. OMs are posterior jaw lesions and typically present radiographically as a multilocular radiolucency with a soap bubble or honeycomb appearance. Our purpose is to report the rare occurrence of an OM that presented in the condylar head of the mandible. Our patient is an edentulous 46-year-old male who presented with a 3.2 x 1.4 x 1.3 cm multiloculated radiolucent lytic lesion in the right condylar head, extending into the condylar neck, found incidentally during workup for carotid stenosis. The patients medical history was significant for a craniopharyngioma, which was surgically excised and irradiated in 1983. The patient complained of no symptoms related to the condylar mass. A bone biopsy was inconclusive; therefore, a resection was performed. Grossly, the specimen exhibited a 1.8 x 1.5 x 0.8 cm multilocular, gelatinous lesion. Histologically, the lesion was composed of a hypocellular uniform population of loose spindled and stellate cells in a mucoid rich matrix. The nuclei were small and inconspicuous. The cells are positive for vimentin and negative for S100. The mucoid-rich matrix showed positivity for Alcian blue stain. OMs in the non-tooth-bearing areas of the jaw are extremely rare. Search of English language literature revealed only 4 reports of myxomatous tumors of the mandibular condyle. We cannot exclude the possibility that the patients previous history of radiation therapy played an etiologic role in this process.

#9

ASSESSMENT OF CONCORDANCE BETWEEN THE SEQUENCING AND IMMUNOHISTOCHEMICAL STUDY FOR DETECTION OF BRAF(V600E) MUTATION IN AMELOBLASTOMAS

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Objective: Recent research have shown frequent MAPK(FGFR-RAS-RAF) pathway mutations in ameloblastomas, among which BRAF(V600E) mutation is most common. Because these mutations have been identified in other neoplasms, the targeted therapy medications are available and have been used for treatment. Moreover, there are three case reports suggested the efficacy of BRAF and MEK inhibitors in treating BRAF mutated ameloblastoma patients. As the first step of using targeted therapy in the future, the aim of this study was to determine the reliable detection method for BRAF(V600E) mutation in ameloblastomas. The concordance between the sequencing and immunohistochemical study for detection of BRAF(V600E) mutation was investigated. Methods: 50 formalin fixed paraffin embedded ameloblastoma tissue sections were used for DNA extraction and sequencing for examining the frequency of BRAF(V600E) mutation. BRAF(V600E) mutation status was further evaluated by BRAF(V600E) immunohistochemistry (IHC) with anti-BRAF(V600E) antibody (clone VE1,

Roche) and concordance between two methods was examined. Dental follicle and papillary thyroid carcinoma were used as negative and positive control, respectively. Results: 41 out of 50 (82%) ameloblastoma cases were BRAF(V600E) mutated. Prominent disconcordance between BRAF(V600E) sequencing and IHC was noted. High background and weak expression frequently affect the interpretation. The sensitivity and specificity of IHC for detection of BRAF(V600E) mutation was 69% and 33%, respectively. Conclusion: BRAF(V600E) mutation plays a predominant role in the pathogenesis of ameloblastoma. Due to the poor sensitivity and specificity of BRAF(V600E) IHC, using sequencing instead of IHC for detection of BRAF(V600E) mutation in ameloblastomas is suggested.

#10

ORAL HAIRY LEUKOPLAKIA AS A PREDOMINANTLY HIV-NEGATIVE ENTITY: A CASE SERIES

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OBJECTIVE: We present a case series of oral hairy leukoplakia (OHL), an oral mucosal lesion caused by Epstein-Barr virus (EBV) that is classically seen on the lateral tongue in patients with HIV/AIDS. We report on the features of OHL seen in the University of Pittsburgh Oral Pathology Biopsy Service and Medical Center. METHODS: All cases of OHL from 1984 to present were retrieved from our archives and reviewed. Clinical and demographic data from these cases were collected. RESULTS: Six cases were identified, all from the Oral Pathology Biopsy Service. EBV-encoded RNA (EBER) in situ hybridization was positive in all cases. The gender ratio was M:F=2:1. The mean age was 58.3 (range: 49-68). All 6 cases presented on the tongue, and 5 (83.3%) were unilateral. The clinical impressions included lichen planus, dysplasia, hyperkeratosis, and leukoplakia but never OHL. The HIV status was known in 5 of the 6 cases (83.3%). Only 1 patient was HIV positive, 4 were confirmed HIV negative, and 1 had an unknown HIV status. Of the HIV-negative patients, 2 used steroid inhalers, and a third developed OHL after using topical clobetasol for lichen planus. This case of topical steroid-induced OHL resolved upon cessation of the steroid use. Lastly, 2 of the 6 cases (33.3%) had concurrent candidiasis. CONCLUSION: While this is a small series, the fact that 80% of our cases with a known HIV status presented in confirmed HIV-negative individuals may suggest a changing demographic, at least in some geographic areas, for patients with OHL. The predominantly unilateral clinical presentation (83.3%) in our case series further emphasizes the need to include OHL in the differential diagnosis of white lesions on the lateral tongue in patients with a history of steroid use, regardless of HIV status.

#11

ORAL HAIRY LEUKOPLAKIA: A SERIES OF 23 CASES WITH A FOCUS ON IMMUNE STATUS AND MEDICAL HISTORY.

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Objectives: Oral hairy leukoplakia (OHL) is a benign Epstein Barr virus (EBV) infection that typically presents as a painless white plaque with corrugations on the lateral border of the tongue. OHL generally occurs in patients who are severely immunocompromised such as those with acquired immunodeficiency syndrome and after organ transplantation. However, an increasing number of cases have been noted in fairly healthy patients. The objective of this study is to report 23 cases of OHL in a single center. Study Design: Cases of OHL were identified from the biopsy service of the Harvard School of Dental Medicine from 2011-2016. Only cases with specific histopathology for OHL and that were positive by in situ hybridization studies for EBV were included. Results: There were 14 females and 9 males with a mean age of 63 years (range 24-100). The majority (86.9%) were aged 50 and above. Nineteen cases (82.6%) presented on the lateral/ventral tongue, 3 (13.0%) on the buccal mucosa and 1 on the lip. Seven patients tested negative for human immunodeficiency virus. Three patients were taking prednisone as well as azathioprine and mycophenolate for asthma, meningitis and systemic lupus erythematosus; one was taking methotrexate for rheumatoid arthritis. Six patients used steroid inhalers for asthma or chronic obstructive pulmonary disease. Thirteen patients were not on immunosuppressive therapy. The most common medical diagnoses were hypertension, hyperlipidemia, and hypothyroidism and the most common prescription medications taken were beta blockers, statins, aspirin and levothyroxine. Three patients were not on any medications. Conclusion: OHL may develop in older adults possibly from immunosenescence or in patients with mild-to-moderate immunosuppression.

#12

WHITE SPONGE NEVUS :A REPORT OF FOUR-GENERATIONS

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White sponge nevus (WSN) is a rare inherited, autosomal dominant genodermatosis, which is characterized by white and corrugated plaques mainly affecting the oral mucosa. Mutations of keratin 4 and keratin 13 have been associated with WSN. This condition shows a high degree of penetrance and variable expressivity. Our report describes the case of a Hispanic family in which oral WSN lesions were seen in four generations. Clinical examination revealed that of their 18 descendants, 6 (33.3%) were afflicted. Of these, 3 were females and 3 were males. The most commonly affected sites were the buccal and labial mucosa.

No extraoral lesions were noted. No history of consanguinity was found within the family. It was determined that both unaffected and affected members had transferred the disease via an autosomal dominant mode of inheritance with incomplete penetrance. This family was discovered after the proband initial consultation of an eight-year old girl.

#13

ORAL VERRUCOUS CARCINOMA IN A 10-YEAR OLD FEMALE: A CASE REPORT AND REVIEW OF THE LITERATURE

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INTRODUCTION: Oral verrucous carcinoma (VC) is an uncommon variant of squamous cell carcinoma and represents 3-4% of all carcinoma. VC was described by Ackerman in 1948 and it occurs in older males in the fifth-seventh decades of life. VC is exceedingly rare in young adults and children. Oral squamous cell carcinoma (OSCC), however, has been reported in patients younger than 40 and accounts for about 4-6% of such cases. Here, we present a rare case of VC in a 10-year-old female, making this is the first report of VC in a child. We also present a review of pediatric OSCC. CASE HISTORY: A 10 year-old female presented with a painless white lesion on the lateral border of tongue with no relevant medical history or risk factor. An excisional biopsy demonstrated features consistent with VC. The lesion appeared to be completely excised with margins clear of neoplastic tissue. The patient has been placed on close long term follow up. LITERATURE REVIEW: A review of the literature between 1979-2017 revealed 48 studies of OSCC in pediatric patients with a total of 120 cases. The patients ranged from neonatal to 20 years of age. Sixty patients were males (50%), 53 (44.17%) females, and in 7 cases (5.83%) gender was unspecified. There were 51 cases on the tongue (42.5%), 21 (17.5%) from the gingiva, 9 (7.5%) lip lesions, palatal involvement in 6 (5%), floor of the mouth in 1 (0.83%), retromolar trigone in 1 (0.83%), and in 29 cases (24.17%) location was not specified. 103 (85.83%) of the patients were otherwise healthy, 14 (11.67%) had other medical conditions, and 3 (2.5%) reported tobacco use. CONCLUSION: OSCC in children is rare, particularly VC; however, it should be considered in the differential diagnosis of oral lesions in pediatric patients irrespective of risk factors.

#14

PRIMARY INTRAOSSEOUS LEIOMYOSARCOMA OF THE MANDIBLE: CASE REPORT AND LITERATURE REVIEW

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Primary leiomyosarcoma (LMS) is a rare type of malignant spindle cell tumor which arises from smooth muscle fibers. It is very uncommon in the oral cavity and only accounts for 4% of all soft tissue sarcomas in head and neck area, with intraosseous presentation even more rare. In this report, we present a new case of primary intraosseous LMS of the mandible and review the literature for previously reported cases. A 19-year-old female presented with an asymptomatic well defined radiolucent lesion of the right body of the mandible. The lesion was incidentally discovered during a routine dental examination. A clinical diagnosis of central giant cell granuloma was favored. An excisional biopsy was performed and the diagnosis established of primary central LMS which was confirmed with immunohistochemical stain for smooth muscle actin which was floridly positive for the lesional cells. Stains for S-100, CD34, desmin, CD 99 and Bcl-2 were non-reactive. A review of the literature revealed a total of 41 reported cases of primary intraosseous LMS of the mandible. The patients' age, gender, and mandibular side were evaluated. Primary intraosseous LMS of mandible shows slight predilection in females with 55% compared to 45% males, and age ranged between 7 and 74 years with mean age of 39 years and median age of 37.5 years. Twenty three (55%) cases arose in left mandible comparing to 14 (33%) cases on the right side, while in 5 cases location was not specified. Surgical resection with adequate margins is the treatment of choice in mandibular LMS. Central LMSs though rare are not unusual neoplasms with a slight female predilection and affinity for the left mandible. This case illustrates a rare case of LMS of the mandible and stresses the need for exploration of all central lesions.

#15

DIGITAL PATHOLOGY: A REVIEW

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As current technologies continually drive healthcare, new applications emerge to address shortcomings in existing medical workflow. Digital pathology (particularly whole slide imaging) is a burgeoning field that is poised to transform the field of pathology. The fundamentals of digital pathology include hardware to scan and image the glass slides, as well as software to view, manipulate, and share information interpreted from the glass slides. Current technologies allow for the creation of digital libraries of educational cases as well as increase the footprint of accessible diagnosticians. Digital slides are not hindered by the weakness of physical media (e.g. fading stains, broken glass, transportation costs), and are exceedingly more efficient in presenting information to other pathologists (e.g. whole slide-integrated lectures and consultations). As this technology develops, image analysis algorithms promise to aid pathologists workflows and create increasingly efficient computer assisted diagnosis. Deep learning techniques may

allow computers to generate new standard of care metrics for prognostication of clinical outcomes or assist with diagnosis. Use cases of digital pathology include, but are not limited to: primary diagnosis, secondary consultation, education, telepathology, tumor boards, clinical research, and quality assurance. Digital pathology is being adopted worldwide; however, the strict regulatory environment in the USA is an obstacle currently being addressed in order to provide the ability for making a primary diagnosis based on whole slide images. This presentation aims to review the history of digital pathology and whole slide imaging, the current uses of whole slide images, and future possibilities that can transform the way pathologists practice.

#16

ORAL MYCOSIS FUNGOIDES- A DIAGNOSTIC CHALLENGE

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Mycosis fungoides (MF) is extremely rare in the oral cavity with less than 40 cases reported to date. The diagnostic process can be challenging both clinically and histologically, especially in de novo cases without prior history of the disease. Here, we report a case of a 68 year-old man presenting with a raised nodular lesion of the tongue with clinical impression of irritational fibroma. Histopathologic examination revealed a fibrous tissue mass consistent with fibroma, but with infiltration of the overlying epithelium with atypical cells that showed large nuclei with abundant cytoplasm, that formed organoid or abscess like patterns. Our histological differential diagnosis included amelanotic melanoma, MF, and lymphoma. An initial immunohistochemical (IHC) panel showed negativity for S-100, HMB45, CD20 and positivity for CD3. Further analysis showed tumor cells to be diffusely positive for CD4 and CD5, and negative for CD7 and CD8. Deeper sections demonstrated the presence of Pautrier microabscesses in the upper spinous layer of the epithelium characteristic of MF and sheets of CD3 positive cells infiltrating the stroma. CD30 was dimly positive for 60% of the tumor cells and Ki-67 was 50% positive for tumor cells suggesting transformation of MF to high grade T-cell lymphoma. After consultation with the referring clinician, the patient's medical history was found to be significant for Sezary syndrome, prostate cancer, type-II diabetes mellitus and hyperlipidemia. This case highlights that the histological diagnosis of oral MF requires a high index of suspicion and a comprehensive panel of IHC stains. Importantly, and as seen in our case, the cells can be atypical due to transformation into higher grade T-cell lymphoma in the context of Sezary syndrome.

#17

RETROCUSPID PAPILLA: A SERIES OF FORTY-THREE CASES

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OBJECTIVE: We present a case series of retrocuspid papillae (RCP), an entity seen in up to 99% of children, known to regress with age to a prevalence of 19% of older adults. The RCP is thought to be a variant of normal anatomy or a developmental anomaly present at birth; enlarging during childhood and adolescence and involuting during adulthood. Some believe it develops as a mass due to the unique position of the permanent and primary mandibular canine. Clinically, it may mimic pathoses, prompting biopsy. The goal of this research was to determine the frequency of regression, clinical features, and differential diagnoses. METHODS: Case information was collected from the University of Pittsburgh Oral Pathology Biopsy Service archives (1998-2016). The clinical and demographic data was reviewed. RESULTS: We present a series of 43 cases of RCP in 42 patients. The mean age was 29.9 years (range: 4-79). No sex predilection was noted (M:F, 1:1). All 43 cases presented in the anterior mandibular lingual gingival area. 52.4% of the patients were older than 20. Bilateral involvement was present in only one case. Clinical descriptions included asymptomatic (43/43, 100%), firm (20/43, 46.5%), and pink (19/43, 44.2%). Clinical impressions included fibroma (23/43, 53.5%) and papilloma (9/43, 20.9%). More than one clinical diagnosis was provided in five cases. The average size was 0.41cm (range 0.15-0.8cm). CONCLUSION: Only one of 43 cases had a clinical diagnosis of RCP. Thus, clinicians should be made aware of this under-recognized entity in adults. 97.6% of our cases were unilateral, suggesting that only asymmetrical cases are biopsied. The lack of RCP regression could lead to misidentification as pathosis by clinicians, prompting unnecessary biopsy of an anatomic variant.

#18

MANDIBULAR ANEURYSMAL BONE CYST WITH USP6 GENE REARRANGEMENT

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Objective: Our institution recently encountered a case of a mandibular aneurysmal bone cyst (ABC) exhibiting a USP6 gene rearrangement. ABCs are grouped into two types: primary (de novo) and secondary (associated with another lesion). The pathogenesis is still not completely understood, but studies of extragnathic bones have shown that primary ABCs have gene rearrangements. Few reports have discussed this finding in the gnathic system. Our objective is to present this case with a review of the literature regarding this subject. Clinical presentation: A 23-year-old female was referred from an outside institution for treatment of an ABC

involving the mandible and teeth #17, #18, and #19. Interventions and outcomes: The patient underwent mandibular resection with extraction of teeth #17, #18, and #19. A reconstruction plate was placed. At the last recall visit (18 months post-resection), no recurrence had been noted. Conclusion: Chromosomal testing of gnathic ABCs and further studies are advisable to improve diagnostic accuracy. Additional studies are needed to establish the appropriate nosology and treatment of this little-understood entity.

#19

ORAL FACTITIAL INJURY ASSOCIATED WITH FAMILIAL DYSAUTONOMIA

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Objective: Familial dysautonomia (FD), known as Riley-Day syndrome or hereditary sensory and autonomic neuropathy type III (HSAN3), is a rare autosomal recessive disorder occurring almost exclusively in individuals of Ashkenazi Jewish (AJ) descent (estimated carrier incidence 1:27). Mutations in the IKBKAP gene have recently been shown to be responsible for FD. Signs and symptoms of FD include: reduced sensitivity to pain and thermal extremes, absence of fungiform papillae, the inability to produce tears upon emotional crying, absence of axon flare after injection of intradermal histamine, and absent deep tendon reflexes. There is a high incidence of self-inflicted or accidental traumas to the oral cavity, including crown fractures, luxation or avulsion injuries, and ulceration of the oral and perioral soft tissues. Clinical Presentation: A 21 year old male with FD presented for routine dental care. Multiple bilateral deep, asymptomatic ulcerations of the ventral and right dorsum of tongue of unknown duration were observed. A clinical diagnosis of traumatic injury related to habit and reduced sensitivity to pain was made. Further examination revealed sharp incisal edges on maxillary and mandibular canines and premolars. The lesions were due to repetitive movements of the tongue over the sharp incisal edges and biting of the mucosa. Intervention and Outcome: Enameloplasty was performed, and healing of the lesions has been closely followed, showing periodic improvement in the depth and size of the ulcers. Due to repeated injury of the area superficial erosions persist. Conclusion: Due to reduced sensitivity to pain, patients with FD are at high risk for significant traumatic injuries to the oral and perioral tissues. Factitial ulceration has variable etiologies.

#20

LUPUS BAND TEST IN ORAL MUCOSA IS A POSSIBLE SIGN OF SYSTEMIC CONNECTIVE TISSUE DISEASE: REPORT OF 3 CASES

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Introduction: A positive lupus band test (LBT) is usually indicative of lupus (LE) and is an uncommon finding in the oral mucosa. Aim: The purpose of this study is to report 3 cases with positive LBT and correlate these findings with H&E and medical history. Materials and Methods: A retrospective examination of demographic, clinical, hematoxylin & eosin (H&E, n=3) and direct immunofluorescence (DIF, n=3) features for all the three patients from archival material at IMMCO Diagnostics laboratory was done. All three patients reported with clinical diagnosis of oral lichen planus (LP) for which the biopsies and DIFs were indicated. Results: Patient 1 was a 62-year-old female with positive LBT (IgA, IgM, C3) and fibrillary fibrinogen deposit at the basement membrane zone (BMZ) with H&E diagnosis of OLP. The medical history revealed presence of discoid lupus erythematosus and this patient may be representing LE\LP overlap syndrome. Patient 2 was a 31-year-old male presented with desquamative gingivitis. The DIF revealed positive LBT (IgM, C3) and fibrillary fibrinogen deposition at the BMZ with H&E diagnosis of OLP. Patient had no history of LE in four years after the biopsy. Patient 3 was a 31-year-old female presented with white lesion in the hard palate. The DIF revealed positive LBT (IgM, C3) and fibrillary fibrinogen deposition at the BMZ with H&E diagnosis of OLP. Her medical history indicated that she had Sjögrens syndrome. Conclusion: Positive lupus band test may indicate a presence of systemic connective tissue disease. This finding should be interpreted with conjunction with clinical findings and serological parameters and therefore may require a referral to a physician. The presence of a positive LBT in an oral DIF test should prompt the clinician to rule out LE.

#21

EBER-NEGATIVE PLASMABLASTIC LYMPHOMA IN A NON-TRANSPLANT, HIV-NEGATIVE PATIENT

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Objective. Plasmablastic lymphoma (PBL) is an uncommon, aggressive lymphoma characterized by a diffuse proliferation of large lymphoid cells that resemble neoplastic immature plasma cells and characteristically lack B-cell markers. It was originally described in and has a predilection to involve the oral cavity (44% of cases). Despite PBL classically being described in the immunocompromised and demonstrating EBV-encoded RNA (EBER) positivity, there is literature that suggests it can also be seen in the non-transplant, HIV-negative, EBER-negative setting. Clinical Presentation. A 66 year-old, asymptomatic, HIV-negative male

with sarcoidosis and non-alcoholic cirrhosis presented with multifocal gingival enlargement, which was clinically suspected to be medication related gingival hyperplasia. Incisional biopsies from two distinct gingival sites were submitted for histopathologic analysis. Intervention and Outcome. A diagnosis of PBL was made on histopathology, immunophenotypic characteristics, and molecular analysis. The neoplastic cells were characterized by large eccentric nuclei and frequent mitoses. Positive IHC stains included: CD138, MUM-1, and c-MYC. Lambda restriction was demonstrated by ISH. Negative IHC/ISH stains included: CD20, PAX5, Cd79a, CD30, CD56, BCL-6, HHV8, and EBER. Ki-67 labeling was >90%. Bone marrow involvement of PBL was noted on core biopsy. Head and neck CT was negative for lymphadenopathy and destructive bony change. Patient was referred to oncology for treatment. Conclusion. Plasmablastic lymphoma is an aggressive lymphoma with a median survival of 15 months. This case is presented to highlight the challenges in the histopathologic diagnosis of PBL and to report an EBER-negative PBL in a non-transplant, HIV-negative patient.

#22

A RETROSPECTIVE SINGLE-CENTER CASE SERIES OF ORAL LYMPHOMAS WITH EMPHASIS ON A RECENT CASE OF GERMINAL CENTER DIFFUSE LARGE B-CELL LYMPHOMA

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Oral lymphomas represent the second most common malignancy of the oral cavity with the majority being primary tumors. Diffuse large B-cell lymphoma (DLBCL) is the most commonly encountered histological subtype in the oral cavity (~60%). Here we present a retrospective case series of oral lymphomas from our oral pathology practice at the School of Dentistry, University of Maryland Baltimore. Oral lymphomas diagnosed in the last 20 years (1996-2016) were retrieved from our biopsy service archives. 28 cases were identified, of which demographic, clinical, and immunohistochemical (IHC) data were obtained. The male to female ratio was 1.3:1, median age at presentation was 68 years (range: 18-100 years), and 32% (9/28) presented with central intraosseous involvement. Based on IHC analysis, (21/28, 75%) were B-cell lymphoma, (3/28, 11%) T cell lymphomas and (4/28, 14%) were not otherwise specified. A recent case of a 75-year-old male presented with a mixed radio-lucent/opaque mass with ill-defined margins and perforation of the right lateral wall of the maxilla. Histopathologic examination demonstrated atypical lymphocytes intermixed with large lymphoblasts with histological evidence of vascular and skeletal muscle invasion. Tumor cells were strongly positive for CD-20, CD-45 and CD-10, BCL-6 was dimply positive, BCL-2 focally weakly positive and Ki-67 was 70% positive. CD-3, CD-30, EBER, and

MUM-1 were negative. Based on these findings, a diagnosis of DLBCL Germinal Center (GC) WHO Sub-type was rendered in concert with the hematopathology department. GC DLBCL usually incurs a more favorable prognosis than non-GC sub-types. This report highlights the importance of IHC and a multidisciplinary approach in establishing a phenotype-based confirmed diagnosis.

#23

IMMUNOHISTOCHEMICAL EXPRESSION OF OCT4, SOX2 AND BETA-CATENIN IN AMELOBLASTOMAS AND AMELOBLASTIC CARCINOMAS.

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Ameloblastoma (AB) is a locally aggressive odontogenic epithelial neoplasm that destroys jaw bones and has a high rate of recurrence. Its malignant counterpart is the ameloblastic carcinoma (AC), which has higher morbidity and the ability to metastasize. Histologically, AC is characterized by anaplasia, high mitotic index, adjacent tissue infiltration, and possible necrosis. At present, predisposing factors for transformation or de novo development of these neoplasms remain unknown. Activation of certain transcription factors present in ameloblastic carcinoma has been proposed. Oct4 is a transcription factor described in stem cell reprogramming, and it has been implicated in the pluripotency of neoplastic cells. Expression of this marker was reported as a poor prognostic factor for gastrointestinal and breast tumors. In the present study we used immunohistochemical markers Sox2, Oct4, and Beta-catenin in 19 cases of AB, 3 cases of Atypical ameloblastoma (AA) and 14 cases of AC. Results showed a strong nuclear Sox2 expression in 57% of ACs, 0% of ABs and focal expression in 100% AA. Beta-catenin expression was nuclear in 28% of ACs, 100% of AAs and 26% of ABs. Oct4 was negative in all cases of AB and AC. Sox2 and Oct4 expression is a poor prognostic feature in some malignant and aggressive neoplasms. In the study Oct4 expression is negative in both AB and AC; therefore, this marker would not seem helpful in distinguishing between these two entities.

#24

ORAL HAIRY LEUKOPLAKIA IN-SITU HYBRIDIZATION TO PROMOTE CLINICAL DECISION MAKING

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At the onset of the AIDS epidemic, oral hairy leukoplakia (OHL) was described as a lesion strongly associated with progressive immunosuppression in patients with HIV. Currently, OHL is seen in other immunosuppressed patients such as recipients of solid organs, patients with hematologic neoplasms or those with

autoimmune systemic diseases. Other factors reported in association with OHL, such as long-term use of steroids and diabetes. Therefore, this entity is no longer simply a feature of severe immunosuppression or HIV infection. Clinically, OHL is an asymptomatic, hyperkeratotic lesion that affects primarily the lateral borders of the tongue. OHL reflects the presence of Epstein-Barr virus (EBV) in oral epithelial cells that can be detected by using in-situ hybridization (ISH) for EBV integrated into the nuclei of infected keratinocytes. Histologically, the lesion displays cellular ballooning and nuclear clearing with peripheral margination of chromatin. We report five ISH-confirmed OHL cases showing predilection for females and the lateral tongue. Of the five cases, one patient had previous breast cancer. Only one patient had known HIV prior to biopsy. These findings demonstrate the need to include OHL as a potential entity in the differential diagnosis of leukoplakic tongue lesions. Patients with ISH-confirmed OHL should undergo HIV testing as indicated to detect previously undiagnosed HIV/AIDS. Identifying unsuspected HIV/AIDS in these patients will serve not only to optimize their treatment for this disease but also to prevent spread of the epidemic. In addition, continuing to describe the relationship between ISH-confirmed OHL and additional disorders relate to immunosuppression will promote more objective evaluation of current and future treatment modalities

#25

NRF2-PEROXIREDOXIN I AXIS IS ASSOCIATED WITH DOWN-REGULATION OF MATRIX METALLOPROTEINASE 2 IN POLYMORPHOUS LOW-GRADE ADENOCARCINOMA

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Objective: Polymorphous low-grade adenocarcinoma (PLGA) is a malignant epithelial tumor that affects almost exclusively the minor salivary glands, generally described with relative good prognosis. Aberrant nuclear factor erythroid 2 (NF-E2)-related factor (Nrf2) activation in tumor cells has been associated with induction of antioxidant enzymes and also with increased matrix metalloproteinases (MMPs) expression, commonly involved in invasiveness and metastasis. In this context, the aim of this study was to elucidate the contribution of Nrf2 and Prx I, as well as the participation of MMPs in the pathogenesis of PLGA. Methods: Thirty-one cases of PLGA from oral biopsies were selected and submitted to immunohistochemical reactions for Nrf2 and Prx I. In order to quantify the MMP-2 in PLGA, cell cultures were analyzed at day 7 by ELISA. For comparison, we have also quantify the MMP-2 in Oral Squamous Cell Carcinoma cell culture (OSCC). Results: The results have shown that Nrf2 is highly expressed in both the cytoplasm and the nucleus of neoplastic cells from PLGA. Nuclear

staining of Nrf2 demonstrated its activation in the majority of the PLGA cells, which was confirmed by the correlated high expression levels of its target gene, Prx I. Quantification of MMP-2 secretion revealed lower levels in PLGA cell cultures when compared to those observed in OSCC cell cultures. Conclusion: Although Nrf2 overexpression has been frequently associated with high grade malignancies, such relationship is not infallible and, in fact, the opposite occurs in low grade tumors such as PLGA of minor salivary glands. This study was supported by FAPESP (#2015/12418-5) and CNPq (#304031/2014-3).

#26

INTRAOSSEOUS MENINGIOMA: A CASE REPORT AND LITERATURE REVIEW

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Intraosseous meningioma is a subtype of extracranial meningioma that typically arises in the skull. This rare neoplasm can mimic a variety of osseous conditions ranging from benign to malignant. We report an unusual case of a intraosseous meningioma of the frontal bone, initially thought to represent a benign or malignant fibro-osseous lesion. A 30-year-old black female presented with a 9-year history of a well-circumscribed, slowly expansile, progressively painful, bony hard forehead mass. The patient reported no history of prior surgery or trauma. Computed tomography showed a large osteosclerotic lesion in the frontal bone exhibiting a fibrillar, sunburst surface architecture that expanded and thickened the external and internal tables of the calvaria, with a somewhat ground glass appearance and compression of the cranial cavity. Histopathologic examination showed spicules of dense vital bone and fibrovascular connective tissue containing focal superficial aggregates of epithelioid cells with clear to granular cytoplasm. Immunohistochemical analysis showed positivity for epithelial membrane antigen (EMA). A diagnosis of meningioma was rendered. Intraosseous meningiomas are rare and can mimic a variety of neoplasms, including fibro-osseous lesions. Awareness of the clinical, radiographic and histopathologic features of this condition can be helpful in its diagnosis.

#27

UNIQUE CLINICAL PRESENTATIONS OF DEEP FUNGAL INFECTIONS INVOLVING THE ORAL CAVITY: A REPORT OF TWO CASES AND REVIEW OF THE LITERATURE

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Oral alterations associated with systemic fungal infections typically present as chronic mucosal ulceration or granular soft tissue overgrowth, mimicking malignancy. We report two cases of deep fungal infections exhibiting unusual oral

findings. Case 1: A 73-year-old male presented with one-month history of bilateral ulcerations of the oral commissures, with significant involvement of the perioral facial skin. With a clinical diagnosis of angular cheilitis and to exclude malignancy, incisional biopsy was performed. Histopathologic evaluation showed chronically inflamed granulation tissue and staining by the GMS method revealed numerous yeast forms, consistent with Histoplasma capsulatum. Systemic itraconazole (400 mg daily) resulted in uneventful resolution. Case 2: A 49- year-old male presented for evaluation of a non- healing extraction socket of the posterior mandible. The patients medical history was significant for renal cell carcinoma recently treated with complete nephrectomy of the affected kidney. A large, ulceroproliferative soft tissue mass was noted in association with the extraction socket, with mobility of the adjacent dentition. Together with an ill-defined radiolucency on panoramic radiograph, concern was raised for metastatic disease. Incisional biopsy showed subacutely inflamed granulation tissue supporting numerous multinucleated giant cells in association with occasional large yeasts, consistent with Blastomyces dermatitidis. While uncommon, deep fungal infections may involve oral and maxillofacial structures, including both soft tissues and gnathic bones. Vigilance regarding this diagnostic consideration can support timely diagnosis and proper treatment.

#28

A 33 YEAR RETROSPECTIVE ANALYSIS OF METASTATIC TUMORS TO THE ORAL AND MAXILLOFACIAL REGION

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Several studies characterizing metastatic tumors to the oral cavity are available. We conducted a retrospective analysis of 153 cases of metastatic lesions to the oral cavity diagnosed from 1984 to 2017 at NYPQ in order to identify changing trends in presentation. For each case, the patients age, sex, cancer history if provided, location of the metastasis and symptoms were compiled. The average age of patients in this study was 65.7 years with a range of 33 to 94. Eighty patients with metastatic lesions were males and 71 were females. In 33.3%, the oral metastasis was the first indication that the patient had cancer. After evaluation of clinical and histologic material, we could identify the primary site of disease in 121 cases. Thirty-two cases were diagnosed as metastases from an unknown primary. When the primary site was known, the most common sites of origin were as follows: 31.4% from the lung, 19% breast, 15.7% colorectal and rare cases from upper GI, prostate, skin, pancreas and liver. Most tumors were adenocarcinomas, but melanomas, neuroendocrine carcinomas, sarcomas and mesotheliomas were also seen. Eighty-one cases metastasized to the jaws with a mandible to maxilla ratio of

3:1. Bone lesions frequently presented as non-healing sockets, periodontal disease, periapical lesions often with fistula. Seventy-two cases presented as soft tissue lesions, most often mistaken for pyogenic granulomas. Paresthesia was commonly encountered both in bony and soft tissue lesions. Based on our results, lung and breast remain the most common primary sites and soft tissue lesions were more commonly seen than expected. Clinicians should recognize these varying presentations and understand the need to submit tissue even with lesions believed to represent reactive processes.

#29

HISTOPATHOLOGICAL ANALYSIS OF REGIONAL ODONTODYSPLASIA

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Regional odontodysplasia (ROD) is an uncommon localized disorder of tooth development with unknown etiology. It is characterized by defective formation of both enamel and dentin, and formation of calcifications in pulp and dental follicle. Because enamel and dentin are the products of ameloblasts and odontoblasts, respectively, findings in ROD indicate that abnormality occurs in both of these cell types. However, knowledge regarding changes in odontogenic cells in ROD is mostly lacking. Therefore, the purpose of this study was to analyze the histopathological features of odontogenic cells and the characteristic calcifications, presumably the products of the odontogenic cells, in ROD. Clinical information and biopsy materials of 12 ROD cases were analyzed. Three types of calcifications were found in ROD affected teeth: 1) globular basophilic calcifications associated with reduced enamel epithelium (REE); 2) small round calcifications associated with spindle cells arranged in a storiform pattern; and 3) eosinophilic calcifications with globular purple calcified material, previously described as enameloid conglomerates. Odontoblasts in ROD affected teeth were flattened and showed vacuolization. Using Picro Sirius red stain, a histochemical stain for collagen type I and III, the second and the third types of calcifications showed collagen birefringence. Our findings showed that the morphology of odontoblasts in ROD is altered; and support that the globular type calcifications in ROD are dystrophic enamel calcifications, most likely products of REE. It also suggests that enameloid conglomerates are likely the products of stem cells in dental follicle. These findings serve as the basis for further immunohistochemical and/or ultrastructural investigations.

#30

AN UNUSUAL AND FAST GROWING MAXILLARY MASS - A CASE REPORT

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Objective: To report a case of a high grade sarcoma with rhabdomyofibroblastic differentiation in the maxilla.Clinical presentation:A 53 year old Chinese female presented with complaint of swelling with slight pain on the right maxilla for 1 month duration. Her medical history is non-significant. She took a course of amoxicillin but the swelling did not subside. On examination, no facial asymmetry, cervical lymphadenopathy, abnormal jaw movements or trismus noted. Intraoral examination revealed an exophytic soft tissue mass with ulceration distal to #2. #2 is mobile. Periapical radiograph taken revealed severe horizontal bone loss around #2. MRI revealed an enhancing mass with hyperintense T2 signal at the right posterior maxillary arch measuring 2.2 x 1.5 cm, abutting the right lateral pterygoid muscle and soft palate with no extension into ipsilateral maxillary sinus. Cervical nodes normal. Intervention and Outcome: #2 was extracted and an incisional biopsy of soft tissue performed revealed fascicles of spindle cells with ovoid to vesicular nuclei with prominent nucleoli. High mitotic activity with infiltration of the tumor into surrounding stroma and adipose tissue is evident. Immunohistochemical studies were performed. The tumor cells were positive for AE1/3, desmin, vimentin and diffuse strong positivity for myoD1. The tumor cells were negative for S-100 protein, myogenin, calponin, smooth muscle actin(SMA) and epithelial membrane antigen (EMA). These findings were in keeping with a high grade sarcoma with rhabdomyofibroblastic differentiation. Conclusion: Although rare, mesenchymal malignant tumors can occur in the oral cavity. Accurate diagnosis with the aid of IHC stains, allows for appropriate treatment to be rendered.

#31

ASSESSMENT OF P63/P40 IMMUNOPHENOTYPE IN BENIGN AND MALIGNANT ODONTOGENIC NEOPLASMS OF THE JAWS

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Background: Np63 and TAp63 are differentially expressed in human epithelial tumors. Recently, p40 recognizing exclusively Np63 but not TAp63, exhibited higher specificity than p63 antibody (4A4). Reportedly, p63 is expressed in ameloblastomas and odontogenic cysts. Expression of p40 has not been studied in odontogenic tumors. Aim: To investigate p63/p40 immunophenotype in benign and malignant odontogenic neoplasms. Materials and methods: Fourteen ameloblastomas including 8 multicystic, 4 unicystic, 1 peripheral and 1 showing ductal differentiation; 7 adenomatoid odontogenic tumors (AOT), 6 calcifying epithelial odontogenic tumors (CEOT), 5 calcifying cystic odontogenic tumors

(CCOT), 1 squamous odontogenic tumor (SOT) and 4 primary intraosseous odontogenic carcinomas (PIOC) were stained using p63 and p40 antibodies. Results: Strong and diffuse nuclear p63/p40 staining was observed in the ameloblastic layer and stellate reticulum cells of ameloblastoma follicles and throughout the cystic epithelial lining of unicystic ameloblastomas. Interestingly, the abluminal cells of the ducts seen in 1 ameloblastoma were p63+/p40+, while the adluminal layer was p63-/p40-. AOT, CCOT, SOT and CEOT demonstrated a consistent p63+/p40+ profile in all lesional cells. Similarly, p63/p40 strongly decorated the majority of malignant cell population in PIOC, except for 1 case with focally decreased or lost p63/p40 expression. p63/p40 expression was not associated with the level of atypia in CEOT and PIOC. Conclusions: A concordant indiscriminating p63+/p40+ immunophenotype was observed in all odontogenic tumors. While in salivary gland malignancies p63/p40 discordances may be useful diagnostically, neoplasms of odontogenic origin show essentially similar p63 and p40 expression patterns.

#32

HYPOACETYLATION OF ACETYL-HISTONE H3 (H3K9AC) PREDICTS POOR PROGNOSIS IN ORAL CANCER

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Objectives: Histones are proteins that support chromatin remodeling to regulate dynamically the gene expression and silencing. The deregulation in histone acetylation can lead to uncontrolled activity of several genes triggering events associated with the malignant transformation. The aim of the present study was to analyzed expression of acetyl-histone H3 at lys9 (H3K9ac) in oral leukoplakia (OL) and oral squamous cell carcinoma (OSCC), in addition to its association with cell proliferation, epithelial-mesenchymal transition and clinico-pathological data. Methods: OL(n=33), OSCC(n=86) and normal oral mucosal (n=10) were submitted to immunohistochemical analysis using anti-H3K9ac, Ki67 and vimentin. Percentage of positive cells were analyzed using the Image J. Data

concerning demographic characteristics, risk factors, clinical aspects, tumor location, TNM system and follow-up information(clinical outcome and survival time) were retrieved from patient records. Results: OSCC presented less expression of H3K9ac compared to OL ($p=0.03$) while Ki67 and vimentin values increased from OL to OSCC ($p<0.001$ and $p=0.03$ respectively). Patients with poor prognosis presented lower H3K9ac expression ($p=0.01$). Moreover, Kaplan-Meier cumulative survival curves revealed a lower survival rates in patients with less H3K9ac expression. Our findings suggest that during the process of oral carcinogenesis modifications in H3K9ac occur alongside with an increase in proliferation and epithelial-mesenchymal transition. Conclusions: This is the first study suggesting that H3K9ac might be considered a prognostic marker in OSCC. The reduction of H3K9ac concomitant to an increase in cell proliferation and EMT during oral carcinogenesis was demonstrated.

#33

VASCULAR MALFORMATION MIMICKING SIALOLITHIASIS OF THE SUBMANDIBULAR GLAND

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Objective: A new case of vascular malformation is here presented as a cause of recurrent unilateral submandibular gland swelling with associated pain in the gland. Clinical Presentation: In November 2016, a 30-year-old Saudi woman presented to the Oral and Maxillofacial Surgery Department, College of Dentistry, King Saud University, Saudi Arabia, with a one year history of a recurrent, painful left submandibular swelling. She had a history of previous admission to the emergency room for severe pain and swelling of the left side of the mandible treated by intravenous fluids, antibiotics and advice to increase fluid intake and citrus fruits. Intervention and Outcome: Clinical examination revealed enlarged, non-tender, soft left submandibular gland which did not yield any pus on milking. No hardened masses or calculi were felt on palpation of the Wharton duct or within the gland. Orthopanthomogram radiograph was unhelpful. Ultra- sound examination showed a well-defined projection (23x22x20 cm) from the left submandibular gland with heterogeneous echotexture and showed mild vascular flow on color Doppler study. Gland excision was done under general anesthesia. Histology revealed a widely distributed vascular lesion in glandular connective tissue comprising veins, arterioles and lymphatic vessels. Vessels engorged with red cells and organizing thrombi were also observed. Sialoliths, phleboliths and mucous plugs were not seen. A diagnosis of vascular malformation of the left submandibular gland was made. Patient had an uneventful recovery and no facial nerve deficit. All symptoms resolved. Conclusion: Vascular malformation should

always be considered in differential diagnoses of painful recurrent unilateral submandibular gland swelling.

#34
ADVERSE REACTION TO SILICONE MIMICKING FACIAL ANGIOEDEMA: A CASE REPORT AND LITERATURE REVIEW OF DIAGNOSIS AND MANAGEMENT OF COMPLICATIONS OF DERMAL FILLERS
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A 67-year-old female presented with a 5-month history of recurrent facial and lip swelling, previously diagnosed as angioedema. The patient had consulted multiple physicians, and been treated with corticosteroids and anti-histamines, with temporary resolution of the swelling. Serology and skin patch testing returned inconclusive findings. A biopsy of the lip mucosa revealed variably-sized vacuoles and cystic spaces containing amorphous, refractile, non-polarizing material in the connective tissue, surrounded by an infiltrate of lymphocytes, histiocytes, and multinucleated giant cells. Discussion of the histopathologic findings and further questioning of the patient revealed a history of silicone injection of her lip the previous decade. She was referred to a plastic surgeon for further management. The differential diagnosis for facial and lip swelling encompasses multiple entities. This case illustrates the importance of the awareness of complications of dermal fillers as contributing factors, and the need for persistent investigation of patients medical and surgical histories.

#35
ANAPLASTIC LARGE CELL LYMPHOMA WITH ORAL INVOLVEMENT: REPORT OF TWO NEW CASES
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Primary systemic anaplastic large cell lymphomas (ALCL) are rare T-cell non-Hodgkin's lymphomas positive for CD30. Anaplastic lymphoma kinase (ALK) positivity is observed in most cases, particularly in patients in the first 3 decades of life, whereas ALK-negative ALCL are common in older adults. Cervical and inguinal lymph nodes are usually affected, with rare cases exhibiting oral involvement. Objective: To describe two new cases of primary systemic ALCL with oral involvement. Clinical presentation: Case 1 presented as a pedunculated ulcerated multilobular swelling measuring 5 cm in the maxillary posterior alveolar ridge of an 88-year-old male. Case 2 was a painful ulcerated swelling measuring 7 cm in the floor of the mouth of an 18-year-old male with previous history of fever and night sweats. Microscopically, both cases showed proliferation of medium to large-sized atypical cells with abundant amphophilic to eosinophilic cytoplasm and

eccentric nuclei, which were positive for CD3, CD7, CD30, and CD45. Ki-67 labeling index was of 90% in both cases. Tumor cells of case 1 were negative for EMA and ALK, and tumor cells of case 2 were positive for these markers. Final diagnoses were of ALK-negative and ALK-positive ALCL with oral involvement. Intervention and outcome: The first patient died six months after the diagnosis with lung involvement, while the second one is currently under treatment. Conclusion: Oral pathologists should consider ALCL when evaluating highly anaplastic cell proliferations of oral ulcerated masses in patients with systemic symptoms. Immunopositivity for CD30, ALK, and Ki-67, as well as careful correlation with clinical features, are required for the diagnosis.

#36

A RETROSPECTIVE ANALYSIS OF THE RISK FACTORS OF BURNING MOUTH SYNDROME

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Background:Burning Mouth Syndrome(BMS) has been a topic of great debate in literature.A lack of set universal diagnostic protocol to be followed, has led to a lot of confusion regarding its diagnosis in the past and therefore a variable prevalence has been reported.It has been deemed an idiopathic condition and is a diagnosis of exclusion.Many authors have postulated different theories regarding its aetiology, including hormonal disturbances, psychogenic origin,etc.The probable risk factors for BMS have not been explored in great detail in the literature. Aim:The aim of this study was to explore the comorbidities and risk factors in a cohort of BMS. Materials and Methods:48 patients diagnosed with BMS, attending the Facial Pain clinic at the Eastman Dental Hospital between 2013 and 2016,were selected as the study group.The patient records were accessed via the database CDR (Clinical Data Repository) for information regarding demographics, BMS details, concomitant and pre-existing co-morbidities. Results:Out of the 48 patients,79% were female and 21% were male,with the tongue being the most common site of pain.Of the concomitant comorbidities depression, Temporomandibular Disorders(TMD) and sleep disturbances were commonly seen. Pre-existing depression was noted in 35% of the patients. Conclusion:Our cohort is comparable to other studies with regards to demographics, the presence of concomitant comorbidities including depression, anxiety, sleep disturbances and TMD.The presence of pain and pain related issues was observed in our study both concomitant and pre-existing, some of which have not been explored in great detail in the literature.

#37

BCOR INTERNAL TANDEM DUPLICATION UNDIFFERENTIATED ROUND CELL SARCOMA OF INFANCY INVOLVING THE HEAD AND NECK REGION

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Objective: This case report describes a recently identified round cell sarcoma, BCOR-ITD URCSI, involving the head and neck in an infant and reviews the clinicopathologic and molecular genetic features of this tumor. Clinical Presentation: An 11 month old boy presented to pediatrician for left submandibular mass of 2 months duration, following an upper respiratory infection. The clinical impression was an underlying bacterial infection and antibiotics were given. The infant was lost to followup, but upon return to the pediatrician, the mass had increased substantially in size. CT and MRI scans showed a 7.5 cm homogenously enhancing mass of the left mandible with extension into adjacent soft tissues. Radiologist's impression was lymphoma, Langerhans cell histiocytosis, infantile fibrosarcoma, desmoid tumor, rhabdomyosarcoma and giant cell granuloma. Intervention and Outcome: At 18 months of age, the patient was referred to a children's hospital for oncologic evaluation and diagnosis. Biopsy and subsequent resection, following oncologic management, demonstrated features resembling clear cell sarcoma of kidney (CCSK) including monotonous round to epithelioid tumor cells with open nuclear chromatin and rare spindle cells. Following biopsy, whole body imaging showed no renal tumor or metastatic tumor. BCOR immunostaining demonstrated nuclear positivity (negative for NKX2.2, CD99, INI1). Cytogenetic analysis was normal male (46,XY). BCOR ITD and BCOR-CCNB3 RT-PCR were performed, with BCOR-ITD identified. Conclusion: BCOR-ITD USCRI is a rare tumor of infancy that shares features of CCSK and primarily involves soft tissues. Following exclusion of a renal tumor on diagnostic imaging, BCOR-URCSI is confirmed with RT-PCR for BCOR internal tandem duplication.

#38

CLINICOPATHOLOGICAL FEATURES OF ORAL METASTASIS: REPORT OF 10 NEW CASES FROM BRAZIL

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Objective: To report the clinicopathological features of 10 new cases of oral metastatic tumors in a population from Rio de Janeiro, Brazil. Methods: Oral metastasis cases diagnosed in the last four years were retrieved from the archives of the Department of Oral Diagnosis and Pathology at School of Dentistry of Federal U. of Rio de Janeiro, Brazil. Results: Five metastatic tumors to the oral soft

tissues (tongue and gingiva) and five to the gnathic bones, mainly to posterior mandible, were diagnosed in patients with average age of 57 years (range of 22 to 88 years), with slight predilection for females (1.4:1). In two cases, tumors represented the first manifestation of an unknown primary tumor, while eight patients had previous history of primary malignant tumors from lung (2 cases), breast (2 cases), prostate, colon, bone, and female genital tract. Interestingly, one breast metastatic tumor occurred in a male patient and the other presented as bilateral tumors in the posterior regions of maxilla and mandible. The origin of primary tumors was confirmed through immunohistochemical analysis in seven cases. Conclusion: Oral metastases from Rio de Janeiro show similar clinicopathological features compared to cases from other centers. We present two cases of oral breast metastases with rare clinical presentations.

#39

CURCUMIN IS RETAINED IN SALIVA BY COMPLEXES WITH EXTRACELLULAR MICROVESICLES

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Objective: Curcumin (Curcuma longa) is an antioxidant, anti-inflammatory and anticancer agent with hydrophobic features. Saliva contains phospholipid membrane-bound extracellular microvesicles (EVs). We showed that EVs can generate EVs-Curcumin complexes to be accessible for the oral tissues. Methods: pooled whole saliva (25 healthy individuals, F=14, M=11) were divided into 1ml aliquots as follows: A saliva after 3,000g centrifugation; B supernatant collected after 12,000g centrifugation; C- EVs-pellets isolated by 120,000g x2 ultracentrifugation and resuspended in 1ml PBS. Control groups included: D- PBS and E- 90% ethanol. All groups were incubated with 0 or 80µM curcumin. Differences (d) in absorption and fluorescence (ex-420, em-510) were assessed at T0, after 24h and 48h. Pellets were also analyzed by transmission electron microscopy, atomic force microscopy and confocal microscopy. Results: T0 absorption with 80µM curcumin was similar in groups A-C and E (range 2.22-2.48) and higher than in D (1.96). The dT48-T0 in groups A-C ranged between 8-15% while in D and E it was 39% and 3%, respectively. T0 fluorescence with curcumin was 1.6-2.3-folds higher in groups A-C than in D. While in group D curcumin lost 20% of its fluorescence, in groups B and C it showed opposite trend of increase. All morphological methods highlighted formation of EVs-curcumin complexes. Conclusion: Saliva can retain active curcumin due to formation of EVs-curcumin complexes.

#40

DIAGNOSIS AND MANAGEMENT OF NEVOID BASAL CELL CARCINOMA SYNDROME: A CASE REPORT

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Objective: Keratocystic odontogenic tumors (KCOTs) are frequently the first detectable feature of Nevoid Basal Cell Carcinoma Syndrome (NBCCS)- over 50% of NBCCS patients develop a KCOT in the first decade of life. NBCCS has been linked to germline mutations in the PTCH gene. We present a case of a pediatric patient with previously undiagnosed NBCCS and highlight the importance of multidisciplinary approach to diagnosis and management. Clinical Presentation: An 11-year-old female presented to an oral surgeon for evaluation of impacted teeth #22 and #27. Clinical exam revealed mild facial asymmetry and mandibular prognathism, frontal bossing, palmar and plantar pitting, orbital hypertelorism, and an enlarged head circumference. Radiographically, well-defined unilocular radiolucencies causing inferior displacement and mesial inclination of impacted #22 and #27 were identified as well as pericoronal radiolucencies associated with developing teeth #18 and #31. Intervention and Outcome: Incisional biopsies of the lesions associated with teeth #22 and #27 revealed KCOTs necessitating tooth extractions and marsupialization. These procedures were followed by excisional biopsies of the lesions associated with teeth #18 and #31. Histopathological examination revealed KCOTs for all lesions necessitating enucleations and peripheral ostectomies. Molecular analysis of the patient revealed a mutation of the PTCH1 gene mapped to chromosome 9p22.3-q31. Conclusion: The specific symptoms and severity of NBCCS can vary greatly from one patient to another often resulting in delayed diagnosis as was the case for our patient. A common presentation includes multiple KCOTs which should prompt additional multidisciplinary evaluation of patients to improve treatment outcomes and quality of life.

#41

DIFFUSION REFLECTION MEASUREMENTS OF GOLD NANORODS BIO-CONJUGATED TO ANTI-EGFR MONOCLONAL ANTIBODY DISCRIMINATE BENIGN FROM MALIGNANT ORAL LESIONS

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Objective. Epidermal growth factor receptor (EGFR) has been found to be dysregulated in OSCC and dysplastic oral lesions, and can be served as an ideal

target for nanoparticle-based contrast agents using gold GNPs bio-conjugated to anti-EGFR monoclonal antibodies. We aimed to evaluate 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 premalignant and malignant human oral lesions. Methods. Tissue sections of 30 cases of OSCC and various dysplastic lesions were incubated with GNRs-EGFR and the reflectance spectrum was measured using hyperspectral microscopy. Results. Reflectance intensity increased with the progression of the disease, lowest in the control group and increasing as the dysplastic changes increase. Intensity was significantly higher in the moderate and severe dysplasias and cancer patients than in the controls and mild dysplasia. Conclusion. The GNRs reflection measurements can discriminate benign and mild dysplastic lesions from the more severe dysplasia and invasive cancer, suggesting an objective, not dependent on the qualification of a technician and with less interpretation errors.

#42

EVALUATION OF THE ROLE OF ORAL MICROBES IN THE PROMOTION OF CANCER IN A MOUSE CARCINOGENESIS MODEL

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Oral carcinogenesis involves complex interactions of the tumor and microenvironment (stroma, vasculature, immune cells and bacteria). We recently reported that oral cancers were associated with high abundance of Fusobacterium and reduced abundance of Streptococcus species (PLoS One June 2014). Our objective was to determine whether Fusobacterium promotes cancer using the 4-nitroquinoline-1-oxide (4NQO) mouse carcinogenesis model, which recapitulates oral cancer including development of precancer lesions that progress to cancer. Mice (C57BL/6, n=10 per group) were orally swabbed with Fusobacterium nucleatum, Streptococcus mitis or control (no bacteria, vehicle only) for 2 weeks, followed by 4NQO administration through the drinking water for 8 weeks. Mice were swabbed with bacteria for another 8 weeks and examined regularly for development of tongue lesions. At 28 weeks, animals were sacrificed and tongues were processed for histologic evaluation. Examination of H&E stained sections taken at 5um intervals revealed multiple lesions in all 3 groups, including dysplasia, carcinoma in situ, microinvasive/early squamous cell carcinoma (SCC) and invasive SCC. The F. nucleatum group showed increased frequency and severity of cancer, including a highly invasive adenosquamous carcinoma with muscle invasion and perineural infiltration. By contrast, the S. mitis and control groups developed only early/microinvasive cancers, but no invasive disease. The

increased incidence and severity of lesions in the F. nucleatum treated group in this pilot study supports a role for F. nucleatum in promotion of oral cancer that we are further evaluating in on-going studies.

#43
GLANDULAR ODONTOGENIC CYST ASSOCIATED WITH AMELOBLASTOMA: CASE REPORT AND REVIEW OF THE LITERATURE
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OBJECTIVE: To present one case of glandular odontogenic cyst (GOC) associated with ameloblastoma focusing on the clinical, radiographic and histologic features contrasting them with the 4 published cases. CLINICAL PRESENTATION: A 58-year-old male presented with an expansile, multilocular radiolucency in the left posterior mandible with a scalloped border and pushing teeth apart. INTERVENTION AND OUTCOME: Incisional biopsy of the swelling revealed a cystic structure with typical features of GOC with multifocal ameloblastomatous changes in the lining epithelium and solid odontogenic epithelial islands in the connective tissue wall. CONCLUSION: GOC is an uncommon cyst that shares histological features with botryoid odontogenic and dentigerous cysts and, rarely, with low-grade mucoepidermoid carcinoma. GOC associated with ameloblastoma is exceedingly rare and only 4 such cases are reported with no known clinical significance or treatment applications. The published cases show an age range of 14-65 and M:F ratio of 3:1. All 4 cases were radiolucentthree unilocular, one multilocularand expansile. Three of the reported cases were in the mandible and one in the maxilla, all in the posterior jaw but extending anteriorly. Histologically, this case demonstrated ameloblastomatous changes within the lining epithelium and the connective wall. Similar changes were described in two of the reported cases; another case described only odontogenic epithelial islands in the wall of the GOC and one described ameloblastomatous changes in the lining epithelium only. In conclusion, we present a case of GOC associated with ameloblastoma in a 58-year-old male and compare it with the current published cases.

#44
HUMAN POLYOMAVIRUS BK AND JC IN ORAL FLUIDS OF IMMUNOCOMPROMISED PATIENTS
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Objective: Human polyomavirus BK (BKV) and JC (JCV) infect asymptomatically around 80% of general population, remaining latent. In case of immunosuppression, these viruses can be reactivated, replicate, and cause diseases,

like polyomavirus associated to the nephropathy, and progressive multifocal leukoencephalopathy. The aim of this study was to detect and quantify BKV and JCV in oral fluids of individuals with chronic kidney failure (CKF), renal transplanted recipients (RT), HIV positive adults (HIV) and controls, compared with blood and urine, traditionally used for this test. Methods: Therefore, we included 68 subjects, distributed into 4 groups: 14 individuals with CKF (Group 1), 12 RT (Group 2), 22 HIV positive adults (Group 3), and 20 healthy individuals (Group 4). In a total, 483 samples were collected and were analyzed through real-time PCR, being 231 of gingival crevicular fluid (GCF), 68 of saliva, 68 of mouthwash, 65 of serum and 51 of urine. Results: In the Group 1, 100% of the individuals were positive for BKV in at least one of the collected samples and 14% were positive for JCV. In the Group 2, 91.7% were positive for BKV and 51.7% for JCV. In the Group 3, 55% were positive for BKV, and 59% were positive for JC. Among the subjects of the Group 4, 80% were positive for BKV and 45% to JCV. There was no difference in viral detection frequency between the 4 studied groups. Oral fluids samples exhibited higher rate of BKV and JC compared with urina Conclusion: The use of oral fluids to detect these viruses enhances positive screening, especially in individuals who do not produce urina, but It is not a substitute for blood exams.

#45

KERATOCYST IN THE BUCCAL SPACE; A CASE REPORT AND LITERATURE REVIEW OF THIS RARE PRESENTATION

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Odontogenic keratocyst (OKC) is a developmental odontogenic cyst that arises from cell rests of dental lamina. This cyst exhibits aggressive clinical behavior, specific histopathologic features and a higher recurrence rate compared to other odontogenic cysts that occur in the jaw bones. The WHO reclassified this cyst as keratocystic odontogenic tumor (KCOT) based on molecular genetic findings and clinical behavior. OKC may occur in a wide age range. It presents in both the maxilla and mandible with a predilection for the mandibular posterior body and ramus. The diagnosis of OKC is based on specific histopathologic features. Unusual cases of extraosseous OKC arising in the gingiva have been reported as peripheral OKC in the literature. Rare cases of cutaneous keratocysts have also been reported in the dermatologic literature. Keratocyst with histopathologic features of OKC arising in the soft tissues other than the gingiva is very rare with fewer than 10 reported cases. We report a case of keratocyst arising in the left buccal space in a 43 year old male. The patient had been aware of this lesion for approximately one year at the time of presentation and reported that the lesion was

gradually increasing in size. This asymptomatic soft tissue mass in the left cheek measured 2.5 x 2.5 cm. The clinical presentation, imaging studies and histopathologic features of this lesion are discussed. The controversial pathogenesis for this lesion, treatment and the uncertain prognosis when compared with gnathic OKC are discussed along with a review of the literature.

#46
MAMMARY ANALOGUE SECRETORY CARCINOMA (MASC) OF THE LOWER LIP IN A PEDIATRIC PATIENT
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OBJECTIVE: Mammary analogue secretory carcinoma (MASC) is a recently described salivary gland malignancy that is characterized by an ETV6 gene rearrangement. The most common location is the parotid gland and the median age is 55. It has rarely been reported in children. The tumor has a wide range of histopathologic patterns and it can be mistaken for other malignant neoplasms but it can also mimic benign entities. CLINICAL PRESENTATION: A 15 -year male presented with a 10 month history of an asymptomatic blue nodule on his lower labial mucosa that was clinically diagnosed as a mucocele. The incisional biopsy showed a macrocystic architecture which was diagnosed as an atypical papillary cystic ductal proliferation and further excision was recommended. INTERVENTION AND OUTCOME: Patient was lost to follow-up and returned 1-year later with 2 distinct indurated 1cm nodules on the lower labial mucosa. A second biopsy showed multiple sized irregular duct-like structures some of which showed focal papillary changes and infiltrated skeletal muscle. The neoplastic cells had minimal pleomorphism and demonstrated apocrine features. The tumor was immunoreactive for vimentin, mammaglobin, CK19 and S100 and was found to be positive for ETV6 gene rearrangement, confirming the diagnosis of MASC. The patient was referred to ENT for complete excision and he underwent a lower lip wedge excision with supraomohyoid dissection. The resected specimen had negative margins and five benign lymph nodes. No lymphovascular or perineural invasion was identified. The patient was seen in clinic for a post-operative follow up and at a 3-month follow up was found to be doing well. CONCLUSION: This is a rare presentation of a MASC in the minor salivary glands of the lip in a pediatric patient.

#47
MULTIFOCAL LOCALIZED JUVENILE SPONGIOTIC GINGIVAL HYPERPLASIA TREATED WITH COMBINED LASER AND TOPICAL CORTICOSTEROID THERAPY

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Localized juvenile spongiotic gingival hyperplasia (LJSGH) represents a distinct subtype of inflammatory hyperplasia with a unique predilection for the anterior gingiva in children and adolescents. Lesions are typically refractory to improvements in oral hygiene and conventional periodontal therapies. The pathogenesis of LJSGH remains poorly understood, although derivation from exteriorized junctional epithelium is favored based on morphologic and immunophenotypic similarities between the two. The most common treatment is surgical excision and recurrences have been documented in 6% to 16.7% of cases. We describe a 9-year-old Caucasian female who presented for evaluation of several erythematous, finely granular lesions involving her anterior maxillary and mandibular gingiva. Her mother reported that she had noted the lesions two years prior, immediately before completion of phase one orthodontic therapy. The patient denied potential inciting events at the time of onset although moderate plaque accumulation was observed. An incisional biopsy revealed epithelial spongiosis with mild neutrophilic exocytosis overlying a richly vascularized and inflamed lamina propria, characteristic of LJSGH. Given the multifocality of the patients lesions and her thin tissue biotype, concerns were raised regarding the need for future connective tissue grafts should excisions be undertaken. Consequently, she elected to undergo laser ablation followed by a course of topical corticosteroids. She is without evidence of recurrence at one year. Management of multifocal LJSGH can be challenging, especially if lesions involve the marginal gingiva in the esthetic zone. A hybrid approach utilizing laser and topical corticosteroid therapy may be a therapeutic alternative in these cases.

#48

ORAL CYTOLOGICAL SMEARS: A PREDICTOR OF DISEASE PROGRESSION IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Objective: The study was designed to observe the cytological changes on the tongue of the patients with Systemic Lupus Erythematosus (SLE). Method: Detailed history and oral findings were recorded from 100 patients diagnosed with SLE. Oral smears were prepared and examined microscopically using H & E, PAP, Giemsa stains. Results: The male to female ratio was 1:9. Mean age was 28.54 ± 10.09 years with majority (52%) of patient in 2135 years age group. Most (51%) of the patients belonged to poor socioeconomic status. A total of 13% patients had family history of SLE. The mean duration of disease was 4.87 ± 4.7 years. Mean

corticosteroid intake was 13.35 ± 15.9 mg per day. On cytological examination, buccal squamous cells demonstrated binucleation (89%), micronuclei (86%), prominent nucleoli (67%), karyorrehxis (45%), karyolysis (47%), pleomorphism (28%) and anucleated squames in (42%). Mild acute and chronic inflammation (59%) with inflammatory (24%) and non-inflammatory (4%) atypical changes in keratocytes were observed. However, only one patient had fungal hyphae on cytology. Glossitis was associated with nuclear pleomorphism (p=0.059), prominent nucleoli (0.000) and inflammatory atypia (p=0.006). However, no statistical association was observed between duration of disease and these variables. Conclusions: Immune mediated diseases cause various changes on tongue ranging from inflammation to atypical epithelial morphology. However these changes were not significantly associated as the disease process advances.

#49

PROGNOSTIC VALUE OF MX1 IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Objectives: Evidence gleaned from recent clinical studies suggests that an intact anti-tumor immune response is indispensable for patient response to adjuvant therapy. Type I Interferon (IFN-I) signatures have rapidly emerged as central regulators of the immune microenvironment of cancer. Hence, we explored whether an IFN-I signature MX1 can be utilized to predict patient clinical outcome. Materials: Primary Head and Neck Squamous Cell Carcinoma (HNSCC) specimens were procured from 74 patients with a maximal follow-up of 85.9 months. We produced an HNSCC tissue microarray with 3 cores per specimen. We then stained sections of 5μm thickness with an anti-MX1 antibody. MX1 staining densities within cancer cells were quantitated using Aperio ImageScope. Conclusion: Among the enrolled patients, 28% had early stage (I-II) cancer, and 72% presented with stage III or IV cancer. HNSCC exhibited a spectrum of MX1 staining density. We observed a statistically significant association between MX1 immunohistochemical staining scores and overall patient survival, using the median MX1 score to separate the patients into two groups ($p = 0.003$). This finding suggests that cancer autonomous IFN-I signaling plays a critical role in the patient clinical outcome. Our ongoing multivariate analysis will provide insight into the mechanism underpinning the MX1-mediated difference in patient survival.

#50

PSEUDOSARCOMATOUS MYOFIBROBLASTIC LESIONS OF THE ORAL CAVITY

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Myofibroblastic lesions of the oral cavity can vary greatly in their histologic appearance. Occasionally, lesions of myofibroblastic origin can exhibit aggressive histologic features such as brisk mitotic activity and extension into underlying skeletal muscle and adipose tissue. Such cases can present a diagnostic challenge and can be aided by immunohistochemical (IHC) studies along with key morphological features to arrive at the appropriate diagnosis. The following is a discussion of two such cases. The first example presented as an exophytic lesion of the left dorsum of the tongue in a 73-year-old male. Histologically, the lesion was highly cellular, exhibited a moderate mitotic rate and showed extension into underlying skeletal muscle and adipose tissue. The lesional cells were focally positive for smooth muscle actin (SMA) and desmin by IHC, showed retention staining for retinoblastoma 1 (RB1) and was negative for CD34. The lesion was classified as a cellular fibrous histiocytoma. The second case also occurred on the tongue and presented in a 23-year-old female patient. Microscopically, this lesion was composed of mitotically active myofibroblasts set in a myxoinflammatory stroma. By IHC the lesion was positive for ALK and SMA but negative for keratin markers. Based on the histologic and IHC findings the lesion was diagnosed as a pseudosarcomatous myofibroblastic proliferation. Reactive and benign neoplastic myofibroblastic lesions can exhibit features suggesting malignancy, which can lead to misdiagnosis and mismanagement. The aim of this study was to examine and provide a discussion of two such cases and to illustrate how the IHC profile along with the overall morphology of the lesion can lead to the appropriate diagnosis of these challenging cases.

#51
RARE INTRAORAL CONGENITAL MELANOTIC NEVUS - A CASE REPORT
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Objective: Congenital melanocytic nevus (CMN) consists of a benign proliferation of melanocytes at birth or shortly after birth. CMN is not an uncommon entity on the skin, and it possesses increased risk of developing melanoma. While the cutaneous counterpart is common, intraoral CMN is extremely rare. There are only five well-documented case reports in the English literature, and here we present one case of an intraoral CMN. Clinical Presentation: A 9-year-old Caucasian female presented with a rapidly expanding mass on the right hard and soft palate, measuring 2 × 1.5 × 0.3 cm. The lesion was covered by normal oral mucosa, and presented as a well-circumscribed, non-tender, firm mass. There was no gross

pigmentation and no palpable lymphadenopathy. Computed topography images showed no bone involvement. Intervention and Outcome: The mass was removed and evaluated histopathologically; margins were positive. Three years after the excision, there was a recurrence; re-excision was performed. Both specimens showed a dense diffuse infiltrate of small epithelioid melanocytes in the lamina propria with involvement of the vessel walls. The melanocytes arranged in clusters, theques or bands, streaming through collagen bundles with occasional melanin deposition. Cellular atypia or mitosis was not identified. The overlying oral mucosa exhibited slight papillomatosis with junctional activity. The majority of the melanocytes in the lamina propria were positive for MART-1 and p16, with a small population of HMB-45 positive cells within the superficial and junctional components. MIB-1 positivity was low (< 5%). No recurrence was reported at 1 year follow-up. Conclusion: This report of an intraoral CMN, with a unique clinical presentation, adds to the literature of this rare entity.

#52

REGULATION OF ENDOPLASMIC RETICULUM STRESS BY DENTIN SIALOPHOSPHOPROTEIN IN ORAL CANCER CELLS

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Objectives: Dentin sialophosphoprotein (DSPP) has been recently related with development, invasion and metastasis of oral squamous cell carcinoma. Cancer cells are commonly found under constant endoplasmic reticulum (ER) stress showing increased levels of misfolded proteins due to mutations and stressful microenvironment. This study examined the effects of DSPP modulation on ER regulating mechanisms and unfolded protein response (UPR) in oral cancer cells. Methods: DSPP shRNA silenced and scrambled OSC2 cells were used. mRNA levels of ER-related molecules were assayed by RT-PCR, while Bcl-2, Bax, PCNA and Cytochrome C protein levels were analyzed by Western blot. Cell viability, apoptosis and migration capacity were monitored by MTT, Annexin V/FITC flow cytometry and wound-healing assay, respectively. Results: DSPP silencing significantly downregulated mRNA levels of major ER stress regulator GRP78, as well as ER stress-related molecules SERCA2b, PERK, IRE1 and ATF6, accompanied by decreases in cell viability and migration and increases in apoptotic rate of OSC2 cells. Further, Bcl-2 and PCNA protein levels were reduced and Bax and cytochrome c were upregulated. Puromycin treatment ameliorated without reversing DSPP silencing effects on ER stress-related molecules and increased migration capacity, while it enhanced cell viability reduction and apoptosis

induction in DSPP silenced cells. Conclusions: DSPP-silencing in OSC2 cells perturbed ER stress homeostasis, deregulated UPR and decreased critical hallmarks of oral tumorigenesis. Puromycin treatment weakened DSPP silencing effects on ER stress-related molecules and triggered a proper UPR. DSPP function may correlate with GRP78, leading to interactions with important proteins of ER stress homeostasis and UPR.

#53

STEM CELL MARKER BMI-1 INCREASED EXPRESSION IN CARCINOMA EX PLEOMORPHIC ADENOMA PROGRESSION: AN ASSOCIATION WITH THE DEVELOPMENT OF DISTANT METASTASIS

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OBJECTIVE: Pleomorphic adenoma (PA) is the most common salivary gland neoplasm and its malignant transformation into a carcinoma ex pleomorphic adenoma (CXPA) is a well recognized event. CXPAs are typically high-grade and widely infiltrative malignancies at the diagnosis, often associated with adverse outcome. However, if the carcinoma is diagnosed at a non-invasive phase of progression (intracapsular CXPA), the prognosis is excellent. We evaluated the immunoexpression of the stem cell marker Bmi-1 in the stepwise progression from pleomorphic adenoma (PA) to invasive carcinoma ex pleomorphic adenoma (CXPA), correlating it with clinicopathological aspects. METHODS: 30 PAs, 27 CXPAs (8 intracapsular and 19 invasive) and 25 residual PA areas were evaluated immunohistochemically for Bmi-1 expression. RESULTS: Twenty CXPAs (7 intracapsular and 13 invasive, 74%) were positive to Bmi-1. Residual PA and PA without malignant transformation were negative. High Bmi-1 expression levels (>50% of positive cells) was correlated with the development of distant metastasis in invasive CXPA (p=0.005, Ç2 test), but no associations were found with histological grade, mitotic index, tumor-associated necrosis, perineural and angiolymphatic invasion, tumor recurrence, nodal metastasis and disease-related death. CONCLUSION: These results suggest that Bmi-1 may play an important role in carcinogenesis and progression of CXPA. Although direct therapeutic intervention in Bmi-1 may result in unwanted complications due to its constitutive functions, strategic approach to Bmi-1-related pathways may provide new therapeutic opportunities for patients with invasive CXPA.

#54

THE COMPARISON OF P53 EXPRESSION PATTERNS IN NORMAL AND DYSPLASTIC ORAL MUCOSA

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Objective: Current diagnostic criteria for oral epithelial dysplasia (OED) mostly rely on cytologic and architectural alterations, and these sometimes are not sufficient to distinguish reactive atypia from mild OED. Wild-type p53 protein has been shown to be present in approximately 25% of the basal cell nuclei in normal oral mucosa. In OED, basal and suprabasal p53 overexpression has been noted. We hypothesize that p53 may help to differentiate OED and reactive keratoses, and improve the accuracy of histopathologic diagnosis. Methods: One hundred and twenty-three archived human oral mucosa specimens were reviewed by two board certified oral pathologists, consisting of 20 cases of reactive keratosis, 76 OED and 27 oral squamous cell carcinoma (OSCC). Nuclear positivity for p53 was recorded as follows: intensity (low, intermediate and high) and percentage of positive basal cells (< 25%, 25%-50%, 50%-75% and > 75%). Results: In reactive keratosis, p53 expression was confined to the basal cell layer with low intensity and less than 5% nuclear positivity. In OED and OSCC, basal and suprabasal cells exhibited intermediate to high intensity positivity for p53, and the percentage of p53 positive basal and suprabasal cells ranged from 25%-100% with a continuous distribution. In addition, the percentage and intensity of p53 positive cells were higher in moderate/severe OED (50%-75%) and OSCC (> 75%) than mild OED (25%-50%) ($p < 0.05$). Interestingly, in 1.5% of cases, OED and OSCC were completely negative for p53. Conclusion: Our preliminary results demonstrated that the percentage and intensity of p53 expression were very low (< 5%) in reactive keratoses, and also reliably and positively correlated with increasing histopathologic grade of OED.

#55

THE PROGNOSTIC SIGNIFICANCE OF CANCER-ASSOCIATED FIBROBLASTS IN ORAL CANCER: A SYSTEMATIC REVIEW OF THE LITERATURE AND META-ANALYSIS

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Objective: The association between cancer-associated fibroblasts (CAFs) in oral cancer (OC) and poor survival is based on small-size studies. We conducted a systematic review of the literature and meta-analysis in order to consolidate this association. Methods: A systematic search of the English language literature for studies that immunohistochemically identified CAFs (alpha smooth muscle positivity) in relation to survival was done. Raw data was reconstructed from graphs of hazard ratio or Kaplan-Meier survival plots. Univariate analysis using

Fishers' Exact Test with odds ratio was used to predict 5-year mortality followed by multivariate analysis using Cox regression. Significance was set at $p<0.05$. Results: Nine studies (N=582 OC patients) met the inclusion criteria. OC patients with high CAF density had a relative risk of mortality that was 5.045 times higher compared to patients with low CAF density ($p<0.001$, 95% CI 3.45-7.38). In addition, multivariate analysis showed that being a male had a protective effect (ß=-4.44), so that the relative risk to die within 5 years from diagnosis in males was 10 times lower than in females ($p=0.025$, 95% CI 0.00-0.57). Conclusions: High CAF density significantly increased the risk to die from OC within 5 years but being a male had a protective effect compared to females. Further studies attempting to establish a cutoff point for CAFs density to be used by clinicians as a reliable prognostic tool in cases of OC, are required.

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USP6 GENE REARRANGEMENT IN CRANIAL FASCIITIS: A REPORT OF THREE CASES

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Objective: Cranial fasciitis (CF) is an uncommon benign myofibroblastic proliferation involving the soft and hard tissues of the cranium. It typically occurs in the pediatric population with a male predilection (male-to-female ratio 1.5:1). Clinical presentation is usually a rapidly expanding painless nodule. Bone erosion may be appreciated radiographically. Histopathological sections of CF show plump fibroblast-like cells with pale, oval shaped nuclei and prominent nucleoli in a fibrous or myxoid background. Growth is self limited and surgical excision is curative. CF is considered to be a variant of nodular fasciitis (NF). As with NF, CF may mimic a sarcomatous process and may represent a diagnostic challenge. Erickson-Johnson et al identified rearrangements of the USP6 gene in 44 of 48 cases of NF. In twelve of these cases MYH9 was the fusion partner. To date, the molecular profile of CF has not been studied. Here we present the molecular findings in three cases. Methods: We identified three cases of CF at our institution. Each case was subjected to fluorescence in-situ hybridization (FISH) to determine USP6 status. Appropriate negative controls were included. Results: Two of three cases were positive for the USP6 gene rearrangement. The third case failed to hybridize, likely related to nucleic acid damage secondary to decalcification. Negative controls did not demonstrate the genetic rearrangement. Conclusions: These findings warrant further investigation of the USP6 gene rearrangement in CF as it may prove helpful as a diagnostic adjunct in challenging cases.

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VEGF AND WNT/BCATENIN MODULATE HOX GENES IN ORAL SQUAMOUS CELL CARCINOMAS M. Campos, E. Lanzel, N. Handoo, S. Timmons, R. Canevari, S. Campos, S.J. Campos, U. of Iowa, Iowa City, U.S.A., University of Vale do Paraiba, Brazil.

This study evaluated a possible interaction between Wnt/bcatenin signaling pathway, angiogenesis and homeobox genes in oral squamous cell carcinomas (OSCC). qRT-PCRarrays were used to assess 25 HOX genes transcripts in cell lines obtained from OSCC from tongue treated as follows: DMEM (Control); recombinant VEGF (rhVEGF); VEGF block with neutralizing antibody; Wnt/bcatenin block with DKK1; VEGF and Wnt/bcatenin block (double block). Alternatively, cells treated as described were also stimulated with rhVEGF. Five HOX genes (B1, B3, C8, C9 and D1) were upregulated or moderately expressed in OSSC cells before and after all treatments. The only exception was HOXC9 which was downregulated after blocking VEGF. Inhibition of VEGF upregulated the expression of 10 HOX genes (C12, A1, A7, C10, D13, A9, C6, B7, D12 and B8) that were primarily downregulated. HOXC12 was also upregulated after blocking Wnt/bcatenin. HOXA1, A7, C10, D13 and B8 switched from downregulated to moderately expressed in cells stimulated with rhVEGF. When cells where stimulated with rhVEGF and double blocked, HOXA1, B7 and D12 switched to moderately expressed. The other 9 HOX genes (B2, B9, C13, D3, B4, D11, C11, D9 and D4) were moderately expressed in OSCC cells. Excluding B2, all switched to upregulated by VEGF inhibition and downregulated by double block. VEGF was able to modulate the expression of HOX genes in OSCC cells. By blocking VEGF on OSCC the expression profile of HOX genes changed from upregulation to downregulation and vice-versa. In some cases, the conjunct action of Wnt/bcatenin and VEGF modulated the expression profile. These data suggest a role of VEGF regulating HOX genes in OSCC and also provide insights on the interactions between Tumor angiogenesis, Wnt/bcatenin and HOX genes in OSCC