



American Academy of Oral  
& Maxillofacial Pathology

## Poster Program

**Monday - May 2, 2011**  
**7:30 am – 11:30 am**

**San Cristobal G**

# Poster Abstracts – Monday, May 2, 2011

## #1

### A REVIEW OF AN ORAL & MAXILLOFACIAL SURGERY RESIDENCY PROGRAM'S

BIOPSY SERVICE. J Doscher, K Ablow, J Kelly. Hospital of Saint Raphael, New Haven, CT.

**Introduction:** The specific aims of the study are twofold to determine the spectrum of oral and maxillofacial pathology (OMFP) in patients of a hospital oral maxillofacial surgery (OMFS) clinic and to determine how often the surgeon's clinical diagnosis correlates with the histopathology. This study provides an overview of the types of cases seen, and also provides valuable information regarding potential diagnostic strengths and weakness of OMFS residents. Thus, this study will provide a foundation for lecture design and clinical mentoring for OMFP instructors who teach OMFS residents. **Methods:** This retrospective study uses Natural Language Search by MDTM. The selection criteria included anatomic location of biopsy, diagnosis comment(s), clinical diagnosis and final diagnosis. This search includes all cases submitted from the OMFS clinic between 7/1/07 to the present. **Results:** Diagnoses included 275 reactive lesions (74%), 54 developmental lesions (16%), and 42 neoplastic processes (11%). In 142 cases, the diagnosis was not given (38%). In 130 cases, a clinical description was provided without a diagnosis (35%), and in 75 cases, the histopathologic and clinical diagnoses correlated (20%). Finally, in 24 cases, the clinical and histopathologic diagnoses did not correlate (6%). **Conclusion:** Overall, only 20% of cases submitted by for histological diagnosis were diagnosed correctly based on clinical presentation, although in most cases (38%) a diagnosis was not given. Thus, it is difficult to assess from this study whether additional training is needed to improve the diagnostic skills of oral surgery residents, or whether barriers in communication need to be addressed between the two specialties.

## #2

### TRIAGE OF HEAD AND NECK MASSES: THE ROLE OF FINE NEEDLE ASPIRATION

CYTOLOGY. D Klingman, N Morgenstern, J Fantasia. North Shore-LIJ Health System, New Hyde

Park, NY. **Background:** Clinical assessment of palpable lymph nodes and masses of the head and neck is challenging and often includes a broad differential diagnosis. The differential includes primary and metastatic neoplasms, inflammatory and reactive lesions, infectious diseases, and developmental processes. Fine needle aspiration cytology provides a useful triage tool and often results in a definitive diagnosis. **Objective:** To demonstrate the use of fine needle aspiration cytology in the triage of selected head and neck masses and its role in directing specific imaging or diagnostic tests to support the diagnosis. **Methods:** Selected case studies: a six-year-old female with Langerhans cell histiocytosis, a 62-year-old female with small cell lymphocytic leukemia/lymphoma, a 63-year-old male with metastatic squamous cell carcinoma, and a 60-year-old female with breast cancer and noncaseating granulomatous lymphadenopathy. **Results:** Work-up of each of the respective cases included immunohistochemistry, imaging, flow cytometry, positron emission tomography and MRI, and special stains for microorganisms to finalize the diagnoses. **Conclusion:** Fine needle aspiration cytology is a useful modality for triage and for initiating the diagnostic work-up of head and neck masses of varied etiologies.

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## #3

SALIVARY ENDOTHELIN-1 AS A POTENTIAL BIOMARKER FOR ORAL SQUAMOUS CELL CARCINOMA (OSCC) IN ORAL LICHEN PLANUS AND IN PREVIOUS OSCC PATIENTS. YSI Cheng, T Rees, L Jordan, HS Chen, DT Wong. Texas A&M HSC-Baylor College of Dentistry, Dallas U Medicine and Dentistry, Newark, NJ; U California, Los Angeles. Endothelin-1 (ET-1) is a potent vasoconstrictor involved not only in vascular biology but also in carcinogenesis. Results of a study in 2007 suggested salivary ET-1 as a potential biomarker for OSCC, but a more recent study showed conflicting results. The purposes of this pilot study were to investigate feasibility of using salivary ET-1 as a biomarker for OSCC in two groups: oral lichen planus (OLP) patients and patients who previously had OSCC. Saliva samples were collected from five groups of subjects: patients with OSCC (Group A; n=18), patients with OSCC previously and in remission (Group B, n=15), patients with active OLP lesions (Group C, n=21), patients with OLP and in remission (Group D, n=28) and normal controls (Group E, n=24). Salivary ET-1 levels were determined by enzyme-linked immunosorbent assay, and the results were analyzed by Mann Whitney U test. The mean salivary ET-1 level in Group A was significantly higher than that found in Group C ( $p=0.001$ ), Group D ( $p=0.015$ ) or Group E ( $p=0.004$ ). There was no significant difference ( $p>0.05$ ) in the mean salivary ET-1 levels between Group A and B; Group B and C; Group B and D; Group B and E; Group C and D; Group C and E; and Group D and E. Our results suggested that salivary ET-1 would be a good biomarker for OSCC development in OLP patients regardless of the degree of OLP disease activity. However, it appeared not be a good biomarker for detecting recurrence of OSCC in patients in remission.

## #4

TEMPORAL ALTERATIONS IN MICRORNAS EXPRESSION DURING EXPERIMENTAL ORAL TONGUE CARCINOGENESIS. L Mosquera, J Wu, J Schaefer, N Vigneswaran. U Puerto Rico School of Dental Medicine and U Texas School of Dentistry, Houston. MicroRNAs (miRNA) are small non-coding single-stranded RNAs which negatively regulate gene expression. Specific miRNA expression signatures have potential diagnostic and prognostic utility in cancers. Aim: To profile and correlate miRNA expression with histologic and molecular abnormalities in a mouse model of oral tongue carcinogenesis. Methods: CBA mice were given 4NQO (100  $\mu\text{g}/\text{ml}$ ) in drinking water for 16-weeks. Tongues of control (n=8) and experimental mice (n=8) were harvested after 8-, 16-, and 21-weeks post-treatment. The Cancer RT2 miRNA PCR Array and Taqman MiRNA assays were used to analyze miRNA expression of RNA isolated from frozen or formalin-fixed tissue. Formalin-fixed tissues were used for histologic/immunohistochemical studies. Results: 4NQO-exposed mice revealed moderate to focally severe epithelial dysplasia after 8-wks (early) and severe epithelial dysplasia in situ, and invasive carcinoma after 16-21-wks. Analysis of miRNA PCR array data identified 28 (21 up- and 7 down-regulated) and 13 miRNAs (11 up- and 2 down) to be significantly ( $>2$  folds) altered compared to control tongue during the early (8-wks) and late ( $> 16$ -wks) stages of carcinogenesis, respectively. MiRNAs-196a, 142-5p, 32, and 21 are the top 5 miRNAs that are up-regulated ( $> 8$ -folds) during the early stage. MiRNAs-196a, 21, and 31 are the only miRNAs that are up-regulated in both the early and late stages of carcinogenesis. Our studies showed that aberrant AKT-mTOR activation is an early event in 4NQO-induced carcinogenesis. Activation of AKT-signaling by miR-196a is implicated in colon cancer. MiRs-21 and 31 are oncogenic in various human cancers. Conclusion: Aberrant expression of miRs-196a, 21 and 31, is an early event and is causally related to 4NQO-induced carcinogenesis.

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## #5

PRIMARY GLYCOGEN RICH CLEAR CELL SQUAMOUS CELL CARCINOMA OF THE MANDIBULAR GINGIVA. J Frazier, H Sacks, P Freedman. New York Hospital Queens and Jamaica Hospital Medical Center, NY. Clear cell squamous cell carcinoma (CCSCC) is a rare variant of squamous cell carcinoma. CCSCC was first reported by Kuo in 1980 who described 6 cases of squamous cell carcinoma of the skin of the head and neck which were composed of cells with clear cytoplasm that he attributed to the accumulation of intercellular fluid and not the presence of glycogen, lipid or mucin. This case report describes a 59-year-old female with an exophytic, hemorrhagic lesion of two months duration on the posterior mandibular gingiva. The lesion was biopsied and histological examination revealed dysplastic stratified squamous epithelium showing transition to an infiltrating tumor composed of islands of epithelial cells with clear cytoplasm. The cytoplasm stained positive with PAS and was PAS negative after diastase digestion. Mucicarmine stains were negative for intracytoplasmic mucin. This is the first reported case describing glycogen rich clear cell squamous cell carcinoma of the mandibular gingiva.

## #6

MODULATION OF THE ONCOGENIC STAT3 SIGNALING BY MAPKS IN ORAL SQUAMOUS CARCINOMA CELLS. N Nikitakis, I Gkouveris, G Rassidakis, A Sklavounou. U of Athens, Greece. The oncogenic role of the constitutive activation of the signal transducer and activator of transcription (Stat3) signaling pathway in oral squamous cell carcinoma (OSCC) cells has been well established. Negative regulation of Stat3 signaling has been proposed as a valid target of chemopreventive and antineoplastic strategies; however, the molecular pathways responsible for Stat3 modulation in OSCC have not been fully elucidated. The purpose of this investigation was to assess the modulating effects of mitogen-activated protein kinases (MAPKs) on Stat3 signaling in OSCC cells. The constitutive expression levels of phosphorylated (activated) and total Stat3, ERK, p38 MAPK and JNK were assessed in OSCC cell lines (SCC25 and Cal33) by Western blot. Inhibition of specific MAPKs was performed using selective inhibitors of p38 MAPK (SB203580), JNK (SP600125), and ERK (U0126). The experiments were performed in the presence and absence of 15d-PGJ2, a known inhibitor of Stat3 tyrosine phosphorylation. Selective inhibition of ERK and p38 MAPK, but not JNK, resulted in upregulation of tyrosine phosphorylated Stat3. 15d-PGJ2 downregulated the tyrosine but increased the serine phosphorylation levels of Stat3 and induced phosphorylation of all 3 tested MAPKs. Treatment of cells with the specific JNK inhibitor had no effect on 15d-PGJ2-mediated inhibition of tyrosine phosphorylated Stat3. On the other hand, selective inhibition of p38 MAPK or ERK reversed 15d-PGJ2-mediated Stat3 repression. These data provide preliminary evidence in support of the role of ERK and p38MAPK, but not JNK, as negative regulators of the oncogenic Stat3 signaling in OSCC as well as mediators of the Stat3 inhibitory effect of 15d-PGJ2.

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## #7

**CHONDROBLASTIC OSTEOSARCOMA OF THE MANDIBLE: A CASE REPORT.** N Nikitakis, D Xygkas-Efthymiou, I Chronas, N Papadogeorgakis. U of Athens, Greece. Osteosarcoma is a malignant tumor characterized by the direct production of osteoid by atypical mesenchymal cells. Excluding multiple myeloma, osteosarcoma is the most common primary bone malignancy. In the head and neck area, osteosarcomas are rare and represent approximately 7-10% of all osteogenic sarcomas. Chondroblastic osteosarcoma is the prevailing subtype found in the jaws. In the case reported here, a 53-year-old male patient presented with a non-painful swelling in the right side of his mandible. It was covered by normal-appearing mucosa and all involved teeth were vital. Radiographically, the lesion appeared primarily as a radiopacity with diffusely admixed less opaque areas and ill-defined margins. Other significant imaging findings were localized root diversion and widening of the periodontal ligament. A biopsy was undertaken. The histopathologic examination revealed a cellular mass composed of pleomorphic malignant mesenchymal cells with extensive areas of chondroid differentiation with lobular arrangement. In addition, areas of direct osteoid production by malignant cells were discerned. A histopathologic diagnosis of chondroblastic osteosarcoma was rendered. Computed tomography and bone scintigraphy did not reveal metastatic disease. The tumor was removed by partial mandibulectomy, followed by reconstruction with a titanium plate. The patient received chemotherapy and radiotherapy postoperatively. At 6 and 12 months postoperative follow-ups, no signs of recurrence or metastatic spread were found allowing for the replacement of the reconstruction plate with a hip bone graft. Despite its rarity, chondroblastic osteosarcoma should be included in the differential diagnosis of space-occupying lesions of the jaws.

## #8

**SINONASAL NON-INTESTINAL-TYPE ADENOCARCINOMA.** V Woo, J Mason, A Chi, E Herschaft, J Moxley. U of Nevada, Las Vegas and Medical U of South Carolina, Charleston. Sinonasal adenocarcinomas are rare malignancies that are broadly categorized into intestinal- or non-intestinal types. Distinct differences in etiology, histopathology and clinical behavior represent the primary bases for distinguishing between these two variants. Sinonasal non-intestinal-type adenocarcinomas arise most frequently in the ethmoid and maxillary sinuses, often presenting with nasal obstruction and epistaxis. They can be further subclassified as low-grade or high-grade depending on clinical and microscopic characteristics. Of note, pain and facial deformity are unusual findings that typically herald advanced disease and high-grade histology. We report a 69-year-old male who presented for evaluation of increasing right cheek pain and worsening nasal congestion. Extraoral examination revealed malar fullness and mild elevation of the eye on the affected side. On intraoral examination, a right maxillary mass was identified that completely obliterated the buccal vestibule. Radiographic examination of the area showed a destructive radiolucency in continuity with an opacified maxillary sinus. Histologically, the tumor was composed of crowded glands without evidence of atypia or intestinal morphology, consistent with sinonasal non-intestinal-type adenocarcinoma. Interestingly, the lesion was ultimately diagnosed as low-grade despite its clinically high-grade presentation. The distinction between the low- and high-grade variants of sinonasal non-intestinal adenocarcinoma has important prognostic implications as low-grade lesions behave indolently while high-grade lesions are associated with dismal survival rates. Management of cases with a disparity between clinical and histologic features can be challenging and guidelines have yet to be established.

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## #9

**MIXED VERRUCOUS-CONVENTIONAL SQUAMOUS CELL (HYBRID) CARCINOMAS: PARAMETERS THAT CORRELATE WITH METASTATIC CAPACITY.** J Bastaki, L Giroux, J Johnson, R Seethala. U Pittsburgh, PA. Mixed verrucous-conventional squamous cell carcinomas (hybrid CA), are a subset of verrucous carcinoma (VC) that may potentially metastasize to regional lymph nodes, unlike pure VC. However, clinicopathologic variables, including proportion of conventional component required to confer a risk for nodal metastasis has not been well delineated. We evaluate tumors from 35 patients (1995-2009) in order to define the parameters in hybrid CA that correlate with lymph node metastasis. The mean age at presentation was 69.4 years (range: 30-87) with a slight male predilection of 1.2:1. The sites involved included: oral cavity (80%), larynx (17.1%) and maxillary sinus (2.9%). Average size was 3.2 cm (range: 1.0 -8.5 cm). The conventional component comprised on average 41.5% of the entire tumor (range 2-95%) and was well differentiated in 54.3%, moderately differentiated in 31.4%, and poorly differentiated in 14.3% including two cases with a sarcomatoid component. Six of 35 (17%) showed lymph node metastases. The proportion of conventional component was the only factor that correlated with lymph node status. Descriptive ROC curve analysis showed high discriminatory value for this parameter (AUC= 0.942 +/- 0.042 SD) with a cut off of 55% conventional component in hybrid CA showing 100% sensitivity and 76.7% specificity. Tumors with more than 55% conventional component thus showed a significantly higher frequency of cases with lymph node metastases (Fisher exact,  $p < 0.001$ ). Thus, the proportion of conventional component in hybrid CA may help in selecting patients for whom selective lymph node dissection may be of benefit.

## #10

**MAXILLARY GINGIVAL METASTASES FROM A CHORIOCARCINOMA: A REPORT CASE.** I Velasco, B Martinez, L Aguilar, C Venables, C Mebus. U Los Andes; U Mayor; Del Salvador Hospital, Chile. Metastatic tumors to the oral cavity are extremely rare lesions that represent 1% of all malignancies in jawbones and soft tissues. The vast majority of these lesions are located in the jawbones; metastases to oral soft tissues are rarer with gingiva and tongue the sites of major prevalence. The primary tumors that frequently produce metastasis to the oral tissues are the lung, breast and kidney. Gingival metastases have an unremarkable clinical appearance; they can be difficult to distinguish from more common hyperplastic or reactive lesions, such as peripheral giant cell granuloma, pyogenic granuloma, and peripheral ossifying fibroma. We report an unusual case of a 33-year-old Hispanic male with a testicular choriocarcinoma of one year of duration already presenting metastases in the brain, neck and lungs. The patient consults due to a tumoral mass, of two weeks duration, in the anterior maxillary gingiva in relation with teeth 1.1 and 1.2 that resembles a benign, gingival mass. The histopathology demonstrates metastasis from the patient's choriocarcinoma and the patient dies 2 weeks after biopsy due to the primary's tumor advance stage. Metastases in oral soft tissue may be indicative of a widespread disease with poor prognosis and can mimic benign gingival entities; therefore, special attention must be paid to these lesions.

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## #11

**ORAL SQUAMOUS CELL CARCINOMA IN AN ADOLESCENT WITH DYSKERATOSIS CONGENITA.** J O'Donnell Jr., T Jhamb, D Klingman, C Fein Levy, J Fantasia. North Shore-LIJ Health System, New Hyde Park, NY. Background: Dyskeratosis congenita (DC) is an inherited bone marrow failure (IBMF) syndrome with a mucocutaneous triad of nail dystrophy, reticular skin pigmentation, and mucosal leukoplakia. Patients with DC have short telomeres and are at high risk for aplastic anemia and neoplasia. Dyskeratosis congenita is second only to Fanconi anemia for cancer risk among the IBMF syndromes. The most common cancer in DC is oral squamous cell carcinoma (SCC). The genetic basis of DC is complex with varied inheritance patterns. This genetic heterogeneity underlies a wide spectrum of disease severity. Specific gene mutations involved in telomere maintenance have been identified in DC. Objective: Present a SCC of the maxillary alveolar ridge, of rapid onset, in a 15-year-old boy with DC. Case Study: The DC patient had defined shortened telomeres. The patient had a renal transplant at 2 years of age for multicystic kidney disease. Subsequently he developed post transplant lymphoproliferative disorder of the small bowel, treated with resection. Immunosuppressive therapy was discontinued and he rejected the transplanted kidney in 2009. In 2010, surveillance examination revealed a fungating mass of the right posterior maxillary alveolus. Biopsy was performed and a diagnosis of SCC was established. The patient underwent a right partial maxillectomy and was evaluated for post-operative proton radiation therapy. Conclusion: This case describes an early onset oral carcinoma in a DC patient with a complex medical history. The difficulties in recommending conventional treatment protocols in this patient group are highlighted.

## #12

**LEUKOPLAKIA IN SMOKERS AND NONSMOKERS: DIFFERENT CLINICOPATHOLOGIC ASPECTS.** J Lima, S Sousa, L Correa. U of São Paulo, Brazil. Oral leukoplakias are defined by the WHO as a white plaque that cannot be characterized clinically or pathologically, as any other disease. Based on this definition a total of 315 consecutive lesions submitted for histopathological diagnosis at the U. of São Paulo (2005-2010) were retrieved. The aim was to analyze clinicopathologic aspects of these lesions in smokers and nonsmokers patients, as to check on possible clinicopathologic differences. Lesions were clinically diagnosed as leukoplakias, and histologic examination excluded reactive entities. Histologically the lesions exhibited hyperortho- or parakeratosis with or without epithelial dysplasia. They were separated according to the smoke habit of the patient, and analyzed in relation to gender, age and site of occurrence, as well as the presence of dysplasia. The results showed that of the 315 leukoplakias, 170 (54%) were from smokers. Among these, 74 cases presented dysplasia (43%) and from the non-smokers 57/145 (39.3%) presented dysplasia. Overall, there was a significant association between male, smoking and dysplastic lesions ( $p < 0.001$ ). However, another important finding was the high occurrence of dysplastic lesions in non-smokers women (35/57), most of them over 58 years of age. The most frequent anatomical sites of dysplastic lesions were floor of the mouth in smokers and lateral tongue in non-smokers (30% and 24.5%, respectively) Non-dysplastic lesions were more frequent in the smokers' gingiva (26.2%) and buccal mucosa in non-smokers (24.4%). It is important to be aware of these aspects in order to identify and treat potentially malignant lesions.

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## #13

THE EXPRESSION OF PEROXIREDOXIN I IN EPITHELIAL CELLS FROM THE BUCCAL MUCOSA BEFORE AND AFTER PANORAMIC RADIOGRAPH. N de Araújo, M Felipe-Silva, A Demasi, J Junqueira, V de Araújo, E Martinez. São Leopoldo Mandic Institute and Research Center, Campinas, São Paulo, Brazil. Ionizing radiation promotes many important cellular processes such as DNA damage, apoptosis and oxidative stress. Previous studies have shown that expression of Prx-I in mammalian and in cancer cells increases following ionizing radiation, demonstrating that Prx-I plays an important role in protecting cells from ionizing radiation induced cell death. Little is known about the involvement of Prx-I in protecting human cells from radiation-induced death. Objectives: The aim of this study was to evaluate the effect of X-rays in epithelial cells from the buccal mucosa in 13 patients before and after panoramic radiograph. Findings: According to the results obtained by indirect immunofluorescence it was possible to visualize an increase in the intensity Prx1 expression after the panoramic radiographs which was confirmed after the quantitative analysis obtained by gene expression of Prx1 by qRT-PCR ( $p < 0.05$ ). Conclusions: It is possible to conclude that panoramic radiography is able to induce a higher expression of Prx1 in epithelial cells from the buccal mucosa indicating the effect of the radiation at the cellular level.

## #14

UNDIFFERENTIATED CARCINOMA OF THE TONGUE: REPORT OF A RARE CASE. P Argyris, N Nikitakis, E Vardas, G Rassidakis, A Sklavounou. U of Athens, Greece. Poorly differentiated oral squamous cell carcinomas should be differentiated from other epithelial malignancies of primary or metastatic origin. However, in certain cases, the degree of anaplasia of tumor cells can provoke significant diagnostic dilemmas. Our objective is to report a rare case of undifferentiated tongue carcinoma of uncertain origin. A 56-year-old woman presented with a painful ulcerative lesion of the tongue of 2 months duration. Renal cell carcinoma had been diagnosed and treated 10 years ago without recurrences. Clinical examination revealed a 1.5 x 1.5 cm ulcer on the left posterior lateral tongue. Firm, nontender, enlarged left cervical lymph nodes were noticed. Microscopic examination of the tongue lesion revealed diffuse infiltration of the connective tissue by overtly malignant cells exhibiting intense cellular atypia and pleomorphism, abundant eosinophilic cytoplasm, large nuclei with prominent nucleoli and numerous atypical mitoses. Immunohistochemically, the neoplastic cells were diffusely positive for vimentin, focally positive for CD10, EMA and CD138, being negative for pancytokeratin, keratin 1, 5/6, 7 and 20, S-100, HMB-45, MART1, LCA, CD56 and chromogranin. FNA of the enlarged cervical lymph node revealed similar cytological and immunohistochemical features. Following appropriate consultations, a final diagnosis of undifferentiated carcinoma was rendered indicating that the exact primary or metastatic origin of the tumor could not be accurately determined. Despite intensive radiotherapy and chemotherapy, the patient died of disseminated metastatic disease within 6 months. Undifferentiated malignant neoplasms may cause significant diagnostic problems which may not be possible to be solved by microscopic and immunohistochemical analysis.

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## #15

IMMUNOHISTOCHEMICAL EXPRESSION OF HSP47 IN BENIGN AND MALIGNANT SALIVARY GLAND TUMORS. V. Papanikolaou, P Argyris, N Nikitakis, A Skavounou, J Sauk. U of Athens, Greece and U Louisville, KY. Salivary gland tumors (SGTs) constitute a heterogeneous group of neoplasms with multiple histological subtypes and a broad spectrum of pathologic appearances, frequently presenting difficulties in their final diagnosis and treatment. In recent decades, the molecular and genetic factors underlying the development and progression of human neoplasia have been the focus of exhaustive research. However, our understanding of the molecular mechanisms governing oncogenesis in SGTs remains limited. The aim of this study was to investigate and compare the immunohistochemical expression of Hsp47, a molecule involved in modulating collagen production and implicated in various forms of cancer, in benign and malignant SGTs. Eighteen benign SGTs (13 pleomorphic adenomas and 5 Warthin tumors) and 61 malignant SGTs (16 adenoid cystic carcinomas, 12 mucoepidermoid carcinomas, 11 polymorphous low-grade adenocarcinomas, 9 adenocarcinomas NOS, 6 salivary duct carcinomas, 3 carcinomas ex-mixed tumor, 2 lymphoepithelial carcinomas, 1 myoepithelial carcinoma, and 1 clear cell carcinoma) were stained immunohistochemically for Hsp47. Hsp47 was expressed in all benign and in 48 of 61 (78.7%) malignant tumors, predominantly showing a diffuse pattern of immunostaining (more than 50% positive cells). The intensity of Hsp47 immunostain varied from weak to strong. Both positivity and intensity scores were significantly higher in benign compared to malignant SGTs ( $p < 0.001$ ). In conclusion, similar to tumors of other anatomic sites such as esophagus and stomach, higher levels of Hsp47 are correlated with benign rather than malignant SGTs, suggesting that Hsp47 may serve as a protective factor in the evolution of carcinogenesis in SGTs.

## #16

THE INCREASED PDGF-A, PDGF-B, VEGF AND FGF-2 EXPRESSION IN RECURRENCE OF SALIVARY GLAND PLEOMORPHIC ADENOMA. A Soares, A Demasi, A Altemani, N de Araújo, V de Araújo. São Leopoldo Mandic Institute and Research Center and School of Medicine, State University of Campinas, São Paulo, Brazil. Background: Pleomorphic Adenoma (PA) is the most common salivary gland tumor. Although classified as benign, it has a tendency to recur (RPA), as well as the ability to undergo malignant transformation. It has been suggested that mutations in various families of growth factors and growth factor receptors are involved in the autonomous growth of tumor cells. The aim of the present study was to investigate the participation of FGF-II, Flg, BEK, PDGF-A, PDGF-B, PDGF-R $\pm$ , and VEGF in PA, RPA and recurrent pleomorphic adenoma with malignant transformation (TRPA). Methods: 18 cases of PA, 19 cases of RPA, 2 cases of RPA with focal malignant transformation (TRPA) were analyzed for growth factor expression utilizing immunohistochemical techniques via tissue microarray. Results: There was a significant difference in PDGF-A, PDGF-B, FGF-2, Flg, BEK and VEGF expression in all groups. There was not a significant difference regarding the expression of PDGFR- $\pm$ . When comparing non-recurrent with recurrent tumors, PDGF-A, PDGF-B, FGF-2, Flg, BEK and VEGF reactivity in RPA was stronger than that observed in PA. All proteins were highly expressed in TRPA. Conclusion: This research suggests that PDGF-A, PDGF-B, FGF-2, Bek, Flg and VEGF can be related to the recurrence of PA. In addition, this study shows that TRPA cells overexpress all growth factors, which has been reported in association with the malignant transformation.

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## #17

**ANALYSIS OF THE CHEMOKINE CXCL13 IN SJÖGREN'S SYNDROME PATIENTS.** J Kramer, T Rothstein. Feinstein Institute for Medical Research, Manhasset, NY. Introduction: Sjögren's syndrome (SS) is a rare autoimmune dyscrasia, most commonly seen in middle-aged women. Primary SS (pSS), or sicca syndrome, affects salivary and lacrimal glands predominantly, while secondary SS (sSS) occurs in conjunction with other autoimmune connective tissue disorders. In addition to reduced exocrine gland function, serious systemic aspects of the disease are recognized. Care for SS patients is palliative, as no established therapeutics address disease etiology. B cell abnormalities are seen systemically and within salivary glands of SS patients. However, the contribution of B cells to SS is poorly understood. In order for B cells to function most efficiently, they must be recruited to specific sites where they interact with other cells, and secrete mediators to orchestrate immune responses. CXCL13 is a B cell chemokine that is elevated in many autoimmune diseases. Accordingly, we hypothesize that CXCL13 is upregulated during SS progression. Methods: We quantified CXCL13 in sera (p=18) and saliva (n=20) of SS patients and healthy controls (n=10) by enzyme-linked immunosorbent assay. Significance was determined by two-tailed Mann-Whitney test (95% CI). Results: Primary SS patients have increased levels of serum CXCL13; and both pSS (n=16) and sSS (n=4) patients have elevated CXCL13 in saliva. Moreover, pSS patients with xerostomia (p=7, 44%) have elevated serum and salivary CXCL13 levels compared to pSS patients with normal salivary flow (n=9, 56%). Conclusion: These data indicate that CXCL13 in salivary tissue and/or serum may be pathogenically involved in SS disease and may serve as a marker of SS progression and severity.

## #18

**CARCINOMA EX-PLEOMORPHIC ADENOMA OF THE PAROTID GLAND.** R Carlos, M Nuyens, B Andrade, M Romañach, O Almeida. Centro Clínico de Cabeza y Cuello/Hospital Herrera Llerandi, Guatemala City, Guatemala, and Dental School of Piracicaba, São Paulo, Brazil. Carcinoma ex-pleomorphic adenoma (CX-PA) is a rare malignant salivary gland tumor that mainly affects the parotid of patients in the sixth to seventh decades of life. It is characterized by the development of an adenocarcinoma in association with a primary or recurrent benign pleomorphic adenoma. We present a case of CX-PA affecting an 81-year-old female, presenting a painless swelling in the left parotid gland lasting for one year. Her past medical history included three surgical treatment attempts of a pleomorphic adenoma. Computed tomography showed a 3.5 x 3 cm nodular lesion with intermediate density in the superficial aspect of the left parotid gland. Histological evaluation revealed areas of typical pleomorphic adenoma next to an intracapsular poorly differentiated adenocarcinoma. Tumor cells (malignant and no malignant) were positive for cytokeratins AE1/AE3 and 8. Pleomorphic adenoma and myoepithelial cells of the adenocarcinoma were positivity for smooth muscle actin, calponin, and p63 while epithelial malignant cells were positive for epithelial markers. Ki-67 index labeling was 5% for the adenocarcinoma and less than 1% for the pleomorphic adenoma cells. The patient was treated by surgical excision and adjuvant radiotherapy, and there is no sign of local recurrence or distant metastasis after 6 months of follow-

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## #19

ONCOCYTIC SALIVARY GLAND TUMORS: REPORT OF TWO CASES. R Carlos, M Peñalongo, M Nuyens, V Toral-Rizo, M Romañach, O Almeida. Centro Clínico de Cabeza y Cuello/Hospital Herrera Llerandi, Guatemala City, Guatemala, and Dental School of Piracicaba, São Paulo, Brazil. An oncocyte is characterized by abundant eosinophilic granular cytoplasm and central rounded nuclei. In the head and neck, various reactive and neoplastic lesions present are formed by oncocytes. Oncocytic sialolipoma is rare benign salivary gland tumor characterized by neoplastic mature adipose tissue surrounding non-neoplastic salivary gland elements, exhibiting oncocytic differentiation. Oncocytoma is a well-circumscribed salivary gland tumor composed solely by oncocytes, accounting for 1% of all salivary gland tumors. We present one case of each of these uncommon oncocytic salivary gland lesions. The patient is an 81-year-old female with asymptomatic right parotid mass, microscopically diagnosed as oncocytic sialolipoma. Interestingly, the same patient also presented a paraganglioma involving the right carotid bifurcation. The second case is a 78-year-old female with asymptomatic mass in the right submandibular gland. The tumor was removed and the microscopic diagnosis was oncocytoma. Oncocytic cells of both lesions were positive for epithelial membrane antigen, cytokeratins AE1/AE3, 7, 18, and 19, and negative for p63, calponin, smooth muscle actin, vimentin, S-100, and carcinoembryonic antigen. Oncocytic sialolipoma cells were positive for cytokeratins 5 and 14, while oncocytoma cells were negative.

## #20

COMPARISON OF MINOR SALIVARY GLAND MUCOUS RETENTION CYSTS AND SIALOLITHS. E Peters, J Coutu, R Sihra, S Wong. U of Alberta, Edmonton, Canada. Minor salivary gland associated mucous retention cysts (MRCs) and minor salivary gland sialoliths (MSGs) share histologic similarities, which include epithelium lined cystic spaces and variable inflammatory changes. The relationship between these entities was investigated by comparing the age, gender, site, and histologic presentation of all such cases presenting sequentially over a 20 year period. 84 MRCs and 24 MSGs were identified representing respectively 15% and 3% of all cases of minor salivary gland pathosis. Significant gender predilections were not noted. MRCs had a generalized distribution as follows: 28% floor of mouth (FOM), 26% buccal mucosa/mucobuccal fold (BM/BF), 14% palate, 17% lower lip, 12% upper lip (UL) and 4% retromolar pad. In comparison, MSGs had a restricted distribution as follows: 58% UL, 29% BM/MF, 4 % palate and 8% unstated sites. There were overlapping histologic features as follows: cuboidal/columnar lining only: 80% MRCs and 5% MSGs; cuboidal/columnar lining with squamous metaplasia: 15 % MRCs and 29% MSGs; squamous lining only: 5% MRCs and 40% MSGs. Twenty-five percent of MSGs had no lining epithelium. Histologic similarities were influenced by site with squamous metaplasia evident in only 5% of FOM MRCs. There was inflammation in 41% and 83%, respectively, of MRCs and MSGs. There was a difference ( $p < 0.05$ ) in the mean presentation age for MRCs (49.4, SD = 18.2) compared to MSGS (60.5, SD = 12.7) However, the site matched mean age for UL and BM/BF MRCs (58.1, SD = 13.4) was similar to MSGs. By contrast, FOM MRCs, a site in which MSGs were not found, showed a significant ( $p < 0.05$ ) age difference (37.7, SD = 16.1). The results suggest that in UL and BM/MF sites, MRC and MSGS cases share epidemiologic and histologic similarities.

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## #21

FIBROBLAST GROWTH FACTOR SIGNALING IN MOUSE ODONTOGENIC EPITHELIAL STEM CELLS. J Chang, J Wright, H Kessler, R D'Souza, F Wang. Baylor College of Dentistry, Dallas, and Institute of Biosciences and Technology, Texas A&M Health Science Center, Houston, TX. Constant supplies of odontogenic epithelial cells from stem cell niches in the cervical loop (CL) enable mouse incisors to grow continuously throughout life. Fibroblast growth factor 10 (FGF10) and FGFR2 have been shown essential for maintenance of incisor's CL during prenatal development. Whether FGF signaling is required for postnatal odontogenic epithelial stem cells (OESC) remains unknown. The purpose of our study was to elucidate the role of FGF signaling in the OESC. We established an in vitro sphere culture to isolate the stem cells derived from postnatal mouse incisor CL. Stem cell properties were evaluated by the sphere forming (self-renewal) ability, label retention (slow cycling), and the differentiation potential. Knockout FGFR was compared with wild type flox mice. The requirement for intact ERK and AKT pathways were evaluated by specific ERK and AKT inhibitors. The dissociated cells from CL were able to self-renew and expand to form spheres for at least 18 generations in the sphere culture. The sphere's cells were less differentiated but epithelial in origin as evident by lineage tracing and CK14 immunoreactivity. These sphere cells could be further stimulated to amelogenin expressing and mineral material producing cells. Sphere forming OESC could also be cultured from the postnatal unerupted mouse molar. Knockout FGFR and both ERK and AKT inhibition impaired the sphere forming ability. Our study provides a substantial advance in the isolation of the mouse postnatal OESC. We also suggest that the FGF through ERK and AKT signaling is required to regulate proper growth of postnatal OESC. The existence of stem cells in the mouse molar suggested that there might be OESC present in humans and they might be the origin of odontogenic neoplasms.

## #22

P53 MUTATION ANALYSIS OF ODONTOGENIC CYSTS (OCS) WITH AND WITHOUT DYSPLASIA. D Cox. U California, San Francisco. Introduction: Overexpression of p53 protein is well described in OCS including those with epithelial dysplasia. However most p53 antibodies stain both wild-type and mutated p53 protein and may not reflect genotype. Direct sequencing of the p53 gene has not identified mutations in OCS. The purpose of this study was to determine the molecular basis of p53 expression in several types of OCS with and without dysplasia. Methods: The study material comprised 13 OCS: odontogenic keratocyst (n=5); orthokeratinized odontogenic cyst (n=5); dentigerous cyst (n=2); lateral periodontal cyst (n=1); and unspecified odontogenic cyst (n=1). Five of these had features of mild or moderate epithelial dysplasia. One intraosseous squamous cell carcinoma (SCC) that was believed to have arisen from an antecedent dysplastic orthokeratinized odontogenic cyst was also included. Immunohistochemistry was performed using the DO7 monoclonal antibody that recognizes wild-type and mutated p53. DNA was extracted from microdissected tissue for all samples and exons 4-8 of the p53 gene direct sequenced. Results: In 4 of 5 OCS with dysplasia there was strong nuclear staining of basal and suprabasal cells. In all cases without dysplasia, nuclear expression in basal cells was either negative or weak and was absent in suprabasal cell nuclei. A mutation in exon 6 of the p53 gene (E224D) was identified in both the dysplastic orthokeratinized odontogenic cyst and the subsequent intraosseous SCC. Conclusions: OCS with features of dysplasia show increased expression of p53 protein that does not reflect p53 mutational status. One dysplastic odontogenic cyst shared the same p53 mutation with a subsequent intraosseous SCC, indicating that p53 mutation may be associated with malignant transformation in this case.

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## #23

**DETECTION OF EPSTEIN BARR VIRUS IN ODONTOGENIC TUMORS.** H Rivera, O Mamaeva, A Gullard, M MacDougall, Central U of Venezuela at Caracas and U Alabama at Birmingham  
Background: Epstein Barr Virus (EBV) is the member of human herpes virus group. It has been considered an oncogenic virus being associated with the etiology of Burkitt's lymphoma, lymphoproliferative disorders of B cell origin and B cell lymphomas in immunosuppressed individuals, nasopharyngeal carcinoma, in thymic lymphoepithelial carcinoma, and squamous cell carcinoma. A few studies on oral tumors have been demonstrated the presence of EBV. Objective: The purpose of the present study was to reveal the presence of EBV in odontogenic tumors. Materials and Methods: Ten cases with the definite diagnosis of keratocystic odontogenic tumor (KCOT), 2 cases of calcifying epithelial odontogenic tumor (CEOT) and 10 cases of solid ameloblastomas were selected from the files of the Oral Pathology Laboratory, School of Dentistry, Central University of Venezuela. DNA was extracted from formalin-fixed, paraffin-embedded tissues, using QIAamp DNA Tissue Kit. (QIAGEN, Valencia, CA). PCR was performed using specific primers for EBV: EBNA 2A, EBNA 2B, BAMC, BAMW, IR3, BMRF-1, BMLF-1, BNRF-1 region, and GAPDH as a house keeping gene. Adequate positive and negative controls were included. Results: One case diagnosed as solid ameloblastoma was positive for BAMC region of EBV, while three cases corresponding to the diagnosis of KCOT were positive for BMLF-1 region. Conclusions: Our results indicate that EBV can be detected in odontogenic epithelial origin tumors. This study is the first report on the presence of EBV in three different epithelial in origin odontogenic tumors. Further molecular analysis including more cases and close follow up of the positive cases should be conducted.

## #24

**THE ODONTOGENIC KERATOCYST: AN ARGUMENT FOR THE CAUTIOUS INTERPRETATION OF RADIOGRAPHIC AND HISTOLOGIC FINDINGS.** N Odingo, D Colosi, D Trochesset. State U of New York at Stony Brook School of Dental Medicine  
The odontogenic keratocyst (OKC) is classified as a benign developmental odontogenic cyst. Accurate diagnosis of OKC is critical due to its potential for clinically aggressive behavior. We report a case of a 71-year-old man with an incidental radiographic finding of a large radiolucent maxillary lesion. The lesion was suspicious for an aggressive benign lesion such as OKC, or a low-grade malignancy. Cone beam computed tomography (CBCT) was performed to delineate the borders of the lesion. A review of CBCT images reinforced the differential diagnosis. The patient was referred to the Oral Surgery department for treatment. An incisional biopsy returned a diagnosis of cyst of the maxilla. Two months later, the patient underwent conservative enucleation of the lesion. This treatment plan was based on the presumption that the 'cyst' originated from an endodontically treated tooth. The surgical specimen was diagnosed as OKC. Due to the high recurrence rate of OKCs, the patient was given the option of peripheral ostectomy with extraction of teeth at the surgical site, or indefinite periodic follow-up with radiographic imaging; he opted for the latter. In view of our original high index of suspicion for OKC, it is suggested that the biopsy results should have been interpreted with caution. A review of the literature supports the conclusion that OKCs should be included in the differential diagnosis for peri-radicular lesions that are refractory to endodontic therapy. In our case, this conclusion was also supported by CBCT interpretation. CBCT could also have been utilized for optimal selection of an appropriate biopsy site. It is recommended that surgical treatment planning of similar lesions take into account cautious and comprehensive interpretation of diagnostic findings.

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## #25

**CD30-POSITIVE T-CELL LYMPHOPROLIFERATIVE DISORDER OF THE ORAL MUCOSA VS. TUGSE?** G Garib, W Buck, Jr., V Reddy, P Devilliers. U Alabama at Birmingham. Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) is a lesion of the oral mucosa with unknown pathogenesis which may clinically resemble a squamous cell carcinoma. A biopsy characteristically reveals a dense cell infiltrate composed of eosinophils, lymphocytes, and large mononuclear cells whose origins have been a matter of debate. These large mononuclear cells may be alarming for a malignant process and immunohistochemical staining usually reveals that in up to 70% of cases, these cells are CD30+ T-cells, needing differentiation from CD30+ T-cell lymphoproliferative disorder of the oral mucosa. This has been regarded as the oral counterpart of cutaneous CD30+ lymphoproliferative disorders such as lymphomatoid papulosis or anaplastic large cell lymphoma. We present the case of a 71-year-old woman with recurrent CD30+ T-cell lymphoproliferative disorder of the oral mucosa which resolved without treatment. The recurrent lesion presented as an ulcer on buccal mucosa near the commissure. The initial and recurring lesions revealed similar histological features including eosinophils, lymphocytes, and large mononuclear cells with strong immunoreactivity for CD30, CD3, CD4, CD8, and LCA but failed to reveal ALK1 and CD20 immunoreactivity. In situ hybridization for Epstein-Barr virus encoded RNA (EBER) was negative. Polymerase chain reaction (PCR) analysis of the T-cell receptor (TCR)<sup>3</sup> chain gene revealed a monoclonal rearrangement for the V 1-8, 9, 10, and 11 regions. It is important to perform TCR<sup>3</sup> gene rearrangements in CD30+ TUGSE lesions to establish a diagnosis and avoid overtreatment.

## #26

**EBV-POSITIVE MUCOSAL ULCERATION IN A PATIENT WITH PREVIOUSLY UNDIAGNOSED MULTIPLE MYELOMA.** B Martin, W Zhao, F Racke, Y Efebera, J Kalmar, C Allen. The Ohio State U, Columbus. Epstein-Barr virus (EBV)-induced disorders are a varied group of diseases with biological behavior ranging from self-limiting reactive processes to aggressive malignant lesions. Due to the similarities in clinical presentation, morphologic features, and immunohistochemical phenotype, these lesions are often a diagnostic challenge. Recently, EBV-associated mucocutaneous ulcers exhibiting distinctive clinical and histopathologic features have been described in immunosuppressed patients. A 66-year-old woman presented with a recurrent ulcer of the left posterior palatal and maxillary facial gingiva. Biopsy revealed ulcerated mucosa and underlying granulation tissue that supported a polymorphous inflammatory cell infiltrate, including eosinophils and numerous large atypical mononuclear cells with pleomorphic nuclei. Immunohistochemical studies using antibodies directed against CD20, CD30 and PAX5 showed positivity in the large atypical cells. These cells were positive for EBER with in-situ hybridization. Antibodies directed against Ki-67 showed a proliferation index of 60-80% among these cells. A preliminary diagnosis of Epstein-Barr virus-driven B-cell lymphoproliferative disorder was rendered with a comment that further medical evaluation was indicated. Hematologic evaluation revealed previously undiagnosed multiple myeloma. A final diagnosis of EBV-positive mucosal ulceration secondary to immune suppression was made. The ulcer healed three weeks after the biopsy. The patient is status post autologous hematopoietic stem cell transplant and to date is in complete remission.

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## #27

**SPINDLE CELL LYMPHOMA: REPORT OF A RARE CASE ARISING IN THE ORAL CAVITY AND REVIEW OF THE LITERATURE.** A Chi, J Lazarchick, R Coles, B Neville. Medical U South Carolina School of Dentistry, Charleston and Mauldin, SC. Prominent spindle cell or sarcomatoid morphology is an infrequent finding in lymphomas. Anaplastic large cell lymphoma is the most common type of lymphoma to exhibit sarcomatoid features; however, spindle cell variants of B cell lymphomas have been described rarely as well. Here we report an unusual case of a spindle cell variant of diffuse large B cell lymphoma arising in a 40-year-old female. The patient presented with a painful, multinodular gingival swelling in the left lower quadrant. The mass was associated with paresthesia and submandibular lymphadenopathy. Radiographic examination showed an ill-defined, moth-eaten radiolucency in the left posterior mandible. Widening of the periodontal ligament spaces was noted among the adjacent teeth. An incisional biopsy showed a proliferation of pleomorphic, spindle-shaped and ovoid cells arranged in intersecting fascicles. Immunohistochemical stains showed the tumor cells to be strongly positive for CD45 and CD20 and negative for CD3, S-100, AE1/AE3, and myeloperoxidase. A review of the literature reveals only 26 previously reported cases of B cell lymphomas with prominent spindle cell features. Most investigators have considered these lesions to represent unusual variants of diffuse large B cell lymphoma or follicular lymphoma. The most commonly affected sites are the skin (especially of the head and back) and soft tissue, with only 3 previously reported cases involving the oral cavity. It is important for pathologists to avoid mistaking spindle cell lymphoma for other malignant spindle cell neoplasms, such as sarcoma, spindle cell carcinoma, and melanoma. Recognition of focal round, atypical lymphoid cells and inclusion of lymphoid markers in the immunohistochemical profile should aid in proper diagnosis.

## #28

**THE CLINICAL SPECTRUM OF ORAL T CELL LYMPHOMAS.** J Whitt, J Rokos, B Barker, C Dunlap. U Missouri Kansas City. Lymphomas of T cell origin are among the least common of the non-Hodgkin lymphomas to involve the head and neck. T cell lymphomas are a diverse group of lesions that exhibit a broad spectrum of clinical behavior ranging from clinically indolent lesions that may exhibit spontaneous regression to highly aggressive lesions associated with significant morbidity and mortality. We present a series of four cases of T cell lymphomas that involved the oral cavity. An incisional biopsy of the oral mucosal lesion established the initial diagnosis of lymphoma in each of these patients. At the indolent end of the spectrum, a 47-year-old female presented with a 2.5 cm, indurated, painless ulceration involving the buccal mucosa. The oral lesion regressed within three weeks of an incisional biopsy. The histologic findings supported a diagnosis of cutaneous T cell lymphoma (lymphomatoid papulosis). At the aggressive end of the spectrum, 25- and 29-year-old females presented with painful, rapidly-enlarging, ulcerative lesions of the hard palate. The histologic findings supported diagnoses of NK/T cell lymphomas. The final patient, an 87-year-old male, presented with a rapidly-enlarging, painful lesion of the mid-lateral tongue. The histopathologic findings, based on an incisional biopsy specimen supported a diagnosis of anaplastic large T cell lymphoma (ALK negative). As is true for lymphomas in general, the clinical course of T cell lymphomas is related to both stage and histologic type; this was reflected in the clinical course of these patients. Mucosal ulceration is a common theme in the reports of oral T cell lymphomas; indeed, each of these patients presented with an oral ulcer. Lymphoma should be included in the differential diagnosis for persistent mucosal ulcerations.

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## #29

**ORAL LEIOMYOMATOUS HAMARTOMA OF THE MIDLINE ANTERIOR MAXILLARY RIDGE: CASE REPORT WITH LITERATURE REVIEW.** T Jhamb, L Pierri, R Kelsch, J Fantasia North Shore-LIJ Health System, New Hyde Park, NY. Background: Hamartoma is defined as a benign tumor-like nodule composed of a disorganized overgrowth of mature cells and tissues normally present in the affected part, with one element predominating. In leiomyomatous hamartoma (LH), the presence of smooth muscle tissue dominates over other tissues. It is a rare oral lesion, often present at birth, and involving the midline portion of the maxilla (incisive papilla), palate and tongue. The age of patients diagnosed with LH range from 3 months to 8-years-old. LH exists in other regions such as the skin and is less prevalent in lungs, kidneys, or as a component of liver hamartoma. LH consists of a proliferation of non-encapsulated smooth muscle cells; characterized by eosinophilic fusiform cells, with blunt end nuclei, in transversal or longitudinal fascicles. Immunohistochemical stains for smooth muscle markers are positive. Methods: Case study of a 4-year-old girl that presented with a 1 cm lobulated smooth nodular mass at the midline maxillary alveolus, clinically suspicious for mucosal neuroma, possibly associated with multiple endocrine neoplasia. Microscopic examination of the excisional biopsy revealed the histopathological features of LH. The management of LH is surgical excision; recurrences are not observed. Conclusion: Hamartomatous processes are not easily distinguished from neoplasia. The differential diagnosis of a nodular lesion of the anterior palate or middle of the tongue in an infant or child should include LH.

## #30

**PRIMARY MALIGNANT MELANOMA OF GINGIVA: REPORT OF A CASE AND LITERATURE REVIEW.** R Kuklani, R Wesley, K Flippo, J Ojha. U Detroit Mercy and St. John Clinical Pathologies Laboratories, MI. Melanoma is defined as a malignant neoplasm of melanocytic origin. The most common site is the skin although it can be seen in any region with melanocytes. Non-cutaneous melanomas, especially oral melanomas are extremely rare and represent less than 1% of all melanomas. The oral melanomas tend to be more aggressive than the cutaneous counterpart. The most common intraoral location is the palate followed by maxillary gingiva. Primary melanoma of gingiva comprises approximately 27% of all intraoral melanomas, although most of these are located on the maxillary gingiva. Primary intraoral melanoma of mandibular gingiva is extremely rare with only less than 50 documented cases in the English literature. We report a case of melanoma on the mandibular gingiva of a 72-year-old Caucasian female. The lesion was located on the lingual gingiva of the edentulous area of tooth #18. Clinically, it presented as a raised, pigmented and ulcerated lesion measuring approximately 1 x 1 cm. The lesion had been present for one month. An incisional biopsy was performed. The microscopic examination displayed numerous neoplastic melanocytes with varying degrees of nuclear pleomorphism and hyperchromatism. Immunohistochemical studies showed S-100 protein, HMB 45 and Melan A reactivity of the lesional cells favoring a diagnosis of melanoma. The patient was treated surgically. We discuss the clinicopathological features, differential diagnosis and prognosis of intraoral melanomas. We also present a review of literature signifying the prevalence of intraoral melanoma on the mandibular gingiva.

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## #31

**CHRONIC LINGUAL PAPULOSIS - NEW INDEPENDENT ENTITY OR MATURE FORM OF TRANSIENT LINGUAL PAPILLITIS.** S Adibi, J Bouquot. U of Texas, Houston. **BACKGROUND:** Several acute, usually pediatric variants of edematous, usually symptomatic fungiform papillitis have been reported since the 1990s, most notably transient lingual papillitis (TLP); but no chronic forms have been mentioned. Is there a chronic, fibrotic counterpart, akin to the fibroma-like masses of older palatal examples of inflammatory papillary hyperplasias (IPH)? One affecting other papillae? Affecting older persons? **OBJECTIVE:** To clinicopathologically characterize a new lesion with clustered, chronic fibrous papules (nonsyndromic) of the tongue. **METHODS:** Cases were collected from clinics in two dental schools. **RESULTS:** 4 females & 3 males were identified with multiple, moderately firm, slightly pedunculated normally colored or slightly erythematous masses clustered at the tip of the tongue (n =4), covering the dorsal surface (n =2) or on the lateral border (n = 1); one showed several erythematous, edematous papules (similar to IPH) admixed with fibrous papules. Patient ages ranged from 37-62 years (avg. 51). All lesions were asymptomatic except for the lateral border lesion, which presented with a burning sensation and mild tenderness (disappeared with antifungal medication). All lesions had been present for years; 5 were associated with mouth breathing or a tongue thrust habit. Four papules were biopsied: all were comprised of dense, avascular fibrous tissue with no or very few inflammatory cells; one had focal dilated capillaries and edema. The lesion appeared to represent altered filiform papillae, rather than fungiform papillae. **CONCLUSION:** We suggest the name chronic lingual papulosis (CLP) as a fibrous hyperplastic response of filiform papillae to mild trauma/irritation or chronic desiccation; it is probably not a chronic counterpart to TLP.

## #32

**IS PERI-IMPLANTITIS MORE THAN SIMPLE INFLAMMATION? PATHOLOGICAL FINDINGS OF 100 BIOPSIES AROUND AILING AND FAILING IMPLANTS.** I Kaplan, A Hirshberg, G Eliyahu, D Schwartz-Arad. Tel-Aviv U and Schwartz-Arad Day-Care Surgical Center, Israel. A retrospective cohort study was conducted on 100 biopsies of peri-implant tissue submitted for pathological diagnosis from ailing and/or failing implants. The study population included 29 males, 45 females, age range 21-78 years (mean 55.2 years). The mean period between implantation and biopsy was 10.1 years (range 0.25-16.6 years). Histological analysis confirmed the diagnosis of peri-implantitis: fibro-epithelial hyperplasia and inflammation were found in 95% of the biopsies; in addition, Actinomyces-related inflammation (30%), pyogenic granuloma (24%), and giant cell granuloma (10 %). These results indicate that the clinical presentation of peri-implantitis in ailing and/or failing implants exhibits microscopic evidence of potentially aggressive reactive lesions rather than simple inflammation in 64% of cases. These lesions are recognized as potentially aggressive when they occur around teeth; however, their contribution to the failure of implants has not been investigated before. This study presents the largest series of peri-implant biopsies with pathological examination. These results suggest that it may be important to biopsy peri-implantitis at earlier stages. Further investigation is required to better understand the role of reactive lesions as well as Actinomyces in peri-implantitis.

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## #33

THE PREVALENCE OF PSEUDOXANTHOMA ELASTICUM-LIKE CONNECTIVE TISSUE CHANGES IN AN ORAL BIOPSY SERVICE. C Harrington, C Allen, F Beck, J Kalmar. The Ohio State U, Columbus. Pseudoxanthoma elasticum (PXE) is an autosomal recessive disorder with potentially significant effects upon elastic tissues of the eyes, skin and cardiovascular system. It is caused by mutation of the ABCC6 gene. The true prevalence of PXE is unknown, but is estimated to range from 0.001% to 0.004%. The frequency of the mutation is also unknown, but estimated to be 0.625% to 1.25%. Phenotypic expression of the mutated gene is highly variable and clinical manifestations in heterozygotes have been documented. Diagnosis of PXE can be suggested by the detection of fragmented calcified elastic fibers in lesional skin. Infrequently, similar connective tissue changes have been noted coincidentally in dermal and oral mucosal biopsies obtained for other conditions, resulting in patient work-up and confirmation of PXE in previously undiagnosed individuals. An acquired form of these connective tissue changes, however, has also been reported to occur in otherwise normal persons. The purpose of this pilot study was to determine the frequency of PXE-like changes in oral mucosal biopsy samples. We examined 500 cases submitted to our oral biopsy service using H&E, Verhoeff-von Gieson and von Kossa stains to identify coarse, fragmented, calcified elastic fibers. Cases were divided into four age intervals, each with 125 sequential patients. Characteristic connective tissue changes occurred more frequently than the reported prevalence of PXE. Overall results showed a prevalence of 9.8%, with upper and lower confidence bounds of 12.8% and 7.3% respectively (95% CI). There were no positive findings in the first two decades, and the prevalence increased with age. These results support the need for additional studies to determine the clinical significance of PXE-like connective tissue changes.

## #34

PAPILLARY TIP MELANOSIS (BROWN BUMPS): UNUSUAL VARIANT OF PHYSIOLOGIC AND DRUG-INDUCED MELANOSIS. S Adibi, P Suarez, J Bouquot. U of Texas, Houston. Background: Since 1967 at least 9 cases of pigmentation of the fungiform papillae have been reported, one congenital, all in blacks or Asians. Suggested names have included pigmented fungiform papillae and black bump. One report suggested that at least 25% of adult blacks showed this sign, but this has not been substantiated and the lesion has, to the best of our knowledge, never been reported in a dental journal. Objective: To clinicopathologically characterize an entity which we suggest be called papillary tip melanosis (PTM). Methods: Cases were collected from the authors' patient panels. Results: 8 females & 3 males were identified with multiple brown fungiform (sometimes filiform also) papillae of the lingual dorsum; 2 showed a diffuse background melanotic macule. Pigmentation was concentrated at the tips of the papillae. Affected papillae were generally clustered on dorsal (n = 7) or lateral (n = 2) regions of the tongue, sometimes (n = 2) randomly scattered over the entire dorsum. Ages ranged from 12-57 years (avg. 44 years); all affected individuals were African-American (n = 7), Asian (n = 3) or Hispanic (n = 1). All lesions were asymptomatic and no papillae were larger than normal. All cases were present for 'years' and at least 3 were present since childhood; one case developed during chronic use of ketoconazole. No biopsies were performed, but previous authors have reported a concentration of melanosis in the tip epithelium of the papillae, with an abundance of pigment incontinence. Conclusion: We suggest PTM as an unusual variant of physiologic pigmentation, probably developing during childhood and typically lasting for years (a lifetime?). It needs no treatment or biopsy. Occasionally, melanosis-inducing drugs may produce the same affect.

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#35

EXTRASKELETAL MESENCHYMAL CHONDROSARCOMA OF ORAL CAVITY: A CASE REPORT AND LITERATURE REVIEW. A Grandhi, R Wiston, R Reich, P Freedman. New York Hospital Queens and Yorktown Heights, NY. Mesenchymal chondrosarcoma is a rare histologic subtype of chondrosarcoma first described by Lichtenstein and Bernstein in 1959. This malignant cartilaginous tumor has a predilection for the facial skeleton with 22-27% of all cases involving the jaw bones. This can also occur as a primary extraosseous tumor with one third of cases seen in the soft tissues of the head and neck, especially the orbit and the cranial & spinal dura mater. Dowling, in 1964, reported the first case of extraskeletal mesenchymal chondrosarcoma, which is usually a rapidly growing tumor with a high incidence of metastasis. To the best of our knowledge, ours is the only case of an intraoral extraskeletal mesenchymal chondrosarcoma in the English language literature. The current case is that of a 67-year-old woman who presented to an oral surgeon with a round buccal gingival mass in relationship to the left mandibular second premolar. Histopathological examination of the biopsy demonstrated an infiltrative tumor composed of ovoid to spindle-shaped cells set in a chondromyxoid stroma. Scattered mitotic figures were also seen. In areas, the lesional stroma exhibited a pericytoma-like vascular pattern. Also noted were foci of cartilage with tumor cells appearing to be set within lacunae and focally arranged in a lace-like pattern. Immunohistochemistry showed that the tumor cells were focally positive for S100 and negative for P63, Calponin, CAM 5.2 and AE1/AE3. The patient was treated by surgical excision two months later. There has been no evidence of recurrence 5 months post operatively. Due to the rarity of this tumor, care must be exercised during examination of histological features and immunohistochemical profile for prompt diagnosis and improved outcome.