OI0253 SELF-REPORTED DRY MOUTH AND ASSOCIATED RISK FACTORS  
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**Objectives:** Hyposalivation often manifests as xerostomia (dry mouth sensation) and may indicate altered salivary gland function, may cause significant oral complications, and may compromise patients’ quality of life. The goal of this study was to investigate the prevalence of self-reported dry mouth in a large population of dental patients aged 18 years or older and to identify the associated risk factors.

**Methods:** Sociodemographic data, medical history, self-reported dry mouth, and related symptoms were collected with an electronic questionnaire from January 2010 to September 2013 for all new patients. Logistic regression models were used to estimate odds ratios (ORs) and 95% CIs to explore the relationship between xerostomia and associated risk factors. All P values reported were 2-sided and were considered to be statistically significant at P < .05.

**Results:** A total of 12,381 patients were included in this analysis. The overall prevalence of xerostomia was 12.2% (54.3% female). Patients aged 46 years or older were significantly more likely to report having dry mouth compared with the younger individuals (P < .01). The prevalence of self-reported dry mouth was greater with increasing numbers of medications (P for trend < .01). Individuals with a history of radiation and chemotherapy were associated with having higher odds of experiencing dry mouth (OR, 4.2; 95% CI, 3.2-5.4; and OR, 3.1; 95% CI, 2.3-4.1). The strongest predictor of xerostomia was association with eating disorders, which increased the odds 5.6-fold (95% CI, 4.1-7.8). Xerostomia was also associated with difficulty swallowing, current tobacco smoking, and recreational drug use (P < .01).

**Conclusions:** Polypharmacy, chemotherapy, radiation therapy, current smoking, and eating disorders were good predictors of xerostomia in dental patients. Clinicians should interview their patients carefully and be familiar with the risk factors associated with xerostomia so that they can diagnose, manage, and treat the oral complications associated with dry mouth.

OI0381 TUMOR LYMPHANGIOGENESIS IN TONGUE/FLOOR OF MOUTH SQUAMOUS CELL CARCINOMA  
Tiffany Tavares, Marcos Antonio Nunes Costa Silami, Simone de Queiroz Chaves Lourenço, Danielle Resende Camisasca, Elisa Vieira Diblasi, Fernando Luiz Dias, Paulo Antônio Silvestre de Faria, Eliane Carvalho da Fonseca, Department of Pathology, Universidade Federal Fluminense, Rio de Janeiro, Rio de Janeiro, Brazil

**Objectives:** Cervical lymph node metastasis (CLNM) occurrence has been highlighted as the main factor of worse prognosis and survival for oral carcinoma. Lymphangiogenesis may favor metastases. The aim was to evaluate and compare vascular endothelial growth factor C (VEGFC) and podoplanin immunoeexpression in tongue and floor of mouth squamous cell carcinoma (TFMSCC) with and without cervical metastasis.

**Methods:** Sociodemographic and clinicopathologic data from patients diagnosed at the National Cancer Institute in 2001 were registered. Semiserial hematoxylin-eosin-stained sections were registered. Semiserial hematoxylin-eosin-stained sections were obtained from 48 patients diagnosed at the National Cancer Institute in 2001. Sections were evaluated and compared with cervical lymph node sections from patients who did not present cervical metastasis. Pancytokeratin AE1/AE3 immunostained sections from 29 patients (WOM) showed 5 cases (17.2%) of CLNM. The resulting WOM (n = 24) and WM (n = 17) groups were separated.

**Results:** Sociodemographic parameters showed no statistically significant association with the expression of VEGFC. Among clinicopathologic data, lymph node metastases and VEGFC expression showed a statistically significant association (P = .015), in which all cases WM were VEGFC positive. Antipodoplanin antibody analysis was performed, capturing hotspots. The mean lymphatic vessel (LV) density was 20.64 LV/mm². The WOM group had lower density 18.86 LV/mm², compared with 23.31 LV/mm² in the WM group. ILVD (19.98 LV/mm²) was lower than PLVD (21.3 LV/mm²). The WM group showed greater PLVD (P = .05) and statistical significance with adjuvant radiotherapy (P = .034) and tumor thickness (P = .034).

**Conclusions:** TFMSCC frequently presents occult metastases. Lymph node sectioning associated with AE1/AE3 reaction was found to be an important complementary tool in metastasis detection. VEGFC and PLVD analysis in tumors of patients with cervical metastasis may be a potential prognosis biomarker to be confirmed by further investigations.

OI0388 SALIVARY ANTIBODIES AGAINST BP180-NC16A IN DIAGNOSING AND MONITORING PATIENTS WITH MUCOUS MEMBRANE PEMPHIGOID  
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**Objectives:** To elucidate whether saliva is a suitable testing medium for enzyme-linked immunosorbent assay (ELISA) for mucous membrane pemphigoid (MMP) and whether serum and salivary antibody titers reflect disease activity in patients with MMP.

**Methods:** Samples were analyzed using commercially available ELISA plates precoated with the noncollagenous domain of bullous pemphigoid antigen 2 (BP180-NC16a). Paired serum and whole saliva samples were taken from 50 healthy controls and 78 patients with MMP, 20 of whom provided parotid saliva as well. An additional 6 healthy controls as well as 16 disease controls (10 lichen planus and 6 pemphigus vulgaris) provided matched serum and whole and parotid saliva. Furthermore, 20 patients with MMP provided matched serum and whole and parotid saliva 3 times monthly over a 6-month period.

**Results:** Serum immunoglobulin G (IgG) or IgA antibodies (or both) were detected in 46% of patients with MMP (36 of 78). In whole saliva, specific IgG and IgA antibodies were detected in 14% (11 of 78) and 38% (30 of 78), respectively, and not in controls. Parotid saliva showed 50% (10 of 20) positivity for
specifc IgA antibody, using either antI-IgA or antiserum component antisera. Sequential samples showed that change in severity scores was significantly related to change in serum IgG and IgA antibodies (P = 0.038 and P = 0.031, respectively).

Conclusions: Serum IgG and IgA antibodies to BP180-NC16a are both highly specific for diagnosing and monitoring MMP. Asssay of specific salivary IgA antibody is as sensitive as specific antibody detection in serum and indicates a secretory origin. Salivary biomarkers may be useful in the diagnosis of patients with MMP. The novel finding of locally produced antibodies needs further investigation, because it might provide some insight into the pathogenesis of the disease.

OIO240 GENETIC SUSCEPTIBILITY TO OROFACIAL GRANULOMATOSIS Shalini Nayee, Natalie Prescott, Michael Escudier, Alex Mentzer, Rishi Goel, Anita Nolan, UKIBD Consortium, Jack Satanson, John Mansfield, Jeremy Sanderson, Dental Institute, King’s College London, London, United Kingdom

Objectives: Orofacial granulomatosis (OFG) is a rare, disfiguring inflammatory disorder of the mouth of which a proportion of cases also have intestinal Crohn disease (CD). The etiology remains largely unknown, although there is high prevalence of allergy in OFG with and without CD. Our objective was to investigate whether OFG and CD have shared genetic etiology or whether OFG is mediated by distinct immune-related genetic susceptibility variants.

Methods: Patients were clinically assessed and determined to have either isolated oral manifestations (OFG only) or concurrent intestinal CD (CD/OFG). Genomic DNA from 263 patients was genotyped using the Immunochip, a custom Illumina microarray assessing 196,524 genetic variants across multiple immune-related disease loci. Patient data were compared with data for 4307 population controls from the UK Immnunoblock Disease Genetics Consortium (UKIBD Consortium). Statistical analysis was performed using PLINK (a whole-genome association analysis program) and the R statistical package.

Results: Analyses found 2 significant associations (P < 2 × 10^-6) within the OFG-only cohort with single nucleotide polymorphisms (SNPs) on chromosome 11 q13.5 near the LRRC32 gene (P = 1.6 × 10^-6) and on chromosome 6 (P = 3.9 × 10^-7) within the major histocompatibility complex (MHC) class I region. The 11 q13.5 locus has previously shown association with atopic conditions, and the MHC class I region is implicated in numerous allergic and autoimmune diseases, including CD. In addition, a highly suggestive association was detected from the CD/OFG group on chromosome 5 p13 (P = 2.5 × 10^-6), a known risk locus for CD. Collectively, these results suggest that OFG is influenced by common variants implicated in allergy and immunity, supporting the link between OFG and allergy. However, there may also be some overlap with genetic etiology for CD. Replication in a larger independent cohort is required to substantiate our findings.

Conclusions: OFG is likely to be a complex disease mediated by diverse genetic variants, sharing genetic susceptibility with allergic disorders and autoimmune conditions such as CD.

Funding sources: Friends of Guy’s Hospital.

OIO271 TIME TO BISPHOSPHONATE-ASSOCIATED OSTEOONECROSIS OF THE JAW DIAGNOSIS: RESULTS FROM A LARGE MULTICENTER STUDY Polly Pok-Lam Fung, Aviva Petrie, Stephen Porto, Stefano Fedele; on behalf of the GENVABO Consortium, Oral Medicine Unit, University College London Eastman Dental Institute, London, United Kingdom

Objectives: There has been limited evidence on the time to bisphosphonate-associated osteonecrosis of the jaw (BONJ), particularly its association with any potential factors. This study aimed (1) to report time elapsed from first bisphosphonate use to BONJ diagnosis in a large multicenter cohort and (2) to investigate its association with a large number of potential factors using robust statistics.

Methods: This is a retrospective study of 348 patients with BONJ recruited from 20 European centers. Time to BONJ was the primary outcome, and was defined as the period from the initiation of bisphosphonates to BONJ diagnosis. The secondary outcome was the association between the primary outcome (dependent variable) and 11 potential factors, regarding demography, bisphosphonate therapy, medical history, and dental history (independent variables). The association was first investigated with univariable analyses, consisting of linear regression, Mann-Whitney tests, and Kruskal-Wallis tests. Factors that were statistically significant at the 10% level in the univariable analyses were entered into a multivariable linear regression using a significance level of 5%. All analyses were performed in Stata 11.0.

Results: The median time to BONJ diagnosis was 39.5 months. Multivariable linear regression found that, on average, (1) individuals with metastatic prostate cancer (P = 0.011) or multiple myeloma (P = 0.044) had significantly shorter time to BONJ than osteoporosis patients; (2) individuals exposed to zoledronate (P = 0.003) had significantly shorter time to BONJ than those on alendronate; and (3) individuals with previous dentoalveolar surgery (P = 0.007) had significantly longer time to BONJ than those with no previous surgery.

Conclusions: The current study investigated time to BONJ diagnosis in the largest cohort of patients to date, recruited from the largest number of centers, and it analyzed the largest number of factors. The current study confirms that malignancy and zoledronate are risk factors for early BONJ. This is also the first study showing that dentoalveolar surgery delays BONJ occurrence.

OIO308 CLASS IV LASER THERAPY IN PEDIATRICS AFFECTED BY CHEMOTHERAPY-INDUCED ORAL MUCOSITIS Maddalena Chernetz, Margherita Gobbo, Giulia Ottaviani, Serena Zucchigna, Roberto Di Lenerda, Matteo Biasotto, Dental Science Department, Division of Oral Medicine and Pathology, Trieste, Italy

Objectives: Oral mucositis (OM) is a debilitating side effect of chemotherapy. Laser therapy has recently proved efficacious in its management. This prospective study evaluates the efficacy of class IV high-power laser therapy (HPLT) in healing OM and in reducing related pain.

Methods: 18 oncohematologic pediatric patients receiving cancer therapies and affected by OM were enrolled 7.5 ± 3.0 days after the end of a chemotherapy cycle. Patients were treated with HPLT during 4 consecutive days (970 nm, 5 W (50%), 35-6000 Hz, 230 s). At first visit, assessment of OM was performed and patients was evaluated with a visual analog scale (VAS). Patients were reevaluated by a blinded operator at day 11 (11 days after the beginning of laser therapy). Neutrophil counts and white blood cell (WBC) counts were recorded on days 1, 4, and 11. Data were analyzed using SPSS, version 11.0. Categorical variables were presented as absolute frequencies and
percentages; continuous data, as medians and interquartile ranges. Differences between evaluations carried out at the different time points were evaluated with McNemar test for paired categorical variables and with Wilcoxon nonparametric tests for continuous variables. A value of \( P < .05 \) was considered significant.

**Results:** All patients showed a decrease in WHO score from a median of 3 (interquartile range [IQR], 2-3.25) at day 1 to a median of 2 (IQR, 1-2) after 4 days (\( P = .001 \)), up to a complete healing (median CTC, 0; IQR, 0-1) at day 11 (\( P < .001 \)). VAS scores decreased from day 1 to day 4: 5 (IQR, 4-7) vs 2 (IQR, 1-3), respectively (\( P < .001 \)), up to complete regression on day 11 (\( P < .001 \)). All patients perceived improvement in functional capacity. Ulcerations/erythema reduced or healed in all sites evaluated, with no major complications reported.

Conclusions: A blinded, placebo-controlled, randomized clinical trial suggests that HPLT™ may be therapeutically effective for OM; however, no single preventive measure has been approved so far. Because the onset of OM is related to the production of reactive oxygen species (ROS), and given that ROS cause cellular senescence in mesenchymal cells, we investigated whether HA-based compounds could exert protective effects against oxidative stress—induced mucosal damage both in vitro and in vivo.

**Methods:** Normal human oral keratinocytes (NOK) and fibroblasts (NOK) were used for the in vitro study. Oxidative stress was induced with \( \text{H}_2\text{O}_2 \) (500\( \mu \)M), and senescence markers were investigated by Western blot (pa6 INK4 A) and immunofluorescence (SA-Bgal). Metabolic effects were studied by MTT test (pa6 INK4 A) and analysis of variance were used to assess statistical significance of the data.

**Results:** Pulse exposure of NOF to \( \text{H}_2\text{O}_2 \) was associated with ROS production and led to senescence, as indicated by sustained increase in the levels of p16 INK4 A (\( P < .01 \)) and SA-Bgal (\( P < .0005 \)). Conditioned media from senescent fibroblasts reduced NOK cell vitality (\( P < .01 \)). Pretreatment with Mucosamin prevented both \( \text{H}_2\text{O}_2 \)-induced fibroblast senescence (\( P < .01 \)) and reduction of keratinocyte metabolic activity (\( P < .05 \)). Of the 31 patients undergoing chemotherapy, radiotherapy, or radiochemotherapy, 2 (6.4%) developed mild OM and none developed severe OM by 6 months after the last cycle of chemoradiation.

Conclusions: HA can prevent cellular senescence in oral fibroblasts undergoing oxidative stress in vitro. Clinically, our pilot study shows that prophylactic use of HA associates with a low incidence of chemoradiation-induced OM. The data provide the basis for larger studies investigating a novel potentially safe and approachable intervention for OM.

**Funding sources:** ErreKappa Euroterapici (N.C.), Italian Ministry of Health PRIN2008 (G.C.), and University of Jordan (Y.H.).

**OI0242 PROGNOSIS OF SQUAMOUS CELL CARCINOMA ASSOCIATED WITH ORAL LICHEN PLANUS**

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**Objectives:** To determine if concomitant oral lichen planus influences the prognosis of oral squamous cell carcinoma (OSCC).

**Methods:** A cohort of 43 patients with a diagnosis of OSCC and associated OLP was compared with a control group of 45 patients with a diagnosis of OSCC not associated with OLP. The number of metachronous malignant and dysplastic events after the first OSCC were compared between the 2 groups using generalized linear models. Overall and disease-specific survival was compared using Kaplan-Meier analysis and Cox regression analysis. Differences in the outcome measures were controlled for traditional clinicopathologic prognostic factors for OSCC.

**Results:** The odds of new primary OSCCs after the first malignancy were 3.026 (CI, 1.076-8.509) times greater in the OLP group than in the control group when controlled for prognostic factors related to the first malignant event (\( P = .0306 \)). The odds of a new dysplastic or malignant event were 1.803 (CI, 1.266-2.569) times greater in the OLP group than in the control group when controlled for factors related to the first malignant event (\( P = .001 \)). A significant difference in the overall survival rate for stage I and II tumors and the disease-specific survival rate for stage II tumors was found (\( P < .05 \)), with outcomes being better in patients with OSCC with OLP. No significant differences in the survival rates were found when the effects of other clinicopathologic risk factors were controlled for.

**Conclusions:** In individuals who have been diagnosed with OSCC, OLP is an independent risk factor for the development of additional primary malignant and dysplastic events. A trend toward better life expectancy was observed in patients with OSCC associated with OLP, particularly in those with stage I and stage II tumors. The present results support the notion that OLP is a potentially malignant disorder associated with a significant increased risk of field cancerization.

**OI0304 HISTOPATHOLOGIC ANALYSIS OF ORAL SQUAMOUS CELL CARCINOMA IN NONDRINKING AND NONSMOKING WOMEN**

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**Objectives:** Previous research has shown an increasing incidence of a distinct clinical subgroup of elderly nonsmoking and nondrinking women with oral squamous cell carcinoma (OSCC) that have different demographic distribution; patients often have second primaries and a worse outcome with a higher mortality. We hypothesized that these nondrinking and nonsmoking patients with OSCC have cancers with unique molecular profiles and biomarker expression. Identification of these
bimarkers will help our understanding of oral carcinogenesis and potentially aid in the development of conservative therapies and of early diagnosis and prediction of disease progression and aggressiveness. The aim of the present study was to undertake an immunohistochemical retrospective analysis of formalin-fixed, paraffin-embedded (FFPE) archival surgical material of OSCC in elderly nondrinking and nonsmoking women.

**Methods:** 169 patients (97 men, 72 women) treated for OSCC at the Royal Melbourne Hospital between January 2007 and July 2010 with a diagnosis of OSCC were included in this study. FFPE tissue was sectioned and stained with antibodies to p53, p16, cyclin D1, epidermal growth factor receptor, S-100, and survivin using standard immunohistochemical techniques, and all slides were scanned using Aperio Scanscope (Aperio Technologies, USA). The expression levels of these markers were analyzed using ImageScope software package, and results were statistically analyzed using a $\chi^2$ test. Differences were considered statistically significant at $P < .05$.

**Results:** Preliminary results indicate that there is significant variation in the expression of these immunohistochemical markers of the disease process and that this variation may indicate fundamental differences in carcinogenesis between these different patient cohorts.

**Conclusions:** It may well be that these observed molecular variations in disease process, if proven to be true across the whole cohort, could act as both markers of aggressive disease and potential targets for therapeutic intervention.

**Funding sources:** Price Family Foundation, National Health and Medical Research Council, Gordon Castles Research Scholarship.

**O10310 SLEEP DISTURBANCES IN BURNING MOUTH SYNDROME AND ORAL LICHEN PLANUS**

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**Objectives:** To examine sleep complaints in patients with burning mouth syndrome (BMS) and oral lichen planus (OLP) and the relationships between these disturbances and negative mood.

**Methods:** A group of 50 patients with BMS and another group of 50 patients with OLP were compared with an equal number of healthy controls matched for age, sex, and educational level. The Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), and the Hamilton rating scales for Depression (HAM-D) and for Anxiety (HAM-A) were administered. Descriptive statistics, including the Kruskal-Wallis analysis of variance and hierarchical multiple linear regression analyses, were used.

**Results:** Patients with BMS had higher scores in all items of the PSQI and ESS than did those with OLP and the healthy controls ($P < .001$). The median and interquartile range of the PSQI was 9-8 and of the ESS 10-5 for the BMS, 5-2 and 3-1 for controls ($P < .001$). The median and interquartile range of the PSQI vs HAM-A ($P < .001$) and for Anxiety (HAM-A) were statistically significant at $P < .05$.

**Conclusions:** It may well be that these observed molecular variations in disease process, if proven to be true across the whole cohort, could act as both markers of aggressive disease and potential targets for therapeutic intervention.

**Funding sources:** Price Family Foundation, National Health and Medical Research Council, Gordon Castles Research Scholarship.

**O10357 COGNITIVE-BEHAVIORAL PAIN MANAGEMENT PROGRAMS FOR PERSISTENT OROFACIAL PAIN**

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**Objectives:** Persistent orofacial pain can have significant physical and psychologic effects. Outcomes for cognitive-behavioral pain management programs (CB PMPs) for people with widespread (nonfacial) pain show improvements in physical functioning and pain-related distress. The aim of this clinical study was to evaluate the effectiveness of a CB PMP for people with persistent orofacial pain. It was hypothesized that a CB PMP tailored to meet the needs of this population would significantly reduce the detrimental physical and psychologic effects of persistent orofacial pain.

**Methods:** Patients of the Eastman Dental Hospital, London, who fulfilled the diagnostic criteria for persistent idiopathic facial pain, temporomandibular disorder, or trigeminal neuropathic pain for at least 3 months were assessed by a clinical psychologist for their suitability to attend the CB PMP. Those accepted participated in the program facilitated by a clinical psychologist and a physiotherapist. The CB PMP consisted of weekly sessions for 6 weeks, each lasting 4 hours. Using 2-tailed paired $t$ tests and validated outcome measures, outcomes were evaluated at baseline and at 1, 5, and 12 months after the program.

**Results:** Statistical analysis of outcome measures at baseline and at 1 month were available for 88 patients (88.6% female; mean age, 45.7 years). There were significant improvements in pain self-efficacy ($P = .001$), pain catastrophizing ($P < .001$), depression ($P = .001$), anxiety ($P < .001$), pain interference ($P = .021$), and illness perceptions ($P < .001$). As predicted, pain intensity did not significantly reduce. With the exception of anxiety, these significant improvements were maintained by those attending their 12-month follow-up.

**Conclusions:** Cognitive behavioral pain management programs specifically for persistent orofacial pain do not exist in the international arena. This study suggests that, despite the continuation of pain, CB PMPs are effective in helping people reduce the physical interference and psychologic distress associated with persistent orofacial pain.

**O10400 ORAL GRAFT-VS-HOST DISEASE IS DISTINGUISHED BY INFLAMMATION AND IMPAIRED ANTIMICROBIAL IMMUNITY**

**Authors:** Jacqueline Mays, Melodie Wellar, Carol Bassim, Stephen Swatzkoski, Marjan Gueck, Steven Pavletic, Fran T. Hakim, Dental Clinic, National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, MD, USA

**Objectives:** The oral cavity is involved in nearly 50% of patients affected with chronic graft-vs-host disease (cGVHD), an autoimmune-like disorder affecting a majority of long-term survivors of allogeneic hematopoietic stem cell transplant. Proteomic and genetic analysis of a target organ (minor salivary gland [MSG]) and local oral biofilm were undertaken to examine the immunologic profile of oral cGVHD, with an end goal of discerning novel disease targets and mechanisms.
Methods: Patients enrolled in an ongoing National Institutes of Health protocol (NCT00331968 or NCT00520130) were evaluated after onset of cGVHD. All cases in this study had biopsy-proven oral GVHD, and all comparisons were with normal controls. MSG from 4 individual oral cGVHD patients and healthy controls were evaluated via microarray, and P values were corrected for multiple comparisons. Whole saliva from individual oral cGVHD patients and healthy controls was processed, iTRAQ-tagged (isobaric tags for relative and absolute quantitation), and analyzed with liquid chromatography—mass spectrometry or with mass spectrometry. The protein and gene expression datasets were compared to identify shared activation pathways.

Results: Interleukin (IL)-6 signal transducing molecule gp130 was increased by 5.26 log fold-change (logFC) (<P <0.01) in cGVHD MSG. IL-32, which is released after T-cell activation and cytokine secretion, was increased by 5.26 log fold-change (logFC) (<P <0.05). Expression of IL-1 R1 was increased 1.44 logFC. In cGVHD saliva, IL-1 R antagonist protein was decreased. Proteins that promote keratinocyte antimicrobial peptide expression were downregulated, including IL1-F7 at −4.84 logFC (P <0.05). Additionally, saliva levels of 2 antimicrobial peptides were reduced in oral cGVHD saliva: cathelicidin and neutrophil defensin 1.

Conclusions: Expression of inflammatory pathways involving elements of the IL-1, IL-6, and TNF-α families was increased in the MSG transcriptome and salivary proteome from oral cGVHD patients. Reduction in gene and protein expression related to antimicrobial peptides suggests impaired oral antimicrobial immunity in cGVHD patients despite increased inflammation. Work is ongoing to validate these findings and their clinical and immunologic implications.

Funding sources: This work was generously supported by the intramural research programs of the National Institute of Dental and Craniofacial Research and National Cancer Institute, National Institutes of Health.

OI0429 ERKα/2 EXPRESSION AND MODULATION OF STAT3 SIGNALING IN ORAL CANCER

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Objectives: Mitogen-activated protein kinase (MAPK) pathways are evolutionarily conserved kinase modules that link extracellular signals to the machinery that controls fundamental cellular processes such as growth, proliferation, differentiation, migration, and apoptosis. Constitutive activation of the signal transducer and activator of transcription 3 (Stat3) signaling pathway has been associated with oncogenic potential in oral squamous cell carcinoma (OSCC). The effects of MAPKs and especially extracellular signal-regulated kinase (ERK) activation on Stat3 signaling in OSCC is not thoroughly investigated. Our purpose was to examine the hypothesis that Erkα/2 activity modulates Stat3 signaling and cellular activities in OSCC cells.

Methods: The constitutive expression levels of phosphorylated and total Stat3, ERK, and cyclin D1 were assessed in OSCC cell lines SCC25 and SCC9 by Western blot. Inhibition of Erkα/2 was performed by selective inhibitor U0126 and by specific small interfering RNA (siRNA) silencing. Chemical induction was achieved by adding active MEK1/2. Cell proliferation and viability were determined by cell counting with a hemocytometer under inverted microscope and by trypan blue dye exclusion test.

Results: Inhibition of Erk1/2 with either U0126 treatment or specific siRNA silencing resulted in decreases in p-ser Stat3 and cyclin D1 levels in both cell lines and increases in p-tyr-Stat3, particularly in SCC9 cells. Moreover, Erk1/2 inhibition resulted in a dose-dependent reduction in cell growth and cell viability in both cell lines. Erk1/2 induction caused upregulation of p-ser Stat3 and cyclin D1 levels and decreases in p-tyr-Stat3 in both cell lines accompanied by a significant dose-dependent increase in cell growth.

Conclusions: Taken together, our results are supportive of a significant oncogenic role of Erk1/2 signaling in OSCC. Crosstalk between Erk1/2 and other cancer pathways such as Stat3 needs to be further investigated. Inhibition of Erk1/2 by pharmacologic means or gene therapy approaches may offer alternative therapeutic strategies for patients with OSCC.

Funding sources: This research has been cofinanced by the European Union’s European Social Fund (ESF) and by Greek national funds through the Operational Program “Education and Lifelong Learning”.

OI0245 ORAL CANCER TREATMENT BY TUMOR ANTIGEN—TARGETED DRUG DELIVERY SYSTEM

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Objectives: Desmoglein (Dsg) is overexpressed in head and neck squamous cell carcinoma (SCC) and is thought to be a biomarker for diagnosis and treatment. We developed a method of targeting antitumor agent to the epidermis by using anti-Dsg single chain variable fragment (scFv) antibody for oral cancer treatment.

Methods: Px44 is an anti-Dsg nonpathogenic scFv antibody previously cloned from a pemphigus patient. We linked Px44 to tumor necrosis factor—related apoptosis-inducing ligand (TRAIL) to produce Px44 TRAIL fusion protein.

Results: By Dsg enzyme-linked immunosorbent assay and immunofluorescence of cultured keratinocytes incubated with Px44 TRAIL, and IF of skin sections after Px44 TRAIL injection in neonatal mice, human skin organ culture, and human skin xenograft on the mice, we could detect TRAIL binding to the specific antigen. Px44 TRAIL was biologically active to cause apoptosis of Jurkat lymphoma cells. TRAIL is known to cause apoptosis of transformed or hyperproliferative keratinocytes, but not in normally differentiating keratinocytes. When targeted to proliferating (in low Ca) cultured human keratinocytes for 2 hours (then washed), Px44 TRAIL caused apoptosis of up to 50% of cells at 16 hours, but did not cause apoptosis of differentiating (in high Ca) keratinocytes. Furthermore, soluble Dsg3 blocked the binding and proapoptotic activity of Px44 TRAIL. AM3-13 TRAIL (in which AM3-13 is an irrelevant scFv) was negative in these assays. Because TRAIL must be a trimmer to be biologically active, we linked foldon trimmerizing sequence to stabilize trimer formation and biological activity. The modified Px44 TRAIL was stable up to 48 hours in physiologic temperature (37°C). No toxic effect was detected by histologic analysis and TUNEL staining (terminal deoxy- nucleotidyl transferase dUTP nick end labeling) in the normal skin treated with Px44 TRAIL. Finally, when injected into...
human SCC organ culture. Pxn4 TRAIL was delivered to the intradermally invading tumor cells.

Conclusions: Our data show the feasibility of targeting TRAIL to SCC, and suggest such therapy may be useful for oral cancer treatment.

O10342 ROLE OF PERIODONTAL DISEASE IN BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAWS Chun-Lei Li, Chaminda Jayamath Seneviratne, Wai Keung Leung, Roger A. Zwahlen, Li-Wu Zheng, Discipline of Oral Diagnosis and Polyclinics, Faculty of Dentistry, University of Hong Kong, Hong Kong, China

Objectives: Despite the great clinical benefits of bisphosphonates, a severe complication known as bisphosphonate-related osteonecrosis of the jaw (BRONJ) has been reported. Although most studies confirmed that invasive dental procedures are the main causes of BRONJ, around 30% of BRONJ occurred spontaneously. This study aimed to investigate the role of progressive periodontal disease in inducing BRONJ using an ovariec-tomized rat model.

Methods: Thirty 12-week-old Sprague-Dawley female rats were subjected to ovariec-tomy. Six weeks later, zoledronic acid (ZA) (66 μg per kilogram of body weight) or vehicle was administered intraperitoneally 3 times per week for 12 weeks. On the same day of injection, cotton ligature was placed sub-gingivally at the first molar of the right mandible to induce periodontitis. All the animals were humanely killed 12 weeks after starting ZA injection, and the whole mandibles were harvested for micro—computed tomography (micro-CT) and histopathologic examinations.

Results: Micro-CT examination found that ligature placement induced significant alveolar bone loss in both the ZA group (1.28 ± 0.23 vs 0.92 ± 0.18 mm; \( P < .01 \)) and the control group (1.82 ± 0.44 vs 0.96 ± 0.14 mm; \( P < .01 \)). The bone loss was attenuated in the ZA group compared with the control group (1.28 ± 0.23 vs 1.82 ± 0.44 mm; \( P < .01 \)). The bone mineral density in the ZA group (1004.23 ± 17.10 mg/cm²) was significantly higher than that in the vehicle control group (963.45 ± 7.17 mg/cm²; \( P < .01 \)). Histologic examination found necrotic bone with extensive empty lacunae in 2 of 15 rats in the ZA group, but not in any rats in the control group.

Conclusions: Bisphosphonates inhibit alveolar bone resorption in progressive periodontal disease, which might benefit the management of periodontitis but increase the risk of development of BRONJ.

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O10353 COST-OF-ILLNESS OF ORAL LICHEN PLANUS IN A UK POPULATION Richeal Ni Riadain, J. Christou, Tim Hodgson, Department of Oral Medicine, Eastman Dental Hospital, University College London Hospitals, London, United Kingdom

Objectives: A cost-of-illness study can provide an estimate of the economic effect of a disease on society. It can therefore inform policy makers in planning the delivery and financing of health services. The objective of this pilot study is to assess the economic burden of oral lichen planus (OLP) from the perspective of the health care provider in a UK population.

Methods: This prevalence-based cost-of-illness analysis was conducted in 3 phases. Phase 1 involved framing of the cost-of-illness analysis, development of the cost inventory, and design of the patient questionnaire for ease of data collection. Data collected from patients was inputted during phase 2, and costings were determined. The final phase consisted of the calculation of the cost-of-illness of OLP.

Results: A total of 100 patients were enrolled in the study, 30 men and 70 women, with an average age of 59.9 years (± 13.4 years). The average OLP patient, based on our cohort, attends the oral medicine unit 2.64 times per year, visits their general medical practitioner 1.13 times annually, visits their general dental practitioner 0.82 times in a year, and fills on average 3.37 prescriptions annually. This leads to an average annual cost of £305.19 (US $499.63) per patient per year from the perspective of the health care provider.

Conclusions: The annual average cost of OLP to the health care provider in the UK is substantial. The prevalence-based cost-of-illness data generated in this study will facilitate comparison with other chronic oral mucosal diseases and with chronic diseases managed in allied medical specialties.

O10419 MEDICATION PRESCRIPTION BY DUTCH DENTISTS Denise van Diermen, Albertine van den Bosch, J. den Boer, J. Bruers, Medical Dental Interaction, Academic Center for Dentistry Amsterdam (ACTA), Amsterdam, The Netherlands

Objectives: The aim of this study was to investigate the use of and acquaintance with guidelines on medication prescription of Dutch dentists and their actual prescribing of medication to their patients.

Methods: A survey with 27 questions was sent digitally to 1319 Dutch general dentists in November 2012. Topics addressed were registration of chronic medication use of their patients, prescribing medicines, use of guidelines, and prescribing antibiotic prophylaxis. Data were analyzed using IBM SPSS for Windows, version 20.

Results: A total of 455 surveys were returned (response rate, 34%); the male-to-female ratio was 4:1, and the mean age was 50.1 years. The dentists estimated that 28% of their patients use medication on a daily basis. Of the respondents, 77% stated that they record the medication they prescribe. Almost all dentists (99%) prescribe analgesics, antibacterial mouthwashes, and antifungals. Anxiolytics, sedatives, and hypnotics are prescribed in less than 6%. Most dentists (95%) prescribe antibiotic prophylaxis for prevention of endocarditis. A large proportion of dentists (62%) prescribe antibiotics for patients with joint prostheses, organ transplant recipients, irradiated or chemotherapy-treated patients, and patients with diabetes. Antibiotics are prescribed before dental extractions, dental cleaning, or root canal treatment. Most dentists (92%) are well acquainted with the 2008 Dutch guideline “Prevention of bacterial endocarditis,” but only 5% are aware of the 2010 Dutch guideline on medication administration. More than 90% consult with medical colleagues or pharmacists when prescribing medication, but only 4% have a regular or more formalized contact. Many dentists state they want further education on this subject and more structural consultation between dentists and other health care providers.

Conclusions: Most Dutch dentists prescribe medications on a daily basis, mainly painkillers and antibiotics, and adhere to the Dutch guideline for prevention of endocarditis in 95% of cases. They state they miss structural consultation with general medical practitioners and pharmacists.
O00446 ROLE OF BETAMETHASONE IN ORAL SUBMUCOUS FIBROSIS Kastubh Sansare, Heena Sonawane, Neha Bansal, Frey Karjodkar, Department of Oral Medicine and Radiology, Nair Hospital Dental College, Mumbai, Maharashtra, India

Objectives: To assess the efficacy of betamethasone in combination with hyaluronidase on oral submucous fibrosis (OSF) patients in a randomized controlled trial.

Methods: Sixty OSF patients were randomly divided into group A (receiving 10 bilateral injections of betamethasone and hyaluronidase weekly for 10 weeks) and group B (receiving placebo injections). Betamethasone was supplied as injection betamethasone sodium phosphate 4 mg/ml (Glaxo SmithKline pharmaceuticals, India). Randomization was performed by using a block size of 6 with an allocation ratio of 2:1. Mouth opening, burning sensation, and quality of life (QOL) assessment were done using repeated-measures analysis of covariance (RM ANCOVA) and ANCOVA tests for intragroup and intergroup comparisons.

Results: Thirty-six patients (all male) completed this study, 21 belonging to group A and 15 to group B. In group A, the mean pretreatment mouth opening was 24.4 mm, and the mean posttreatment opening was 26.7 mm. In group B, the mean pretreatment mouth opening was 30.5 mm, and the mean posttreatment opening was 32.5 mm. There was a significant difference between the 2 groups for the primary endpoint measure, mouth opening, using a within-participants (P = .003 from the third week) and between-participants (P = .042) approach. ANCOVA analysis comparing mouth opening for the final visit of groups A and B, using pretreatment mouth opening as a covariate, shows no significant difference (P = .369). Similar analysis for burning and QOL parameters are also presented. There was a statistically significant pre- and posttreatment difference in group A for mouth opening, burning sensation, and QOL assessment; however, there was no clinically significant difference for mouth opening (2.2 mm).

Conclusions: Corticosteroids reduce burning sensation in grade 1 and 2 OSF. Mouth opening largely remains unchanged. Future studies could include a combination of anti-inflammatory and antibacterial medications. QOL instruments need to be developed and assessed.

O00414 TWO SCORING SYSTEMS COMPARISON: EVALUATION OF LICHER PLANUS SEVERITY Margherity Gobbo, Giulia Ottaviani, Luca Cocco, Pamela Blasi, Rossana Bussani, Sook-Bin Woo, Matteo Biasotto, Dental Science Department, Division of Oral Medicine and Pathology, Trieste, Italy and Department of Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine, Boston, MA, USA

Objectives: In the present study, 2 scoring systems, 1 proposed by Pibooniyom et al. (designated REU) and 1 proposed by Thongprasom et al. (designated WEA), were used for the evaluation of oral lichen planus (OLP) lesions. The aim of the study was to assess the reproducibility and the learning curve of both systems, according to evaluations made by 3 different raters.

Methods: Fifty patients, diagnosed with OLP after incisional biopsy, were enrolled in the present study. Each patient was photographed at 10 intraoral sites (lip mucosa, right and left buccal mucosa, dorsum and ventrum of the tongue, floor of the mouth, maxillary and mandibular gingiva, and hard and soft palate) at baseline and at 3 weeks after topical steroid therapy. Three observers evaluated the photographs and rated OLP severity using both REU and WEA scores after calibration. Observer 1 was a professor in the field of oral medicine; observer 2 was a dental student trained in oral medicine; and observer 3 was a dental student not experienced in oral medicine. Data were analyzed using SPSS, version 16.0. Kendall W and intraclass correlation coefficient (ICC) were calculated.

Conclusions: Among observers, both systems exhibited excellent reproducibility; it was slightly higher for the REU system than for the WEA system. The WEA system seemed more difficult to apply and more sensitive to operator experience than the REU system.

O00220 PLACEBO EFFECT IN BURNING MOUTH SYNDROME: A SYSTEMATIC REVIEW Michal Kuten-Shorrer, John M. Kelley, Stephen T. Sonis, Nathaniel S. Triester, Department of Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine, Boston, MA, USA

Objectives: A wide range of placebo responses has been documented in randomized controlled trials (RCTs) evaluating treatment efficacy in burning mouth syndrome (BMS). Given the subjective nature of BMS symptoms and the subsequent reliance on patient-reported outcomes, a better understanding of the placebo effect in BMS is critical in the assessment of treatment response and in the design of future RCTs. The objective of this study was to evaluate the placebo effect in published RCTs of therapies for BMS.

Methods: The PubMed/Medline database was searched up to June 2012 for randomized, blinded, placebo-controlled studies published in the English language. Only studies that excluded patients with oral mucosal lesions or abnormal laboratory findings were included. Clinical outcomes of both the placebo arm and the treatment arms were documented in all included studies. To evaluate the magnitude of the placebo effect compared with that of the treatment, the fraction of the active treatment that was duplicated by placebo was computed and averaged across all studies.

Results: Twelve studies met the inclusion criteria. Ten studies (83%) reported at least some improvement in the symptoms of patients receiving active treatment compared with baseline. In 6 of the 10 studies (60%), there was also a positive response to placebo. The mean placebo response as a fraction of drug response was 72%.

Conclusions: This study documents a robust placebo response in trials evaluating therapies for BMS. Future adequately powered RCTs using a standard placebo substance, a standard protocol for providing instructions, and an adequately long follow-up period are essential to obtain strong evidence for treatment efficacy compared with placebo. The inclusion of a third “no treatment” waitlist control group would allow further
differentiation between the natural course of the symptoms or regression to the mean, and the genuine placebo effect.

**OIO447 NARROW-BAND UV-B PHOTOTHERAPY FOR MANAGEMENT OF ORAL CHRONIC GRAFT-VS-HOST DISEASE** Nathaniel Treister, Shuli Li, Mark Lerman, Stephanie Lee, Robert Soiffer, Division of Oral Medicine and Dentistry, Brigham and Women’s Hospital, Boston, MA, USA

**Objectives:** Oral chronic graft-vs-host disease (cGVHD) is a frequent and potentially debilitating complication after allogeneic hematopoietic cell transplant (HCT). Despite the overall effectiveness of topical immunosuppressive therapies (IST), there continues to be a need for novel and alternative therapies. The objective of this study was to evaluate the safety and efficacy of intraoral narrow-band UV-B (NB-UV-B) phototherapy in the management of oral cGVHD.

**Methods:** Patients with symptomatic oral cGVHD on stable systemic and topical IST signed informed consent and were treated using a custom NB-UV-B unit for a course of 24 phototherapy sessions on either a twice-a-week or 3-times-a-week schedule. Treatments were initiated at 50 mJ/cm² and increased by 10% at each subsequent visit unless toxicity was noted. Response was assessed by National Institutes of Health criteria weekly, and toxicity was assessed at each visit per National Cancer Institute Common Toxicity Criteria.

**Results:** Eleven patients received a median of 22 (range, 4-39) NB-UV-B treatments; of these 11 patients, 5 completed 24 treatments and elected to receive a median of 7 additional treatments. Median symptom scores (0-10) for sensitivity, pain, and dryness at baseline and at end of therapy were 7.5, 3, 1, and 3, 1, 2, respectively. Taking into account all patient-reported outcomes, 7 of 11 patients had improvement (defined by a decrease from baseline of 3 points in at least 1 measure), and 2 of 11 worsened. At least partial overall improvement was reported in 8 of 11 patients, with none reporting worsening. Over-treatment (burn) occurred in 10 of 11 patients (median of 4 events per participant) at a range of doses, with all graded mild or moderate and resolving without intervention in 1 to 2 days.

**Conclusions:** Intraoral NB-UV-B may be effective for management of refractory oral cGVHD. Given the frequency of toxicity, further optimization of treatment parameters, as well as minimal erythema dose testing, are necessary in the consideration of future studies.

**OIO338 IATROGENIC PRECIPITATION OF BISPHOSPHONATE-INDUCED OSTEONECROSIS OF THE JAWS** Morten Schiodt, Pouya Yazdi, Department of Oral and Maxillofacial Surgery, Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark

**Objectives:** The onset of osteonecrosis of the jaws (ONJ) is often preceded by tooth extraction or other trauma. The purpose of the present study was to examine the frequency of oral trauma preceding the onset of ONJ, as well as the characteristics of the patients in a cohort of patients with ONJ.

**Methods:** The Copenhagen ONJ cohort consists of consecutive referred patients since 2005. All patients are examined according to a standard ONJ chart and are classified according to the American Association of Oral and Maxillofacial Surgeons (AAOMS) staging (Ruggerio et al., 2006). Data were obtained on the number of patients, the type of trauma, and the time from trauma to referral. The group of trauma-precipitated ONJ was compared with the group of spontaneous ONJ with regard to a number of parameters (Fisher exact test; P < 0.5%)

**Results:** Among 140 consecutive patients with ONJ, 88 patients (63%) had an oral trauma before referral; tooth extractions (n = 75), denture sore mouth (n = 11), or other (n = 2). The remaining 52 patients had spontaneous ONJ. There was no difference between the 2 groups with regard to basic diagnosis (65% cancer and 35% osteoporosis in both groups; P > 0.05), duration and type of antiresorative medication, symptoms (VAS scale), or ONJ stage in the 2 groups (P > 0.05). The average time from the trauma to referral was 8 months, with a range of 1 to 48 months. The dentists treating the patients were often unaware of the consequences of tooth extraction and the need for securing the healing process after tooth extraction among this group of patients, as well as the need for referrals if no healing occurred.

**Conclusions:** There is a significant need for focused information campaigns targeting the primary dental health care sector to follow up the healing process after tooth extraction, to avoid denture sore mouth and refer in due time to central clinics or hospitals taking care of ONJ cases.

**OIO270 PERIANAL DISEASE IN PATIENTS WITH OROFACIAL GRANULOMATOSIS** Esther Hullah, R. Goel, S. Navee, J. Brostoff, J.D. Sanderson, M.P. Escudier, Department of Oral Medicine, King’s College London Dental Institute, Guy’s and St Thomas’ Hospitals, London, United Kingdom

**Objectives:** To investigate the incidence and clinical significance of perianal disease in association with orofacial granulomatosis (OFG).

**Background:** A proportion of patients with OFG present with concurrent perianal disease. Perianal disease is common in Crohn disease (CD) and often associated with a more severe disease course and a significant morbidity.

**Methods:** A retrospective analysis of the case notes of 263 patients with OFG was undertaken to identify the significance of concurrent CD and perianal disease.

**Results:** Of the 263 patients in the analysis, 79% (208 of 263 patients) had OFG alone, and 21% (55 of 263 patients) had concurrent CD. Of the 55 patients with CD, 14% (36 of 55 patients) had intestinal CD and no perianal disease, and 7% (19 of 55 patients) had intestinal CD with perianal disease. The entire perianal group had concurrent intestinal CD; however, 42% (8 of 19 patients) initially presented with OFG and perianal disease before a subsequent diagnosis of intestinal CD. The median time to diagnosis of CD in this group was 2 years. The presence of OFG and perianal disease significantly increases the chances of developing intestinal CD (OR, 222; P = .0002; 2-tail Fisher test).

**Conclusions:** Perianal disease is highly indicative of intestinal CD in patients with OFG. It is important to enquire about the presence of perianal symptoms in patients with OFG to ensure further investigation is instigated to confirm or refute the presence of occult CD.

**OIO254 LABIAL GLAND SECRETION RATE MEASUREMENT IN SJÖGRÉN SYNDROME PATIENTS** Satoshi Gotoh, Yasuo Watanabe, Takashi Fujibayashi, Haneishi Dental Clinic, Utsunomiya, Japan

**Objectives:** We developed a new electronic device for sialometry of minor salivary glands (Oral Surg Oral Med Oral Pathol Oral Radiol 2013;116:301-305). The purpose of this study was to compare labial gland secretion rates (LGSRs) of patients...
with Sjögren syndrome (SS) and of healthy control participants by using the electronic device.

**Methods:** The device is used as follows: labial gland saliva is absorbed by a standardized filter paper (10 mm × 10 mm × 0.2 mm), and then the filter paper is fixed between the electrodes of the device. A voltmeter in the device shows a low voltage when the amount of saliva absorbed is small. LGSR is estimated from a calibration curve. In this study, the LGSRs of 50 women with SS and of 41 healthy control women were measured by the device. Patients with SS were diagnosed by revised Japanese criteria for SS (1999). Control participants met the following 3 requirements: (1) no complaint of subjective symptoms of dry mouth was present; (2) no disease that causes hyposalivation was suspected; and (3) medications that cause hyposalivation were not being used. The mean values of measured voltages and estimated values of LGSR in the patients and control participants were analyzed by Student t test. Unstimulated whole saliva flow (UWSF) of patients with SS was also measured, and correlation between the LGSR and UWSF was analyzed by the Pearson method.

**Results:** The mean voltage of patients with SS was 0.29 V (standard deviation [SD], 0.08 V), and that of control participants was 0.43 V (SD, 0.03 V). The mean voltages showed statistically significant difference between the 2 groups (P < .0001). The mean LGSR of the patients was estimated as 0.59 (SD, 1.09) μL/cm²/min, and that of control participants was 2.97 (SD, 1.33) μL/cm²/min. Statistically significant difference was also observed (P < .0001). The LGSR was significantly correlated with UWSF of patients with SS (r = 0.43; P = .0017).

**Conclusions:** The LGSR of patients with SS showed significantly lower values than that of healthy controls.

**OI0265 DEMOGRAPHIC CHANGES IN ORAL SQUAMOUS CELL CARCINOMA DIAGNOSES OVER A 9-YEAR PERIOD** Martina Shephard, P. Thakrar, C. Venda Nova, D. Pinder, C. Wilson, T.A. Hodgson, Department of Oral Medicine, University College London Hospitals NHS Foundation Trust Eastman Dental Hospital and University College London Eastman Dental Institute, London, United Kingdom

**Objectives:** To assess trends in oral squamous cell carcinoma (OSCC) diagnoses in a UK oral medicine unit over a 9-year period. The study examined OSCC incidence annually, as well as the demographic data of patients diagnosed over this period.

**Methods:** A retrospective analysis was undertaken using a clinical database, containing records of all patients seen in the oral medicine unit since 2004. Each annual database was searched by 2 investigators independently (M.K.S., P.T., C.V.N., D.P., and C.W.) for cases of OSCC. Data were analyzed for trends in incidence of OSCC over the 9-year period, and for trends in the age and gender of patients diagnosed with OSCC.

**Results:** There were 64 OSCCs diagnosed over the 9-year period. The overall incidence rate of OSCC over this period remained stable, despite increasing numbers of patients being seen in the unit; 40% of cases were in the 46- to 65-year age group, and 33% in the 65- to 85-year age group. Analysis of trends in our cohort suggests an increase in OSCC incidence in women and a decrease in men. There was a significant increase in the incidence of OSCC in women aged 46 to 65 years (Pearson r = 0.59). Of these malignancies, 53 were in newly referred patients and 11 were in patients already under review for conditions including oral lichen planus, previous dysplasia, and previous OSCC.

**Conclusions:** The incidence rate of OSCC diagnosed in our oral medicine unit over the past 9 years has remained stable, contrary to our clinical impression. The incidence rate of OSCC in women has increased over this time. The most significant change was an increased incidence in women aged 46 to 65 years.

**CR0315 PRIMARY CHRONIC OSTEOMYELITIS OF THE MANDIBLE IN A CHILD** Chizobam Idahosa, William Bogess, Lawrence M. Levin, Faizan Alawi, Department of Oral Medicine, School of Dental Medicine, University of Pennsylvania, Philadelphia, PA, USA

**Background:** Primary chronic osteomyelitis (PCO) is a rare nonsuppurative inflammatory disease of unknown etiology presenting as intermittent episodes of mandibular pain, swelling, regional lymphadenopathy, and trismus. It usually presents with diffuse, unilateral enlargement of the mandible, runs a chronic clinical course, and is often refractory to antibiotic treatment.

**Summary:** A 6-year-old Asian boy presented with a 5-month history of recurrent right mandibular pain, swelling, and trismus. He had no other medical problems. His family history was significant for rheumatoid arthritis. Clinical examination found right mandibular swelling, which was tender to palpation. Radiographs found diffuse expansion of the right mandibular body, ramus, condyle, and coronoid process. Small osteolytic areas were also noted. There was no obvious dental origin to explain the swelling, and there was no history of trauma. The only significant clinical laboratory finding was an elevated sedimentation rate of 67 mm/h. PCO, fibrous dysplasia, and mandibular hemihypertrophy were considered in the differential diagnosis. Histologic examination of a biopsy found trabecular of vital woven bone exhibiting basophilic reversal lines, suggestive of remodeling. Bone cultures submitted for analysis found Actinomyces and Abiotrophia species. Based on the clinical, radiographic, and histologic findings, a diagnosis of PCO was rendered. The patient was initially treated with a prolonged course of amoxicillin, and then clindamycin in conjunction with nonsteroidal anti-inflammatory drugs, without resolution. Referral to a rheumatologist and subsequent treatment with methotrexate and infliximab resulted in almost complete resolution.

**Conclusions:** PCO should be differentiated from other forms of inflammatory and infectious bone diseases. PCO may occur on its own or as a clinical manifestation of SAPHO syndrome (synovitis, acne, pustulosis, hyperostosis, osteitis). Extragnathic findings were not evident in our patient. Nonetheless, when refractory to antibiotic therapy, PCO may require treatment with medications more commonly used for systemic inflammatory and rheumatologic disorders.

**CR0314 CLONAZEPAM-RELATED ORAL BULLOUS ERUPTIONS: A CASE REPORT** Dina Hammouda, Department of Oral Medicine, University of Washington, Seattle, WA, USA

**Background:** Clonazepam is effective against burning mouth syndrome but has multiple side effects. The most frequently reported are neurologic (central nervous system inhibition) then dermatologic. Mucosal side effects are unknown. We hereby present a case with oral bullous eruptions related to clonazepam use.

**Summary:** A 60-year-old woman complained of a burning sensation in her mouth, dry mouth, irritated tip of tongue, and lip sensitivity to spices. Rheumatoid panel, Sjögren antibodies, and fungal cultures were negative. Initial diagnosis was primary
burning mouth syndrome, and she was enrolled in a burning mouth syndrome trial. Clonazepam was prescribed, 0.25 mg 3 times daily. Three weeks later, the patient came with an additional complaint. She had bullae on the ventral tongue and right tonsillar pillar. This was thought to be the result of the drug being in direct contact with the mucosa, so the method of intake was changed. Instead of dissolving it in her mouth, she was advised to swallow the pill. Also, clonazepam was increased to 0.5 mg 2 times daily, as per research protocol. Over the next 11 days, the patient’s condition worsened. Examination found severely ulcerated mucosal bullae with positive Nikolsky sign. This was no longer a case of burning mouth syndrome, and she was advised to discontinue clonazepam for 3 days. Immunofluorescent microscopy of a lesion biopsy found drug-induced lichenoid mucositis. Less than a week later, the patient had complete resolution of all mucosal lesions. Regarding her chief complaint, she was rediagnosed and treated accordingly. On follow-up, 1 month later, no bullous re-eruptions were found anywhere in her oral cavity.

Conclusions: The patient had oral bullous eruptions after starting clonazepam. Her eruptions worsened with higher doses and vanished 3 days after it was discontinued. Therefore, this case raises awareness of possible mucosal side effects of clonazepam.

CR0233 THE IMPORTANCE OF A MULTIDISCIPLINARY APPROACH FOR PARANEOPLASTIC PEMPHIGUS

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Background: Paraneoplastic pemphigus (PNP) is a mucocutaneous disease commonly associated with lymphoproliferative neoplasms.

Summary: A 55-year-old man presented with widespread oral mucosal lesions of 2 months’ duration. The patient was previously evaluated and underwent 2 oral biopsies consistent with lichen planus. Review of systems was positive for dysphagia, dyspnea, and wheezing. Clinical examination found widespread ulceration of the oral mucosa and the left inner eye canthus. Diagnosis was consistent with erosive lichen planus. Treatment of the oral lesions consisted of topical and systemic corticosteroids, and the patient was referred to ophthalmology, dermatology, and otolaryngology for associated findings. On reevaluation, the patient reported improvement of oral symptoms, and clinical examination found slowly healing ulcerations on involved oral mucosal surfaces. On subsequent follow-up, the patient reported undergoing repeat oral biopsy consistent with a nonspecific ulcer and a negative direct immunofluorescence study. In addition, a biopsy of the left eye inner canthus was consistent with lichenoid dermatitis. Despite these findings, the diagnosis of lichen planus was reconsidered owing to ongoing pulmonary symptoms, because PNP is associated with bronchiolitis obliterans. Indirect immunofluorescence study and enzyme-linked immunosorbent assay for desmoglein-1 and -3 were performed and found positive cell surface staining on monkey esophagus and the presence of anti-desmoglein-3 antibodies, suggestive of either pemphigus vulgaris or PNP. The patient was referred to pulmonology. Pulmonary function tests found very severe obstructive disease, and a computed tomography scan of the chest and abdomen found air trapping, as seen in bronchiolitis obliterans, as well as retroperitoneal lymphadenopathy extending from the aortic bifurcation to the level of the renal vein. A left paraortic lymph node biopsy was consistent with follicular lymphoma, supporting the diagnosis of PNP.

Conclusions: This case highlights the importance of a multidisciplinary approach for the evaluation and management of patients with suspected PNP.

O10348 PREOPERATIVE DETECTION OF NECK LYMPH NODE METASTASIS USING FDG-PET/CT

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Objectives: Fluorodeoxyglucose-labeled positron emission tomography (FDG-PET) has shown a high diagnostic value for identifying lymph node metastasis over contrast-enhanced computed tomography (CT) in many oncologic fields. This study evaluated the diagnostic accuracy of FDG-PET/CT in comparison with histologic findings for detecting metastatic cervical lymph nodes in patients with oral cancer.

Methods: A total of 2146 lymph nodes were retrospectively analyzed from 65 neck dissections in 58 patients with oral cancer who preoperatively underwent both PET/CT and enhanced CT. All dissected lymph nodes were examined by conventional hematoxylin-eosin staining for metastasis on 1 plane with the largest diameter of the node. According to the pathologic findings, each metastatic lymph node size (short-axis diameter) was measured from the corresponding enhanced CT.

Results: A total of 77 lymph nodes from 34 neck sides were pathologically diagnosed with metastasis. The sensitivity, specificity, accuracy, positive predictive value, and negative predictive value of PET/CT evaluated individually per neck sides were 85%, 68%, 77%, 74%, and 81%, respectively. All the results were better than those of enhanced CT (76%, 68%, 72%, 72%, and 72%). PET/CT detected 100% of metastatic nodes > 9 mm (31 of 31). On the other hand, there were 10 of 65 (15%) false-positive PET/CT results in lymph nodes, mainly due to positive FDG uptake in inflammatory lesions.

Conclusions: PET/CT is a powerful tool for preoperative diagnosis of N classification, because PET/CT perfectly detects metastatic cervical lymph nodes larger than 9 mm and has higher specificity than enhanced CT in screening for neck lymph node metastasis. Thus, FDG-PET/CT permits surgeons to decide accurate dissection level.

O10340 ORAL CANDIDA: SIGNIFICANCE AMONG OTHER RISK FACTORS IN ORAL CANCER

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Objectives: Tobacco use and alcohol consumption have been related to the majority of oral cancers. Candida, an opportunistic fungal pathogen, has been implicated in oral and esophageal cancers. This study aimed to isolate, identify, and genotype Candida isolates from 52 patients with oral cancer and from 104 age-, gender-, and denture status—matched participants without oral cancer.

Methods: A study questionnaire was used to collect information about general health, smoking and drinking habits, use of alcohol-containing mouthwash, and periodontal status assessed using a community periodontal index of treatment needs. Oral rinses were obtained and yeasts were isolated using Sabouraud dextrose agar and CHROMagar Candida. Species identification
and *C. albicans* genotyping was achieved using real-time polymerase chain reaction high-resolution melting curve analysis of intergenic transcribed spacer regions and site of the transposable intron in the 25S of the rDNA, respectively. Conditional logistic regression was used to identify explanatory variables that are risk factors for oral cancer.

**Results:** Oral yeasts were present in 69.2% of patients with oral cancer and in 42.3% of participants without oral cancer. No significant differences in the isolation of *Candida* species were found between the 2 groups except for *C. parapsilosis*, which was more frequent (*P* = .016) in the non-oral cancer group. There was a significantly higher incidence of *C. albicans* genotype A in patients with cancer and significantly more *C. albicans* genotype B in the no-cancer group. A Cox multiple regression model found that the highest odds ratios were observed for alcohol drinking (OR, 3.906; 95% CI, 1.705-8.949; *P* = .001) and *Candida* presence (OR, 3.269; 95% CI, 1.534-6.967; *P* = .002). Smoking was not statistically significant (OR, 1.849; 95% CI, 0.911-3.753; *P* = .089).

**Conclusions:** These results indicate that there is a significant association between oral cancer occurrence and *Candida* oral colonization and that the observed genotypic diversity of *C. albicans* strains may play a role in oral carcinogenesis.

**O10398 2011-2012 AMERICAN ACADEMY OF ORAL MEDICINE PRACTICE PATTERNS SURVEY** Mohd Khalaf, Andres Pinto, Craig Miller, Department of Oral and Kaiser Permanente, Head and Neck Surgery, Division of Orofacial Pain and Oral Medicine, Sacramento, CA, USA; Oral and Maxillofacial Medicine and Diagnostic Sciences, University Hospitals Medical Center, Cleveland, OH, USA; University of Kentucky, Division of Oral Medicine, Lexington, KY, USA

**Objectives:** To determine the practice characteristics of American Academy of Oral Medicine (AAOM) diplomates who provide oral health care in North America.

**Methods:** An institutional review board–approved survey was distributed electronically and during 2 annual scientific meetings to all active members of AAOM between March 2011 and June 2012. Participants were asked to record patient information (i.e., demographic data, diagnosis, referral source, location) for a 5-day practice week. Data were analyzed with descriptive statistics and bivariate analysis to explore the association between systemic disease and oral medicine diagnoses.

**Results:** A total of 74 practitioners responded from 20 states. Of those, 62 (83.8%) were diplomates of the American Board of Oral Medicine. A total of 916 patients were entered into the database; the mean age was 57 years (standard deviation, 17.3; 95% CI, 55.5-57.8), and 596 (65.4%) were female. Participants had seen an average 2 practitioners before consulting the current clinician and had experienced symptoms for a mean of 16.8 months (95% CI, 15.4-18.3). Common chief complaints were oral lesions (mass/red/white) (39.3%; *n* = 313), orofacial pain (14.31%; *n* = 113), dry mouth (10.69%; *n* = 85), burning mouth (10.69%; *n* = 85), and oral sores (9.94%; *n* = 79); 35.47% had symptoms in 2 or more intraoral or extraoral locations. Common intraoral locations were the tongue and gingiva (28.55%). The most frequent medical comorbidities were cardiovascular (28%), endocrine (14.7%), and rheumatologic (12.6%). Primary referring providers were general dentists (42.75%) and medical practitioners (33.45%). There was a significant association between the presence of cardiovasucular disease and the risk of lichen planus (OR, 8.23; 95% CI, 5.76-11.77; *P* < .001) and psychiatric disorders and the risk of glossodynia (OR, 3.3; 95% CI, 1.76-5.20; *P* < .001).

**Conclusions:** Oral medicine clinicians see a wide spectrum of patients in practice. The majority of referrals come from general dental practitioners, followed by physicians. There is significant delay in diagnosis and treatment, with patients experiencing symptoms for more than a year before consultation.

**O10260 EFFECTS OF XYLITOL AND SORBITOL ON LYSOZYME AND PEROXIDASE ACTIVITIES** Hong-Soep Kho, Bum-Soo Kim, Moon-Soo Park, Ji-Youn Chang, Yoon-Young Kim, Department of Oral Medicine and Oral Diagnosis, School of Dentistry and Dental Research Institute, Seoul National University, Seoul, Korea

**Objectives:** The purpose of this study was to investigate how xylitol and sorbitol could affect the enzymatic and candidacidal activities of lysozyme, the peroxidase system, and the glucose oxidase–mediated peroxidase system.

**Methods:** Xylitol and sorbitol were added to hen egg-white lysozyme, bovine lactoperoxidase, glucose oxidase–mediated peroxidase, and whole saliva in solution and on the hydroxyapatite surface phases. The enzymatic activities of lysozyme, peroxidase, and glucose oxidase–mediated peroxidase were determined by measuring the turbidity of a *Micrococcus lypo- deicticus* suspension, the rate of oxidation to 5,5'-dithiobis-2-nitrobenzoic acid by hypohochanate, and the production of oxidized d-diamidine, respectively. Candidacidal activities were determined by comparing colony-forming units and calculating the percent loss of cell viability using *Candida albicans* ATCC strains 10231, 11006, and 18804.

**Results:** Both xylitol and sorbitol did not affect the enzymatic activity of hen egg-white lysozyme, either in solution or in the hydroxyapatite surface phases, while both sugar alcohols inhibited the enzymatic activity of salivary lysozyme significantly in solution phase, but not on the surface phase. Both xylitol and sorbitol enhanced the enzymatic activities of both bovine lactoperoxidase and salivary peroxidase significantly in a dose-dependent manner in solution phase, but not in the surface phase. Sorbitol, not xylitol, inhibited the enzymatic activity of glucose oxidase–mediated peroxidase significantly. Both xylitol and sorbitol did not affect the candidacidal activities of hen egg-white lysozyme, the bovine lactoperoxidase system, and the glucose oxidase–mediated peroxidase system.

**Conclusions:** Xylitol and sorbitol inhibited salivary lysozyme activity, but enhanced both bovine lactoperoxidase and salivary peroxidase activities significantly in solution phase. Xylitol and sorbitol were not additive to the candidacidal activities of lysozyme and peroxidase.

**O10422 ORAL LEUKOPLAKIA IN DYSKERATOSIS CONGENITA: ASSOCIATIONS BETWEEN GENOTYPE AND PHENOTYPE** Pamela Gardner, Payal Khancha, Neelam Giri, Blance Alter, Sharon Savage, Intramural Research, National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, MD, USA

**Objectives:** Dyskeratosis congenita (DC), a cancer-prone inherited bone marrow failure syndrome (BMFS), is associated with defects in telomere biology. DC is diagnosed by the presence of very short, age-adjusted telomeres in white blood cell subsets. The classic diagnostic criteria include at least 2 features of the trial of lacy reticular skin pigmentation (SP), nail dystrophy (ND), and oral leukoplakia (OL). DC patients have an 11-fold
increased risk of cancer, including a roughly 1000-fold increase of tongue cancer risk. DC patients may have high rates of bone marrow failure (BMF), myelodysplastic syndrome (MDS), acute myeloid leukemia (AML), anogenital cancers, pulmonary fibrosis, and other medical problems. Very little is known about the clinical or histopathologic features of OL in DC or in the more severe Hoyeraal Hreidarsson (HH) or Revesz syndrome (RS) variants. This cross-sectional study correlates OL with causative genes and severity of BMF to analyze the clinical expression of DC in the oral cavity.

Methods: Detailed oral examinations (with radiographs and clinical images) were performed in 44 individuals with DC, participants in the National Cancer Institute cohort study of IBMFS (02-C-0052). The presence/absence of OL was associated with laboratory studies and mutation analyses (Fisher exact test and Cochran-Armitage trend test).

Results: The prevalence of OL was 64%: 75% in children and 50% in adults. It was found that 93% of OL localized to the dorsal tongue (plaque-like lichenoid white lesions with papillary atrophy). Participants with DC were significantly more likely to have OL than were those with TERT (telomerase reverse transcriptase) mutation. A significant association was found between OL and severity of BMF.

Conclusions: OL in DC develops at an unusually young age, is characteristic in appearance and location, and is associated with genetic mutations and severity of BMF. The lesions are phenotypically similar to oral lichen planus; the role of the inflammatory environment may be important in the initiation and promotion of malignant transformation in DC.

O10252 PROTEOMICS FINDS INCREASED SALIVARY CD59 AND MAMMAGLOBULINS IN RECURRENT BREAST CANCER Nelson Rhodus, Sri Bandhakavi, Susan Van Riper, Peter Tawfik, Matt Stone, John Carlis, Tim Griffin, Department of Oral Medicine, University of Minnesota, Minneapolis, MN, USA

Objectives: Breast cancer remains one of the most significant causes of cancer-related death in women. Recent technologies aimed at earlier detection of breast cancer (such as mammography screening, magnetic resonance imaging, and new chemotherapeutic treatment and prevention agents) have resulted in very little improvement in earlier detection, prognosis for recurrence, or survival rates. The best-case scenario of successful treatments for breast cancer still allows up to a 30% rate of local recurrence or distant metastases. Our group has previously reported a novel proteomics approach using dynamic range compression (DRC) for analyzing proteins in saliva. In this study, we aimed to determine abundance changes in specific proteins in saliva that may be useful in detection of recurrent breast cancer.

Methods: Whole saliva was collected from patients diagnosed with recurrent breast cancer as well as from age-/sex-matched controls by standard methods. Using a multidimensional peptide fractionation-based workflow, samples were analyzed in parallel, one sample aliquot with DRC and another without. This technique categorizes proteins with higher absolute abundance.

Results: Bioinformatics analysis found significant changes in levels of known circulating breast cancer biomarkers in saliva of participants with recurrent breast cancer vs controls. Specifically, CD59 and mammaglobulins A and B were increased over 600-fold and 12-fold, respectively. We also identified increases in a number of other proteins in saliva that have been associated with breast cancer.

Conclusions: Through proteomic analysis of saliva using novel methods of DRC, we identify specific known circulating biomarkers for recurrent breast cancer that might have future utility as the basis for a noninvasive diagnostic/prognostic procedure that could improve earlier detection of recurrent disease and thereby intervention and overall survival.

O10249 ROLE OF POSTN GENE IN REGULATING TUMORIGENESIS OF ORAL SQUAMOUS CELL CARCINOMAS Husein Al-Omer, Gihan E.-H. Gawish, C. Sheler., Prince Abdul Rahman Advanced Dental Institute, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

Objectives: Oral squamous cell carcinomas (OSCCs) are the most frequent malignancy of the oral cavity. Tissue microarray analysis of OSCC found the upregulation of POSTN gene (periostin, osteoblast specific factor) expression in OSCC compared with normal tissues. It was reported that periostin contributes to malignancies mainly by preventing apoptosis and promoting angiogenesis, invasion, and metastasis. The roles of periostin in regulating cell proliferation and in genomic instability of cancer cells during tumorigenesis still require further investigation. The aims of this study were to indicate the oncogenic activity of periostin in OSCC, to gauge the contribution of periostin in promoted OSCC proliferation, and to calculate the DNA index of ploidy and aneuploidy channels.

Methods: Specimens from the SCC4, SCC9, SCC15, and SCC25 cell lines were transfected with periostin. siRNA and transfected C19-22 cells were used as controls. Expression of periostin was analyzed, and cells were stained with annexin V for apoptosis detection and with propidium iodide (PI) for proliferation and DNA ploidy. Next, stained cells were analyzed using FACS Calibur (BD Biosciences).

Results: We found that the OSCC cells transfected with periostin exhibited significantly increased proliferation compared with nontransfected cells. Periostin-overexpressing cells stained with annexin V and PI showed significant difference (P < .05 and P < .005, respectively). The percentage of hyperdiploid passages was 33%, and 67% were diploid. Hyperdiploid passages with DNA index ≥ 1.16 and ≤ 1.6 (12 passages) and hyperdiploid passages with DNA index > 1.6 (11 passages) were recorded.

Conclusions: We conclude that periostin plays an important role in the tumorigenesis of OSCC by deregulation of the cell cycle, causing escape from apoptosis and thus the potential for unlimited replication. It encourages genetic alterations by enhancing chromosomal instabilities.

Funding sources: This work was supported by the National Institute of Dental and Craniofacial Research (grant R01 DE16296) and the Prince Abdul Rahman Advanced Dental Institute.

O10288 FUNCTION OF TOLL-LIKE RECEPTORS AND NATURAL KILLER ACTIVITY IN CANDIDIASIS Manabu Oouchi, Hironobu Hata, Yuataka Yamazaki, Akira Hasebe, Ken-ichiro Shibata, Yoshinusa Kitagawa, Oral Diagnosis and Medicine, Graduate School of Dental Medicine, Hokkaido University, Sapporo, Japan

Objectives: Although oral candidiasis is considered to be developed by a decline of the immunocompetence of the host, little is known about the details. Therefore, this study was designed to investigate the roles of the expression and function of
Toll-like receptors (TLRs) and natural killer (NK) activity in the development of oral candidiasis and in the aging of healthy individuals.

Methods: The oral candidiasis group included 39 individuals (age range, 25-89 years) with major complaints of pain in the oral mucosa or dysgeusia who visited the Dental Clinical Division of Hokkaido University Hospital, from which were excluded patients with underlying diseases caused by immunologic disorders and patients treated with antimicrobial and immunosuppressive drugs. Healthy volunteers as the noncandidiasis group included students (age range, 25-35 years) of Hokkaido University Graduate School of Dental Medicine and teaching staff (age range, 50-65 years) in the same university.

Results: At first, we examined the relationship of the expression levels and function of TLR2 and its coreceptors (TLR1 and TLR6) and TLR4 and NK activity in the aging of the noncandidiasis group. No correlation was observed between the expression levels of TLRs and aging in the noncandidiasis group. However, it was found that the function of TLR2 and TLR4 significantly decreased and that the NK activity slightly, but not significantly, decreased. Then, we compared the expression levels and function of these TLRs and NK activity of the oral candidiasis group members over 55 years of age with those of the noncandidiasis group. Significant differences in the expression levels of TLRs were not observed between them, but the function of TLR2 and TLR4 and the NK activity were significantly decreased in the oral candidiasis group.

Conclusions: This study suggests that a decline of function of TLR2 and TLR4 as well as NK activity plays an important role in the development of oral candidiasis in humans.

OIO309 ROLE OF HERPES SIMPLEX VIRUS AND MALARIA PARASITE IN RECURRENT ERYTHEMA MULTIFORME A.F. Dayo, G.A. Agbelusi, O.T. Owotade, O.F. Ajayi, Department of Preventive Dentistry, Lagos University Teaching Hospital, Lagos, Nigeria

Objectives: Erythema multiforme (EM), a very painful inflammatory disease of the skin and mucous membranes with unknown etiology, has been documented to have a wide range of predisposing factors. Malaria constitutes an important public health issue of global proportions. Apart from its obvious clinical features, it also influences or initiates oral diseases. The purpose of this study was to determine the role of malaria parasite (MP) and herpes simplex virus (HSV) infections in the etiology of recurrent EM.

Methods: An analytical study was carried out in the oral medicine clinic of Lagos University Teaching Hospital among patients with confirmed diagnosis of EM and a control group with no oral ulcerative lesions. Patients who took antimalarial drugs 4 weeks before having EM were excluded. Groups comprising 40 cases and 40 controls were enrolled for the study. The prevalence of MP was determined by the use of thick and thin blood film preparations, and polymerase chain reaction was used on sputum samples to detect the presence of HSV.

Results: The prevalence of MP infection was 22 (55%) in the case group and 7 (17.5%) in the control group, with a statistically significant association of $P = .0005$. Six (15%) cases were positive for HSV-2, whereas none of the sputum samples for the controls yielded a positive result ($P = .0128$).

Conclusions: There was a demonstrable association with MP infection among participants with EM. Based on our findings, we recommend that routine MP test should be carried out on EM patients with associated fever, malaise, and headache. This will be most valuable in malaria-endemic regions.

OIO337 MUSCLE TENDERNESS SCORE IN TEMPOROMANDIBULAR DISORDERS Gali Almoznino, Avraham Zini, Avraham Zkuto, Julio Slutsky, Yair Sharav, Rafael Benoliel, Department of Oral Medicine, Hebrew University-Hadassah School of Dental Medicine, Jerusalem, Israel

Objectives: To assess and validate the total muscle tenderness score (TTS) compared with the traditional method of counting the number of tender muscles in the diagnosis of temporomandibular disorders (TMDs).

Methods: Masticatory (MTS), cervical (CTS), and total muscle (TTS) tenderness scores were assessed and analyzed against demographic and clinical parameters collected from 200 patients with TMDs and 100 TMD-controls matched for age and gender. Muscle tenderness score was calculated as the summed palpation scores from all the muscles examined. Descriptive analysis of the sample and reliability and factor analysis were performed. A conceptual hierarchical data analysis model from distal to proximal determinants of TTS was adopted.

Results: Diagnostic categories included MMP (masticatory muscle pain) ($n = 44$; 22.9%); TMJ (isolated disorders of the temporomandibular joint) ($n = 26$; 13.5%); and TMD (both MMP and TMJ) ($n = 122$; 63.5%). TTS clearly distinguished between MMP, TMJ, TMD, and controls ($6.05 \pm 4.98$, $1.00 \pm 1.76$, $6.11 \pm 4.97$, and $0.61 \pm 2.07$, respectively; $P < .001$) and was positively associated with female gender ($P = .001$), whiplash history ($P = .004$), comorbid headache ($P < .001$), body pain ($P < .001$), verbal pain scores (VPS) ($P < .001$), pain and limitation on opening ($P < .001$), pain onset ($P < .001$), pain duration ($P < .001$), and pain frequency ($P < .001$). Analysis of reliability found an intraclass correlation of Cronbach $\alpha = .982$ for the TTS. Exploratory factor analysis found 2 main factors that explained 80.9% of the variance: a main factor including the muscle tenderness scores ($\alpha = .962$), which explained 62.5% of the variance, and a 4-item factor, including pain onset, duration, frequency, and VPS ($\alpha = .835$), which explained a further 18.4% of the variance. In the conceptual modeling, pain characteristics (onset, frequency, and duration), comorbid pains (headache and body pain), and levels of VPS were mediators in the relationship between TMD diagnosis and TTS.

Conclusions: Routine patient work-up should include the TTS to distinguish between different TMD populations and to assess severity and changes over time as well as treatment response.
blot. Real-time quantitative polymerase chain reaction and immunohistochemical staining were used to validate the gene expression and distribution of ENO1 in labial salivary glands, respectively.

Results: Ten WS proteins were found to be downregulated, and 11 WS proteins, including ENO1, were found to be upregulated in patients with pSS compared with matched healthy control participants. The Western blot results of whole saliva and labial salivary glands validated that ENO1 was highly expressed in patients with pSS. Real-time polymerase chain reaction (PCR) results showed that the levels of ENO1 mRNA in labial salivary glands of patients with pSS were significantly higher than in healthy controls. Immunohistochemical staining was used to identify the distribution of ENO1 in labial salivary glands, and the results showed that ENO1 protein expressed in the acinar and ductal epithelial cells of pSS was much higher than in healthy controls.

Conclusions: Our preliminary observations suggest that ENO1 is a potential biomarker of pSS that can be used in the detection of pSS. Further studies are necessary to investigate the potential role it may play in the pathogenesis of pSS.

Funding sources: National Natural Science Foundation of China.

OIO0417 GENETIC ASSOCIATION OF ORAL CROHN DISEASE WITH INTESTINAL CROHN DISEASE Anita Nolan, Rebecca L. Roberts, Mary C. Wallace, John Pearson, Andre van Rij, Gregory T. Jones, Pamela M. Jackson, Michael Schultz, Andrew S. Day, Richard B. Geary, Department of Oral Health, AUT University, Auckland, New Zealand

Objectives: An association between oral Crohn disease (oral CD) and Crohn disease (CD) has been reported. Oral lesions may precede or reflect intestinal CD. Nevertheless, there are no publications on the specific gene mutations known to confer a risk for CD in relation to oral CD. The purposes of this study were (1) to investigate the clinical relevance of oral CD in relation to CD and (2) to establish if those CD patients with oral CD are genetically different from other CD patients.

Methods: A total of 342 patients with confirmed CD and 750 healthy controls completed a questionnaire on their lifetime experience of oral lesions and underwent an oral examination. All controls and 285 of the CD patients were genotyped for confirmed CD risk loci using predesigned Taqman SNP genotyping assays. A $\chi^2$ analysis was performed to identify deviations from Hardy-Weinberg equilibrium and to test for association of selected genetic loci with CD and oral CD.

Results: Within the CD group, 150 of 275 patients (54.5%) reported oral lesions consistent with oral CD, compared with 42 of 201 (20.9%) of the control group. NOD2 (nucleotide-binding oligomerization domain containing 2) and CDK4 (CDK5 regulatory subunit associated protein 1-like 1) were associated with overall CD susceptibility, and the NOD2 association remained significant when the CD patients were stratified according to presence of mouth symptoms. CDK4 appeared to predict early onset of CD (allelic $P = .031$), and DLG5 (discs, large homolog 5) (allelic $P = .034$) was associated with the occurrence of oral lesions before the occurrence of intestinal inflammation.

Conclusions: Our study provides preliminary evidence that oral CD may be associated with specific CD susceptibility genes. If replicated, our findings may have both diagnostic and prognostic value.

Funding sources: Lottery Health Grants, NZ, New Zealand Dental Association, Otago Medical Research Foundation.

CR0366 ORAL SWELLING IN A CHILD AFTER INITIATION OF ORTHODONTIC TREATMENT Temitope Omolehinwa, Alicia Houston, Sam Kadan, Faizan Alawi, Thomas P. Sollecito, Oral Medicine, School of Dental Medicine, University of Pennsylvania, Philadelphia, PA, USA

Background: Granulomatous inflammation represents a unique form of the chronic inflammatory response. It may be associated with infectious or noninfectious processes and often presents a diagnostic dilemma for the clinician.

Summary: In August 2013, a 12-year-old Asian girl presented with a 3-month history of upper lip swelling and a non-healing ulcer on the right side of the upper lip. Her parents reported that her condition had been present since she underwent orthodontic treatment. She was seen by her pediatrician, a pediatrician, and an allergist and was treated with cefadroxil suspension and bacitracin ointment after a bacterial culture was positive for Staphylococcus aureus, but without resolution. An allergist tested the patient for metal and food allergies, yet no allergen was identified. Medical history was positive for recurrent herpes labialis. She was taking no medications and denied any known allergy. A detailed review of symptoms failed to confirm any bowel symptoms; however, she reported an occasional...
nonpruritic erythematous rash on her right arm and leg. The remainder of her review of systems was not significant. Physical examination found an upper lip swelling with a doughy consistency, and a chronic ulcer on the right upper lip vermilion. Also noted were gingival erythema and significant edema extending from the maxillary right canine to the maxillary left canine. An empiric trial of Medrol dose pack was recommended and resulted in significant improvement (85%) but without complete resolution. A biopsy of the lip and the gingival tissue was performed, and the gingival biopsy found granulomatous inflammation. The biopsy did not find a foreign body under polarized light. The patient is presently being evaluated for Crohn disease and sarcoidosis.

Conclusions: Having not identified foreign material by microscopic means, it is important that other causes of granulomatous inflammation be considered.

CR0262 A CASE SERIES OF VASCULAR MALFORMATIONS IN PEDIATRIC PATIENTS Carly Harrison, Meena Radralingam, Oral Medicine, Manchester Dental Hospital, Manchester, United Kingdom

Background: Vascular malformations are congenital aberrations affecting the skin and mucosa, often affecting the head and neck region, recorded in 1 in 22 neonates. Vascular malformations consist of progressively enlarging aberrant and ectatic vessels composed of a particular vascular architecture. Hemangiomia is the most common neoplasm consisting of localized developments, owing to the marked increase in growth factor, denoted histologically by endothelial proliferation and hypercellularity. Most true hemangiomias involute in time; however, some cases present late. These can be alarming owing to local disfigurement, and the treatment options are not without serious complications.

Summary: We report a series of 4 clinical cases of vascular and lymphangiomatous oral malformations in pediatric patients. These were originally misdiagnosed as dental and herpes infections by dental practitioners. Failure to respond to the antibiotic and antiviral therapy prescribed led to persistence, enlargement, and local disfigurement. The local morbidity caused by the malformations eventually alerted urgent referral to oral medicine. The clinical diagnoses are as follows: (1) lymphangioma localized to the palate, causing ulceration and bleeding; (2) microcystic lymphangioma in the buccal mucosa infiltrating into the subcutaneous tissues, causing drooping of the lip and distortion of the cheek; (3) capillary hemangioma in the maxillary alveolus, causing oculusal disharmony and facial discoloration; and (4) hemangioma in the submandibular region, causing facial swelling. Clinical photographs of the cases were taken. Investigations to confirm the diagnosis and the range of multimodal therapy were performed.

Conclusions: The cases demonstrate an interesting documented journey of pediatric referrals with inaccurate diagnoses. The effects on patients’ quality of life and parental concerns were explored. Highlighting such cases’ correct classification and an accurate diagnosis is imperative to ascertain prognosis and direct treatment. This reflects on the management strategies and how they have varied in each case of vascular malformations.

CR0416 CEREBELLOPONTINE ANGLE TUMOR: TRIGEMINAL NEURALGIA AS A CRITICAL SIGN Imad Elimairi, A. Santi, Oral and Maxillofacial Surgery, Oral Pathology and Oral Medicine, Ribat University Hospital and Nile College, Khartoum, Sudan

Background: Cerebellopontine angle (CPA) tumor can manifest with similar symptoms to trigeminal neuralgia (TN).

Summary: Chief complaint: A 26-year-old woman presented to the Facial Pain Clinic, Ribat Hospital, with severe right-sided facial pain. Each episode lasted for several seconds. Examination: There was hyperesthesia to digital palpation along the right maxillary division of the trigeminal nerve and the right temporal region. Diagnostic investigations: We requested contrast-enhanced magnetic resonance imaging (MRI) of the brain and brain stem and a brain magnetic resonance angiogram (MRA) to rule out any tumorous lesion or cranial neuropathy. Therapeutics: A tentative diagnosis of trigeminal neuralgia was reached. She was empirically started on oxcarbazepine 150 mg 3 times daily, with reexamination planned in 10 days. Three days after, the patient complained of increased intensity, frequency, and duration of each pain episode. The oxcarbazepine dose was increased to 150 mg 4 times daily, and clonazepam 0.5 mg 2 times daily was also prescribed. She reported pain improvement but remarkable hyperesthesia to the maxillary division of the trigeminal nerve and loss of sensation on the right half of the upper lip on 10-day review. Results: MRI of the brain and brain stem found a space-occupying lesion at the CPA that was mostly
hypointense relative to the pons and mildly hyperintense to cerebrospinal fluid. There was no distortion to the pons or extension into the internal acoustic maeus. Our differential diagnostic included epidermoid tumor, CPA dermoid cyst, meningioma, or cystic schwannomas, which required urgent referral to the neurosurgical team for further evaluation and surgical management.

Conclusions: We stress the importance of imaging and exclusion of CPA tumors as a cause of TN symptoms, particularly in young patients that do not respond completely or well to treatment. Although uncommon, CPA tumors may be a cause of neuropathic TN.

CR0239 INTEGRATING DENTISTRY WITH MEDICINE: A POSTER CASE REPORT Behjat Moghadam, Craig Whitt, Oral Pathology, Radiology and Medicine, University of Missouri—Kansas City School of Dentistry, Kansas City, MO, USA

Background: Detection of enlarged lymph nodes during routine head and neck dental examination led to the diagnosis of stage 4 renal cancer.

Summary: A 48-year-old woman came to the dental clinic for full extraction and dentures. A unilateral hard, fixed supraclavicular lymph node, about 1 cm × 1 cm, was detected in the right neck, with smaller nodules attached to the main node. Differential diagnosis included lymphoma or a metastatic lesion of unknown origin. Enlarged lymph node was biopsied, and metastatic carcinoma of unknown primary was found. Renal origin was suspected based on further immunohistologic examinations. Abdominal computed tomography found stage 4 renal cell carcinoma with metastasis to the adrenal glands, pleura, 12th rib, thoracic vertebrae, abdominal aorta, lungs, and distant lymph nodes including axillary, mediastinal, and hilar nodes. The primary lesion of 7.5 × 4.5 cm was found on the right kidney. No intracranial mass was identified by magnetic resonance imaging. The initial treatment plan was to have her right kidney removed, with 3 rounds of chemotherapy in the form of IL-2 therapy with a total of 75 doses of IL-2. Surgery was not performed, because the primary lesion appeared to be wrapped around her aorta. If the mass responds to chemotherapy, the surgery will be attempted. The patient was given a 10% chance of responding to treatment, and with no estimate as to life expectancy or a chance for remission. She was seen in the Oral Oncology Clinic for extractions of her maxillary teeth and insertion of a transitional denture. Chemotherapy began 6 days after extractions.

Conclusions: This case describes integration of dentistry with medicine. It shows the necessity and the importance of the head and neck examinations during routine dental treatment. Many patients, such as the one in the current case, are more likely to pursue treatment for dental pain rather than visiting a physician.

CR0355 UNICYSTIC AMELOBLASTOMA AFFECTING AN OLDER MAN: CASE REPORT Érica Patrício, Bianca Freó, Anna Torrezani, Ana Paula Candido dos Santos, Camila de Barros Gallo, Norberto Nobuo Sugaya, Décio dos Santos Pinto Júnior, Department of Stomatology, University of São Paulo, São Paulo, Brazil

Background: Ameloblastomas of unicystic appearance are rarer than their solid counterparts, show a less aggressive behavior, have lower recurrence rates, and characteristically affect young adults.

Summary: A 62-year-old man was referred by a private clinician to our clinic owing to an evolving asymptomatic radiolucent mandibular lesion. A small cystic-like periaxial mandibular lesion associated to the second lower right premolar, asymptomatic and causing no deformity, had been found by a routine panoramic radiograph. His clinician decided to deliver dental treatment and keep the bone lesion unattended. Twelve months later, the radiolucent had expanded to 2.5 cm, had caused teeth dislocation and buccal plate deformity, and had motivated the referral. A clinical diagnosis of keratoctytic odontogenic tumor led to an incisional biopsy procedure, which resulted in a histopathologic diagnosis of an odontogenic cystic lesion. A surgical approach to enucleate the cystic lesion and remove the teeth involved was accomplished. The gross appearance during surgery was of a true cystic lesion. Histopathologic analysis of the surgical specimen found an ameloblastoma. Unicystic presentation and regularity of the surgical bed obtained after careful curettage supported the establishment of a clinical and radiographic follow-up. The patient remains under periodic assessment and shows normal bone repair, 10 months after surgery, with no signs of tumor recurrence or manifestation of any kind of symptoms.

Conclusions: A unicystic ameloblastoma affecting a man in his seventh decade of life was very unusual, although the location (mandible) and behavior (good response after curettage treatment) presented within the regular ameloblastoma features. The diagnosis of cyst after the incisional biopsy suggests an ameloblastoma arising from a cystic epithelial lining in this case.

CR0387 NEUROFIBROMATOSIS PRESENTING AS 2 UNUSUAL SWELLINGS: DIAGNOSTIC CRITERIA REVIEW Ana Poveda Gallego, Rui Albuquerque, Jon Higham, Andrea Richards, John Hamburger, Oral Medicine Department, Birmingham Dental Hospital, Birmingham, United Kingdom

Background: Neurofibromatosis (NF) is an inherited autosomal dominant genetic disorder characterized by multiple cutaneous lesions and tumors of the peripheral and central nervous system. Neurofibromatosis type 1 (NF1) affects about 1 in 3500 individuals and presents with characteristic abnormalities of the skin and the peripheral nervous system. Neurofibromatosis type 2 (NF2) is more rare, presenting in less than 1 in 25 000 of the population. Often its first clinical onset is in the late teens with sudden hearing loss due to the development of bilateral or unilateral vestibular schwannomas. We aim to summarize the oral characteristic features and review the clinical diagnostic criteria of this condition.

Summary: A 17-year-old boy was referred to the Oral Medicine department at Birmingham Dental Hospital (UK) with 2 swellings affecting the tongue and the left buccal mucosa. Histopathology studies confirmed the diagnosis. A 60-year-old woman was referred to the Oral Medicine department at Birmingham Dental Hospital (UK) with a 5-year history of diffuse swelling affecting the palate. Ultrasonography and histopathology confirmed the diagnosis.

Conclusions: We report 2 clinical cases of NF type 1 presenting as unusual oral swellings. NF type 1 can commonly affect the maxillofacial region and, even though the oral manifestations have previously been documented in the literature, this condition may not always be included as a differential diagnosis for intraoral swellings and may be misdiagnosed. Oral health...
practitioners should be aware of the clinical diagnostic criteria of this condition, as well as the oral manifestations, to improve recognition and early diagnosis of the disease.

CR0384 DIAGNOSTIC DILEMMA: DRUG REACTION OR PARANEOPlastic AUTOIMMUNE MULTIORGAN SYNDROME? John C. Steele, Alan Mighell, Department of Oral Medicine, University of Leeds, Leeds, United Kingdom

Background: We present the case of a 71-year-old white man with chronic lymphocytic leukemia (CLL) referred to the Department of Oral Medicine by his hematologist regarding persistent ulcerated oral and labial lesions of unknown cause.

Summary: The chief complaint was of a 7-month history of a sore mouth and lips that had progressively worsened over the last few weeks. An associated widespread cutaneous rash developed in the weeks before presentation. He had been treated with ibrutinib, a tyrosine kinase inhibitor, as part of a clinical trial for his underlying hematologic malignancy after relapse. There was a good response. The drug was withdrawn 3 weeks before presentation in our department. Examination found blood crusted lips with no extension to skin and intraoral ulceration on all mucosal surfaces. An extensive maculopapular rash with exorriations was also noted. The differential diagnosis was paraneoplastic autoimmune multiorgan syndrome (PAMS) drug reaction and persistent erythema multiforme. There was no suitable ulcer-free oral tissue to biopsy. A skin punch biopsy found erythema multiforme-like changes. Indirect immunofluorescence was weakly positive (1 of 10) for pemphigus antibodies. Review of the clinical features and test results concluded that the mucocutaneous lesions were consistent with a drug reaction rather than the other differential diagnoses. This conclusion was reported to the clinical trial. Topical preparations for symptomatic treatment and systemic corticosteroids were commenced. Unfortunately, over the next few weeks the patient’s general health deteriorated while he remained an inpatient, without improvement in the orolabial lesions. He died of a relapse of his underlying malignancy and the associated complications 10 weeks after presentation to Oral Medicine.

Conclusions: This case highlights the challenges in differentiating between PAMS and drug reactions in a patient participating in a clinical drug trial.

CR0379 SQUAMOUS CELL CARCINOMA OF THE TONGUE: A CASE REPORT Rui Amaral Mendes, Patrícia Couto, Pedro Coelho, Dental Medicine, Universidade Católica Portuguesa, Viseu, Portugal

Background: Squamous cell carcinoma (SCC) is a malignancy originating on the epithelial lining of the oral cavity and represents 50% of all oral cancers. SCC is more common among men aged between 50 and 70 years. The tongue is the most affected place, representing about 50% of oral carcinomas. It is a multifactorial disease, generated in extrinsic factors such as tobacco and alcohol, as well as in intrinsic factors such as malnutrition, candidiasis, syphilis, and oncogenic viruses. It can present as an exophytic or endophytic lesion, leukoplakia, erythroplakia, or erythroleukoplakia.

Summary: A patient attending oral screening conducted for the early diagnosis of head and neck cancer was diagnosed with a white plaque on the left posterolateral border of the tongue. The histopathologic analysis led to a diagnosis of squamous cell carcinoma. The early detection of this cancer allowed the lesion excision by surgery alone.

Conclusions: Because squamous cell carcinoma is often preceded by premalignant lesions with clinically detectable symptoms, it is very important to reach an early diagnosis and to educate the population about the risk factors associated with this condition.

O10435 ASSESSMENT OF DNA REPAIR MECHANISMS IN ORAL POTENTIALLY MALIGNANT DISORDERS Nikolaos G. Nikitakis, Georgios Rassidakis, Jason Tasoulas, Argyris Daskalopoulos, Georgios Kamperos, Alexandra Sklavounou, Department of Oral Medicine and Pathology, Dental School, University of Athens, Athens, Greece

Objectives: This study aimed to investigate the alterations in DNA damage and response (DDR) mechanisms in oral carcinogenesis, during the evolution from normal mucosa to invasive cancer through epithelial hyperplasia and various degrees of dysplasia.

Methods: The expression of DDR molecules H2 AX, pChk2, 53 BP1, p53 and phosphorylated p53 was assessed immunohistochemically in 41 cases of oral potentially malignant disorders (PMDs) with a clinical appearance of leukoplakia varying from hyperplasia (EH) (n = 9) to various degrees of dysplasia (ED) (n = 32). Control cases of normal oral mucosa (NM) (n = 5) and oral squamous cell carcinoma (OSCC) (n = 10) were included. Comparative statistical analysis was performed.

Results: γH2 AX expression showed a progressive increase and extension to the upper epithelial layers from NM toward ED; OSCC exhibited higher expression levels compared with pre-cancerous lesions. pChk2 expression was minimal/absent in NM, showed variation among premalignant lesions with an increasing tendency from EH to ED, and was more intense in OSCC. We found that 53 BP1 had higher levels in OSCC compared with NM and a wide range of expression among EH and ED. p53 presented the highest levels of positivity in OSCC; it showed more expression in ED compared with NM and EH with a tendency for extension to a higher level of the spinous layer according to the degree of ED. Phosphorylated p53 expression was absent in NM and relatively low in ED and OSCC.

Conclusions: DNA damage-related molecules are expressed in oral PMDs with escalating intensity according to the presence and degree of epithelial dysplasia supporting their participation in oral carcinogenesis. Although DNA repair mechanisms may play an important role in the inhibition of carcinogenesis in the early stages of oral PMDs, they probably undergo a progressively worsening failure as a result of mutations under the influence of activated oncogenes or other mechanisms of continuous genomic instability.

O10231 INTRODUCTION OF AN EPORTFOLIO INTO ORAL MEDICINE TRAINING Roddy McMillan, Department of Oral Medicine and Facial Pain, Eastman Dental Hospital, University College London Hospitals and Eastman Dental Institute, University College London, London, United Kingdom

Objectives: The aim of this action research project was to facilitate the successful implementation of an electronic portfolio (ePortfolio) into oral medicine training within the British Isles. The objectives were (1) to garner a consensus of opinion from trainees about the proposed ePortfolio, (2) to facilitate the adoption of an existing surgical ePortfolio to produce an oral medicine ePortfolio, and (3) to have the participants in the trainee focus group demonstrate reflective practice and deeper learning.
Methods: All trainees within the British Isles were sent an online questionnaire and allowed access to an existing ePortfolio. Two trainee focus groups were conducted to help design the oral medicine ePortfolio template. Qualitative and quantitative data would be collected from both questionnaires and focus groups. Quantitative data would be presented using descriptive statistics, and qualitative results would be processed using the “content analysis” method.

Results: Of all trainees, 61% (11 of 18) responded to the questionnaire; 72.7% (8 of 11) thought the specialty requires standardized portfolios. Dominant themes from qualitative data were identified. Beneficial themes included practical benefits (e.g., remote access, less paperwork) and workforce benefits (e.g., national standardization of training). Negative themes included concerns about ePortfolio limiting trainee input and dissatisfaction with requirement for trainees to self-fund the ePortfolio. Suggestions from the trainees about the design of the ePortfolio included an emphasis on practicality and simplicity and a requirement for a voluntary pilot study to further refine the ePortfolio before full implementation. Evidence of deeper learning and reflective practice were demonstrated by the trainees attending the focus groups.

Conclusions: The results of this action research project suggest that there is a strong desire among oral medicine trainees within the British Isles to implement an ePortfolio. The focus group setting appeared to be successful in producing a pragmatic design for the oral medicine ePortfolio and in promoting deeper learning and reflective practice within the participating trainees.

OIO293 SALIVARY EXOSOMES: COMPARISON BETWEEN METHODS OF ISOLATION Marilena Vered, Ayelet Zlotogorski-Hurvitc, Gavriel Chaushu, Taula Salo, Dan Dayan, Department of Oral Pathology and Oral Medicine, Tel Aviv University, Tel Aviv, Israel

Objectives: Exosomes are nanoparticles (30-100 nm) secreted by most cell types. It was the aim of our study to isolate for the first time salivary exosomes using a chemically based agent (Exoquick (EQ)-TC; Systems Biosciences, CA, USA) and to compare their characteristics to those isolated by ultracentrifugation (UC).

Methods: Whole saliva (5-10 mL) from healthy individuals was collected under standardized conditions, kept at 4°C, and centrifuged (3000 g for 15 minutes), and the supernatant was frozen (−70°C) until further use. Exosomal precipitates (ppt) obtained by EQ were termed EQppt, and those resulting from UC (120 000 g for 3 hours) were termed UCppt. EQ was added to saliva in a ratio of 1:2; incubated overnight at 4°C followed by centrifugation (5000 g for 30 minutes). Exosomes isolated with EQ were characterized by ELISA and Western blotting molecular tests for assessment of the exosomal markers CD63, CD9, and CD8 and compared with those isolated by UC. Morphologically, the comparison was done by atomic force microscopy (AFM) and electron microscopy (EM).

Results: All the tests were done using a saliva volume of 0.5 mL. EQppt was considerably larger than UCppt. ELISA tests found no significant differences in the concentrations of the exosomal markers in EQppt when compared with UCppt. Using the same markers, Western blotting showed thinner bands in EQppt than UCppt. Examination with AFM found that EQppt contained only a few single particles of exosomal size alongside with aggregates of varying size, unlike in UCppt. EM of EQppt showed only a few particles with classical exosomal size and bilayered morphology together with aggregates and debris of other biologic precipitates. UCppt showed purer exosomes almost without debris or aggregates.

Conclusions: Although isolation of exosomes by EQ is quicker and easier, it provides an impure precipitation when compared with exosomes isolated by UC.

OIO306 DOES NARROW BAND IMAGING ADD VALUE IN ORAL MEDICINE? Giulia Otaviani, Margherita Gobbo, Marta D’Ambros, Serena Zacchigna, Roberto Di Lenarda, Matteo Biazzotto, Dental Science Department, Division of Oral Medicine and Pathology, Trieste, Italy

Objectives: The study of angiogenesis, an early and key event in carcinogenesis, could improve early detection of malignant premalignant oral lesions. Narrow band imaging (NBI) is an optical technique that is used both to perform objective examination of the oral cavity, with the aid of different grades of magnification, and to visualize intrapapillary capillary loops (IPCLs). IPCLs through a 415-nm light source. The aim of this study was (1) to define the sensitivity and specificity of NBI in detecting dysplastic and neoplastic lesions and (2) to evaluate its learning curve.

Methods: The NBI-guided technique was used to photograph and biopsy 91 white, red, or white-red oral lesions after detecting IPCL abnormalities. Lesions were classified by an expert blind rater (main rater) and by 17 students (nonexpert raters) after adequate instructions, according to Takano’s IPCL classification. Lesions were classified into mild/moderate/severe dysplasia or neoplasia. Histopathologic retrievals were used as a reference standard. Dysplastic oral lesions were induced in 40 mice. Lesions were analyzed according to IPCL classification and biopsied. Comparison between histopathologic retrievals and clinically determined grade of dysplasia (mild/moderate/severe dysplasia or neoplasia) was performed. Kendall W was used to compare clinical/histologic findings and expert/nonexpert evaluations.

Results: In the clinical study, the concordance between the main rater and reference standard was 72.5%; the k coefficient of the main rater was 0.74 (95% CI). Nonexpert raters had 21.7% concordance with the reference standard and 26.8% with the main rater. NBI examination found 57% to 96% sensitivity and 85% to 99% specificity, depending on grades of dysplasia. The highest values were found in neoplasia detection. In the animal study, sensitivity and specificity of NBI-guided grading were 95.7% and 98.5%, respectively.

Conclusions: Our findings support (1) that high sensitivity/specificity can be obtained both in patients and in mice and (2) that NBI has a steep learning curve. We can hypothesize that NBI could be of great help in the early detection of oral lesions, performing guided biopsies and follow-up of suspicious oral lesions, although guidelines and education courses could help in rendering it more reproducible.

OIO317 EPIDEMIOLOGIC, CLINICAL, AND RADIOGRAPHIC EVALUATION OF JAW LESIONS Juliane Piragine Araujo, Celso Augusto Lemos Junior, Decio Santos Pinto Junior, Gustavo Henrique Campos Rodrigues, Fabio Abreu Alves, Stomatology, Dentistry School, São Paulo University, São Paulo, Brazil

Objectives: This study evaluated the prevalence and the clinical and radiographic features of jaw lesions in a single institution.

Methods: A prospective study of descriptive character evaluated clinical and radiographic features of all lesions arising
in the jaws between May and December 2013 in the Stomatology Department, School of Dentistry, São Paulo University. The imaging examinations and biopsy were performed according to each lesion diagnosis indication. The data were reported through the absolute and relative frequency of categorical variables.

Results: A total of 64 patients, 32 male and 32 female, with a mean age of 33 years (± 18; range, 8-77) had 65 lesions. The most frequent symptoms were swelling and pain. A biopsy was indicated in 47 lesions, and in the other 17 the diagnosis was done by clinical and radiographic features. The anterior maxilla region and the body of the mandible were the main affected sites. Despite the diagnosis, 10 cases were periapical cyst, 8 simple bone cyst, 6 osseous dysplasia, 5 dentoalveolar cyst, 3 calcifying cystic odontogenic tumor, 3 ameloblastomas, 2 keratocystic odontogenic tumor, 2 condensing osteitis, 2 odontomas, 2 nasopalatine duct cyst, and a case each of mucoepidermoid carcinoma, hypercementosis, maxillary sinus hypoplasia, multiple myeloma, osteosarcoma, bone exostoses, sclerotic bone, and fibrous dysplasia. Surgical treatment was performed in 39 cases and in 17 cases was only expectant. At the time of this report, 8 cases remained waiting for the biopsy or anatomicopathologic analysis.

Conclusions: These preliminary results showed that odontogenic cyst and tumors were the most prevalent lesions. Interestingly, in about 30% of the jaw lesions only clinical and radiographic features performed the diagnosis.

OIO318 HEALING OF ORAL ULCERS BY POLYMER-BASED MUCOADHESIVE Ines Velez, Diagnostic Sciences, Nova Southeastern University, Fort Lauderdale, FL, USA

Objectives: This double-blinded pilot study was to evaluate MuGard (carbomer-homopolymer) as a mucoadhesive (1) to promote healing of oral lichen planus ulcerations, (2) to decrease erythema, and (3) to decrease pain.

Methods: Patients who had ulceration due to their erosive lichen planus (n = 10) were followed for severity changes and compared with a placebo group (n = 10). Measures included oral mucositis assessment scale (OMAS) and visual analog scale (VAS) for pain, measured at rest, speaking, and swallowing, (1) at baseline (before randomization and before treatments began) and (2) repeated on days 2, 7, and 14 after initiation of treatment. After baseline evaluation, patients were randomly assigned to the active or placebo cohort. Participants were assigned a blinded ID number and supplied with either the MuGard or the placebo. After clinical evaluations, the code was broken to allow for statistical analysis. No adverse incidents were reported. The initial OMAS and VAS scores of the 2 groups were compared using the nonparametric Mann-Whitney test to determine if the 2 groups were statistically similar before treatments began. Each group was compared with its own baseline values using the Friedman test, a within-group measure. The final values were compared statistically, using the Mann-Whitney test.

Results: The randomization process was successful in forming 2 statistically similar groups. One-way repeated-measures analysis of variance found statistically significant changes from baseline for the MuGard participants with respect to mucositis and pain. No significant changes occurred in the placebo group. Changes in pain are associated with changes in ulcers but not with changes in erythema.

Conclusions: The copolymer MuGard is effective in promoting the healing of oral erosive lichen planus ulcers and in decreasing pain. Clinical trials with larger sample sizes are necessary to validate the effectiveness of this therapy.

Funding sources: Nova Southeastern University.

OIO341 UTILIZATION OF COMPOUND PRESCRIPTION MEDICATIONS IN AN ORAL MEDICINE PRACTICE Shannon Stock, Katherine Rubino, Arthur Margolis, Irena Thomas, Sook-Bin Woo, Nathaniel Treister, Mathematics and Computer Science, College of the Holy Cross, Boston, MA, USA

Objectives: For many oral medicine conditions, the use of intensive topical therapies that act directly at the affected site provides greater efficacy and fewer side effects than systemically delivered medications. The efficacy of these treatments, combined with the need for patient-specific customizations, such as vector of delivery and dose, has resulted in drug compounding playing an important role in the practice of oral medicine. The objective of this study was to characterize the utilization and costs associated with the use of compounded medications in an academic hospital-based oral medicine practice.

Methods: This was a retrospective analysis of outpatients treated at the Center for Oral Disease at Brigham and Women’s Hospital (Boston, MA, USA) from November 2006 through November 2011. Patient prescription and payment information were obtained from the pharmacy’s patient database. Variables included medication, number of refills filled, prescription cost, and payment contributions from insurance and patients. An electronic medical record review was conducted to obtain patient demographic data and diagnosis as well as the prescribing provider.

Results: A total of 510 prescriptions corresponding to 423 unique patients were filled during the study period. Nearly 93% of prescriptions were for management of neurotrophic conditions or mucosal diseases. Four medications composed the majority (474 of 510; 93%) of prescriptions filled. Approximately half were for clozapine 0.5 mg per 5 mL of solution, followed by tacrolimus 0.5 mg per 5 mL of solution (29%), clobetasol 0.05% solution (10%), and ketoprofen 20% cream (7%). Nearly all prescriptions filled (94%) were at least partially paid for by insurance. The median cost per prescription was $167 (range, $10-$809). The median out-of-pocket cost (including copays) paid by patients was $25 (range, $0-$550). A median of 1 fill was obtained for each prescription (range, 1-28).

Conclusions: Compound medications provide an affordable and flexible treatment option for patients being treated for a variety of oral diseases, especially those involving neuropathic and mucosal conditions.

OIO444 BIOMARKERS IN ORAL CHRONIC GRAFT-VS-HOST DISEASE Ana Carolina F. Motta, Robert J. Soiffer, Qian Zhan, Allison Larson, George F. Murphy, Nathaniel S. Treister, Department of Oral Diagnosis, São Paulo University, São Paulo, Brazil

Objectives: Chronic graft-vs-host disease (cGVHD) is a serious complication of allogeneic hematopoietic stem cell transplant and the leading cause of nonrelapse mortality. There is great interest in identifying cGVHD biomarkers for diagnosis and evaluating disease activity. As the oral cavity is one of the most frequently affected sites, we investigated the specificity of immunopathologic features of oral mucosal cGVHD and the effect of topical therapy on biomarker expression.

Methods: Biopsies of oral cGVHD (n = 17) were compared with oral acute GVHD (aGVHD; n = 3), oral lichen...
planus (OLP; n=5) and healthy controls (n=5). Oral cGVHD biopsies were obtained 1 month after topical treatment with tacrolimus (n=4) or dexamethasone (n=8). The immunologic profiles of infiltrating mononuclear cells, mast cells, and endothelial cells were characterized by immunohistochemistry.

**Results:** The submucosal infiltrates consisted predominantly of CD3+, CD4+, and CD8+ T cells. Comparisons between cGVHD and aGVHD found higher CD103+ and lower e-selectin-positive expression in cGVHD compared with aGVHD. The CD4+/FOXP3+ ratios in cGVHD (2:1) and aGVHD (6:1) were significantly higher than in OLP (1:1), and there were lower numbers of FOXP3+, CD20+, and c-kit+ cells in cGVHD and aGVHD compared with OLP. Dexamethasone (but not tacrolimus) therapy resulted in markedly reduced CD4+ and CD103+ cells.

**Conclusions:** This study highlights differences in biomarker expression in cGVHD, aGVHD, and OLP. These findings raise the possibility that aGVHD and cGVHD may differ in terms of participation of regulatory T cells (FOXP3) and endothelial activation (e-selectin) in the former, and human mucosal lymphocyte antigen 1 (CD103)-expressing cells in the latter. Because both oral aGVHD and cGVHD may mimic OLP histologically, the greater numbers of B cells (CD20) and mast cells (c-kit) in OLP may represent a potential diagnostic adjunct. Dexamethasone, but not tacrolimus, reduced CD4+ and CD103+ cells, which may signify different immunosuppressive pathways.

**O10352 CXCL-10 AND CSF-3 GENETIC EXPRESSION IN SEVERE RECURRENT APHTHOUS STOMATITIS**
Camila de Barros Gallo, Érica Patricio, Jéssica Naomi Okamoto, Ricardo Ramalho Vecchiatti, Ricardo Carneiro Borra, Fábio Daumas Nunes, Norberto Nobuo Sugaya, Department of Stomatology, School of Dentistry, University of São Paulo, São Paulo, Brazil

**Objectives:** Recurrent aphthous stomatitis (RAS) is a common immunemediated oral ulcerative disease characterized by a T-helper 1 cell (Th1)-polarization of the immune response with disturbed local release of cytokines and chemokines. This study investigated the local expression of 2 chemokines: The interferon-γ-induced protein 10 or C-X-C chemokine 10 (CXCL-10) and colony-stimulating factor 3 (CSF-3) in RAS patients.

**Methods:** This case-control study enrolled 15 patients with severe RAS bouts and 5 non-RAS patients proportionally matched by sex and age. Each patient was submitted to a 5-mm-severe RAS bouts and 5 non-RAS patients proportionally matched by sex and age. Each patient was submitted to a 5-mm-thick oral biopsy and dexamethasone therapy. Research is encouraged toward the elucidation of the molecular mechanisms enrolled in RAS etiology.

**O10363 DEFECTS OF THE INNATE IMMUNE SYSTEM IN PATIENTS WITH OROFACIAL GRANULOMATOSIS**
Helen J. Petersen, T.A. Hodgson, S.R. Porter, A.M. Smith, University College London Eastman Dental Institute, London, United Kingdom

**Objectives:** Crohn disease (CD) is fast being recognized as an immunodeficiency state characterized by defects in the innate immune system, particularly in bacterial handling and cytokine secretion by macrophages. A number of patients with orofacial granulomatosis (OFG) have also been shown to have clinical/subclinical intestinal Crohn disease, which may manifest years later. The aims of the study were to assess innate immune function in patients with OFG compared with healthy controls and those with intestinal Crohn disease alone. Our hypothesis was that patients with OFG have defects in innate immune cell functioning.

**Methods:** Patients with OFG, patients with CD, and healthy controls were assessed for neutrophil and macrophage functioning. Superoxide production by patient neutrophils was assessed by stimulation with phorbol-myristyl acetate. Peripheral blood monocyte-derived macrophages were stimulated with a number of agonists including oral and gastrointestinal bacteria. Cytokine secretion was then measured by multiplex assay.

**Results:** A total of 2 of 26 patients with OFG had a defect in neutrophil superoxide production (<1.5%) compared with healthy controls. Interferon-γ secretion by macrophages in patients with OFG was severely attenuated, and IL-10 secretion was increased compared with healthy controls. The oral bacteria Fusobacterium nucleatum and Porphyromonas gingivalis were more immunostimulatory compared with Escherichia coli and resulted in increased secretion of cytokines by human macrophages.

**Conclusions:** A small percentage of OFG patients have a defect in superoxide production by neutrophils, whereas the majority have attenuated cytokine secretion by macrophages. These results suggest OFG is a manifestation of an immunodeficiency state.
elderly people with sarcopenia, as well as the relationship between chewing ability and sarcopenia. We performed regression analysis to analyze the effect of sarcopenia-related factors.

Results: Among the patients, 5.6% had severe sarcopenia, 12.8% had sarcopenia, and 22.5% had presarcopenia. After dividing the severity of sarcopenia into a normal and deteriorated group, where deterioration of muscle strength or general function was actualized, and performing logistic regression analysis on the value as a dependent variable, there was a significant difference between age (odds ratio [OR], 2.60; 95% CI, 1.74-3.88), serum albumin (OR, 0.93; 95% CI, 0.88-0.99) and chewing ability (OR, 2.32; 95% CI, 1.39-4.10).

Conclusions: The results showed that there is a relationship between chewing ability and sarcopenia of equal influence as the known factor of age. Therefore, this research suggested that improving chewing ability can possibly contribute to preventing sarcopenia.

O00385 OROFACIAL GRANULOMATOSIS IMMUNOPHENOTYPES IN PATIENTS WITH OR WITHOUT CROHN DISEASE Gita Gale, Sofia Ostman, Robert Saalman, Esbjörn Telemo, Mats Jontell, Bengt Hasseus, Department of Oral Medicine and Pathology, Faculty of Odontology, Gothenburg, Sweden

Objectives: Orofacial granulomatosis (OFG) is a debilitating inflammatory disorder in the orofacial region characterized by disfiguring perioral swelling and intraoral tag and cobblestone phenomenon. The etiology is unknown. OFG may occur concomitantly with other granulomatous diseases such as Crohn disease (CD) and sarcoidosis. The aim of this investigation was to characterize the inflammatory cell infiltrate in patients with OFG solely (OFG-S) and patients with OFG and coexisting Crohn disease (OFG+CD).

Methods: Biopsy specimens from patients with OFG-S (n = 11) and OFG+CD (n = 11) were immunostained with monoclonal antibodies raised against CD11 (Langerhans cells [LCs]), CD3 (T cells), CD4, CD8, CD11 c (dendritic cells), CD20 (B cells), CD68 (macrophages), and mast cell tryptase (MCT) (mast cells). Digitalized images were obtained followed by quantitative analyses.

Results: Analyses of the connective tissue found a significantly higher number of CD3+ T cells (P = .0066) in the connective tissue of OFG-S patients in comparison with OFG+CD patients. In the connective tissue of OFG-S patients, CD11 c–expressing dendritic cells were significantly more numerous than in the corresponding tissue compartments of OFG+CD patients (P = .0066). MCT+ mast cells displayed a surprisingly high level of activation in both patient groups, although no significant difference was detected when comparing OFG-S and OFG+CD. Comparing the presence of CD11+ LCs and CD4+, CD8+, and CD68+ macrophages between the 2 groups did not reveal any significant difference.

Conclusions: The study shows a different composition of the inflammatory infiltrate of patients with OFG-S compared with patients with OFG+CD. These observations may contribute to a better understanding of the pathogenesis of OFG.

Funding sources: Gothenburg Dental Society.

O00386 INTRAORAL STENT DECREASES THE RADIATION DOSE ON HEALTHY STRUCTURES Fabio Abreu Alves, Juliana Rocha Verrone, Graziella Chagas Jaguar, Maria Aparecida Conte Maia, Petrus Paulo C. Eufrazio da Silva, Jose Divaldo Prado, Department of Stomatology, A.C. Camargo Cancer Center, São Paulo, Brazil

Objectives: Few dosimetric studies have shown the benefit of intraoral stents in decreasing radiation dose on healthy tissues during radiotherapy (RT). The aim of the study was to compare the dosimetric analysis of patients with oral cancer with and without the use of an intraoral stent.

Methods: A total of 15 patients with oral cancer, composed of tumors located in the tongue, floor of the mouth, jaw, lower alveolar ridge, and lower gums, were divided into 2 groups: group 1 (with intraoral stent) and group 2 (without intraoral stent). The patients were submitted to 2 RT-planning computed tomography scans (with and without the use of an intraoral stent) to quantify the dosimetric analysis.

Results: According to the study population, of the 15 patients analyzed, 8 patients (53%) were men and 7 (47%) were women. The age ranged from 21 to 79 years (mean age, 55.67; standard deviation, 13.7). Dosimetric analysis reported that patients in group 1 showed significantly lower dose of radiation delivered to healthy structures in the maxilla when compared with group 2 (16.99 Gy in group 1 vs 24.50 Gy in group 2, respectively; P = .001). This difference was also observed in relation to the hard palate (12.58 Gy in group 1 vs 14.32 Gy in group 2, respectively; P = .04).

Conclusions: The intraoral stent showed promising results in decreasing the radiation dose to healthy structures during RT for oral cancer. Consequently, it may decrease the side effects caused by RT and improve the patient’s quality of life.

mainly located in the cells’ nuclei (n = 12; 70.6%). Cyclin D1 protein was exclusively in the nucleus in 19 (76%). The predominant scores for HHIP, PTP1B, CCND1, and Cyclin D1 were: +2 (57.14%), +3 (73.91%), +3 (58.82%), +2 and +3 (36.36%), +3 (90.48%), and +1 (47.37%), respectively. A high level of HHIP (P = 0.0357), GLI1 (P = 0.0088), and CCND1 (P = 0.0090) was observed in OED compared with normal oral mucosa.

Conclusions: SHH pathway may play an important role in the pathogenesis of OED and could contribute to the biologic profile of these premalignant lesions.


O01259 A DENTURE ADHESIVE CONTAINING MONOCAPRIN FOR REDUCING CONTAMINATION WITH CANDIDA W. Peter Holbrook, Thórdís Kristmundsdóttir, Hallórdur Thorðmar, Sigfríður Ásta Jónsdóttir, Helga Helgadóttir. Faculty of Odontology, University of Iceland, Reykjavík, Iceland

Objectives: Candida-associated stomatitis is a common problem in patients wearing dentures, especially the institutionalized elderly. Regular topical antifungal therapy is often not very effective. New treatments for candidal overgrowth in the mouths of edentulous people are needed, preferably using agents not similar to conventional antifungal agents, to avoid the buildup of resistance. Antimicrobial lipids, such as fatty acids and their monoglycerides, are known to have activity against Candida, and the monoglyceride monocaprin is the most effective. The aim of this study was to perform a clinical trial to determine the effect of a denture adhesive containing 3% monocaprin on Candida-associated denture stomatitis.

Methods: Denture adhesives with and without monocaprin were produced for clinical trials. Samples for yeast counts were taken from the dentures and oral mucosa of 16 volunteers who agreed to participate in the clinical trial. Sampling was done with contact sponges on the denture and mucosa to give an estimate of the density of Candida on the surface, expressed as colony-forming units per square centimeter (CFU/cm²). After random selection of the test adhesive, 6 participants were in the control group and 10 participants were in the treatment group, for a 4-week treatment of the denture adhesive. Sampling was then repeated.

Results: Participants initially had 20 to 50 CFU/cm² of Candida on the palatal and lingual mucosa and > 50 CFU/cm² on the fitting surfaces of the dentures. The denture adhesive containing monocaprin reduced the amount of Candida on dentures after 4 weeks of treatment to < 20 CFU/cm². There was a general reduction in the number of Candida on mucosal surfaces after treatment, but less so than on the dentures. No side effects were reported.

Conclusions: A denture adhesive containing monocaprin was effective in reducing Candida contamination of dentures and could be an effective preventive measure against Candida-associated denture stomatitis.

O01275 CLINICAL EFFICACY OF JAPANESE HERBAL MEDICINE FOR PATIENTS WITH GLOSSODYNIA Ken-ichiro Sakata, Noritaka Ohiga, Yitaka Yamazaki, Manabu Oouchi, Yoshimasa Kitagawa, Department of Oral Diagnosis and Medicine, Department of Oral Pathobiological Science, Hokkaido University, Sapporo, Japan

Objectives: In our department, we have been using mainly selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) as first-line medicine for patients with glossodynia. However, we also have been using kampo (Japanese herbal medicine) for patients with glossodynia under 3 conditions: first, when the effectiveness of SSRIs and SNRIs is insufficient; second, when these drugs are not advisable because of the side effects; and third, when the patients already have other types of antidepressants or are taking many medicines. For these patients, we have experienced a lot of responders by administration of rikko-san. The purpose of this study was to evaluate the effectiveness of rikko-san for patients with glossodynia. We included 21 patients in this study (male, 2 cases; female, 22 cases; mean age, 71 years) who were diagnosed with glossodynia in our department from 2006 to 2012.

Methods: In this study, only patients who could take rikko-san (7.5 g/d) for more than 28 days were admitted. We excluded the patients from this study who have been taking some medicines for glossodynia except for rikko-san. We administered rikko-san regardless of kampo diagnosis “Sho.” We instructed the patients to swallow the solution of rikko-san (TJ-110) after keeping it in the mouth for about 30 seconds. Pain was assessed using the visual analog scale (VAS). We defined the improved cases as decreasing more than 50% in subjective VAS scores of pain after administration of rikko-san for 4 weeks.

Results: The total improving rate was 50%. Although 2 patients experienced mild side effects with gastrointestinal disorders, they could keep on taking rikko-san for more than 4 weeks.

Conclusions: We concluded that rikko-san could be a choice of medicine for patients with glossodynia.

O01279 LASER THERAPY: A BOON FOR SALIVARY GLANDS IN THE PORTAL Mutha Kumar, Mubeen Vijaya Lakshmi, Iqbal Ahmed, Kirpa Johar, Shamuganandan, D. Suman, Department of Oral Medicine and Radiology, Government Dental College and Research Institute, Bangalore, Karnataka, India

Objectives: This study aimed to assess the feasibility and assess the quantitative and qualitative changes in saliva by using low-level laser therapy for salivary glands in patients on chemoradiotherapy for oral cancer.

Methods: Patients reported to the Government Dental College and Research Institute who were clinically and histopathologically proven as having oral carcinoma were undergoing chemoradiotherapy, and fulfilled the inclusion and exclusion criteria were selected for the study, and institutional ethical committee approval was obtained. Group 1 comprised 20 patients who could take rikko-san containing oral carcinoma undergoing chemoradiotherapy receiving external beam radiotherapy with telecobalt 60 and cisplatin 40 mg/m² intravenously at weekly intervals. They were administered low-level laser therapy at a wavelength of 650 nm with a diode laser with 2.0 J/cm² energy density per period, 80 mV nominal power, by “contact mode,” for a minute per point area. Group 2 comprised 20 patients who were undergoing chemoradiotherapy similar to that of the study group for oral cancer, matched for age and sex, who were not on any treatment for xerostomia; this was the control group. Resting and stimulated saliva samples were collected from all the patients on the first day, on the 15th day, and at the end of the treatment for assessment of salivary sodium, potassium concentration by the ion selective method, and salivary pH as determined by pH indicator strips. The obtained values
were statistically analyzed using analysis of variance, independent-samples t test, and χ² test.

**Results:** In group 1, resting and stimulated saliva was significantly higher (P < .001) and with higher pH value (P < .001), whereas the salivary sodium level was lower compared with group 2 patients; however, salivary potassium level difference was not significant between the 2 groups.

**Conclusions:** There was a significant increase in resting and stimulated salivary levels, with decreased salivary sodium levels, in group 1 patients.

**O10295 SALIVARY SPLUNC2A AND SPLUNC1 IN HEAD AND NECK RADIOTHERAPY** Marco Ajudarte Lopes, Wilfredo Alejandro Gonzalez-Arriagada, Lara Maria Alencar Ramos, Pablo Agustin Vargas, Ricardo Della Coletta, Lynne Bingle, Department of Oral Diagnosis, Piracicaba Dental School, University of Campinas, Piracicaba, São Paulo, Brazil

**Objectives:** Radiotherapy for head and neck cancer is associated with adverse effects, which can be related to alteration in saliva composition and oral defensive mechanisms. Given that PLUNC proteins (pale, lung, and nasal epithelium carcinoma-associated [BP1F1A]) participate in innate immunity and have antibacterial and anti-inflammatory functions, the aim of the study was to verify if radiotherapy is able to modify the salivary PLUNC expression and if the proteins are associated with radiotherapy side effects.

**Methods:** Unstimulated whole-mouth saliva of 65 volunteers (45 patients with cancer and 20 controls) was collected. SPLUNC1 and SPLUNC2A expression was analyzed by Western blotting and was compared with clinicopathologic data and radiotherapy side effects.

**Results:** Reduction of salivary flow rates was observed during and after radiotherapy, being more accentuated in patients who underwent radiotherapy involving the facial region. Facial radiation field was correlated with collateral effects, mainly with presence (P = .0110) and severity (P = .0143) of mucositis. Salivary SPLUNC1 and SPLUNC2A were detected in the saliva of patients without treatment in variable concentrations. The study group showed levels of SPLUNC2A significantly lower than the control group, while SPLUNC1 did not show differences. Concentration of PLUNC was modulated by radiotherapy, with decreasing glycosylated SPLUNC2A levels (P < .0001) and increasing SPLUNC1 levels (P = .0081) in second and third collections. The only secondary effects of radiotherapy associated with PLUNC levels were mucositis (P = .0363) and its severity (P = .0580).

**Conclusions:** The present study reported that levels of SPLUNC1 and glycosylated SPLUNC2A are affected by radiotherapy, suggesting that these proteins may have importance in the oral microenvironment of patients with irradiated head and neck cancer.

**O10353 IMPORTANCE OF LONG-TERM VISUAL SCREENING ON TONGUE CANCER INCIDENCE** Babu Mathew, Kunnambhath Ramadas, Richard Mwungwe, Gigi Thomas, Gopan Anju, Somanathan Thara, Rengaswamy Sankarananrayanan, Department of Community Oncology, Regional Cancer Centre, Trivandrum, Kerala, India

**Objectives:** We conducted a secondary analysis to study the effect of oral visual screening on tongue cancer incidence and mortality in the general population and among users of tobacco or alcohol or both during a 15-year follow-up in a cluster-randomized controlled trial in Trivandrum district, Kerala, India.

**Methods:** Healthy individuals aged 35 or older in 7 clusters randomized to the screening arm received 4 rounds of oral visual inspection by trained health workers at 3-year intervals. Those in 6 clusters randomized to the control arm received routine care during 1996-2005 and 1 round of screening during 2006-2009. Screen-positive persons were referred for diagnosis and treatment. Tongue cancer incidence and mortality rates were compared between the study groups by intention to treat analysis.

**Results:** Of the 96,517 eligible persons in the screening arm, 25,144 (26.1%) had 1 round of screening, 22,382 (23.2%) had 2 rounds, 22,008 (22.8%) had 3 rounds, and 19,288 (20.0%) had 4 rounds. Of the 95,356 eligible participants in the control arm, 43,992 (46.1%) received 1 round of screening. There was a significant reduction in advanced tongue cancers in the screening arm compared with the control arm (relative risk, 0.88; 95% CI, 0.77-1.00). Although a 29% reduction in tongue cancer mortality in all individuals in the general population did not reach statistical significance, there was a significant 26% (95% CI, 9%-40%) reduction in tongue cancer incidence rate and a 38% reduction in mortality (95% CI, 15%-56%) in users of tobacco or alcohol or both in the screening arm after 4 rounds of screening.

**Conclusions:** Reduction in tongue cancer incidence and mortality and the feasibility and acceptability of oral visual screening support its introduction in population-based screening programs targeting users of smoking or chewing tobacco or alcohol or both in high-incidence countries.

**Funding sources:** World Health Organization and International Agency for Research on Cancer, Lyon, France.

**O10343 ORAL LICHEN PLANUS: A RETROSPECTIVE STUDY OF 416 JAPANESE PATIENTS** Kanako Matsumoto, Fumihiko Tsuchima, Jinkyo Sakurai, Masaru Sato, Atsushi Uesugi, Seichiro Oda, Ken Omura, Department of Oral and Maxillofacial Surgery, Tokyo Medical and Dental University, Graduate School, Tokyo, Japan

**Objectives:** To investigate the correlation between the clinical and histopathologic diagnosis of OLP, and to describe the clinical characteristics of 246 patients diagnosed with OLP and 170 patients with oral lichenoid lesions (OLLs).

**Methods:** This study was based on a retrospective survey of 951 records with clinical or histopathologic diagnosis of OLP available from the archive of the Department of Oral and Maxillofacial Surgery, Graduate School, Tokyo Medical and Dental University, from 2001 to 2010. The modified WHO diagnostic criteria proposed by van der Meij et al. in 2003 were used to identify cases.

**Results:** Of 951 patients clinically diagnosed with OLP or as OLP compatible, 761 patients were histopathologically examined. A total of 553 patients (73%) were histopathologically confirmed to have OLP, and 79 patients (10.4%) were diagnosed with epithelial dysplasia. The group of 416 patients clinicopathologically diagnosed with OLP, and then followed for a minimum of 6 months, was further classified into 2 categories according to modified World Health Organization diagnostic criteria. Under those criteria, the clinical characteristics were evaluated; 246 patients (49 male and 197 female; mean age, 59.9 years) had OLP, and 170 patients (37 male and 133 female; mean age, 59.9 years) had OLLs. The clinical types of OLPs were reticular (44.2%), erosive (27.9%), and atrophic (27.8%). The site
The clinical characteristics of OLP patients were mostly consistent with previous studies. More than 10% of the patients clinically diagnosed with OLP were histopathologically diagnosed with epithelial dysplasia. The clinical characteristics of OLP and OLLs did not significantly differ, except that patients with OLLs developed SCC.

**O10344 GROUP PHYSIOTHERAPY FOR MANAGEMENT OF TEMPOROMANDIBULAR DISORDERS**

**Rebecca McLoughlin, L. Mao, S. Takroni, J. Zakrzewska, Department of Orofacial Pain Unit, Eastman Dental Hospital, University College London Hospitals, London, United Kingdom**

**Objectives:** Temporomandibular disorders (TMDs) are a major cause of facial pain, and combined physiotherapy and education for TMDs has been advocated. We evaluated the effectiveness of a group physiotherapy intervention for TMDs, incorporating education and stretching.

**Methods:** Patients with TMDs were invited to a 2-hour group information session. The physiotherapist-led group provided an opportunity for patients to share their experience of TMDs, learn about the nature of TMDs, and receive advice regarding movement, returning to pain-associated activity, and stretching. Patients were provided with an information booklet and DVD of stretches, which were rehearsed during the session. Patients who attended between April and September 2012 were asked to complete a semistructured telephone interview conducted by independent observers. Patients who completed the interview were sent the Brief Pain Inventory (BPI), which had also been completed at baseline.

**Results:** A total of 60 patients attended, and 26 attendees completed the telephone interview. Altogether, 18 full data sets of pre- and post-BPI were analyzed; 77% of patients reported continued use of self-management strategies taught, and 65% of attendees said their pain management routine had changed since the group; 50% reported reduced use of other treatments, including medication and splints; and 42% felt the group information session. The physiotherapist-led group provided education and stretching.

**Conclusions:** A 2-hour group physiotherapy session is effective in reducing interference associated with TMDs, as recorded on the BPI, and can increase use of self-management strategies. Only a minority of patients express a preference for individual sessions over group work.

**O10376 HYPOSALIVATION AND DENTAL HEALTH IN COGNITIVE DECLINE IN LATE MIDLIFE**

**Christiane Elisabeth Sørensen, Naja Liv Hansen, Erik Lykke Mortensen, Martin Lauritzen, Kirsten Avlund, Merete Osler, Anne Marie Lyng Lyne Pedersen, Department of Odontology, University of Copenhagen, Denmark**

**Objectives:** The aim of the present study was to test whether functional aspects of salivary glands and measures of dental health represent potential peripheral correlates of age-related cognitive decline, which could be used in future studies of abnormal cognitive aging. It was hypothesized that symptoms of oral dryness, hyposalivation, and poorer dental health are more frequently observed in a group of middle-aged men displaying relatively declined cognitive performance compared with a group of men displaying relatively high cognitive performance in late midlife.

**Methods:** Male participants, born in 1953 and selected as outliers in midlife cognitive performance scores, were recruited from the Metropolit Cohort of the Copenhagen Aging and Midlife Biobank. Medical status, symptoms of oral dryness, and saliva flow rates were assessed, and all participants underwent a comprehensive clinical oral examination. The significance of group differences was tested with the Fisher exact test, \( \chi^2 \) test, unpaired \( t \) test, and Wilcoxon 2-sample rank sum test. The Spearman rank correlation coefficient was used to analyze associations between continuous or ordinal variables. Values of \( P < 0.05 \) were considered as statistically significant. The Holm Bonferroni method was used to correct for multiple comparisons.

**Results:** Unstimulated whole saliva flow rates were significantly lower in the group of men displaying cognitive decline (\( P = 0.014 \)), whereas the frequency of hyposalivation (\( P = 0.007 \)), low unstimulated secretion (\( P = 0.013 \), daytime xerostomia (\( P = 0.024 \)), and carries experience (\( P = 0.034 \)) was significantly higher than within the group of persons with nondeclined cognitive performance.

**Conclusions:** The results suggest that hyposalivation and poorer dental health represent potential peripheral correlates of age-related cognitive decline in late midlife when other causes such as medical conditions and medication intake can be excluded. Daytime xerostomia and low secretion were associated with medication intake and thus not considered as valid indicators of cognitive decline.

**Funding sources:** Nordea Fonden, The Danish Dental Association Research Foundation (KOF/FORSKU).

**O10380 THE LONG-TERM OUTCOMES OF ORAL LICHEN PLANUS, PATTERNS OF REMISSION, AND RELAPSE**

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**Objectives:** Reports related to the course of various clinical forms of oral lichen planus (OLP) patients are lacking in the literature. Therefore, the clinical forms of OLP patients were evaluated.

**Methods:** A total of 93 patients (19 male and 74 female; mean age, 61 years), who were initially referred to the Department of Oral and Maxillofacial Surgery from 2001 to 2007, were reviewed retrospectively. Their lesions were histologically confirmed as OLP. Their clinical progression was assessed every year for 5 years. Oral manifestation was divided into 2 categories: (1) white (reticular, plaque, papular) and (2) red (atrophic, erosive, bullous). The term “remission” was used to refer to the extinction of intraoral LP lesions. Treatment modalities were a topical steroid, an antibacterial ointment, and antifungal agents separately or combined.

**Results:** Of the 93 lesions, 49 were white and 44 were red at the initial visit. The ratio of first change from white to red was 12.2%. On the other hand, the ratio of first change from red to white was 70.5%. Remission of OLP was obtained in 44.1%
(white, 55.1%; red, 31.8%). The relapse of LP lesions was observed in 36.6% (white, 37.0%; red, 35.7%). The remission rate of the relapse cases was 46.7%. The disease took more than 3 years to enter remission in about half of the patients (56.1%). In many cases, clinically white preceded both remission (90.2%) and relapse (93.3%). Relapse occurred within 2 years (100%). Topical steroid therapy was used in 90 patients (96.8%).

Conclusions: These results suggest that white is the passive phase of OLP and red is the active phase. When the activities of the red lichen declined, the red phase turned into the white phase. Almost all remissions were seen after white lesions, and remission develops slowly over periods of several years.

OI0399 SALIVARY FLOWS IN PATIENTS WITH BURNING MOUTH SYNDROME Renee Poon, Nan Su, Victor Ching, Tamara Gulasekharam, Mark Darling, Miriam Grushka, University of Toronto, Toronto, Ontario, Canada

Objectives: Our hypothesis is that the alterations in the autonomic function of CN VII, IX, and X may also affect salivary gland function in patients with burning mouth syndrome (BMS). To verify whether there is an actual change in salivary gland function, in this study, salivary flows of BMS patients were compared with those of patients with Sjögren syndrome (SS) (with expected pathologic changes to the salivary glands) and those of participants without oral dryness.

Methods: A retrospective study was conducted involving patients who reported burning mouth pain. Data of their unstimulated and stimulated salivary flows were recorded. All patients had undergone the same salivary flow test by expectorating into a 10-mL Kimax graduated cylinder (Kimble Chase Life Science Services) for 5 minutes at 10-mL Kimax graduated cylinder (Kimble Chase Life Science Services) and then for 5 additional minutes while chewing on a paraffin pellet (as part of the Dentobuff saliva analysis kit by Orion Diagnostica, Espoo, Finland) (stimulated flow). Data were analyzed with the Levene test, analysis of variance, and Tukey test with a level of significance of $P = .05$.

Results: The groups were not different in terms of age ($P = .23$). In the SS group, both unstimulated and stimulated flows were significantly below those of the other groups ($P < .05$). No significant difference was found between the BMS and BMS-med groups for either stimulated or unstimulated flows ($P > .05$). However, both BMS and BMS-med groups had significantly lower unstimulated flows compared with the control group ($P < .05$).

Conclusions: Our study shows that there is a significant reduction in unstimulated salivary flows in BMS patients, although stimulated salivary flow remains normal. Oral dryness in BMS patients is the result of nerve damage rather than of changes in salivary glands themselves or of medications. Therefore, treatment of oral dryness in BMS patients should include education on the cause of the dryness and treatment of neuropathy.

OI0418 THE EASTMAN DENTAL HOSPITAL COGNITIVE BEHAVIORAL PATHWAYS: 1990S TO DATE Clare Daniel, Jenna Love, Rebecca McLoughlin, Adeline Crawford, Department of Facial Pain, Eastman Dental Hospital, London, United Kingdom

Objectives: Patients in Oral Medicine and Facial Pain Services often present with concomitant physical and social difficulties and psychologic distress. The aim of this service development was to provide and evaluate cognitive-behavioral interventions for diagnostic subsets within this patient population. The interventions aim to help patients to use cognitive behavioral strategies to reduce the physical and psychologic effects of their condition.

Methods: Initially patients who experienced significant psychosocial difficulties as a result of their orofacial condition were referred to a part-time clinical psychologist for cognitive behavioral therapy. Objective and subjective evaluation suggested that this intervention helped the team work with distressed patients and helped the patients reduce the effect of their condition. The service now employs 3 clinical psychologists (37.5 h/week) and a specialist physiotherapist (7.5 h/week). The following clinical pathways have been developed: (1) one-on-one cognitive behavioral therapy with a psychologist for nonpainful oral conditions; (2) cognitive behavioral pain management group programs for persistent orofacial pain, complex temporomandibular disorder or trigeminal neuropathic pain (as 1 group), burning mouth syndrome, and trigeminal neuralgia; and (3) pain management physiotherapy information sessions for (noncomplex) temporomandibular disorder. A recent development is the joint working of a clinical psychologist and consultant in restorative dentistry with patients with complex needs. These clinical pathways will be produced in full at Frontiers in Oral Medicine. All interventions are evaluated using validated outcome measures.

Results: This is an ongoing development. The data collected thus far show promising outcomes. The interventions produce statistically significant improvements in pain self-efficacy, catastrophizing, depression, anxiety, and pain interference ($P < .001$ and $P < .05$).

Conclusions: The evaluation of these interventions suggest that multidisciplinary cognitive behavioral interventions facilitated by clinical psychologists and specialist physiotherapists are effective in helping patients reduce the effect of persistent orofacial pain and oral medicine conditions on them and their lives.

OI0420 LIP SUNSCREEN ON ACTINIC CHELITIS: CLINICAL AND HISTOPATHOLOGIC EVALUATION Licia Gonzaga Fernandes, Anna Torrezani, Bianca Freo, Valdirene Alves dos Santos, Norberto Nobuo Saça, Department of Stomatolgy, University of São Paulo, São Paulo, Brazil

Objectives: Actinic cheilitis (AC) is a potentially malignant lesion caused by chronic exposure to ultraviolet light that mainly affects the lower lip. It is believed that the damage caused to the lips is irreversible and that photoprotective measures just prevent worsening. The main purpose of this study was to evaluate the effect of sunscreen lip balm over clinical parameters of severity and degree of histologic dysplasia through clinical follow-up and histopathologic analysis.

Methods: Patients were selected from the Oral Diagnosis Clinic of our Institution after agreement with the terms of an informed consent. Once AC diagnosis was established by a biopsy procedure, patients were included in the research group. All patients presented a positive history of chronic sunlight exposure and none or limited use of sunlight protection. Patients were instructed to use the sunscreen lip balm every time exposed to daylight, renewing application every 2 hours. Follow-up appointments were scheduled every 3 months for clinical evaluation and reinforcement of sunscreen use. A second biopsy was planned 6 months minimum after starting sunscreen use.

Results: Twenty patients were included in the study (12 men and 8 women; mean age, 63 years). Between 6 and 35
OI0441 EFFICACY OF DAPSONE AND SULFAMETHOXYPYRIDAZINE IN THE TREATMENT OF MMP S.J. Challaombre, H. Mcparland, S. Samizadeh, A. Khan, E. Hullah, P.J. Shirlaw, J. Setterfield, Department of Oral Medicine, King’s College London at Guy’s Campus, London, United Kingdom

Objectives: Mucous membrane pemphigoid (MMP) is often refractory to treatment. There are no large placebo-controlled randomized controlled studies, and few studies using a standardized scoring methodology to quantify objective improvement with systemic treatment. The aims of this study were to investigate the efficacy of dapsone and sulfamethoxypyridazine (SMP) in the management of patients with mild to moderate MMP, using an oral disease scoring system (ODSS).

Methods: The medical records of 95 patients with MMP, confirmed by direct immunofluorescence, who had received treatment with dapsone, SMP, or both in a combined oral medicine/dermatology clinic, were analyzed. Full data, including oral disease severity scores (sites affected and disease activity) before and at visits every 3 months during treatment, were available for 65 patients treated with dapsone and 23 treated with SMP. Of the 23 patients treated with SMP, 19 had moved to SMP after having side effects with dapsone. Adverse events were noted for both drugs.

Results: A total of 64 patients were treated with dapsone. Of these, 33 stopped dapsone because of side effects, which included anemia, macrocytosis, rash, muscle pain and weakness, anxiety, nausea, and dizziness. The mean (± standard deviation) ODSS for the remaining 31 patients was 23.3 ± 10.8 and had reduced to 14.3 ± 7.7 after 12 months of treatment (P < .01); 24 patients were successfully treated with SMP. The mean ODSS in these patients reduced from 29.2 to 18.2 after 12 months (P < .01). One patient stopped SMP owing to a skin rash; another, owing to pancytopenia.

Conclusions: Our study provides clinical evidence to support the use of both dapsone and SMP in the treatment of oral MMP and the value of using an ODSS in the assessment of treatment responses.

OI0263 EFFECTS OF 3 PLANT SPECIES ON INTRAORAL ULCERS IN RATS Amirreza Ghassemi, Maryam Alsadat Hashemipour, Sodabeh Lotfi, Molok Torabi, Oral Medicine Department, Oral and Dental Diseases Research Center, Los Angeles, CA, USA

Objectives: The purpose of this study was to assess the effects of Myrtus communis L (MC), Camellia sinensis L (CS), and Zataria multiflora Boiss (ZM) on the healing process of intraoral ulcers in rats.

Methods: In this study, 80 adult male Sprague-Dawley rats weighing 250 to 300 g were used. Rats were randomly assigned into 5 groups of 16 animals, where 3 groups were associated with the 3 plant-extracts. One group served as a placebo group in which the basic material used for preparing the extracts was tested. The last group was the control and received no treatment. In each rat, a wound of 2 mm diameter was punched on the hard palate. A swab was soaked in the solution and packed into the wound for 8 days. A histologic sample was obtained from a 5-mm-diameter excisional biopsy of palatal soft tissue in each rat. Histologic samples were taken on postoperative days 2, 4, 6, and 8 and then studied for inflammation and reepithelialization values. One-way analysis of variance was used to compare the mean values among the groups (α = .05).

Results: MC groups showed the greatest reduction in wound size on days 4, 6, and 8. The highest thickness of epithelium was observed in MC and CS groups on days 6 and 8. In terms of reepithelialization, the MC groups showed the highest values on days 6 and 8, while the placebo and control groups showed the lowest values at all intervals. The MC groups had the least mononuclear inflammatory cells on days 6 and 8.
Conclusions: Based on the wound healing parameters studied, *Myrtus communis* L showed significant effectiveness in the healing of palatal ulcers in rats, whereas the other 2 plant species showed no significant difference in most of the parameters compared with the placebo and control groups.

Funding sources: Oral and Dental Diseases Research Center, Kerman University of Medical Sciences.

O10289 QUANTITATIVE DETECTION OF SALIVARY BIOMARKERS IN WHOLE SALIVA Amal Dafar, Paulo Rico, Aysegil Izik, Mats Jonntell, Halya Çevik, Department of Oral Medicine and Pathology, Odontology, Gothenburg, Sweden

Objectives: Using saliva as a diagnostic fluid has increased exponentially in the past decade because of recent technologic developments. To identify protein biomarkers in saliva that could be associated with the pathogenesis of oral diseases is an interesting topic of research. However, at present, the accurate and reliable detection of protein biomarkers in saliva has yet to be achieved, owing to lack of standardized laboratory protocols in the analysis of highly complex and viscous saliva specimens. We therefore aim to create a common consensus on the detection of salivary biomarkers regarding saliva handling, the application into methodologic assays, and the presentation of the results. For this purpose, we evaluated the improvement of detection levels for interleukin 8 (IL-8) and epidermal growth factor (EGF) by the pretreatment of saliva samples with an anionic detergent, sodium dodecyl sulfate (SDS).

Methods: Whole unstimulated saliva samples (n = 28) were collected from healthy individuals. Protease inhibitor cocktail was immediately added after collection. Samples were treated either with SDS or with phosphate-buffered saline (PBS) for 20 minutes, then applied on a sandwich enzyme-linked immunosorbent assay for the quantitative detection of IL-8 and EGF. The statistical significance of differences was calculated with the Student *t* test.

Results: Saliva is a viscous complex fluid and needs to be degraded before the analysis of salivary biomarkers. Pretreatment of samples with SDS significantly increased the reproducibility and detection levels for EGF by 348% and for IL-8 by 368% compared with PBS-treated pairs (*P* < .001).

Conclusions: To be able to make the results comparable with other studies, results should be presented as secretory output, and the gender and meal intake have to be taken into consideration, because they have an effect on the secretory output of EGF and IL-8.

O10290 RELATIONSHIP BETWEEN PRIOR CANCER DIAGNOSIS AND ORAL BIOPSY RESULTS Eugene Ko, J. Huryn, Cherry Estilo, Dental Service, Memorial Sloan Kettering Cancer Center, New York, NY, USA

Objectives: The Dental Service at Memorial Sloan Kettering Cancer Center (MSKCC) provides care for patients with various primary cancer diagnoses. Management occasionally includes performing biopsies to rule out malignant lesions. This study reviewed the resulting biopsy diagnoses within the setting of different prior cancer diagnosis.

Methods: All the biopsy reports and associated patient records from the Dental Service at MSKCC were reviewed from the 1998-2013 period.

Results: A total of 136 unique patients were reviewed. The biopsies were performed by 4 attending dental faculty. A known prior cancer was diagnosed in 93% of the patients (n = 127). A hematopoietic malignancy was the most common (n = 72) followed by distant primary tumors (n = 36) and primary oral squamous cell carcinoma (n = 19). A total of 145 biopsies were reviewed. The majority of the biopsy specimens were nonmalignant at 80% (n = 116). A malignancy was diagnosed in 14% of the biopsies (n = 21), and premalignant lesions were diagnosed in 5% (n = 8). The greatest number of biopsies were taken from patients with a prior hematopoietic malignant diagnosis (n = 78). The highest rate of malignant biopsies was found in patients with a prior diagnosis of primary oral squamous cell carcinoma at 44% (n = 8) not taking into account premalignant lesions (n = 4).

Conclusions: Despite the high prevalence of prior cancer diagnosis within the patient population at MSKCC’s Dental Service, the majority of the biopsy diagnoses were nonmalignant. One interpretation of this inverse relationship between patients with primary tumors and nonmalignant biopsies is that malignancy in the oral cavity is still a relatively rare occurrence, notwithstanding primary oral squamous cell carcinoma. Moreover, the higher rates of malignancy seen in biopsies of patients with a primary oral squamous cell carcinoma may confirm these patients having a higher risk of developing at least 1 new primary tumor after the initial diagnosis.

O10312 RADIOGRAPHIC OBSERVATION OF SHRINKAGE AFTER MARSUPIALIZATION OF MANDIBULAR CYSTIC LESIONS Masahiro Ohara, Tatsuyuki Kono, Kenji Kawano, Department of Oral and Maxillo-Facial Surgery, Oita University, Yufu, Japan

Objectives: We examined the size change of various cystic lesions of the mandible after marsupialization to determine the timing of secondary enucleation.

Methods: Cystic lesions of the mandible, including radicular cyst (RC), dentigerous cyst (DC), keratocystic odontogenic tumor (KCOT), and cystic ameloblastoma (CA), were retrieved from the surgical procedure record from the 2006-2013 period in our department. Included in this study were 21 cases of RC (from 15 male patients and 6 female patients; mean age, 41 years); 18 cases of DC (from 11 males and 7 females; mean age, 52 years); 20 cases of KCOT (from 3 males and 7 females; mean age, 44 years); and 5 cases of CA (from 3 males and 2 females; mean age, 37 years). All the lesions underwent marsupialization as the initial treatment, and then enucleated after various follow-up periods. The area of radiolucent lesions on panoramic radiographs was measured at various intervals after marsupialization by the image analysis software ImageJ (National Institutes of Health). Vertical and horizontal lengths of all panoramic radiographs were adjusted to those of the panoramic radiograph taken before marsupialization in each patient. The area after marsupialization relative to that before marsupialization was calculated and compared among the cystic lesions.

Results: Average relative areas at the 24th week after marsupialization were 48% in RC, 67% in DC, 50% in KCOT, and 60% in CA. RC and KCOT showed slightly larger shrinkage rates, but no significant difference was observed among the 4 lesions. The shrinkage speed was high immediately after marsupialization, but it gradually became low and almost constant after the 30th week. There was also no difference in the speed among the 4 lesions.

Conclusions: No apparent differences in the pattern and speed of shrinkage were detected in 4 cystic lesions of the
mandible. It is likely that 24 to 30 weeks is an appropriate duration between marsupialization and secondary enucleation.

**O10339 QUALITY OF LIFE IN XEROSTOMIA PATIENTS USING DIFFERENT SALIVA SUBSTITUTES** Ivana Skrinjar, Vanja Vuicicevic Boris, Iva Bakale, Ana Andabak Rogulj, Danica Vidovic Jurus, Vlado Brailo, Bozana Loncar Brzak, Department of Oral Medicine, Clinical Hospital Center Zagreb, Zagreb, Croatia

**Objectives:** Xerostomia or dry mouth is a subjective sensation of oral dryness. Xerostomia may have many causes, including medications, Sjögren syndrome, head and neck radiotherapy, uncontrolled diabetes mellitus, and psychologic factors, but drug-induced xerostomia is the most common. Dry-mouth treatment consists of salivary stimulation, salivary substitutes, or both. Many different artificial salivas are available on the market. The aim of the present study was to compare the efficiency of 3 different saliva substitutes on quality of life in patients with xerostomia.

**Methods:** A total of 60 patients with xerostomia were divided into 3 groups. In the first group, patients were using dental spray based on thermal spring water; in the second group, mouthwash containing hydroxyethylcellulose; and in the third group, marshmallow root. Therapy lasted for 2 weeks. Quality of life was measured by the Croatian version of the Oral Health Impact Profile 14 questionnaire, and a visual analog scale was used to determine the intensity of dry mouth before and after therapy.

**Results:** Dental spray based on thermal spring water has shown the highest effect on quality of life in patients with xerostomia. Intensity of dry mouth was lower after the therapy, no matter which salivary substitute patients used.

**Conclusions:** We can recommend using all 3 saliva substitutes for decreasing the intensity of dry mouth. Dental spray based on thermal spring water has shown the best result for both decreasing the intensity of dry mouth symptoms as well as improvement in quality of life.

**O10369 INTERVENTIONS FOR THE MANAGEMENT OF RADIOTherapy-PURDuced XEROSTOMIA: A META-ANALYSIS** Valeria Mercadante, Arva AL Hamad, Giovanni Lodi, Aviva Petrie, Stephen Porter, Stefano Fedele, Department of Oral Medicine, University College London Eastman Dental Institute, London, United Kingdom

**Objectives:** The effectiveness of available treatments of radiotherapy-induced xerostomia remains unclear, because data from previous systematic reviews included participants with dry mouth due to different causes. The aim of this meta-analysis is to summarize and estimate the effectiveness of available treatment options for radiotherapy-induced xerostomia.

**Methods:** We searched the following databases on June 6, 2013: MEDLINE, Cochrane Central, EMBASE, AMED, CINAHL. We included randomized controlled trials comparing any topical or systemic intervention with active or nonactive controls for the treatment of radiotherapy-induced xerostomia. Two independent reviewers extracted the data and evaluated the quality of the study using the Cochrane Collaboration’s tool for assessing risk of bias.

**Results:** Seven randomized controlled trials met inclusion criteria and were included. Four trials focused on oral salalogues (pilocarpine and cevimeline) and 3 on saliva substitutes. The principal measure of effect size was the standardized mean difference (SMD), because the selected trials assessed the same outcome (dry mouth symptoms) but used different measurements. For the primary outcome of short-term xerostomia relief, the overall estimate of the efficacy of all interventional pooled together produced an SMD of 1.38 (95% CI, 0.55-2.20). When trials were subgrouped according to the experimental treatment, this meta-analysis found a significant higher beneficial effect of pilocarpine (SMD, 2.99; 95% CI, 2.19-3.80) with respect to cevimeline (SMD, 1.60; 95% CI, 1.20-2.10). Use of saliva substitutes was the least effective treatment (SMD, 0.65; 95% CI, 0.06-1.25) in lessening dry mouth symptoms.

**Conclusions:** The present findings suggest that radiotherapy-induced xerostomia can be effectively managed with available treatments, with pilocarpine possibly being the most effective agent.

**O10375 MULTIFACTORIAL RISK INDEX FOR ORAL CANCER** Eduardo Piemonte, J.P. Lacos, M. Branetto, P. Belardinelli, D.G. Secchi, G. Castillo, A. Talavera, H.E. Lanfranchi, Department of Oral Pathology, School of Dentistry, National University of Cordoba, Cordoba, Argentina

**Objectives:** To categorize oral cancer risk through a multifactorial risk index.

**Methods:** Groups of 53 patients with oral cancer and 100 controls who were attended at the Dentistry College (Cordoba, Argentina) between 2009 and 2013 were examined by trained professionals. Age, gender, body mass index, smoking, involuntary smoking, alcohol consumption, hot beverages, chronic mechanical irritation of the oral mucosa, oral potentially malignant disorders, oral candidiasis, human papillomavirus, tooth loss, ill-fitting dentures, diet, environmental carcinogens, arsenic in drinking water, and cancer family history were recorded. Model 1 (M1) was built with statistically significant variables. Model 2 (M2) was built with statistically significant variables not acquired through clinical examination; both were analyzed with a χ² test. Model 3 (M3) was built with statistically significant variables through multivariate logistic regression analysis. For each variable a value of a whole number corresponding to the OR was assigned. Also, for each individual a total value was obtained by the sum of registered variables. The sample was split into 2 groups according to the median of total value, which were analyzed with a χ² test.

**Results:** In all 3 models (M1, M2, and M3), to have more points was statistically associated with oral cancer risk: M1 = OR, 50; 95% CI, 14.3-174.5; P < .0001; M2 = OR, 3.17; 95% CI, 1.57-6.41; P < .001; and M3 = OR, 28.16; 95% CI, 11.25-70.50; P < .0001. Sensitivity, specificity, likelihood ratio, and attributable risk for M1 were 0.94%, 0.75%, 2%, and 94%; for M2, 0.68%, 0.6%, 0.9%, and 53%; and for M3, 0.73%, 0.91%, 4.33%, and 76%, respectively.

**Conclusions:** Including all variables, the multifactorial risk index obtained by means of univariate analysis allowed a better risk assessment with more sensibility than the other models. It is eligible in oral cancer prevention and monitoring programs, and should be carried out by a dentist properly trained in oral medicine.

**O10390 UK AND IRELAND NATIONAL ORAL MEDICINE SPECIALTY TRAINING FORUM** Alan J. Mighell, Tim A. Hodgson, Department of Oral Medicine, University of Leeds, Leeds, United Kingdom
Objectives: To describe the experiences of establishing a national training day for specialty trainees and trainers based in the United Kingdom and Ireland.

Methods: In 2010 the UK General Dental Council (GDC) approved a curriculum for specialty training in Oral Medicine. This set out learning outcomes to be achieved by the end of training. Specialty training was being delivered in multiple centers, but with little interaction between training programs. It was recognized that establishment of a national training day could help bring training programs together to address shared issues and raise standards.

Results: The first National Specialty Training Forum in Oral Medicine was run in May 2011 as a satellite meeting of the Annual Scientific Meeting of the British Society for Oral Medicine. Similar meetings ran in 2012 and 2013. Participants from all 11 training programs engaged. Trainees undertake a series of 30-minute interactive stations with trainers uninvolved in their training. Many of the stations include simulated patients playing out challenging and sometimes complex situations. Content is not restricted to clinical situations, but also includes aspects of generic management skills and critical appraisal. Some stations require prior preparation by the trainee. Although the stations are challenging, the emphasis is on a safe training environment. All trainees benefit from interacting with trainers they do not normally encounter and vice versa. Simulated patients provide insightful feedback to trainees and trainers.

Conclusions: A national specialty training day in Oral Medicine has been established and will continue. This is highly valued by specialty trainees and their trainers. It is helping trainees meet the outcomes of the GDC curriculum as well as encouraging a more collective approach to training between the different centers.

Funding sources: Supported by the British Society for Oral Medicine.

O10424 ORAL LESIONS IN PATIENTS WITH FANCONI ANEMIA NOT SUBMITTED TO HEMATOPOIETIC STEM CELL TRANSPLANT Cassius Torres-Pereira, Laura Grein Cavalcanti, Karine Fátima Lyko, Renata Lins Fuentes Araújo, Carmem Bonfim, Department of Stomatology, Federal University of Paraná (UFPR), Curitiba, Paraná, Brazil

Objectives: The aim of this study was to describe the prevalence of oral mucosa lesions in Fanconi anemia patients previous to hematopoietic stem cell transplant (HSCT).

Methods: Patients with Fanconi anemia who had not received HSCT were clinically evaluated for oral mucosa lesions.

Results: The sample was composed of 65 male and 50 female patients, with a median age of 9 years. Of the 115 patients included in this study, approximately 42% manifested at least 1 oral mucosa abnormality: 23 patients (20%) presented with traumatic injuries (n = 36), including ulcers, erosion, and frictional hyperkeratosis, and 16 (13.9%) exhibited leukoplakia. The following lesions were observed in low prevalence: aphthous ulcers, petechiae and hematomas, hyperplasia gingivalis, mucocoeles, herpes, hypopigmentation, hemangioma, nonneoplastic proliferative lesions, neutropenic ulcers, and papillomas.

Conclusions: Repetitive oral tissue injury may pose a risk for cancer development and progression and may be an independent risk factor for OSCC. Further epidemiologic, molecular, and genetic studies are necessary to confirm these preliminary findings.
extracted from the *Canella sinensis* (tea tree) plant may possess a therapeutic effect against xerostomia and modulate salivary function. The objective was to evaluate the efficacy of a natural formulation containing tea catechins in a clinical trial in patients with xerostomia.

**Methods:** This study used a double-blind, placebo-controlled, randomized design involving 60 patients (30 in the placebo group, 30 in the natural formula group) with subjective complaint of xerostomia, including SS-mediated salivary gland hypofunction. In comparison with the natural formula, the placebo contains 500 mg of xylitol and all other ingredients except 2 natural plant extracts.

**Results:** While the xylitol-containing placebo failed to modulate saliva function, the catechin-containing natural formulation resulted in statistically significant increases in both unstimulated and stimulated saliva production after 8 weeks of therapy.

**Conclusions:** The xylitol-containing placebo did not significantly modulate salivary function. In contrast, the catechin-containing natural formula partially restored salivary function in xerostomia patients by significantly increasing unstimulated and stimulated saliva production. This catechin-containing formulation warrants further evaluation in large-scale clinical trials.

**OI0230 ORAL MUCOSAL LESIONS IN LIVER TRANSPLANT RECIPIENTS AND CONTROLS**

**Jaana Helenius-Hietala, Hellelu Ruokonen, Lisa Grönroos, Harri Rissanen, Miira Vehkalahti, Liisa Suominen, Helena Isoniemi, Jukka H. Meurman, Department of Oral and Maxillofacial Diseases, Helsinki University Central Hospital, Helsinki, Finland**

**Objectives:** Liver transplant recipients have permanent immunosuppression to prevent graft rejection. Immunosuppressive and also other nontransplant medications may predispose to oral diseases. However, data on oral mucosal health in liver transplant recipients are limited. The aim of our study was to investigate oral mucosal lesions (OMLs) in liver transplant recipients compared with controls.

**Methods:** We recruited 84 liver transplant recipients (64 chronic liver disease, 20 acute liver failure) for clinical oral examination in a cross-sectional, case-control study. Their oral health had been clinically examined before transplantation. Prevalence of OMLs was assessed in different etiologies of liver diseases and different immunosuppressant groups compared with that of controls selected from a nationwide survey in Finland (n = 252). Statistical associations were studied using either the Fisher exact test or the Mann-Whitney U test. Risk factors for oral mucosal lesions were further evaluated using logistic regression.

**Results:** OMLs were more frequent in liver transplant recipients than in controls (43% vs 15%; *P* < .001), and the use of steroids raised the prevalence to 53%. Drug-induced gingival overgrowth was the single most common lesion, and its prevalence was significantly higher in patients using cyclosporine compared with tacrolimus (30% vs 5%; *P* = .007 and even higher with simultaneous calcium channel blockers together with cyclosporin or tacrolimus (47% vs 8%; *P* = .002), respectively. Lesions with malignant potential, such as drug-induced lichenoid reactions, oral lichen plans–like lesions, leukoplasias, or ulcers, occurred in 13% of patients with chronic liver disease and in 6% of controls. Every third chronic patient showed reduced salivary flow, and more than half of all patients were positive for *Candida*, a risk higher with steroids.

**Conclusions:** In conclusion, the high frequency of OMLs after liver transplant is explained not only by immunosuppressive drugs but also by other medications. Because dry mouth affects oral health and OMLs may have potential for malignant transformation, annual oral examinations are indicated.

**OI0272 RECURRENCE AND RESECTION MARGIN STATUS IN ORAL SQUAMOUS CELL CARCINOMA**

Ayaka Abe, Yoshihiro Takahashi, Kenji Kawano, Department of Oral and Maxillo-Facial Surgery, Oita University, Yufu, Japan

**Objectives:** This study aims to evaluate the relationship between local recurrence and margin status after resection of oral squamous cell carcinoma (SCC) of the tongue and oral floor.

**Methods:** We retrieved the records of 15 patients with SCC of the tongue and oral floor, who met the following criteria, from the oral cancer records of our department: (1) epithelial dysplasia existed at the resection margin of surgical materials, which were examined with semiserial histologic sections; (2) patients underwent neither chemotherapy nor radiotherapy; and (3) patients were periodically followed up at our department, and recurrence was confirmed histologically. Patients without recurrence whose follow-up periods were shorter than 5 years were excluded. The participants were 5 men and 10 women, with an average age of 66.8 years.

**Results:** The grade of dysplasia at the resection margin was “mild” in 9 patients, “moderate” in 5, and “severe” in 1. Local recurrences of OSCC were observed in 9 of 15 patients. The higher was the grade of dysplasia at the margin, the higher was the rate of local recurrence; recurrence rates were 4 of 9 (44%) in mild dysplasia, 4 of 5 (80%) in moderate dysplasia, and 1 of 1 (100%) in severe dysplasia. Median durations between resection and recurrence were 42.5 months, 30.5 months, and 10 months in mild, moderate, and severe dysplasia, respectively.

**Conclusions:** Epithelial dysplasia that accompanied SCC of the tongue and oral floor seemed to have high potential of malignant transformation. When dysplasia is observed at the resection margin by pathologic examination of surgical materials, additional resection or long follow-up is recommended, even in cases of mild dysplasia.

**OI0276 GINGIVAL CANCER: EARLY DETECTION AND DIAGNOSIS**

Hector Lanfranchi, M. Labbrozzi, M.L. Velazo, M.J. Scola, M.S. Gandolfo, Department of Oral Medicine, Faculty of Dentistry, University of Buenos Aires, Buenos Aires, Argentina

**Objectives:** To analyze the efficacy in early detection of gingival cancer, comparing patients diagnosed in 2 periods: 1990-1999 and 2000-2011.

**Methods:** Clinical and histologic examinations of 99 cases of gingival squamous cell carcinoma (SCC) were performed. Statistical analysis was carried out using a *χ²* test.

**Results:** A statistically significant increase in gingival SCC was observed in women: 50% in 1990-1999 and 57% in 2000-2008, as well as an increase in smoking in the last period (48%) compared with the first (40%). Staging (S) analysis found 58% of cases were SI-II and 42% were SIII-IV in the first period, whereas 77% were SI-II and 23% were SIII-IV in the second period. Four cases of early-stage tumors showed the presence of cords of neoplastic epithelial cells arising from the gingival wall of the periodontal pocket, infiltrating the basal membrane, destroying it, and invading the underlying connective tissue. This characteristic
of early-stage gingival SCC arising from the gingival wall of the periodontal pocket might be due to the histologic characteristics of the inner gingival epithelium: It is nonkeratinized, permeable, and transitional. The aforementioned features facilitate the action of different carcinogenic agents, such as tobacco, alcohol, viruses, and bacteria, which result in cumulative genetic damage and progression toward malignancy.

Conclusions: Incipient lesions of gingival SCC are hard to detect. The present results highlight the importance of thorough clinical examination to allow for early detection and diagnosis of gingival cancer. Further studies must be conducted to confirm localization of early-stage gingival SCC in the gingival wall of the periodontal pocket.

**O10280 ANALYSIS OF Ki-67 AND Mcm2 IMMUNOREACTIVITY IN SALIVARY GLAND TUMORS** Pablo Agustin Vargas, Felipe Paiva Fonseca, Ana Lúcia C.A. Rangel, Manoela Domingues Martins, Luiz Paulo Kowalski, Lynne Bingle, Paul Michael Speight, Department of Oral Diagnosis, Piracicaba Dental School, University of Campinas (UNICAMP), Piracicaba, São Paulo, Brazil

**Objectives:** To investigate the proliferative features of benign and malignant salivary gland tumors by evaluating the immunoreexpression of Ki-67 and Mcm2 proteins.

**Methods:** A set of 76 formalin-fixed, paraffin-embedded tissue samples of benign and malignant salivary gland tumors, collected between 2001 and 2010, were retrieved from the archives of the Department of Oral Diagnosis (Pathology) of the Piracicaba Dental School (Brazil). These samples were assembled in tissue microarray (TMA) blocks containing duplicate 2-mm cores. Immunohistochemical analysis of the resulting TMA sections was carried out using Ki-67 (DakoCytomation, USA) and Mcm2 (Novocastra, UK) antibodies. The slides were scanned and analyzed using the Aperio ScanScope Slide Scanner CS and the software ImageScope (Aperio Technologies, USA), respectively. Clinical data were retrieved from patients’ charts.

**Results:** We selected 38 pleomorphic adenomas, 10 mucoepidermoid carcinomas, 10 adenoid cystic carcinomas, 4 carcinoma ex-pleomorphic adenomas, 4 adenocarcinomas not otherwise specified, 4 polymorphous low-grade adenocarcinomas, 3 acinic cell carcinomas, 2 epithelial-myoepithelial carcinomas, and 1 myoepithelial carcinoma. A slight female predominance was seen in patients affected by benign tumors, whereas male individuals were more commonly affected by malignancies. The average age for those patients having malignant neoplasias was 54.9 years, whereas those affected by benign tumors was 43.9 years. The parotid gland was the most involved site. Although malignant tumors found an increased Ki-67 proliferative index if compared with their benign counterpart (0.76 vs 0.5, respectively), a significant difference between both groups was only obtained with Mcm2 expression (11.9 vs 2.99, respectively).

**Conclusions:** The current research found that Mcm2 protein expression might be a more reliable proliferative marker to distinguish benign and malignant salivary gland tumors.

**O10294 COMPARATIVE STUDY BETWEEN LOW-LEVEL LASER THERAPY AND TOPICAL CORTICOSTEROIDS IN APHTHOUS ULCERS** Hersheal Aggarwal, Mohit Pal Singh, Hemant Mathur, G.V. Somwya, New Delhi, India

**Objectives:** Corticosteroids help in the treatment of aphthous ulcers by means of their significant anti-inflammatory action. It has been shown that, if given in a correct and adequate manner, low-level laser therapy (LLLT) may also induce local anti-inflammatory actions. Hence, the purpose of this study was to clinically assess and compare the efficacy of LLLT and topical corticosteroids in aphthous ulcers for reduction of pain, ulcer size, and healing time.

**Methods:** A total of 60 participants were included in the study (30 in each group). Group A patients were treated using a single session of LLLT, whereas group B patients were asked to use topical corticosteroid (triamcinolone acetonide 0.1%) 3 times a day till the ulcers healed. The patients were kept on daily follow-up and were evaluated for reduction in pain and total healing time. The Student t-test was used for statistical evaluation.

**Results:** The results indicated that group A patients had a significantly greater and rapid relief of pain compared with group B patients. Also, the healing time was quicker in group A patients (3.05 ± 1.10 days) compared with group B patients (6.70 ± 1.90 days).

**Conclusions:** In the present study, LLLT proved to be significantly more effective in the management of aphthous ulcers for reduction in pain and healing time compared with topical corticosteroid (0.1% triamcinolone acetonide). LLLT not only reduced the healing time considerably, but perhaps more significantly provided instantaneous relief of pain.

**O10302 HELICOBACTER PYLORI: A RISK FACTOR FOR RECURRENT APHTHOUS STOMATITIS?** Maureen Marshall Baburizza, Eva Alvia Maldonado, Hector Oñate Núñez, Alfredo Esquep Sarah, Department of Oral Pathology, Universidad Nacional Andrés Bello, Viña del Mar, Chile

**Objectives:** To determine the relation between the presence of Helicobacter pylori in the oral cavity and recurrent aphthous stomatitis (RAS).

**Methods:** The case group was composed of 25 patients diagnosed with RAS (24 minor and a major RAS) and the control group of 25 systemically healthy patients with no history of RAS. Conventional and nested polymerase chain reaction (PCR) were used to detect the presence of H pylori in the supra- and subgingival plaque, saliva, and aphthous ulcers. The χ² test, t test, and Fisher test were performed using IBM SPSS, version 22, for the statistical analysis.

**Results:** Within the case group (n = 25), H pylori infection was detected in 15 ulcers (60%), 18 samples (72%) of subgingival plaque, 15 samples (60%) of supragingival plaque, and 3 samples (12%) of saliva. In the control group (n = 25), H pylori infection was detected in the subgingival plaque in 12 cases (48%), 11 samples (44%) of supragingival plaque, and 1 sample (4%) of saliva. There were no statistical differences between the case and control groups.

**Conclusions:** There was no relation between the presence of H pylori in the oral cavity and the presence of RAS. A high percentage of patients (88%) had H pylori in the saliva, sub- or supragingival plaque, or aphthous ulcer. Nevertheless, it is not known if these patients truly had gastric H pylori infection or if its presence in the oral cavity was only transient.

**O10334 SALIVARY CYTOKINE PROFILE IN ORAL CHRONIC GRAFT-VS-HOST DISEASE AND COMMON ORAL CONDITIONS** Kairusha Hull, Jeff Szer, Ian Kerridge, Michael McCullough, Melbourne Dental School, University of Melbourne, Melbourne, Australia
Objective: The prevalence of GVHD oral lesions in patients with Fanconi anemia has not been described. Knowing the prevalence of oral GVHD in this population is important to future comparisons with other patients in post-HSCT and to assist in the evaluation of groups of individuals with increased risk for the development of oral GVHD and in the screening of malignant oral lesions.

OIO368 PREVALENCE OF GRAFT-VS-HOST DISEASE IN PATIENTS WITH FANCONI ANEMIA Laura Grein Cavalcanti, Gabriela Schumacher de Camargo, Renata Lins Fuentes Araújo, Carmem Bonfim, Cassius Torres-Pereira, Graduated Program in Dentistry, Federal University of Paraná (UFPR), Curitiba, Paraná, Brazil

Objectives: The purpose of this study was to describe the prevalence of oral graft-vs-host disease (GVHD) in patients with Fanconi anemia, according to the National Institutes of Health (NIH) scale.

Methods: Between January and June 2013, 41 patients with Fanconi anemia subjected to allogeneic hematopoietic stem cell transplant (HSCT) were evaluated in the dental unit from a bone marrow transplant service.

Results: The sample was composed of 22 male and 19 female patients with a median age of 13 years. Most of the individuals (58.5%) received stem cells from related donors. The post-HSCT time varied from 28 days to 10 years and 4 months, and it was divided into immediately post-HSCT (up to 6 months after transplant); intermediate post-HSCT (between 7 months and 2 years after transplant); and late post-HSCT (more than 2 years after transplant). Among the evaluated patients, 18 (43.9%) presented oral manifestations of GVHD, and most of them (n = 15; 83.3%) were in late post-HSCT. The NIH score varied between 01 and 09, and the median value was 01. The lichenoid lesions and hyperkeratotic plaques were the alterations most frequently observed (100%).

Conclusion: The prevalence of GVHD oral lesions in patients with Fanconi anemia has not been described. Knowing the prevalence of oral GVHD in this population is important to future comparisons with other patients in post-HSCT and to assist in the evaluation of groups of individuals with increased risk for the development of oral GVHD and in the screening of malignant oral lesions.

OIO371 LASER TREATMENT IN ORAL AND MAXILLOFACIAL HEMANGIOMAS AND VASCULAR MALFORMATIONS Beata Petkowicz, Marlena Pedowska, Karolina Thum-Tyzo, Marcin Dziedic, Department of Oral Medicine Independent Unit, Medical University in Lublin, Lublin, Poland

Objectives: Vascular lesions in the facial and oral regions localized especially on exposed sites may cause significant psychological distress, and if traumatized are characterized by a risk of hemorrhage. Their treatment usually requires caution to prevent massive bleeding. Different kinds of lasers have been introduced for use in management of vascular lesions. The aim of this study was to evaluate the efficacy of the 810-nm diode laser for photocoagulation treatment of oral and maxillofacial hemangioma and vascular malformations.

Methods: In this study, 75 vascular lesions located on the oral and maxillofacial areas were treated by 3 different laser techniques (contact, noncontact, and interstitial), using preoperative color Doppler ultrasonography for evaluation.

Results: Long-term follow-up found regression of the lesions in all patients with good aesthetic results without tissue loss. Photocoagulation with diode laser of hemangioma and low-flow vascular malformation is effective and safe for correctly selected patients.

Conclusions: When properly applied, laser treatment of vascular lesions is minimally invasive surgery, without compromising function and cosmetics.

OIO296 DRUG INTERACTIONS: CONSIDERATIONS FOR THE DENTAL PRACTITIONER Basim El Said Dawoud, Anthony Roberts, Julian M. Yates, Oral Surgery Department, University of Manchester Dental Hospital, Manchester, United Kingdom

Objectives: This presentation will explore the diverse and complex nature of pharmacologic drug-drug interactions in the general dental practice setting by highlighting medications frequently prescribed for common medical conditions that have potential for interaction with drugs frequently prescribed by general dental practitioners (GDPs). The overall goal is to provide an update on the most common drugs prescribed in primary care by general medical practitioners (GMPs) and the considerations the GDP should take before prescribing.

Methods: Using published National Health Service statistics on the incidences of highly diagnosed and treated medical conditions, we aimed to cross-reference these conditions with medications frequently prescribed by GMPs that may interact with medication prescribed by GDPs.

Results: The medications most commonly prescribed by the GDP are amoxicillin 250/500 mg (46.8%), metronidazole 200/400 mg (21.9%), and chlorhexidine gluconate 0.2% (10.3%). The diseases most commonly diagnosed by the GMP were hypertension (13.7%), depression (11.7%), and obesity (10.7%), and the less common diseases were coronary heart disease (3.4%) and stroke or transient ischemic attack (1.7%). These medical...
conditions closely match some of the medications most frequently prescribed by the GMP, including simvastatin (6.1%), ramipril and other angiotensin-converting enzyme inhibitors (4.2%), aspirin and clopidogrel (4.0%), citalopram and amitriptyline (4.0%), and, slightly less commonly, calcium channel blockers (1.7%) and warfarin (1.6%). There are manifestations of drug-drug interactions, including an increase in the international normalized ratio by 10-fold of warfarinized patients who are wrongly prescribed macrolides and significant gastrointestinal bleeding due to prescription of nonsteroidal anti-inflammatory drugs in patients taking clopidogrel. These are all preventable situations if care is taken before prescription.

Conclusions: There are some important drug-drug interactions that the dental practitioner must be aware of. There is evidence for some particularly hazardous drug-drug interactions due to inappropriate prescription.

OI0319 QUALITY OF LIFE AFTER INJURY TO THE INFERIOR ALVEOLAR/LINGUAL NERVE Neil Patel, Julian Yates, Department of Oral Surgery, University Dental Hospital Manchester, Manchester, United Kingdom

Objectives: Trigeminal nerve injury is one of the most problematic complications of dental/oral surgical procedures, with significant consequences for patients, including neuropathy and facial pain. This abstract reports the results of a cross-sectional survey studying the effect of nerve injury on patients’ quality of life.

Methods: A group of 30 patients attending a specialist nerve injury clinic at Manchester Dental Hospital were asked to complete an Oral Impacts on Daily Performance (OIDP) questionnaire. Five further patients took part in semi-structured interviews. Each interview was recorded, and responses were thematically analyzed.

Results: Of the 30 patients, 18 had an inferior alveolar nerve injury and 12 had lingual nerve injuries. There was no significant difference in mean OIDP score (and therefore effect on quality of life) for gender or type of nerve injured ($P < .05$). Nerve injury most affected patients who enjoyed social contact with other people, as well as their ability to eat and enjoy food. It also affected their capacity to maintain an emotional state without becoming irritable. The majority (70%) of nerve injuries were caused by dental extractions. There was also some evidence to show that patients who had sustained a nerve injury after the surgical removal of a wisdom tooth had a worse quality of life compared with the other injury groups ($P < .05$).

Conclusions: Iatrogenic trigeminal nerve injury still remains a significant complication in dentistry, with a significant effect on patients’ quality of life. Furthermore, managing patients correctly after nerve injury may help to improve the overall care given to this patient group.

OI0250 CLINICAL EFFECTIVE DOSE FOR INTRA-SEGMENTAL STEROIDS OF ORAL LICHEN PLANUS Eun-Gyo Jeong, Su-Hyeon Park, Ji-Su Kim, Department of Oral Medicine, Pusan National University, Yangsan, Republic of Korea

Objectives: The aim of this study was to determine the effective dose of intralesional steroids for the management of oral lichen planus (OLP) and to elucidate their side effects.

Methods: This study was designed as a controlled randomized trial. Sixty-two OLP lesions were treated with local injection with 12 mg or 20 mg (40 mg/mL) of triamcinolone acetonide (TA) in group A or B, respectively. Follow-up was made at 0, 1, 2, and 4 weeks. The primary outcome variable was improvement of signs (reticulation, erythema, ulceration) and symptoms (pain or burning sensation) plus side effects, while the secondary outcome variable was specific lesion type influencing the clinical response. Descriptive and bivariate statistics were computed. Statistical significance was set at $P = .05$.

Results: The improved response of subjective discomfort and the reduction in reticular area were significantly higher in group B. Both erythematous and ulcerative OLP were converted into more favorable types in group B, and the ulcerative OLP more quickly responded to steroid. Oral candidiasis was developed only in group B (10.71%).

Conclusions: The 0.5 mL of TA was effective to maximize early remission of symptoms and signs of ulcerative OLP compared with the 0.3 mL of TA for intralesional injection. There was candidiasis, the only side effect, after 2 consecutive injections of 0.5 mL of TA, but it was transient, mild, and mainly local.

OI0373 THE ASSESSMENT OF TEMPOROMANDIBULAR JOINT CHANGES ON CONE BEAM COMPUTED TOMOGRAPHY Michael McCullough, Ben Ma, Michelle Lim, Da Li, Jeffrey Lim, Lavanya Lingham, Jonathan Tversky, Melbourne Dental School, University of Melbourne, Carlton, Victoria, Australia

Objectives: The present study’s aim was to develop a valid and reliable method for the qualitative analysis of the radiographic appearance of the temporomandibular joints (TMJs) captured by cone beam computed tomography (CBCT). The developed method is more comprehensive for TMJ bony changes and is standardized and simple.

Methods: The developed method, based on a study by Koyama et al., used 5 assessors who independently performed qualitative analyses of 42 randomly selected de-identified CBCT images. Statistical analyses were performed to assess the inter-examiner variability.

Results: Normal TMJ anatomy was observed in 3 of the 42 study participants, whereas a range of bony defects with various levels of severity was observed in the remainder. There were statistically significant ($P < .05$) correlations between all assessors in interpreting the radiographic appearance using the developed method.

Conclusions: The method developed in the current study for the interpretation of CBCT images of TMJs is capable of generating consistent, valid, and reliable qualitative data on the bony changes of the TMJ.

CR0426 TUFTED ANGIOMA OF THE MAXILLA: A UNIQUE CLINICAL PRESENTATION Nikolaos Nikitakis, Nikolaos Katsoulas, Nadia Theologie-Lygidakis, Konstantinos Tsiklakis, Ioannis Iatrou, Alexandra Sklavounou, Department of Oral Medicine and Pathology, Dental School, University of Athens, Goudi, Greece

Background: Tufted angioma is an uncommon benign vascular tumor usually presenting in early childhood and mainly affecting the skin. It has been associated with Kasabach-Merritt syndrome, a severe coagulopathy with poor prognosis. There have been only very few published cases of oral tufted angiomas, while bone involvement has not been hitherto reported.
Summary: A 10-year-old white boy presented for evaluation of an upper left gingival mass, which had been surgically removed and recurred twice. The lesion was hemorrhagic and caused delay in the eruption of the permanent canine. The patient’s medical history was otherwise noncontributory. Clinical examination found erythematous and swollen gingiva around the displaced left maxillary premolars along with hard tissue swelling in the area. A panoramic radiograph and a cone beam computed tomography scan found an irregular mixed radiolucent and radiopaque area in the left maxilla, accompanied by alveolar ridge erosion, cortical plate expansion, and displacement and divergence of the left premolars. A partial biopsy was performed, and histopathologic examination found scattered irregular tufts and lobules of variably sized vascular spaces inside the subepithelial connective tissue and between bone trabeculae. These thin-walled vascular channels were lined by densely packed spindle cells, exhibiting a “cannonball” appearance. Immunohistochemical evaluation found positivity for CD31, CD34, and smooth muscle actin. Based on these findings, a final diagnosis of intraosseous tufted angioma with bone erosion and soft tissue involvement was set. The lesion was surgically removed under general anesthesia; there were no signs of recurrence after 1 year of follow-up.

Conclusions: Tufted angioma is a rare tumor of endothelial origin, almost exclusively affecting the soft tissues of the skin. Oral involvement is exceedingly rare. To the best of our knowledge, this is the first case of intraosseous tufted angioma located in the maxilla.

CR0391 LACRIMAL LYMPHOMA: AN UNUSUAL PRESENTATION OF SJÖGREEN SYNDROME Amanda Willis, L.H. Cheng, P.N. Plowman, A.S.M. Jawad, M. Bombardieri, A.R. Tappuni, Department of Oral Medicine, Institute of Dentistry, Barts and the London School of Medicine and Dentistry, London, United Kingdom

Background: A 65-year-old woman was referred to the Dry Mouth Multidisciplinary Clinic at the Institute of Dentistry, Barts and the London School of Medicine and Dentistry, for investigation of suspected Sjögren syndrome after a diagnosis of marginal zone lacrimal lymphoma affecting her right lacrimal gland, which had been successfully treated with radiotherapy.

Summary: She gave a history of at least 5 years of dry eyes and dry mouth. High-resolution salivary gland ultrasonography found atrophy in all major salivary glands, with changes consistent with established Sjögren syndrome. Blood investigations found positivity for Ro and La antibodies. A diagnosis of primary Sjögren syndrome was made, and she was treated accordingly. Approximately 6 months later at a routine review clinical appointment, she reported a 2-month history of a progressive but painless left-sided palatal swelling. Examination found a firm but spongylous lesion extending from the first permanent molar tooth to the tuberosity, which did not cross the midline. The overlying epithelium was normal in appearance. Given her previous diagnosis of a lacrimal gland lymphoma, an urgent biopsy was performed and a diagnosis of marginal zone lacrimal lymphoma of the mucosa-associated lymphoid tissue (MALT) type was confirmed on histology. After discussion by the multidisciplinary team, she is being worked up for further radiotherapy.

Conclusions: Primary Sjögren syndrome presenting as a lymphoma of the lacrimal gland is rare and has been reported in the literature only once to our knowledge. Marginal zone lymphoma of the MALT type often presents in a multifocal fashion, and the risk for recurrence in other sites is in the region of 50% despite treatment of the primary site. We present a rare case of a palatal lymphoma as a recurrence of a primary lacrimal gland lymphoma in a patient with primary Sjögren syndrome.

CR0292 PARANEOPLASTIC AUTOIMMUNE MULTIGAN SYNDROME: 2 CASE REPORTS Sheila Galvin, Stephen Flint, Claire Healy, Mary Toner, Dublin Dental University Hospital Department: Department of Oral and Maxillofacial Surgery, Oral Medicine, Oral Pathology and Radiology, Dublin, Ireland

Background: Paraneoplastic autoimmune multiorgan syndrome (PAMS) is a heterogeneous autoimmune syndrome with multiple mucosal, cutaneous, and internal organ manifestations and a complex pathophysiology. Increasingly antibody-negative PAMS is being recognized, and we report 2 cases associated with non-Hodgkin lymphoma (NHL).

Summary: Patient 1 is a 62-year-old man with a background of low-grade follicular NHL, twice treated with rituximab-based combination chemotherapy, who presented with extensive, somewhat lichenoid, oral ulceration and a lichenoid skin eruption. Initial oral biopsy found features of erythema multiforme, and a second found lichenoid features. Direct immunofluorescence (DIF), immunoblotting, immunoprecipitation, and indirect immunofluorescence (IIF) on multiple substrates were all negative. The oral ulceration was unresponsive to topical and intralesional steroids. Treatment has included prednisolone 0.75-1 mg/kg, intravenous immunoglobulin, and mycophenolate mofetil. His mouth is currently stable on 50 mg prednisolone daily, and his NHL is under observation. Patient 2 is a 59-year-old man with biopsy-proven oral lichen planus, previously well controlled with topical beclomethasone 0.5 mg mouthwash, who developed severe cheilitis and oral ulceration and a lichenoid skin eruption. Oral biopsy found features of severe erosive lichen planus and erythema multiforme. DIF was nonspecific, and IIF was negative on multiple substrates. There was no response to topical treatment and 6 weeks of 1 mg/kg oral prednisolone, so further investigations were carried out, including computed tomography (CT) of the thorax, abdomen, and pelvis, which found significant retroperitoneal thickening and lymphadenopathy. CT-guided biopsy confirmed diffuse large B cell lymphoma, and he has begun treatment.

Conclusions: Up to 50% of patients with PAMS are antibody negative; postulated reasons include prior rituximab treatment, hypogammaglobulinemia, and cytotoxic T cell–dominant disease. These cases highlight the importance of clinical and histopathologic diagnosis with negative serology in this unusual condition, the treatment challenges in patients with ongoing malignancy, and the importance of searching for an underlying cause in patients who are unresponsive to therapy.

CR0436 PRIMARY ORAL TUBERCULOSIS Al Roshaidan Mohammed, Dharti N. Patel, Yagoub Alyami, Alexander R. Kerr, Sonal S. Shah, Department of Oral Pathology, Radiology and Medicine, New York University College of Dentistry, Brooklyn, NY, USA

Background: Tuberculosis (TB) is a disease caused by Mycobacterium tuberculosis. It is primarily a pulmonary infection, although extrapulmonary infections are possible. Oral tuberculosis is rare and results from secondary exposure to infected sputum via ulcers or minor masticatory trauma. It can be found on the tongue, palate, lips, buccal mucosa, and (less commonly) the gingiva, and it usually manifests as persistent ulceration.
Summary: A 65-year-old Indian man, a taxi driver, presented with > 3 month painful lower lip swelling and deep linear oral ulcerations involving the labial vestibule and anterior mandibular gingivae. He had no history of fever, night sweats, or productive cough. His medical history was pertinent for rheumatoid arthritis, hypertension, coronary artery disease, hyperlipidemia, and benign prostatic hypertrophy. He had been diagnosed as purpura protein derivative—positive a year earlier, with negative spurni and chest computed tomography, and placed on a 9-month course of isoniazid and vitamin B6. His medications included adalimumab, enalapril, atenolol, doxazosin, acetylsalicylic acid, clopidogrel, and simvastatin. Incisional biopsy found necrotizing granulomatous changes. Definitive diagnosis was made both by polymerase chain reaction of the paraffin-embedded tissue block and by culture of swabs taken from the ulceration. The case was reported to the Department of Health, and standard antituberculosis treatment led to the complete resolution of disease.

Conclusions: In this case, the patient was found to have primary oral TB with no pulmonary involvement. Patients taking adalimumab (Humira), a tumor necrosis factor z inhibitor, are at a heightened risk for TB infection. Patients taking this drug must be counseled about this potential consequence.

CR0412 LEISHMANIASIS WITH ORAL PRESENTATIONS: A NEW ENTITY? Imad Elimairi, A. Sami, Department of Oral and Maxillofacial Surgery, Oral Pathology and Oral Medicine, Ribat University Hospital and Nile College, Khartoum, Sudan

Background: Of all the countries in the world substantially affected by leishmaniasis, Sudan is one of the most highly affected. Leishmaniasis is caused by Leishmania donovani, which is transferred by Phlebotomus orientalis (sandfly). Recent years have shown a transfer in endemic pattern of distribution from rural to urbanized areas (such as Khartoum). There are 3 subtypes: visceral, mucocutaneous, and cutaneous. Oral manifestations have not been well documented in the literature. We present a case with oral presentation of leishmaniasis in the mouth and therefore a possible fourth subtype: oral or mucosal leishmaniasis.

Summary: Chief complaint: A 34-year-old man presented to our Oral Medicine Clinic complaining of difficulty with eating and speaking due to soreness of the mouth that had commenced 4 months before his attendance. medically, he noted no other relevant medical problems. Pertinent history: The patient had moved from his home in East Sudan, Gedaref state, a year earlier to search for employment in Khartoum city. Examination: A 2-cm deep stellate ulcer appeared on the right ventral tongue, as well as generalized hard palate swelling with accentuated hyperplasia with some ulceration. No skin lesions were found. Diagnostic investigations: An incisional biopsy was taken of the palate, and blood specimens were sent for polymerase chain reaction, complete blood cell count, blood glucose test, and liver function tests.

Results: Biopsy found leishmaniasis protozoa and granulomatous inflammation, and the polymerase chain reaction confirmed the diagnosis. The patient was treated with sodium stibogluconate, and 2-, 4-, and 6-month follow-up visits found full healing of the oral lesions.

Conclusions: Leishmaniasis may present with oral manifestations without visceral or cutaneous signs and symptoms. Leishmaniasis is an important cause for oral ulceration and should not be forgotten when differentiating causes of oral ulceration in the oral cavity.

CR0301 BRITISH SOCIETY FOR ORAL MEDICINE AND CLINICAL EFFECTIVENESS C. Harrison, M. Rudralingam, A.J. Mighell, Department of Oral Medicine, Manchester Dental Hospital, Manchester, United Kingdom

Background: It is reasonable for patients to expect similar minimum standards of care irrespective of which specialist center care is provided in. Robust clinical governance and effectiveness activities are fundamental to high-quality, safe, patient-centered care. It identifies how care may be improved further. Over time, its importance within health care has increased, as expectations among patients, service providers, and regulators change. Governance and effectiveness activities are most typically undertaken within individual centers and often use different approaches for the same issue. Multicenter projects have clear advantages. These include a coordinated approach to shared issues, center comparisons, data sets with meaningful numbers of patients, and input from multiple specialists.

Summary: To help raise standards of clinical care in oral medicine across the United Kingdom and Ireland, the British Society for Oral Medicine (BSOM) promotes and supports joint governance activities. For a multicenter project to be successful, collective agreement based on clear, shared, and agreed objectives is essential. A simple audit instrument for oral lichen planus (OLP) was developed and agreed by the leads of 6 oral medicine centers. Over a 3-month period in 2012, 120 new cases of OLP were prospectively audited. Compliance with the standards was good. Key areas for development were history taking (i.e., questioning extraoral sites, informing and recording the known risk of oral cancer, and supplementing information with the patient information leaflet). The following year the audit cycle was completed by the 6 centers, and the first cycle was undertaken by 3 other centers.

Conclusions: Shared governance activities between centers are desirable and possible. These activities do not have to be complicated. BSOM will continue to support development and completion of joint governance activities. Multicenter data are currently being accrued for a service evaluation of the management of orofacial granulomatosis.

CR0291 CHE´DIAK-HIGASHI SYNDROME: AN ATYPICAL PHENOTYPE CASE Christine Nadeau, Muralidhar Mupparapu, Thomas P. Sollecito, Thomas Berardi, Department of Oral Medicine, University of Pennsylvania School of Dental Medicine, Philadelphia, PA, USA

Background: Che´dias-Higashi syndrome (CHS) is an autosomal recessive disorder usually caused by a mutation in the gene LYST (lysosomal trafficking regulator) resulting in systemic neutrophil abnormalities and characterized by cutaneous, ocular, neurologic, and hematologic abnormalities. CHS usually manifests early in life in the form of partial oculoocutaneous albinism (OCA), frequent infections (mostly skin and upper respiratory tract), and lymphadenopathy. Reported oral findings include ulcerations and early-onset periodontitis occurring in childhood.

Summary: A 15-year-old girl of mixed heritage (Pervian-Norwegian) presented with her father for dental evaluation. Her medical history was significant for CHS, including an accelerated phase of CHS treated by allogeneic bone marrow transplant (BMT), asthma, hypothyroidism, hepatitis A, renal dialysis, osteopenia, seizures, total body irradiation (TBI), and chemotherapy. Current medications included estradiol, levothyroxine, somatropin, calcium carbonate, and cholecalciferol. The patient reported allergy to pollen extract and denied any history of dental medicine across the United Kingdom and Ireland, the British Society for Oral Medicine (BSOM) promotes and supports joint governance activities. For a multicenter project to be successful, collective agreement based on clear, shared, and agreed objectives is essential. A simple audit instrument for oral lichen planus (OLP) was developed and agreed by the leads of 6 oral medicine centers. Over a 3-month period in 2012, 120 new cases of OLP were prospectively audited. Compliance with the standards was good. Key areas for development were history taking (i.e., questioning extraoral sites, informing and recording the known risk of oral cancer, and supplementing information with the patient information leaflet). The following year the audit cycle was completed by the 6 centers, and the first cycle was undertaken by 3 other centers.

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Conclusions: Shared governance activities between centers are desirable and possible. These activities do not have to be complicated. BSOM will continue to support development and completion of joint governance activities. Multicenter data are currently being accrued for a service evaluation of the management of orofacial granulomatosis.
tobacco use, alcohol use, or recreational (including intravenous) drug usage. The review of systems found myopia, depression, and amenorrhea. Detailed physical examination found short stature, with evidence of delayed puberty. Oculocutaneous albinism, facial asymmetry, and lymphadenopathy were negative. Oral examination found poor oral hygiene in her permanent dentition, with gingivitis and multiple restorations. A full-mouth radiographic examination found extensive caries, relatively short roots of posterior teeth, and normal bone levels. Consultation with a pediatrician, hematologist, and oncologist confirmed a medical history of an accelerated phase of CHS, allogeneic BMT following conditioning with thiopeta, cyclophosphamide, and 1200 cGy of TBI at age 11 (2008); osteopenia; and endocrine deficiency after TBI and chemotherapy.

Conclusions: This case is an atypical phenotype presentation of CHS in that the patient lacked OCA, had no serious infections in childhood, and had reached age 11 without previous complications. Remarkably, the CHS-associated oral findings reported in the literature, such as ulcerations and early-onset periodontitis, were absent.

CR0360 INTRACRANIAL SCHWANNOMA OF THE JAWS: UPDATED REVIEW OF THE LITERATURE
Gisele N. Mainville, Adel Kauzman, Nathalie Rei, Volong Dao, Department of Stomatology, Université de Montréal, Montreal, Canada

Objectives: Schwannomas are benign neural sheath tumors derived from Schwann cells. Although rare, they are the most common of intraosseous neural tumors. We present a case involving the mandible and provide an updated review of the literature on schwannomas arising within the maxilla or the mandible.

Summary: A 39-year-old man presented with occasional pain involving the right mandible. There was no paresthesia or bony expansion. A panoramic radiograph found an elongated, scalloped, and well-defined radiolucency centered on the inferior alveolar nerve in the right posterior mandibular body. An incisional biopsy found Antoni B tissue, nodules of whorled spindle cells, but no Verocay bodies. Immunohistochemistry found S-100+ (diffuse), vimentin-positive, EMA cells, but no Verocay bodies. Immunohistochemistry found alveolar nerve in the right posterior mandibular body. An incisal-scalloped, and well-de

Conclusions: This is the largest review of the literature to date. Sagittal split osteotomy is a versatile orthognathic surgical technique mainly used to correct dentoskeletal deformities. Leaving no extraroral scars, the technique can be used to access benign tumors of the mandibular body while preserving the inferior alveolar nerve.

CR0406 RARE TYPHOID FEVER CASE IN ORAL MEDICINE
Temitope Omolehinwa, Arthur Kuperstein, Agnes Radwan-Woch, Thomas P. Sollecito, Department of Oral Medicine, University of Pennsylvania, Philadelphia, PA, USA

Background: A rare case of typhoid fever, with diagnosis and treatment unsubstantiated, complicated with a space infection, presents to a dental school for emergency care.

Summary: A 14-year-old African girl presented to the Emergency Care Clinic, Department of Oral Medicine, Penn Dental Medicine, with a right facial swelling, pain, and fever of 7 days’ duration. The etiology was determined to be related to abscessed maxillary right first premolar. During the medical work-up, her mother said that the patient recently arrived in the United States but had a vague history of a diagnosis of typhoid fever 1 month earlier while in Africa. Because of the uncertainty of her treatment and current infectious level and the elevated contagion risk while in the school environment, and subsequent to discussions with the emergency department physician at Children’s Hospital of Philadelphia on our campus, we chose to send the patient to that hospital to be evaluated and treated in isolation. Laboratory tests were performed, malaria smear was performed, and blood culture was sent. Results for complete blood cell count and liver function tests were within the reference ranges. The rapid malaria result was negative. Blood results were preliminary no growth. Incision and drainage was performed. Pending medical status and risk of contagion being determined, in consultation with an infectious disease specialist, the patient would be able to return to Penn Dental Medicine for further treatment. Salmonella enterica subspecies enterica serovar Typhi does not have nonhuman vectors. Significant modes of transmission include oral via food or beverages (handled by an individual who chronically sheds the bacteria through stool or, less commonly, urine) and hand-to-mouth after using a contaminated toilet and neglecting hand hygiene.

Conclusions: The challenge of treating an emergency patient, presenting with potentially infectious disease in a highly populated dental school environment, is discussed. Collaboration with infectious disease specialists is emphasized, to meet the demands of treating an expanding head and neck space infection and protecting the dental school population.

CR0238 METASTATIC PAPILLARY THYROID CARCINOMA TO THE MAXILLA: A RARE CASE REPORT
Mahnaz Fatahzadeh, Gyathri Subramanian, Steve S. Singer, Rabie Shanti, Department of Diagnostic Sciences, Rutgers School of Dental Medicine, Newark, NJ, USA

Background: Nearly 1% of all oral malignancies are metastatic. Although metastatic disease may involve oral osseous and soft tissues, neoplastic spread to the maxilla, particularly from a thyroid source, is uncommon. We describe a rare case of papillary thyroid carcinoma metastatic to the maxillary alveolar process and sinus.

Summary: A 43-year-old woman presented with a hemorrhagic mass in the upper right jaw noted 3 weeks earlier. Her medical history indicated hypertension and papillary thyroid carcinoma with multifocal spread. Her medications included hydrochlorothiazide, levothyroxine, oxycodone, and recently discontinued chemotherapy with sorafenib for management of metastatic disease. Social history was noncontributory, and she reported no allergies. There was no lymphadenopathy. The patient was dentate, and the right posterolateral palate appeared swollen with a spongy consistency. An exophytic mass displacing

Conclusions: This case is the largest review of the literature to date. Sagittal split osteotomy is a versatile orthognathic surgical technique mainly used to correct dentoskeletal deformities. Leaving no extraroral scars, the technique can be used to access benign tumors of the mandibular body while preserving the inferior alveolar nerve.
the maxillary right second molar and emerging from palatal sulcus of the right maxillary first molar was present medially. Cone beam computed tomography found a soft tissue mass in the right maxillary sinus, loss of lamina dura for the maxillary right second and third molars, destruction of the alveolus posterior to the maxillary right first molar and effacement of the sinus floor. Clinical and radiographic findings indicated an aggressive process. The patient’s medical history supported thyroid cancer metastatic to the oral cavity. Primary malignancies including lymphoma, minor salivary gland tumor, and a tumor of mesenchymal origin were also considered. Biopsy found papillary and follicular structures lined by cuboidal cells with round basophilic nuclei within the connective tissue. Microscopic findings indicated a metastatic adenocarcinoma, and histologic features suggested a thyroid origin. Immunohistochemical staining was positive for thyroglobulin. The patient received radiation therapy for metastatic oral disease.

**Conclusions:** Definitive diagnosis of metastatic malignancy to the oral cavity frequently requires extensive work-up, starting with a thorough medical history. Dental practitioners should be familiar with the spectrum of metastatic oral disease and, despite its rarity, consider this possibility in the differential diagnosis, particularly in patients with prior or current history of malignancy.

**CR0244 PROLIFERATIVE VERRUCOUS LEUKOPLAKIA: A PROGRESSIVE EVOLVING DISEASE OF ORAL MUCOSA**

_Lujain Homeida, Mahnaz Fatahzadeh, Department of Diagnostic Sciences, Rutgers School of Dental Medicine, Newark, NJ, USA_

**Background:** Proliferative verrucous leukoplakia (PVL) is an uncommon form of leukoplakia with a high propensity for multifocality, malignant transformation, and recurrence after removal. We describe an older woman with multiple, longstanding oral lesions that in retrospect followed a clinical course expected from PVL, ultimately developing a multitude of malignant and premalignant oral lesions.

**Summary:** A 62-year-old woman presented for evaluation of multiple asymptomatic oral lesions noted by her prosthodontist. She was aware of lesions for years and received 2 prior biopsies with benign findings. Her medical history was significant for osteoporosis treated by oral bisphosphonates. She was a chronic smoker but denied alcohol abuse. There was no lymphadenopathy. She was partially dentate, with implant-supported fixed restorations in both arches. A broad, mixed verrucopapillary growth was visible on the right buccal mucosa. Also notable were irregular, adherent white patches of variable thickness with or without erythema affecting the left buccal mucosa, bilateral ventral tongue, anterior attached gingivae in both arches, and hard palate. Differential diagnosis included verrucous hyperplasia, verrucous carcinoma, and squamous cell carcinoma for the right cheek lesion and hyperkeratosis, lichen planus, lichenoid mucositis, hyperplastic candidiasis, leukoplakia, and dysplasia for other lesions. Histopathologically, right buccal mucosa growth had hyperkeratinized epithelium with basal and parabasal cell layers showing nuclear hyperchromatism. Large, broad epithelial proliferations extended deep into the submucosa and displayed keratinization. Histologic features indicated a malignant keratinizing epithelial neoplasm and candidiasis. Two other lesions examined histologically had varying degrees of dysplasia. The patient was referred to a head and neck surgeon for further evaluation and management.

**Conclusions:** Unfortunately, definitive diagnosis of PVL often relies on retrospective correlation of clinical and histologic findings from multiple biopsies over a protracted course. Dental providers should be aware of the aggressive behavior of this variant of leukoplakia, identify those affected early on, institute frequent preventive examinations, and appropriately manage the lesions.

**CR0300 NON-BISPHOSPHONATE-RELATED OSTEO NECROSIS OF THE JAW** _Lauren Levi, Jamie Cohn, Joseph Huryn, Cherry Estilo, Dental Department, Memorial Sloan Kettering Cancer Center, New York, NY, USA_

**Background:** Osteonecrosis of the jaw (ONJ) is a well-documented adverse effect associated with bisphosphonate therapy. Nonetheless, recently, other antiresorptive and antiangiogenic medications have also been implicated in ONJ. Previous case studies have reported ONJ in patients with exposure to denosumab (an inhibitor of receptor activator of nuclear factor-\(\kappa\) B ligand), bevacizumab (a vascular endothelial growth factor inhibitor), and sunitinib (a tyrosine kinase inhibitor that targets vascular endothelial growth factor receptors among others). We report 5 patients with no known history of bisphosphonate administration who displayed clinical findings consistent with ONJ.

**Summary:** Three patients presented with ONJ related to denosumab administration. In 1 patient, ONJ was linked to denosumab and sunitinib. One patient developed ONJ after exposure to bevacizumab and denosumab. All but one of the patients exhibited ONJ with no known history of recent dental surgical procedures. Manifestations of ONJ included nondraining fistulas, mobile teeth, purulent exuberant lesions, and exposed bone. Our treatment approaches included oral antibiotics and chlorhexidine gluconate 0.12% mouthrinses.

**Conclusions:** The pathogenesis of ONJ is still not well understood, and it appears that denosumab, bevacizumab, and sunitinib administration may be a risk factor for ONJ development. Further studies are needed to evaluate the risks and prevalence of non-bisphosphonate-related ONJ. Given these recent findings, health care providers should be aware that ONJ may also manifest in patients undergoing antiresorptive or antiangiogenic therapy.

**CR0404 MUCOSAL LESIONS AFTER HEMATOPOIETIC STEM CELL TRANSPLANT** _Jamie Cohn, Lauren Levi, Ronald Ghosein, Joseph Huryn, Cherry Estilo, Department of Dental Service, Memorial Sloan Kettering Cancer Center, New York, NY, USA_

**Background:** Patients previously treated with hematopoietic stem cell transplant (HSCT) often develop oral mucosal lesions. The nature of these lesions includes oral infections (viral, fungal, or bacterial), oral graft-vs-host disease, and premalignant or malignant conditions. Therefore, vigilant coordination of care between the oncologist and oral health specialist are crucial for early identification and management of oral lesions. We report 7 patients who developed isolated, deep, corrugated, painful lesions after HSCT.

**Summary:** Seven patients presented with deep painful mucosal lesions, some involving skeletal muscle, after HSCT. All of the patients had hematologic malignancies and underwent either an autologous or allogeneic HSCT. Each patient was placed on an antiviral therapy before their visit to the Dental Service at Memorial Sloan Kettering Cancer Center, with no resolution of symptoms or clinical presentation. The patients’ median presentation date was 184 days post-HSCT. Incisional biopsy was performed in 2 patients. The pathology report was consistent with
squamous mucosa with chronic inflammation. Both patients were Epstein-Barr virus (EBV) immunoglobulin G (IgG) positive before HSCT. Patients with EBV-positive mucocutaneous ulcers have been documented in the recent past to be associated with immunosuppression by Dojinov et al. (2010). The specimens are currently pending for EBV in situ hybridization. All patients were prescribed clobetasol (0.05%) with triamcinolone with Orabase ointment, 3 times daily for 2 weeks. After 2 weeks, the patients had experienced pain relief and improvement or near resolution of the oral lesions.

Conclusions: Treating oral conditions of patients after HSCT requires a team approach with the involvement of an oral health specialist. In cases where antiviral therapy is not effective in pain reduction or resolution of the lesion, we believe clobetasol (0.05%) with triamcinolone with Orabase ointment, 3 times daily, should be considered as topical therapy for these lesions.

CR0347 CANCER DEVELOPMENT IN ORAL LICHEN PLANUS: REPORT OF 5 PATIENTS Kenji Kawano, Ayaka Abe, Masahiro Ohara, Department of Oral and Maxillo-Facial Surgery, Oita University, Yufu, Japan

Background: Oral lichen planus (OLP) is associated with risk of developing oral squamous cell carcinoma (OSCC). We present 5 patients with OSCC, which arose in preexisting OLP.

Summary: In case 1, a 61-year-old woman had reticular-type OLP in the buccal mucosa and atrophic-type OLP in the sublingual mucosa on both sides. The left sublingual lesion changed to a leukoplakia-like white patch at the age of 72 (cytology class a) and transformed into OSCC at 76. In case 2, a 49-year-old woman had reticular-type OLP in the buccal mucosa on both sides, and OSCC arose in the right lower vestibule at 64. In case 3, a 59-year-old man visited us because of a white lesion of the right sublingual mucosa. At the age of 64, erosive-type OLP appeared in the buccal mucosa and lower lip. At 69, OSCC affected the right buccal mucosa. In case 4, a 62-year-old man had erosive-type OLP in the sublingual areas on both sides. The lesions changed to white patches (plaque-type OLP?) at 63, and the left side lesion developed OSCC at 73. In case 5, a 42-year-old woman had reticular-type OLP in the buccal and sublingual mucosa on both sides. At 64, the right sublingual lesion changed to a leukoplakia-like white lesion, which was excised and diagnosed as OSCC pathologically. The mucosa surrounding OSCC showed hyperkeratosis but no findings of OLP.

Conclusions: The duration between the first visit and OSCC development ranged from 10 to 22 years. It was noteworthy that OLP changed to a leukoplakia-like lesion before OSCC development (cases 1, 4, and 5). Although plaque-type OLP may be difficult to distinguish from leukoplakia, the findings of our cases suggest a possibility of the transition from OLP to leukoplakia in the process of cancer development.

CR0350 OSSIFYING FIBROMYXOID TUMOR AFFECTING THE FACE OF AN OLD WOMAN Érica Patricio, Anna Torrezani, Camila de Barros Gallo, Noberto Nobuo Sugaya, Fabio Daumas Nunes, Ana Paula Candida dos Santos, Department of Stomatology, São Paulo University, São Paulo, Brazil

Background: Ossifying fibromyxoid tumor (OFT) is a rare mesenchymal neoplasm of subcutaneous tissue whose histogenesis is still uncertain, and although it usually progresses in a benign way, there are a few reports of malignant manifestation.

Summary: A 75-year-old woman visited the oral diagnosis clinic owing to a progressive swelling in her chin with 1-year duration. On extraoral examination, the patient presented a subcutaneous dome-shaped swelling over her mandible right body; it was 4 cm in diameter, extended from her chin up to the molar region, had a smooth surface, had no cutaneous discoloration, was hard on palpation, and was slightly painful under compression. The swelling caused facial asymmetry that was the patient’s main complaint. Intraoral examination found a smooth swelling on the lower right buccal vestibule, which was hard on palpation and caused no color change of the mucosal surface. Conventional radiographs found no signs of bone involvement. A differential diagnosis composed of myobroblastic tumor, nodular fasciitis, and chondrosarcoma led to an incisional biopsy procedure. Histopathologic analysis concluded the diagnosis of an ossifying fibromyxoid tumor. The patient was referred to the maxillofacial surgery department for complete excision of the tumor. Microscopic analysis of the surgical specimen confirmed the diagnosis of OFT. The patient is currently well, with a slight postoperative paresthesia in the mental area, and is attending a regular follow-up schedule.

Conclusions: The occurrence of an ossifying fibromyxoid tumor in the head and neck region is extremely rare, and despite the benign appearance of the case reported, the possibility of recurrence (around 20%) and malignant expression impose a lifelong follow-up on the patient.

CR0440 CONDYLAR RESORPTION IN A TEENAGER WITH JUVENILE IDIOPATHIC ARTHRITIS AND PARA-FUNCTION Paulo Affonso Pimentel, Jr., Laira Machado de Braganca Soares, Marcia Rodrigues Magacho, Leonardo Metello, Roberto Luiz Veloso Magalhaes, Marcos Vinicius Lac e Silva, Orofacial Pain Center, Brazilian Association of Dentistry (Section RJ), Niterói, Rio de Janeiro, Brazil

Background: Juvenile idiopathic arthritis (JIA) is an articular disease that affects young people, mainly girls, with the prevalence of 1:1000 to 4:1000 and incidence of 15:100 000. It can be oligoarticular, polyarticular, or systemic. The temporomandibular joint (TMJ) can be affected in 50% of the cases, and common findings are functional pain, limited mouth opening, and TMJ sounds. The presence of other risk factors, such as parafunction, can lead to an early onset or even a faster development of the disease.

Summary: A 14-year-old girl came for treatment presenting preauricular pain and sounds and locking in both TMJs. There had been other complaints for 1 year, such as lack of sleep, anxiety, sleep bruxism, diurnal parafunction, and headache. Daily pain ranged from 5 to 9 on the visual analog scale. The only previous treatment was the use of a soft splint. There was no family history of rheumatologic diseases. Physical examinations found pain upon palpation in both TMJs and in cervical muscles, an active mandibular range of motion (ROM) of 37 mm, marked tongue borders, and increased overjet. An active mandibular range of motion (ROM) of 30 mm, a passive ROM of 37 mm, marked tongue borders, and increased overjet. Image findings in the examination dating from 1 year earlier presented a light cortical alteration in the right condyle. A new radiograph and computed tomography scan were taken and found a fast progression of bilateral condyle resorption. Treatment consisted of recognition and avoidance of parafunction, thermotherapy, mandibular rest, sleep hygiene, and reduction of anxiety. The patient was referred to a pediatric rheumatologist, who prescribed methotrexate. There were no serologic alterations. The patient is in clinical control, is using an oral appliance, and does not present any pain or functional limitation.
Conclusions: The presence of parafunction in patients predisposed to the development of JIA can magnify its clinical features. The present case shows the partial destruction of the condyles after 1 year and clinical management of the disease progression.

CR0248 CONCOMITANCE OF AMYLOIDOSIS AND SJÖGREN SYNDROME WITH ENLARGED SALIVARY GLANDS Zhimin Yan, Hong Hua, Yan Chen, Yan Gao, Department of Oral Medicine, Peking University School of Stomatology, Beijing, China

Background: Sjögren syndrome (SS) is an autoimmune disorder that is less likely to be complicated with systemic amyloidosis. Few cases of localized amyloidosis associated with SS have been reported to date.

Summary: We report the rare concomitant occurrence of Sjögren syndrome and systemic amyloidosis. A 53-year-old Chinese woman complained that she had had dry mouth for 20 years and had found a nodule on her tongue and lower lip in the previous month. Extreme oral dryness and multiple mucocutaneous abnormalities included an elevated erythrocyte sedimentation rate of 80 mm/h, elevated immunoglobulin levels (IgG, IgA, and IgM), a polyclonal increase in β- and γ-globulins; and strongly positive antinuclear, anti-SSA (Sjögren syndrome antigen A) antibodies. Additionally, serum and urine protein electrophoresis found positive immunoglobulin A (IgA) k and λ chains. Therefore, diagnosis of Sjögren syndrome and light chain amyloidosis were established for this case. The patient was referred to the rheumatologist for further treatment thereafter and is still in follow-up.

Conclusions: Amyloidosis, although relatively common in some chronic inflammatory diseases, has been rare in Sjögren syndrome, and even rarer manifested as enlarged salivary glands in addition to multiple orofacial mucocutaneous nodules, as reported in this case.

CR0261 CHELITIS GLANDULARIS DIAGNOSED 50 YEARS AFTER INITIAL PRESENTATION Adepiton A. Owosho, Kurt F. Summersgill, Department of Diagnostic Sciences, University of Pittsburgh, School of Dental Medicine, Pittsburgh, PA, USA

Background: Cheilitis glandularis is a rare condition characterized by swelling of the lip and hyperplasia of the minor salivary glands, often with mucopurulent salivary discharge through dilated ductal openings. It was first described by Richard Von Volkmann in 1870 as a chronic, supplicative inflammation of the lower lip. The etiology is unknown, but the following factors have been suggested: hereditary (autosomal dominant), chronic irritation, or immunosuppression. Cheilitis glandularis has a predilection for the lower lip in men. It has been associated with extensive actinic exposure due to the eversion of the lower lip, with a few reports of squamous cell carcinoma.

Summary: A 58-year-old man presented with an asymptomatic, enlarged, everted lower lip. He reported that it always had been large, with flares in size. There was no reported familial history. The condition was initially noticed 50 years earlier, with increase in size of the lower lip. At age 14, he was evaluated by a plastic surgeon, but nothing was done, and he has since been evaluated by many different clinicians, without treatment. On examination, the lower lip was markedly enlarged, everted, and nontender, showing the labial mucosa and prominent minor salivary glands, with clear salivary discharge through dilated ductal openings. Palpation found abundant enlarged minor salivary glands. A biopsy found minor salivary gland hyperplasia. The overall histopathologic and clinical features of this case support a diagnosis of cheilitis glandularis. Treatment options include topical steroids and oral minocycline plus topical tacrolimus (Protopic) for inflammation; sun protection to reduce actinic damage; and plastic surgery to reduce the size of the lip.

Conclusions: The case highlights a rare condition that may be encountered in clinical practice. Squamous cell carcinoma may develop in an enlarged and everted lip, thereby raising the need for clinicians to be aware of this condition for proper and timely management.

CR0273 ORAL SQUAMOUS CELL CARCINOMA MIMICKING PERI-IMPLANTITIS Chelsia Sim, Nita Chainaini Wu, Tim Wu, Sol Silverman, Jr., Department of Oral Maxillofacial Surgery, National Dental Center, Singapore

Background: Peri-implantitis is inflammation and alveolar bone loss around a dental implant. Published case reports have described squamous cell carcinoma (SCCA) development around dental implants. The mechanism underlying the rare occurrence of SCCA around dental implants is not well understood.

Summary: A 60-year-old woman, otherwise in good health, had a 14-year history of recurrent erythroleukoplakia (with microscopic dysplasia) on the left lateral tongue that had been managed by surgical removal (scalpel and carbon dioxide laser), biopsies, and close follow-up. She currently presented with a 2-mm fistula on the alveolar ridge of missing mandibular left second molar. The mucosa around the fistula appeared otherwise normal, with no hyperplasia, erythema, or keratotic changes. An implant had been placed to replace this tooth about 4 years previously, which was removed a year ago owing to peri-implantitis manifested by pain and radiographically evident alveolar bone loss. The implant had been removed without flap reflection, curettage, or biopsy. A year later, the discomfort had persisted and the mandibular alveolar radiolucency was unchanged in dimensions. A curettage and biopsy of this area was performed, which found a well-differentiated SCCA. Surgical treatment consisted of a marginal mandibulectomy. Histopathologic evaluation of the surgical specimen confirmed the presence of localized residual tumor that did not extend to the margins of the surgical specimen. Lymph nodes were negative on magnetic resonance imaging evaluation.

Conclusions: This is a case of peri-implant SCCA development in a patient at high risk for SCCA of the oral mucosa. The carcinoma was present within the alveolar socket only, and the overlying surface mucosa was not involved by the carcinoma. This case and others indicate that it is important that periodic oral and radiographic examination be performed after implant placement. Although extremely rare, neoplasia must be considered in the evaluation of peri-implant pathology.

CR0305 MORPHEA COUP DE SABRE: AN UNUSUAL ORAL PRESENTATION Sven Niklander, Lucia Fernandez, Maria Cristina Henriquez, Alfredo Esguep, Patologia y
**CR0382 CHARACTERIZATION OF ORAL TOXICITIES ASSOCIATED WITH ERLOTINIB AND PEMETREXED**

Milena Correia de Pinho, Nathalie Rezende, Fabiana Martins, CAPE Special Care Dentistry Center, University of São Paulo, São Paulo, Brazil

**Background:** Morphea coup de sabre or linear scleroderma, the most common variant of localized scleroderma, is a rare disorder often observed in childhood or youth. Presentation is typically with a single unilateral sclerotic lesion with linear distribution on the limbs, face, or scalp. Oral and dental involvement is an unusual presentation that has been described only once in the literature.

**Summary:** A 14-year-old girl presented to the Diagnostic Clinic of the Dentistry faculty of Universidad Andres Bello, Chile, complaining of sudden mobility of the upper incisors. Intraoral examination found a white, linear, hypopigmented lesion affecting the skin and mucosal surface of the left upper lip, including the left alveolar vestibular ridge. The central and lateral upper left incisors had severe mobility. Periapical radiographs found bone loss of both incisors. A biopsy of the upper lip was performed, which found mucosal sclerosis with mononuclear infiltrate. Doppler ultrasonography found the lumen of the facial and labial artery of the left side to be diminished at 50% compared with the right side. Full blood cell count, biochemical profile, and C3 and C4 levels were all normal. Antinuclear antibodies, extractable nuclear antigen, and antineutrophil cytoplasmic antibodies were negative.

**Conclusions:** En Coup de Sabre is a deep-seated form of linear scleroderma that usually affects the skin of the forehead and possibly the underlying muscle and tissues. In this case there was no involvement of the forehead, and the disease was localized on the upper lip and alveolar ridge, affecting the alveolar bone and resulting in increased tooth mobility, which makes this case extremely unusual.

**CR0434 SQUAMOUS CELL CARCINOMA OF THE TONGUE IN A PATIENT WITH XERODERMA PIGMENTOSUM**

Breno Enrico Lemos Machado, Sheyla Battista Bologna, Thais Borguezan Nunes, Tathyane Harumi Nakajima Teshima, Ana Patrícia Carneiro Gonçalves Bezerra, Marcello Menta Simonsen Nico, Silvia Vanessa Lourenço, Department of Stomatology, Dental School, University of São Paulo, São Paulo, Brazil

**Objectives:** Xeroderma pigmentosum (XP) is a rare autosomal recessive inheritance disorder that makes cells unable to repair cellular DNA damage and makes the patients susceptible to early-developing malignancies on sun-exposed areas. The XP patients often present with ocular, skin, and intraoral involvement, and a clinical investigation concludes the diagnosis. They have an increased frequency of oral cancer, especially squamous cell carcinoma (SCC) of the anterior third of the tongue.

**Summary:** An 11-year-old boy with prominent telangiectasias and atrophic and reticular lesions that exhibited keratotic areas on the distal border of the tongue was examined in the Oral Diseases Clinic of the Department of Dermatology, University of São Paulo, Brazil. Histopathologic examination found atrophic epithelium with numerous instances of apoptosis related to superficial lymphocytic inflammatory infiltrate at the junction of the epithelium with lamina propria, corresponding to a lichenoid glossitis. Skin manifestations were present, with a great mixture of mottled, hyperpigmented, and oral macules covering the whole dry skin. The patient also exhibited ocular alterations such as photophobia, corneal keratitis, and pigmentary changes. Four years later, this patient had a pedunculated lesion on the same site. Another biopsy was performed, and the histopathologic examination found a squamous cell carcinoma on the tip of the tongue. He was referred for surgical resection of the lesion.

**Conclusions:** Oral manifestations in XP patients are rarely discussed in the literature, perhaps because it is not well investigated once these patients show many other lesions over their bodies. The distal border of the tongue is presumed also to be a UV-exposed structure owing to its physiologic functions, which increases the frequency of cancer, particularly squamous cell carcinoma. This fact highlighted the importance of a careful inspection of all structures of the oral cavity, contributing to the early diagnosis and management of XP malignancies.

**CR0257 ANTI—DESMOGLEIN 1 ANTI BODY—POSITIVE AND ANTI—DESMOGLEIN 3 ANTI BODY—NEGATIVE PEMPHIGUS**

Yoshinori Jinbu, Akiko Kashitwazaki, Michiko Ozawa, Etsu Iinoue, Hiromi Hayashi, Mikio Kusama, Department of Dentistry, Oral and Maxillofacial Surgery, Shimotsuke, Japan

**Background:** Pemphigus foliaceus (PF) is an autoimmune blistering disorder clinically presenting as crusted raw areas predominating in seborrhoeic regions such as the scalp, face, chest, and upper back. The absence of oral lesions is characteristic of PF and is a helpful sign in the differential diagnosis from pemphigus vulgaris (PV). The pathogenesis of PF lies in the presence of
autoantibodies against the epidermal cadherin desmoglein 1 (Dsg1).

Summary: The patient was a 47-year-old woman who presented with skin and oral mucosal lesions. Edematous erythema and pigmentation with crusts were observed on the scincut, precordium, and upper back, and gingival erosion and redness were seen in the oral cavity. Clinically, PV was suspected. However, blood examination results were positive for anti-Dsg1 antibody but negative for anti-Dsg3 antibody. Histopathologic examination and direct immunofluorescence microscopic observation found superficial vesicular formation and immunoglobulin G (IgG) and C3 deposits in the epithelial cell membranes. A diagnosis of PV was made. Regarding the gingival lesions, histopathologic cleavage of the suprabasal cell layer was detected, and direct immunofluorescence microscopy found intercellular IgG and C3 deposits in almost the entire epithelial cell layer. These findings were compatible with PV. As there was a contradiction between the clinical features and laboratory data, we further performed immunoblotting analysis. Autoantibodies against periplakin and the C-terminal of the 180-kDa bullous pemphigoid antigen (BP180) were detected. However, these autoantibodies were not considered to be pathogenic.

Conclusions: We report a case of anti-Dsg1 antibody—positive and anti-Dsg3 antibody—negative pemphigus in which the patient presented with redness and erosion of the gingiva.

CR0283 ORAL MANAGEMENT IN JUVENILE HYALINE FIBROMATOSIS: A CASE SERIES Talita Castro, Adriana Ortega, Maria Luiza Almeida, Kareem Ortega, Marina Gallottini, Department of Oral Pathology, University of São Paulo, São Paulo, Brazil

Background: Juvenile hyaline fibromatosis (JHF) is a rare autosomal recessive disorder of the connective tissue caused by mutations in the ANTXR2 gene (anthrax toxin receptor 2). It is characterized by abnormal growth of hyalinized fibrous tissue usually affecting subcutaneous regions on the scalp, ears, hands, feet, and face. Additional manifestations include joint contractions, osteopenia, and gingival hypertrophy.

Summary: This case series describes 5 children (3 girls and 2 boys) with JHF, ranging from 1 to 14 years old. All patients had pronounced subcutaneous nodules, except the youngest (1 year old), who had just 1 skin papule on the face. All had joint contractions, and 1 was unable to walk for this reason. All participants had gingival hypertrophy and limitation of mouth opening. The gingival hypertrophy was surgically treated by gingivectomy under local anesthesia; 3 cases were removed with high-power laser (2 with carbon dioxide laser and 1 with neodymium:yttrium-aluminum-garnet [Nd:YAG] laser) and 2 cases with conventional scalpel. There were no transoperative complications; however, the use of the high-power laser was an advantage for hemostasis and important to reduce the postoperative pain. Postoperative follow-up visits were satisfactory in all cases, and the expected recurrence occurred in all patients, regardless of surgical technique used. Orthodontic treatment was performed in 1 case (in a 12-year-old girl) to improve the positioning of teeth to facilitate removal of gingival overgrowth relapses, hygiene, function, and aesthetics. The histopathologic sections of the gingival specimens had deposition of amorphous, eosinophilic hyaline material in connective tissue permeated by inflammatory infiltrate of varying intensity, covered by stratified squamous epithelium that was parakeratinized.

Conclusions: The surgical treatment to remove the gingival hypertrophy in individuals with JHF is important to improve feeding, hygiene, speaking, and self-esteem.

CR0321 RECURRING ORAL ULCERS WITH ACUTE STOMATITIS: A DIAGNOSTIC CHALLENGE Juan M. Bugueno, Martin S. Greenberg, Department of Oral Medicine, University of Pennsylvania, Philadelphia, PA, USA

Background: Patients with a history of oral mucosal disease that does not coincide with common diagnostic categories may undergo multiple diagnostic tests and consultations.

Summary: A 24-year-old white woman was admitted to the Hospital of the University of Pennsylvania with acute, generalized, painful oral ulcers for 3 weeks. An Oral Medicine consultation was requested. She had had a history of recurrent oral ulcers since childhood, with 5 to 6 episodes per year. There were no present skin, vaginal, or conjunctival lesions, but a recent history of a pruritic rash. Her medical history was significant for periodic edema, asthma, migraines, prolonged QT, ovarian cyst, and genital human papillomavirus. Her medications included acetaminophen, lorazepam (Ativan), hydromorphone (Dilaudid), lidocaine solution, norgestimate/ethinyl estradiol (Ortho Tri-Cyclen), and prednisone 30 mg daily. She reported no known drug or food allergies. Her family history included diabetes, coronary artery disease, sarcoidosis, and systemic lupus. Social history was noncontributory. Review of systems was positive for fatigue, nausea, weakness, acute mouth pain, and dysphagia. Laboratory studies found neutrophilia. Results for erythrocyte sedimentation rate, antinuclear antibodies, antineutrophil cytoplasmic autoantibody, HIV, herpes simplex virus (HSV), and cytomegalovirus were negative. Physical examination found her to be a well-developed woman in apparent distress. Extrarctal examination displayed no facial skin lesions. Intrarctal examination found severe inflammation and ulcerations involving the labial mucosa, buccal mucosa, and tongue. Biopsies of labial mucosa found changes consistent with erythema multiforme (EM). Direct immunofluorescence was negative. She was discharged taking prednisone, clofetosal, and valacyclovir (Valtrex) for possible HSV-related EM. She has been followed up by the oral medicine, rheumatology, dermatology, and cardiology departments. For the past 7 months before this report, she had no recurrences of acute stomatitis but experienced occasional aphthae.

Conclusions: Present diagnosis is EM complicated by a history of recurrent aphthous ulcers, multiple drug therapy, skin lesions, cardiac disease, and family history of lupus. The severity of the lesions resulted in hospitalization, and the complex history required multiple consultations and laboratory studies for diagnosis.

CR0323 TREATMENT OF EROSIIVE LICHEN PLANUS WITH TOPICAL TACROLIMUS Rui Albuquerque, Jonathan Higham, Ana Poveda, Jose Lopez-Lopez, Luis Monteiro, Petros Mylonas, Department of Oral Medicine, School of Dentistry, University of Birmingham, Birmingham, United Kingdom

Background: Erosive oral lichen planus (EOLP) is the second most common variant of oral lichen planus and one of the most challenging forms to treat. We present a case of EOLP recalcitrant to topical corticosteroid therapy, which responded well to topical tacrolimus. This case highlights the potential value of topical tacrolimus as an alternative to more routine therapy in some patients who are unresponsive to topical corticosteroids.

Summary: A 48-year-old man with type 2 diabetes mellitus controlled with metformin presented to the oral medicine department at the Birmingham Dental Hospital (United Kingdom)
with extensive biopsy-proven EOLP refractory to treatment with topical corticosteroid agents. Consideration was given to short-term intervention with systemic corticosteroids. However, owing to patient concerns regarding potential side effects of oral corticosteroids and longer-term treatment with immunosuppressants such as azathioprine, an alternative was sought. Treatment with 0.1% topical tacrolimus ointment twice daily was prescribed for 3 months, and the patient was reviewed monthly. His condition responded well, clinically and symptomatically. Tacrolimus was then withdrawn, and a maintenance regimen of prednisolone mouthwash, 5 mg in 15 ml water, was instigated.

Conclusions: This case report illustrates the potential value of short-term intervention with topical tacrolimus in the management of recalcitrant EOLP. Review of the literature suggests that in the majority of cases topical tacrolimus is well tolerated and effective in the short term. However, the long-term safety and effectiveness of oral topical tacrolimus is still to be ascertained via prospective studies.

CR0327 SIX CASES OF CHEILITIS GRANULOMATOSA IMPROVED AFTER DENTAL TREATMENT Kenichiro Ukichi, Masako Yabushita, Yuichiro Kimura, Naohiko Iguchi, Michiyoshi Kouro, You-ichi Tanaka, Shin-ichi Takahashi, Akira Katakura, Department of Oral Medicine, Oral and Maxillofacial Surgery, Tokyo Dental College, Ichikawa, Japan

Background: Cheilitis granulomatosa (CG) is characterized by a persistent lip swelling and considered as an incomplete expression of Melkersson-Rosenthal syndrome, a triad of orofacial edema, facial nerve palsy, and fissure on the tongue. Because the etiology of CG is still unclear, the effective treatment has not been defined yet. Although corticosteroids are widely used for the treatment of CG and are thought to be effective, some cases are resistant. Here we report 5 cases of CG, including 3 steroid-resistant cases, successfully improved after treatment of focal dental infection.

Summary: In all cases, the patient had chronic enlargement of lips without any symptom including facial paralysis and scrotal edema, facial nerve palsy, and fissure on the tongue. Because the etiology of CG is still unclear, the effective treatment has not been defined yet. Although corticosteroids are widely used for the treatment of CG and are thought to be effective, some cases are resistant. Here we report 5 cases of CG, including 3 steroid-resistant cases, successfully improved after treatment of focal dental infection.

Conclusions: Our findings suggested that focal dental infection could be one of the causative factors in CG, and that dental and oral examination for infectious focus should be performed in CG patients before treatment. Further analysis on the relation between focal dental infection and CG may contribute to the elucidation of pathophysiology in CG and Melkersson-Rosenthal syndrome.

CR0336 ORAL TUBERCULOSIS Yang Liu, Yan Gao, Hong Hua, Department of Stomatolgy, Peking University School and Hospital of Stomatology, Beijing, China

Background: Oral tuberculosis (TB) is a rare, chronic granulomatous disease, usually secondary to pulmonary TB.

Summary: A 29-year-old man complained of an ulcer on the hard palate that had been present for 4 years and increased in size gradually. It was painless and did not cause him any difficulty in speaking and swallowing. He did not provide any history of recurrence or any associated traumatic episode or any surgery in the affected area. He had had fever for the preceding 2 months. The fever peaked in the afternoon, with normal body temperature in the morning. He reported losing about 5 to 6 kg of body weight in the past 1 year, but no cough with expectoration. The patient’s mother had a medical history of tuberculosis when she was young. The patient had not been treated for this condition. By oral examination, there was a single large, deep ulcer measuring 2 × 2 cm on the anterior hard palate with irregular margins, covered with yellow pseudomembrane, surrounded by erythema and induration. Three ulcers, 3 × 3 mm, occurred on the right border of the tongue. No significant cervical lymphadenopathy was found. The investigations found that the erythrocyte sedimentation rate was 2 mm/h, and the complete blood cell count found that neutrophils were 79% (high), lymphocytes were 15.7% (low), and eosinophils were 0.4% (low); these values were within reference limits 1 week later. The chest radiograph found formation of tuberculoma in the right-middle pulmonary lobe.
suggestive of pulmonary tuberculosis. The purified protein derivative (Mantoux) test result was +++ , with a crust 8 mm in diameter with red halo on the left arm. An incisional biopsy found submucosal granulomatous inflammation; nodules consisted of epithelioid cells and Langhans giant cells, which was in accordance with tuberculous ulcer. The diagnosis was oral tuberculosis; antibiotic therapy and periodic follow-up was given.

**Conclusions:** Oral tuberculosis lesions are rare and are difficult to diagnose. Biopsy and other examinations are necessary to confirm the diagnosis.

**CR0356 CHRONIC FACIAL PAIN ASSOCIATED WITH PERSISTENT POSITIVE VISUAL SYMPTOMS** Sabine Jurge, Joanna Zakrzewska, Department of Oral Medicine, Eastman Dental Hospital, University College London Hospitals, and Eastman Dental Institute, University College London, London, United Kingdom

**Background:** Orofacial pain is a common reason for referral to the oral medicine clinic. Association between facial pain and other pain conditions is not uncommon, and hence a thorough history is essential to ensure correct diagnosis and management. Although migraine is a common neurologic disorder and is often accompanied by complex neurologic symptoms known as an aura, persistent visual symptoms are very rare.

**Summary:** We describe the case of a 40-year-old man who was referred to our clinic regarding chronic midface pain. The pain had started suddenly 21 years earlier, without any obvious cause, as a continuous dull ache, tightness, and pressure of the top of the head, temples, and midface, associated with persistent visual symptoms. He had had a partial maxillectomy performed 18 months ago to treat a lesion in the palate. Serologic examinations and lip biopsy were requested, confirming the diagnosis of SS, and a review of the slide with immunohistochemistry palate surgery was consistent with the diagnosis of MALT lymphoma type. The patient was referred for services of rheumatology and hematology, Hospital das Clínicas (HC-UFPE), and is under treatment for both diseases.

**Conclusions:** In summary, it is observed that the diagnosis of SS is disregarded even in patients with classic display of signs and symptoms, which may lead to unnecessary and mutilating interventions.

**CR0394 IMMUNOGLOBULIN G4—RELATED DISEASE: A CASE REPORT OF AN UNDERESTIMATED DISEASE** Bruno Enrico Lemos Machado, Sheyla Batista Bologna, Thais Borgezan, Priscila Ramos Lota, Marcello Menta S. Nico, Silvia Vanessa Lourenço, Department of Stomatology, Dental School, University of São Paulo, São Paulo, Brazil

**Background:** Immunoglobulin G4—related systemic disease (IgG4-RSD) has been recently characterized by a focal or diffuse tissue infiltration or enlargement in 1 or more organs, elevated levels of serum IgG4, and characteristic histopathologic findings. Since its first description as sclerosing (or autoimmune) pancreatitis, many extrapancreatic manifestations have been reported, even in the absence of pancreatitis. IgG4-RSD commonly involves several head and neck structures, including salivary and lacrimal glands, orbits, lymph nodes, thyroid, sinonasal cavities, and pitiuitary gland. We report herein a case of IgG4-RSD.

**Summary:** A 64-year-old man had presented exophthalmos and conjunctival erythema with a progressive worsening of visual acuity. He also noticed swelling of the right malar area and periorbital (bilaterally) that progressively became tender. Xerostomia was also reported during clinical examination. Biopsies were performed from the right malar area and in labial minor salivary glands. Histologic examination of the skin fragment found a cutaneous lymphadenosis, with expression of MUM-1 (melanoma-associated antigen [mutated] 1), BCL2 (B-cell CLL/lymphoma 2), CD20, CD21, and IgG4; salivary gland fragments showed intense periductal hyalinization and plasma cell infiltrate. These specimens were IgG4 positive. Additional computed tomography (CT) scan investigation found alterations in the orbits, kidneys, pancreas, and thorax. The histologic, immunohistochemical, and CT scan profiles were compatible with IgG4-RSD. The patient was included in an immunosuppression scheme and is now under ambulatory follow-up.

**Conclusions:** An increased ability to recognize the characteristic features of IgG4-related sclerosing disease, based on clinical, pathologic, and image examinations, would play an extremely important role in avoiding unnecessary surgery in favor of initiating corticosteroid therapy.
CR0298 ORAL PIGMENTED LESION Cyril Pandarakalam, William Goebel, Bradley Seyer, Southern Illinois University, School of Dental Medicine, Edwardsville, Illinois, USA

**Background:** Oral melanocanthoma (OMA), a term first coined by Mishima and Pinkus in 1960, is an uncommon, benign pigmented lesion of the oral mucosa. The rapid growth of OMA may mimic malignant melanoma. The exact etiology of OMA is not clear, but constant trauma has been suggested as a causative factor.

**Summary:** A 47-year-old man was referred for evaluation and treatment of pigmentation in the oral cavity. The patient noticed the discoloration 1 month earlier. The patient indicated that the lesion was much smaller in the beginning, but had gradually increased in size. He smokes half a pack of cigarettes a day. Upon examination, a 1.5 × 1.5-mm light to dark brown flat discoloration was noted on the left buccal mucosa. The lesion had a somewhat velvety surface texture with a slightly irregular border, and was nontender on palpation. The patient reported that the area sometimes “tingled,” and that he experienced a metallic taste that was “like putting your tongue on the leads of a 9-volt battery.” Our differential diagnoses were oral melanocytic macule, oral melanoma, and OMA. Biopsy was performed and sent for microscopic examination. Histopathologic examination found acanthosis and spongiosis of the epithelium with proliferation of thin, dendritic melanocytes scattered throughout the epithelium. Patchy chronic inflammatory cell infiltrates with scattered eosinophils were noted in the underlying connective tissue. The histopathologic report was OMA.

**Conclusions:** OMA is a rare condition affecting the oral mucosa. It is possible that OMA may be underreported because of its clinical resemblance to oral melanocytic macule. In our case, the clinical appearance and increasing size of the lesion triggered a biopsy of the lesion to confirm diagnosis and rule out malignancy. OMA should be considered in the differential diagnosis of pigmented lesions of the oral cavity.

CR0326 DENTIGEROUS CYST IN A BABY AGED 8 MONTHS Gustavo Henrique Campos Rodrigues, Nathalia Tuan Duarte, Isabela Werneck da Cunha, André Caroli Rocha, Juliane Pirágine Araújo, Fabio Abreu Alves, Department of Stomatology, São Paulo University, Cruzeiro, São Paulo, Brazil

**Background:** Dentigerous cyst is a developing odontogenic cyst, which is associated with a crown of an included tooth. Its occurrence associated with deciduous teeth is extremely rare. The objective of this report is to present a case of dentigerous cyst affecting a baby.

**Summary:** A boy of 8 months of age was referred to the Stomatology Department at A.C. Camargo Cancer Center Hospital owing to a swelling in the left side of the mandible of 15 days’ duration, which was observed by his parents. Intraoral examination found an indurated lesion growing on the vestibular border, and was nontender on palpation. The patient reported that the discoloration 1 month earlier. The patient indicated the lesion was much smaller in the beginning, but had gradually increased in size. He smokes half a pack of cigarettes a day. Upon examination, a 1.5 × 1.5-mm light to dark brown flat discoloration was noted on the left buccal mucosa. The lesion had a somewhat velvety surface texture with a slightly irregular border, and was nontender on palpation. The patient reported that the area sometimes “tingled,” and that he experienced a metallic taste that was “like putting your tongue on the leads of a 9-volt battery.” Our differential diagnoses were oral melanocytic macule, oral melanoma, and OMA. Biopsy was performed and sent for microscopic examination. Histopathologic examination found acanthosis and spongiosis of the epithelium with proliferation of thin, dendritic melanocytes scattered throughout the epithelium. Patchy chronic inflammatory cell infiltrates with scattered eosinophils were noted in the underlying connective tissue. The histopathologic report was OMA.

**Conclusions:** OMA is a rare condition affecting the oral mucosa. It is possible that OMA may be underreported because of its clinical resemblance to oral melanocytic macule. In our case, the clinical appearance and increasing size of the lesion triggered a biopsy of the lesion to confirm diagnosis and rule out malignancy. OMA should be considered in the differential diagnosis of pigmented lesions of the oral cavity.

CR0297 ORAL AND MAXILLOFACIAL MANIFESTATIONS OF GARDNER SYNDROME: CASE REPORT João Sousa Magalhães, Rui Albuquerque, Luís Silva Monteiro, Department of Oral Surgery Oral Medicine, Cooperativa de Ensino Superior Politécnico e Universitário (CESPU), Gandra, Portugal

**Background:** Gardner syndrome (GS) is a hereditary autosomal dominant disorder characterized by the presence of a familial adenomatous polyposis and extracolon manifestations including osteomas and soft tissue tumors. Osteomas, epidermoid cysts, tooth impaction, and odontomas may be found in the cranio-maxillofacial area and generally precede the intestinal polyposis manifestations. Untreated polyps have a high risk of malignancy. Early diagnosis is crucial to prevent malignant transformation. Because these extracolonic manifestations generally precede intestinal manifestations, the dentist could be important in the diagnosis during routine oral examination.

**Summary:** We present a case of a 59-year-old woman with Gardner syndrome referred to our department because of a mandibular tumefaction. Anamnesis reported familial adenomatous polyposis, which had been submitted to proctocolectomy with ileorectal anastomosis. She mentioned also the existence of osteomas in the skull. On clinical and imaging examination we identified massive osteomas of the mandible and skull, tooth impaction, and dental abnormalities, all compatible with the manifestations of the disease. Restorative dental treatment was performed in the maxillary anterior incisors.

**Conclusions:** Dentists should have in mind the characteristics of Gardner syndrome, not only for the treatment of oral mouth lesions in these patients but also because they could be important in the early diagnosis of Gardner syndrome.

CR0401 FATAL MUCORMYCOSIS: A CASE IN A PEDIATRIC ONCOLOGIC PATIENT Augusto Poropat, Guilherme Ottaviani, Margherita Gobbo, Andrea Giulio Zanazzo, Rosanna Bussani, Roberto Di Lenarda, Dental Science Department, Division of Oral Medicine and Pathology, Trieste, Italy

**Background:** Mucormycosis is an opportunistic fungal infection caused by fungi in the order Zygomycetes. It primarily occurs in immunocompromised and insulin-dependent patients and frequently involves sinuses, brain, and lungs. Lesions typically appear as extensive areas of necrosis and, if treatment is not promptly established, cerebral involvement occurs. Despite radical surgical debridement of involved areas associated with high doses of amphotericin B, the prognosis is usually poor.

**Summary:** A 17-year-old girl, diagnosed with glioma of the cerebral trunk, was first subjected to radiotherapy and then treated with bevacizumab, irinotecan, and dexamethasone in combination. One year later, the patient referred right hemiplegia, inflammation, and tumefaction of the right hemiface, edematous and hemorrhagic gums, and eueptic symptoms. She was immediately hospitalized, with a bacterial cellulitis suspected, and intravenous lineosamide and levofloxacin were administered. At oral swab, the presence of Candida was enhanced, so it was decided to add treatment with intravenous fluconazole. Two days later, maxillofacial and thoracic computed tomography was performed; superficial and deep involvement of the right hemiface...
and bilateral pleural effusion were registered. Because a systemic mycosis was suspected, treatment with intravenous amphotericin was started. Moreover, incisional biopsy of the nasal septum pointed out the presence of aspergillosis and mucormycosis, whereas in peripheral blood there was an increase in galactomannans. Nuclear magnetic resonance was performed, which evidenced a right temporal tumefaction with a diameter of 3 cm. The parents refused a surgical approach, and medical therapy was continued with the addition of micafungin. The oral mucosa presented progressive areas of cleavage, necrosis of the right hemiface, and worsening of the respiratory function. The patient died of respiratory arrest 3 days later.

Conclusions: mucormycosis is an emerging fungal infection associated with high morbidity and mortality. Early diagnosis and aggressive combined approaches with surgical debridement and antifungal therapies are crucial in improving survival.

CR0437 CASES OF EARLY ORAL CANCERS AND LESIONS MIMICKING CANCER Mohamed Dahawi, Khalil Assiri, A. Ross Kerr, Dharti Patel, Sonal Shah, Department of Oral Medicine, Pathology and Radiology, New York University, School of Dentistry, New York, NY, USA

Objectives: One person dies every hour because of oral cancer, and approximately 42,000 oral cancers are diagnosed every year in the United States alone. This is because many early oral cancers are not identified. We present a total of 10 cases of early oral cancers and other oral lesions resembling malignancies.

Summary: The patients in this case series had ages ranging between 52 and 88 years. None of the cancers were diagnosed by a general dentist, owing to their innocuous appearance. Only 2 of the patients had significant risk factors: 1 was a heavy smoker for 30 years, and 1 was a moderate alcohol drinker. Three cases were referred owing to suspicious oral findings, whereas 2 other cases were diagnosed during examination of other chief complaints unrelated to the cancerous lesion. All early cancer cases were positive for toluidine blue stain and loss of autofluorescence. All of the cancer cases showed histopathologic features of a well-differentiated squamous cell carcinoma with superficial connective tissue infiltration. Pain was not associated with any of the cases. All of the patients with oral cancers were referred to an oral surgeon to have their cancer removed surgically, and they are regularly monitored for recurrence or any new lesions. In this case series report, we present the chief complaint, social history, and clinical pictures associated with each case. We also present 3 additional cases of oral lesions resembling oral cancers but found to be benign or traumatic lesions upon biopsy and further investigation.

Conclusions: We conclude that comprehensive head and neck examinations should be performed for each patient at regular intervals and that no lesion should be overlooked. However, some traumatic lesions or benign lesions can also mimic oral cancers. Therefore, many early cancers look innocuous, and some benign lesions appear suspicious.

CR0411 MELKERSSON-ROSENTHAL SYNDROME: A CLASSIC PRESENTATION CASE Vanessa Juliana Gomes Carvalho, Claudia Fabiana Joca de Arruda, Carina Domaneschi, Norberto Sugaya, Department of Stomatology, University of São Paulo (USP), São Paulo, Brazil

Background: Melkersson-Rosenthal syndrome (MRS) is a rare condition, classified as a neuromucocutaneous disorder and characterized by a triad of signs and symptoms: recurrent facial paralysis, swelling of the face and lips, and fissured tongue. Nevertheless, the complete MRS picture is rarely seen (25%), and most patients that receive this diagnosis present only 2 signs of the syndrome.

Summary: A 42-year-old black woman sought care in the oral diagnosis clinic owing to an orofacial edema that had been evolving for several months. The main complaint was facial disfigurement, besides sore lips. Extraoral examination found facial edema involving mainly the left cheek and the edematous lips (especially the lower one) and causing a protruded profile, pain under compression, and distension of the perilabial skin, accompanied by erythema and slight desquamation. Intraoral features included a cobblestone appearance in the left buccal mucosa and fissured tongue. The patient reported 2 previous episodes of facial paralysis, 1 recent and the other 2 years before. A clinical diagnosis of MRS led to an incisional biopsy procedure in the lower lip. Microscopic analysis resulted in a diagnosis of granulomatous chelitis. A thorough investigation to rule out other granulomatous conditions, such as Crohn disease, sarcoidosis, Ascher syndrome, and Lyme disease, was accomplished, allowing a final diagnosis of MRS. The patient was treated with local injections of betamethasone (1 ml per week, 4 weeks) under local anesthesia. Treatment was successful, providing a great reduction of lip swelling, a recovery of facial profile, and achievement of patient satisfaction.

Conclusions: Melkersson-Rosenthal syndrome is a condition whose etiopathogenesis is still obscure and for which no management guideline is available. A large collection of case
reports should aid in the establishment of such a guideline to heighten the security and prediction of ideal outcomes.

**CR0226 RARE STONES** Sonita Koshal, Department of Oral Surgery, Eastman Dental Hospital, University College London Hospitals, London, United Kingdom

**Background:** Sialolithiasis is a common disease of the salivary glands. However, sialoliths in the minor salivary glands are considered very rare. The clinical features are not always typical, so clinical misdiagnosis is common. We report 2 rare cases of stones found in the minor salivary glands.

**Summary:** In case 1, a 21-year-old man attended with a 6-month history of a lower right lip 1 cm swelling. He found it varied in size, was not painful, and never burst. He had a history of liths removed from his right submandibular gland 5 years earlier and from a lacrimal duct 3 years earlier. The differential diagnosis was a mucocele. The mucocele was excised, but there was an unexpected finding of two 4-mm sialoliths at the base of the cavity. The lower lip salivary glands are an unusual site for a sialolith to occur, and even more so for multiple liths. A multi-organ disease was considered, but no underlying systemic cause was found. In case 2, a 26-year-old man attended the clinic with a 2-year history of a hard swelling within his right anterior tongue. The patient felt it had increased in size and was not painful. There was a normal appearance of overlying tongue dorsal mucosa clinically. A 1-cm, hard, smooth, and discrete swelling was palpated. The differential diagnoses were a cystic lesion or neoplasm. The swelling was excised, and a 5-mm sialolith was removed from within the musculature of the anterior right tongue. The stone appeared to have originated from the anterior lingual salivary glands, also known as glands of Blandin and Nuhn.

**Conclusions:** These 2 interesting cases and the literature suggest that sialoliths of the minor salivary glands may occur more frequently than previously thought and should therefore be included in the clinical differential diagnoses. However, atypical signs and symptoms can make this a challenge.

**CR0285 THREE CASES OF CANDIDAL CHELITIS** Michiko Ozawa, Yoshinori Jinba, Emi Inoue, Hiromi ment, and progress has been good, with no recurrence. Swelling, redness, and pain disappeared with antifungal treat- of tumors of the head and neck region. Sinonasal mucoepidermoid carcinoma may be confused with odontogenic tumors.

**Summary:** An 18-year-old boy presented a swelling, which involved both the palate and vestibular region of the right maxilla. The panoramic radiograph found a large osteolytic lesion affecting the maxilla. Our diagnosis hypotheses were ameloblastoma and keratocystic odontogenic tumor. An incisional biopsy was performed, and the result was low-grade mucoepidermoid carcinoma. To better evaluate the tumor, computed tomography was performed, which found a lesion with soft tissue density arising in the maxillary sinus and involving the right side portion of the hard palate and maxilla. In addition, some areas of bone erosion were observed. The treatment consisted of tumor resection with microsurgical free flap reconstruction. After 3 months, a dental prosthesis was made, and the patient is asymptomatic.

**Conclusions:** The present case showed a very rare case of mucoepidermoid carcinoma that arose in maxillary sinuses. Owing to its clinical and radiographic features, this tumor can be misdiagnosed as an odontogenic tumor.

**CR0415 A CASE OF COMPLEX CONNECTIVE TISSUE DISEASE WITH A DIAGNOSTIC DILEMMA** Daniela Ion, Priya Thakrara, Penelope Shirlaw, Department of Oral Medicine, Guy’s and St Thomas’ NHS Foundation Trust, London, United Kingdom

**Background:** A 52-year-old woman was referred by rheumatology for investigations of a dry mouth.

**Summary:** The patient presented with a decade of mixed-pattern connective tissue disease under the joint care of rheumatology and dermatology. Six years earlier, the patient began to notice having dry eyes and mouth, with increasing severity over time. Serial investigations failed to arrive at a satisfactory explanation or diagnosis. Her connective tissue disease manifestations have now been attributed to an Ehlers-Danlos type 3, probable poikilodermatomyositis and possible photosensitive lupus. She is currently maintained on weekly methotrexate and folic acid rescue, with no other medications likely to cause dry mouth as a side effect. There are no signs to suggest a nodal osteoarthritis portraying the sialadenitis, nodal osteoarthritis, and xerostomia (SNOX) syndrome diagnosis as an alternative. Current investigations to establish whether or not the patient has Sjögren syndrome have so far found a low whole saliva flow (< 0.1 mL/min), normal stimulated parotid flow (0.75 mL/min), borderline lacrimal flow in the left eye and normal flow in the right eye. Serology has persistently found negative status for...
extracted unirradiated DNA, and antigens, double stranded DNA, and rheumatoic factor autoantibodies. Recent salivary gland ultrasonography has confirmed a normal echo-texture of the major salivary glands. A labial gland biopsy is planned as far as the diagnosis of Sjögren is unlikely.

Conclusions: This case highlights the diagnostic dilemma when assessing patients with xerostomia as 1 component of a complex connective tissue disease presentation. By the Modified American and European Diagnostic criteria, the Sjögren diagnosis cannot be sustained, even with a positive lip gland biopsy. However, following the newly proposed SICCA Collaboration criteria, the diagnosis is still doubtful without the lip biopsy contribution, unless ultrasonography is permitted as an alternative. The results of further investigations will be presented in the context of the diagnostic criteria for Sjögren syndrome, highlighting the current controversies in its diagnosis.

CR0421 TWO SURGICAL TREATMENTS FOR THE MANAGEMENT OF KERATOCYSTIC ODONTOGENIC TUMORS Rebeca Vasconcelos, E.L. Queiroz, S. Corby-Nunes, P.M. Corby, B.L. Schmidt, Bluestone Center for Clinical Research, NYU College of Dentistry, New York, NY, USA

Background: The keratocystic odontogenic tumor (KCOT) is a benign odontogenic neoplasm that has destructive and infiltrative behavior and a high recurrence rate. The KCOT can occur as part of nevoid basal cell carcinoma syndrome (NBCCS) with high prevalence or as a sporadic case. A wide spectrum of surgical treatment has been reported for the KCOT, with no optimal outcomes. The treatment modalities include enucleation alone or with peripheral osteotomy, resection, treatment with adjuvant substances (Carnoy solution or cryotherapy), marsupialization, and decompression.

Summary: In this poster we report 2 different surgical treatments for KCOT: (1) a modified decompression technique and (2) enucleation with cryosurgery and a simultaneous bone graft.

Conclusions: The techniques presented in these case reports have been reported to be associated with a lower recurrence rate. However, given the clinical behavior of KCOTs and the well-documented high recurrence rate, long-term follow-up with clinical examination and plain radiographs is required.

CR0432 ORAL MANIFESTATIONS OF ARECA NUT HABITS: SELECTED CASES Nirav H. Parekh, Sonal Shah, Dharti Patel, Alexander Ross Kerr, Department of Oral Maxillofacial Pathology and Radiology, New York University College of Dentistry, New York, NY, USA

Background: Areca nut chewing with or without tobacco is widespread in people of South Asian countries. Areca nut alkaloids are addictive, and habitual use of areca nut can adversely affect oral health. There is a growing immigrant population from countries like India, Pakistan, and Bangladesh, and these immigrants bring these habits to the United States. Currently, there are few restrictions on the sale and distribution of areca nut products. To help educate oral health care providers, we will present a series of clinical cases from South Asian immigrants in New York City to show the different habits and oral manifestations of areca nut use.

Summary: The cases compare and contrast 2 different habits, namely the chewing of paan or betel quid (where the user rolls up the ingredients in a betel leaf) and guthka (where the user opens a single-use industrially manufactured sachet containing the ingredients). The oral manifestations include severe dental attrition, extrinsic staining, betel chewer’s mucosa lichenoid reactions, and potentially malignant oral disorders including oral submucous fibrosis epithelial dysplasia and oral squamous cell carcinoma.

Conclusions: An understanding of these habits and their oral manifestations can facilitate better patient care management of such patients, including the early detection of potentially malignant oral disorders.

OIO269 TREATMENT OF ORAL LICHEN PLANNUS WITH 0.1% TACROLIMUS IN ORAGARD-B Siddharth Gupta, Nitasha Gupta, Department of Oral Medicine and Radiology, I.T.S. Dental College, Hospital and Research Centre, Greater Noida, India

Objectives: The purpose of the study is to investigate the efficacy and safety of 0.1% tacrolimus powder in Oragard-B for the treatment of patients with symptomatic oral lichen planus (OLP).

Methods: A nonrandomized, unblinded study was conducted in 20 patients with symptomatic oral lichen planus. Patients were provided with 20 g containers of study medication, and instructed to apply 3 times daily until the resolution of the lesions. Clinical assessment was performed every 15 days. Tissue changes from pretreatment values and posttreatment values were compared using Wilcoxon signed rank test; a value of $P < .001$ indicated a significant change.

Results: The patients responded well to topical tacrolimus. Eleven patients had complete resolution of lesions, and all 20 patients had significant improvement in their symptoms. There were significant improvements comparing pretreatment status with posttreatment changes ($P < .001$).

Conclusions: Topical tacrolimus in Oragard-B is effective in the treatment of patients with symptomatic oral lichen planus.

OIO442 LOW-COST ORAL SPLINT IN THE BRAZILIAN PUBLIC HEALTH SERVICE Paulo Pimentel, Jr., Laura Machado de Braganca Soares, Department of Dentistry, Niterói, Rio de Janeiro, Brazil

Objectives: The mechanisms of action of oral splints are still controversial. Nevertheless, their use in the management of temporomandibular disorders (TMDs) is known to help relieve pain and to protect tooth wear associated with bruxism. The use of articulators, the need for occlusal adjustments, and the laboratory steps to fabricate acrylic splints are associated with costs that are too high for splints to be used in the Public Health Service (PHS). The aim of this study was to evaluate the use of acetate oral splints in patients referred to the PHS Orofacial Pain and TMD Center in Rio de Janeiro, Brazil.

Methods: The patients referred to the OFP/TMD Center were assessed according to the American Academy of Orofacial Pain criteria. They were educated to recognize and avoid oral parafunctional habits, to understand sleep hygiene and methods for reducing anxiety, and to perform therapeutic exercises and were provided directions on the use of analgesics and adjunctive drugs. When needed, the oral splints were made of acetate. Casts of the lower or upper arches were made, the splint was pressed in a vacuum press device using an acetate plate, and it was then fitted to the patient. Additional occlusal build-up with self-curing acrylic was performed only when
there was no improvement of symptoms or when occlusal contacts were extremely uneven.

Results: During 8 months, 258 patients were referred to the OFP/TMD Center. The mean age was 47 years, ranging from 12 to 87. From this total, 218 (84.5%) had TMD or bruxism symptoms, and 123 (56.4%) required and received the oral splint. In the 27 (12.4%) cases that had no clinical improvement, an additional occlusal build-up of the acetate splint was performed using self-curing acrylic, although 10 (4.5%) still had no clinical improvement.

Conclusions: The use of oral splints made with acetate for TMD and bruxism management in the Brazilian PHS is effective and helps to reduce cost and time of fabrication.

O10258 CALCIFICATION OF THE CAROTID ARTERY USING PANORAMIC RADIOGRAPHY Hiroshi Yanagi, Yasushi Shinohara, Unichi Hayakawa, Yoshihito Tsuchiya, Hiroto Ishihara, Tadao Noguchi, Mikio Kusama, Yoshinori Jinbu, Department of Dentistry and Oral and Maxillofacial Surgery, Jichi Medical University, Shimotsuke, Tochigi, Japan

Objectives: Neck carotid stenosis caused by atherosclerosis of the carotid artery is regarded as a risk factor for stroke, a theory that has gained recognition in recent years. However, subjective symptoms are difficult to observe, and these lesions are difficult to find. Depending on the case, abnormalities may be detected by panoramic radiography. This study evaluated calcification of the carotid artery using panoramic radiography and computed tomography (CT) of the neck.

Methods: The participants were 105 patients presenting for consultation in the Oral Surgery Department from April 2011 to March 2013 with a primary diagnosis of oral cancer and who underwent panoramic radiography and neck CT (46 men, 59 women; age range, 20-91 years). The presence of calcification inside the plaque of the carotid artery was confirmed on CT, and the presence of calcification findings was confirmed on panoramic radiography. In addition to these imaging findings, relationships between variables such as medical history, life history, lost teeth, and remaining number of teeth were also investigated.

Results: In this study, calcification of the carotid artery was observed in 19.0% of panoramic radiographs. Calcification of the carotid artery was observed in 62 patients on CT, whereas calcification was observed in 20 cases on panoramic radiography. No cases in which calcification was not confirmed on CT showed calcification on panoramic radiography.

Conclusions: Panoramic radiography is generally performed for patients consulting the Dentistry/Oral Surgery Department, and calcification of the carotid artery is sometimes confirmed at the top of the image. With panoramic radiography, radiographic image interpretation must include evaluation for the possible presence of carotid artery calcification in patients without subjective symptoms.

O10320 INCREASING THE ORAL CANCER AWARENESS: STAGE 1: CURRENT KNOWLEDGE Amir Seifi, Nicholas Tsieffos, Theresa Adamczyk, Michael Moran, Department of General Dental Sciences, Marquette University, Milwaukee, USA

Objectives: Oral cancer survival rates have remained unchanged for the past years; this is in part because most cases are not detected until later stages. Misattribution of the signs, symptoms, and risk factors of oral cancer has been found to be the most significant barrier to seeking consultation by patients in a timely manner. The objective of this study is to assess the current knowledge of oral cancer by patients, evaluating the efficient ways patients with different demographics receive their dental knowledge and assessing the effectiveness of different strategies to improve the knowledge of oral cancer.

Methods: In the first stage, written surveys were administered by student-researchers to prospective dental patients. The survey included questions addressing participant demographics and health history as well as risk factors, signs and symptoms, and the diagnosis and treatment of oral cancer.

Results: Administration of surveys and data collection is ongoing. Preliminary analysis found that while 69% of participants had previously heard of oral cancer, only 30% of the participants had adequate knowledge of the signs and symptoms of the oral cancer. Only 51% of the participants recognized it as fatal if left untreated; only 16% knew that oral cancer is commonly detected in later stages owing to lack of awareness; and most importantly, only 50% of the participants were aware that dentists can detect and treat oral cancer. While 55% of the participants reported to receive their oral health—related knowledge through their dentist, they have mostly received their knowledge regarding oral cancer from TV and other media.

Conclusions: Our preliminary results show the need for improving the awareness. Our data indicate that dentists need to be more involved in educating the patients. In the second stage we will evaluate different ways of improving the awareness to determine the most efficient way for this approach.

O10397 SALIVARY METAL ION CONTENTS IN PATIENTS WITH FIXED PROSTHESES Ji-Su Kim, Eun-Gyo Jeong, Sung-Hye Jeong, Department of Oral Medicine, School of Dentistry, Pusan National University, Yangsan-si, Republic of Korea

Objectives: This study aimed to assess the amount of metal ions released from fixed prostheses in saliva and correlation with mucosal disease.

Methods: Unstimulated whole saliva was collected from patients with oral lichen planus (OLP) or without OLP, and all patients also had restorations in the oral cavity. Metallic ion content (Cu, Co, Cr, Ni, Zn, Al, Pt, Sn, Pd) was measured by inductively coupled plasma mass spectrometry (ICP-MS).

Results: In relation to the period of dental materials in the oral cavity, statistically significant increases of Co, Pt, and Pd concentration were observed ($P = .048, P = .011$, and $P = .004$, respectively). Regardless of the period of dental materials in the oral cavity, Salivary Pd release was significantly higher in patients with OLP ($P = .008$).

Conclusions: The release of Co, Pt, and Pd from old fixed prostheses in the oral cavity may be proportional to time. Moreover, the palladium ion may influence the pathogenesis of OLP.

O10267 ORAL MUCOSAL DISEASE PATHWAY IN PEDIATRIC PATIENTS AT EASTMAN DENTAL HOSPITAL, UNIVERSITY COLLEGE LONDON HOSPITALS Adele Johnson, Nabilah Harith, Timothy Hodgson, Department of Paediatric Dentistry, Eastman Dental Hospital, University College London Hospitals, United Kingdom

Objectives: The aims of this audit were to assess the total number of pediatric referrals with oral mucosal disease. To look
at the correlation between the diagnosis in the referral letter and the actual clinical diagnosis, to assess the time frame between the referral date and the first visit, and to develop an integrated clinical care pathway for pediatric patients with oral mucosal or salivary gland disease.

Methods: This was a retrospective case-note evaluation (January 2011 to December 2011). Patients were seen on new patient clinics either in pediatrics or oral medicine. A data extraction form was developed and information recorded and analyzed. The standards were that all clinical notes should have a referral letter, and that all patients be seen within 18 weeks. All patients’ notes should have a letter back to the referring practitioner, and there should be an 80% correlation between the actual diagnosis and that in the referral letter.

Results: Results were looked at for 110 patients. Oral ulceration was the common condition diagnosed. Almost all patients referred (98%) had a referral letter. It was found that 88% of children were seen within 18 weeks. All patients’ notes had a letter back to the referring practitioner, and there was a 75% correlation between actual diagnosis and diagnosis made in the referral letter. This audit highlighted the range of diagnoses made by the specialists compared with the diagnoses made in the referrals, which found 25% of the diagnoses not identified correctly.

Conclusions: Overall, the standards were partially met. There is a need to streamline these patients to meet the target of 18 weeks with the introduction of a joint oral medicine/ pediatric clinic. Data can be used for research, and a template will be developed for referral of patients. There will be a repeat audit after 12 months.

OIO268 NONAROMATIC NAPHTHALAN FOR THE TREATMENT OF ORAL MUCOSAL DISEASES Ana Andabak Rogulj, Ivan Alajbeg, Emir Đumić, Department of Oral Medicine, School of Dental Medicine, University of Zagreb, Croatia

Objectives: Nonaromatic naphthalan (NAVS) is a purified natural oil derivative, abundant in steranes (geogenic steroids). The purpose of this study is to evaluate the effectiveness of NAVS in the treatment of oral mucosal diseases including oral lichen planus (OLP), recurrent aphthous ulcers (RAU), and cicatricial pemphigoid (CP).

Methods: We applied NAVS oil in adhesive paste in patients with clinically and histologically proven OLP, in patients with RAU (double-blind and randomized; topical betamethasone in adhesive paste used as control), and in 1 participant with CP (open label), 3 times daily during 4 weeks. The severity of the OLP lesions was objectively scored. The number and diameter of RAU lesions were also assessed on days 3 and 5. The intensity of pain and discomfort was determined using a visual analog scale (VAS) and the Oral Health Impact Profile 14 (OHIP-14) before and after therapy. Statistical analysis was performed by use of the Wilcoxon test for paired samples to evaluate the effect of treatment in each group. Treatment effect between the groups was performed by Mann-Whitney test; values of $P < .05$ were considered significant.

Results: The results of this study showed that NAVS has successfully reduced the clinical signs and symptoms of OLP; has reduced the number, diameter, and symptoms in patients with RAU statistically comparable with corticosteroids. NAVS has reduced clinical signs in 1 CP patient.

Conclusions: These results indicate the good performance of NAVS as a potential alternative to corticosteroids in the treatment of oral mucosal diseases.

OIO3064 EFFECTIVENESS OF BEXIDENT POST IN THE TREATMENT OF RECURRENT APHTHOUS STOMATITIS Enric de Clemente Rodríguez de Rivera, E. Rodríguez de Rivera Campillo, E. Jané Salas, R. Albuquerque, José López López, Department of Oral Medicine, University of Barcelona, Spain

Objectives: Recurrent aphthous stomatitis (RAS) is the most common inflammatory ulcerative condition of the oral mucosa. It is characterized by multiple recurrent small, round ulcers with circumscribed margins, erythematous halos, and yellow or gray floors typically presenting first in childhood or adolescence. To date, the treatment remains empirical and nonspecific. The main goals of therapy are to minimize pain and functional disabilities as well as to decrease inflammatory reactions and frequency of recurrences. The aim of this study is to evaluate the effectiveness of Bexident Post in the control of the symptoms of RAS. The gel is composed of chlorhexidine digluconate (0.2%), chitosan (0.5%), dexamethasone (5%), allantoin (0.15%), and sodium saccharin (0.01%).

Methods: A total of 25 patients with RAS were included. The product was applied 3 times per day. The patient could not eat, drink, or rinse during the first 15 minutes. A control was done on days 2 and 10.

Results: Bexident Post was applied during an average of 5.08 days. Pain improved by 7.2 points (out of 10) 2 days after. In 10 days, the improvement was 9.4 points. An improvement of 7.2 points (2 days after the application) and 8.6 points (10 days after) was seen in the speaking difficulties. Eating limitations improved by 8.2 points 48 hours after and by 9 points after the first 10 days. The average product applicability was 8.44. The mean satisfaction rate was 8.56.

Conclusions: The effectiveness of the product in the treatment of the symptoms of RAS has been demonstrated. There are no complications. Given the positive results obtained and its easy application, we highlight the importance of considering it as a handy treatment.
margin of the unstained area was demarcated with a shallow incision across which the elliptical incision or punch biopsy was made. Specimens were sent for histopathologic examination to determine the extent of epithelial dysplasia beyond the incision line.

**Results:** Thirty-two patients were examined using this method. Two (6.2%) showed negative findings owing to technical errors in processing the specimen. The demarcation incision was coincident with the histologic margin to an error of 2 mm in 18 patients (75%). In 6 patients (18.8%), the staining was negative, and the biopsy found no signs of dysplasia.

**Conclusions:** The use of Lugol iodine has been found to be of great help in the assessment of the extension of oral cancer and dysplasia. Furthermore, it shows accuracy in delineation of the true histologic extension to an error of 5 mm. It also shows promising results in determining the presence of epithelial dysplasia and cancer.

**O10443 PREVALENCE OF FIBROMYALGIA IN TEMPOROMANDIBULAR PATIENTS ACCORDING TO AMERICAN COLLEGE OF RHEUMATOLOGY CRITERIA**

**Paulo Pimentel, Department of Oral and Maxillofacial Surgery, State Server’s Federal Hospital, Rio de Janeiro, Rio de Janeiro, Brazil**

**Objectives:** Many articles have been published on the relation of fibromyalgia and temporomandibular disorders (TMDs). Nevertheless, the mutual pathophysiology has not been elucidated yet. The lack of criteria for fibromyalgia diagnosis has been another difficulty; 18% to 30% of patients with TMD present with myalgia, but 75% to 97% of patients with fibromyalgia present with TMDs. The objective of this study was to evaluate the prevalence of fibromyalgia according to the new diagnostic criteria by the American College of Rheumatology (ACR) in a group of TMD patients.

**Methods:** A total of 78 patients with TMD were assessed according to the Research Diagnostic Criteria for Temporomandibular Disorders in a tertiary hospital. They were consecutive, random, and of both genders. Two scales were used for the assessment of fibromyalgia. One was the widespread pain index (WPI), in which the patient pointed the spread pain index (WPI), in which the patient pointed the

**Results:** Twenty-two patients (28.2%) showed WPI ranging from 7 to 19, 39 (50%) from 3 to 6, and 17 (21.8%) from 0 to 2. The values for SS were from 9 to 12 in 15 patients (19.2%), from 5 to 8 in 27 (34.6%), and from 0 to 4 in 36 (46.1%). According to new ACR criteria, 32 (41%) of the patients presented fibromyalgia. The prevalence between genders were as follows: in women 49 (62.8%) with TMD, of which 55.3% had fibromyalgia, and in men 29 (17%) and 20.7%, respectively.

**Conclusions:** The existence of more effective diagnostic tools for fibromyalgia for dentists that deal with TMDs can make the recognition of this medical problem easier. As the palpation of several painful spots is no longer needed, a higher prevalence of fibromyalgia can be found in TMD patients.

**O10221 WATER-PIPE SMOKING IS SIGNIFICANTLY ASSOCIATED WITH EARLIER DEVELOPMENT OF ORAL CANCER**

**Suhail Al-Amad, Manal Awad, Omar Nimri, Department of Oral and Craniofacial Health Sciences, University of Sharjah, Sharjah, United Arab Emirates**

**Objectives:** Water-pipe smoking is a way of smoking tobacco that is rapidly spreading among young people. Its relationship with oral cancer remains to be determined. The objective of this study was to investigate the relationship between the frequency of water-pipe smoking and the age of cancer development.

**Methods:** Data of patients with biopsy-proven squamous cell carcinoma of the oral cavity were extracted from the Jordanian National Cancer Registry. Patients with valid contact details were then telephone interviewed and asked about frequency of cigarette smoking and water-pipe smoking and of drinking alcohol. The relationship between age at diagnosis and risk factors was assessed using multiple regression analysis.

**Results:** A total of 164 patients with oral cancer satisfied the inclusion criteria and were contactable for the purpose of this research. Among the men (n = 112), the mean age was 58.8 years (standard deviation, 17.2); among the women (n = 52), the mean age was 56.8 years (standard deviation, 18.5). Of these participants, 71% were cigarette smokers, while 35% and 20% were water-pipe smokers and alcohol drinkers, respectively. Adjusted for sex, cigarette smoking, and alcohol drinking, the multivariate regression analysis found that regular and occasional water-pipe smokers were significantly younger when developing their oral cancer, by comparison with nonsmokers (B = −20.5 [95% CI, −25.7 to −15.3] and B = −14.2 [95% CI, −21.5 to −6.9], respectively).

**Conclusions:** Water-pipe smoking is a significant and independent risk factor that is associated with the development of oral cancer at a younger age. Longitudinal studies of the effect of water-pipe smoking on the earlier development of oral cancer are needed to establish a cause-effect relationship. Antismoking campaigns should put emphasis on this growing habit, particularly among young people.

**O10229 EFFECT OF SMOKING ON REPAIR GENE METHYLATION IN ORAL MUCOSA**

**Celina Faig Lima Carta, Monica Ghislaine Oliveira Alves, Fabio Daumas Nunes, Jaqueline Scholz Issa, Marcia Sampaio Campos, Patricia Pimentel de Barros, Antonio Olavo Cardoso Jorge, Janete Dias Almeida, Department of Biosciences and Oral Diagnosis, Institute of Science and Technology, São Paulo State University (UNESP), São José dos Campos, São Paulo, Brazil**

**Objectives:** Epigenetic changes, such as methylation, can provide genetic silencing that may contribute to the development of oral squamous cell carcinoma. The aim of the present study was to study epigenetic alterations in the process of carcinogenesis in oral mucosa, through a screening of methylation of repair genes from chronic smokers.

**Methods:** Cytologic material was obtained from 5 patients of the Outpatient Program for the Treatment of Smoking, Heart Institute, Faculty of Medicine, University of São Paulo (INCOR-HCFMUSP), São Paulo, Brazil. The inclusion criteria specified men who were smokers (> 20 cigarettes per day for 10 or more years) and had no history of malignant neoplasm or
clinical signs at the evaluated site. Exfoliative cytology from the lateral border of the tongue was performed. DNA from smears was evaluated for methylation profile analysis by a DNA methylation polymerase chain reaction array system for 22 repair genes.

Results: Genes usually involved in oral carcinogenesis process that showed methylation included hMLH1 (0.09%, 0.43%, and 1.37%); hMSH2 (0.06%, 0.18%, and 1.34%) and ATM (0.22%, 0.83%, 1.13%, and 1.64%). No methylation was seen in 2 cases for hMLH1, 2 cases for hMSH2, and 1 case for ATM.

Conclusions: Smokers evaluated showed low levels of DNA gene repair methylation, without correlation with the number of cigarettes smoked and years of consumption.

OIO251 ORAL SQUAMOUS CELL CARCINOMA SECONDARY TO HEMATOPOIETIC STEM CELL TRANSPLANT CONFOUNDED BY HUMAN PAPILLOMAVIRUS
Joseph Katz, Indraneel Bhattacharyya, Islam Nadim, Jan Moreb, Department of Oral Diagnostic Sciences University of Florida College of Dentistry, Gainesville, FL, USA

Objectives: We report 3 cases of oral squamous cell carcinoma that were secondary to autologous hematopoietic stem cell transplant (HSCT) and were positive for human papillomavirus (HPV). Because the prospects of a secondary malignancy in HSCT are higher than in normal participants, we hypothesized that they may be associated with HPV infection. We have also reviewed the pertinent literature on oral squamous cell carcinoma as a secondary malignancy in HSCT patients.

Methods: We have screened the records of the Oral Pathology biopsy service archives for oral squamous cell carcinoma (SCC) cases that were secondary to a previous HSCT. Three cases were identified, and the sections were submitted for immunohistochemical staining for HPV16.

Results: All 3 cases of oral SCC that were secondary to autologous HSCT were positive for HPV16. All patients had the traditional risk factors for secondary cancer, such as the past use of immunosuppressive chemotherapy and graft-vs-host disease (GVHD).

Conclusions: The relevant literature reports that oral SCCs are the most common secondary malignancy in HSCT patients. These patients should therefore be screened frequently for oral cancers for years after the transplant, especially if they were exposed to potent immunosuppressive drugs and have developed GVHD. Special attention should be given to the presence of HPV. Consideration of HPV vaccination in HSCT patients should be discussed if these findings are validated in a large cohort of HSCT patients.

OIO264 COMPLIANCE WITH WORK-UP AND MONITORING FOR AZATHIOPRINE AND MYCOPHENOLATE MOFETIL M.K. Shephard, C. Venda Nova, T.A. Hodgson, Department of Oral Medicine, Eastman Dental Hospital, University College London Hospitals NHS Foundation Trust, and University College London Eastman Dental Institute, London, United Kingdom

Objectives: To audit unit compliance with published guidelines for work-up and monitoring of azathioprine and mycophenolate mofetil (MMF).

Methods: Data were collected from patient records and compared to the British Association of Dermatologists guidelines of 2011, for patients prescribed azathioprine and MMF from January 2010 to August 2013. Data were collected for 13 patients on MMF and 52 patients on azathioprine. The second stage of data collection took place 6 months after the introduction of a clinic checklist for work-up and monitoring.

Results: Azathioprine group: Compliance with pretreatment viral serology screening improved from <10% to >80% after checklist introduction. Compliance with tuberculosis risk assessment improved from 5% to 50%. Documentation of counseling regarding side effects and risks improved from 48% to 100%. Compliance with monitoring blood tests improved slightly. Over this period, 18 patients ceased therapy owing to adverse effects; 9 patients then commenced MMF. MMF group: Compliance with viral serology screening increased from nil to 100%; 80% of patients had documented evidence of counseling after introduction of the checklist, compared with none previously. Monitoring blood test compliance did not significantly improve. Two patients ceased therapy owing to adverse effects.

Conclusions: The introduction of a clinical checklist improved compliance in some but not all areas of work-up and monitoring protocols for azathioprine and MMF therapy. After cessation of the audit, 2 cases of occult viral infection were identified by the screening protocol (Hepatitis C and HIV). There was ongoing difficulty in complying with monitoring blood test protocols. The serious adverse effect rate appears to be low for both medications. Patients who fail azathioprine therapy appear to tolerate MMF well.

OIO284 TOPICAL STEROID ABSORPTION IN ORAL AND DERMATOLOGIC DISEASE Zahra Syed, Jonathan Buchanan, Department of Oral Medicine, Leeds Dental Institute, Wembley, United Kingdom

Objectives: Topical corticosteroids are used widely throughout medicine; however, clinicians and patients worry about their potential side effects. This review sought to answer 2 questions: (1) to find whether the evidence available proves systemic absorption of topical steroids is possible by oral, mucosal, and skin surfaces and (2) to find whether the available guidelines for topical steroid use are in line with the evidence available.

Methods: A literature search was conducted according to the SIGN guidelines to evaluate the evidence supporting systemic absorption of topical steroids.

Results: Of the 50 studies that were identified, 15 were reports occurring during mucosal application (oral, 8; ocular, 2; nasal, 7), and 33 were associated with cutaneous application.

Conclusions: Topical steroids should be used for their anti-inflammatory properties to treat active and symptomatic inflammatory skin and mucosal conditions. Specific preparations should be used for specific tissues, based primarily on practical considerations such as formulation. In general, high potency topical steroids should not be applied >4 times per day. More high-quality clinical trials and reviews are needed to better characterize the potential systemic absorption of topical steroids in the management of mucosal diseases.

OIO359 LEUKOPLAKIA IN THE CLINICAL AND EPIDEMIOLOGIC ASPECTS: ANALYSIS OF CASES Marlena Pedowska, Beata Petkowicz, Karolina Thum-Tyzo, Marcin
OI0377 TELEDENTISTRY FOR THE SCREENING OF ORAL MUCOSA ALTERATIONS IN JUVENILE OFFENDERS

Cassius Carvalho Torres-Perreira, Imara A.C. Morosini, Diego C. Oliveira, Bruna Basso Fonseca, Fernanda M. Ferreira, Fabian C. Fraiz, Stomatology Department, Federal University of Paraná (UFPR), Curitiba, Paraná, Brazil

Objectives: This study was developed to evaluate a teledentistry system as a method of screening oral mucosa alterations in a cohort of 102 Brazilian juvenile offenders.

Methods: The oral condition of each adolescent was documented using a digital camera. The images were uploaded on a file sharing service (www.sendspace.com) and then the link was sent via email to a distant consultant, an oral medicine specialist, who downloaded the files and proposed a diagnostic hypothesis for each case. The oral lesions frequencies were analyzed through descriptive statistics.

Results: In this group, the prevalence of oral lesions was 38.23%; while 78.43% of the adolescents concentrated at least 1 of the normal alterations and 51% at least 1 periodontal condition.

Conclusions: Considering the results and facing the difficulties involved in the assessment of the oral care needs of vulnerable groups, teledentistry seems to be an efficient method of assistance in the screening of oral mucosa alterations in juvenile detention facilities.

CR0307 TRAUMATIC ULCERATED GRANULOMA WITH STROMAL EOSINOPHILIA ASSOCIATED WITH KHAT CHEWING Esther Hullah, T. Kovacevic, M. Escudier, King’s College London Dental Institute, Guy’s and St Thomas’ Hospital, London, United Kingdom

Background: Khat or qat (Catha edulis) is a shrub indigenous to Yemen and East Africa. Chewing the leaves, which have sympathomimetic and euphoric effects, is a popular habit in many countries, notably in East Africa. Chewing khat has been reported to result in white and pigmented lesions affecting the oral mucosa in up to 83% and 100% of individuals using it over a 3-year period. This change has been attributed to the combination of chronic local mechanical and chemical trauma to the oral mucosa.

Summary: A 24-year-old Somalian man presented with a 2-month history of intermittent tongue soreness. Medically, he was fit and well, taking no regular medication and with no known allergies. Socially, he smoked 10 cigarettes per day and chewed khat twice per week, as he had done for the past 10 years. He did not consume alcohol. Introral examination found the tongue to have a granular appearance with central depapillation. Multiple deep ulcers were also evident, on the affected area, with an overlying thick fibrinous slough. An incisional biopsy of the tongue found a nonspecific ulceration with granulation tissue at the ulcer base. There was an acute inflammatory infiltrate and prominent eosinophils, representing a traumatic ulcerated granuloma with stromal eosinophilia (TUGSE). The patient was advised to stop chewing khat, after which the soreness and ulceration resolved over a 6-week period. Follow-up over a 6-month period found no recurrence.

Conclusions: Khat chewing has been documented in many countries and has increased progressively with worldwide migration. It is therefore important for clinicians to be aware of
such habits. We report the first case of TUGSE affecting the tongue secondary to khat chewing as a result of the combination of local mechanical and chemical irritation.

CR0313 OROFACIAL PAIN CAUSED BY BRAIN TUMORS: 3 CASES Yeon-Hee Lee, Ji-Woon Park, Hee-Kyung Park, Jin-Woo Chung, Hong-Seop Kho, Department of Oral Medicine and Oral Diagnosis, School of Dentistry, Seoul National University, Seoul, South Korea

Background: Orofacial pain may be caused by various diseases and conditions, providing an ongoing diagnostic challenge for clinicians. In rare cases, patients with orofacial pain may have intracranial tumors as the underlying cause. Therefore, it is important for dental clinicians to understand and recognize warning signs of intracranial tumors associated with orofacial pain.

Summary: We report on 3 patients with orofacial pain and neurologic deficits due to brain tumors. In case 1, a 58-year-old woman presented with a 5-month history of right TMJ pain, right hemifacial dysesthesia, paresthesia, and dysgeusia, which had gradually become aggravated. In case 2, a 64-year-old woman reported a 5-year history of electric-like sensations on her left facial area. The symptoms gradually worsened and expanded, while accompanying tinnitus and hearing loss of her left ear. In case 3, a 70-year-old woman presented with a 2-year history of paresthesia in her right perioral area, foreign body sensation and paroxysmal pain of her right middle and lower face, and bitter taste for migraines and previous surgical removal of a basal cell carcinoma of the right arm. Extraoral findings were within normal limits, and cranial nerve examination elucidated mild disabling neurologic symptoms such as worsening paresthesia, was no delay to the acoustic schwannoma (case 1) and meningioma (cases 2 and 3) for evaluation of a tongue mass of 6 weeks duration. The patient was previously diagnosed with folliculotropic MF, and over a 5-year period, his skin lesions continued to evolve despite multiple treatments with total skin electron beam therapy, phototherapy, and various chemotherapeutic agents, without evidence of extracutaneous disease. Intraoral examination found an exophytic, nonindurated verrucous mass with shallow ulcers and a hemorrhagic appearance covering the entire dorsal surface of the tongue. Patient 2 was a 76-year-old white man with a 3-year history of treatment-refractory MF. He presented with complaints of dry, burning lips with generalized mouth soreness. Linear ulceration of the anterior labial mucosa and diffuse erythema of the buccal mucosa were evident on intraoral examination consistent with a Candida infection. He presented 6 weeks later with widespread painful oral swellings. Histologic analysis of affected tongue tissue from patient 1 and affected buccal mucosa from patient 2 both found a diffuse infiltrate of atypical, CD3+ T lymphocytes with marked epidermotropism. After the diagnoses of oral T-cell lymphoma, both patients were classified with stage IV MF, with subsequent modification of their therapeutic regimens. Brentuximab was initiated for the first patient, with significant improvement of his tongue and skin lesions. The second patient was started on gemcitabine, but after multiple complications, the CHOP chemotherapy regimen (cyclophosphamide/
doxorubicin/vincristine/prednisone) was initiated, with ongoing treatment.

Conclusions: Visceral involvement of MF is associated with a poor prognosis. Oral lesions may be indicative of extratumoral disease associated with MF.

CR0431 SPORADIC BURKITT LYMPHOMA FIRST PRESENTING AS A JAW LESION Nikolaos Nikitakis, Savvas Titisinides, Ioannis Karousis, Lemonia Tsartsali, Natalia Tourkantoni, Antonis Kattanis, Dental School, University of Athens, Greece

Background: Burkitt lymphoma (BL) is an aggressive non-Hodgkin lymphoma (NHL), further subdivided into endemic (African), sporadic, and immunodeficiency-associated forms. It exhibits a very rapid growth with multiorgan involvement. While jaw lesions are common in endemic BL, they are infrequent in sporadic cases, only rarely constituting the first manifestation of the disease.

Summary: An 11-year-old white girl was referred for evaluation of painful swellings in the gingiva around erupting second permanent mandibular molars bilaterally, accompanied by difficulty in swallowing, general malaise, and weight loss of 20 days’ duration. Clinical examination found right facial swelling and bilateral prominent gingival swellings adjacent to mandibular premolars and molars, which were mobile, displaced, and partially extruded. Panoramic radiography found ill-defined radiolucencies in the posterior mandible bilaterally with a “floating in air” teeth appearance. A screening blood test did not show any significant abnormalities. Computed tomography found bilateral soft tissue masses along the mandibular ramus extending upward into the maxillary sinus. With a provisional diagnosis of hematologic disease, the patient was admitted to the hospital, and a partial biopsy of the gingival/periapical tissues in the right mandible was performed. Histopathologic examination and immunohistochemical analysis led to a final diagnosis of BL. The patient underwent full staging work-up, which found multiple lesions in the skeleton, liver, and pelvic lymph nodes on positron emission tomography—computed tomography and found bone marrow infiltration. A polychemotherapy regimen was initiated, with regression of clinical oral lesions and symptoms within a few weeks and complete remission of the disease after 5 chemotherapy cycles.

Conclusions: We analyzed a rare case of a sporadic BL first manifesting in the jaws. With the BL’s exceedingly rapid doubling time and the aggressive clinical course, this case is a fitting example of the importance of timely diagnosis and life-saving referral of rapidly growing jaw lesions.

CR0243 ORAL SQUAMOUS CELL CARCINOMA IN A PATIENT WITH KERATITIS-ICHTHYOSIS-DEAFNESS SYNDROME Lujain Homeida, Mahnaz Fatahzadeh, Rutgers School of Dental Medicine, Newark, NJ, USA

Background: Keratitis-ichtyosis-deafness (KID) syndrome is a rare form of ectodermal dysplasia with significant visual and auditory impairment. Pathogenesis involves a mutation in the GJB2 gene (gap junction protein, beta 2), which encodes connexin-26, a protein in epithelial gap junctions thought to be involved in epithelial cell differentiation. Affected patients are also at increased risk for epithelial malignancies. We report a patient with KID syndrome whose ulcerative oral lesion caused him significant discomfort and was subsequently diagnosed as oral squamous cell carcinoma (SCC). To date, 100 cases of KID syndrome, including 19 with SCC complications, have been reported worldwide.

Summary: A 25-year-old white man with KID syndrome presented for evaluation of symptomatic oral sores of several months’ duration. He was visually impaired, was nearly deaf, and had difficulty with oral functions owing to pain. Social and family history were noncontributory. Clinically evident were numerous pink papules on his face and neck, hypopigmentation of the scalp, dystrophic nails, and a fungating mass on his left foot diagnosed as a benign neoplasm by his dermatologist. There was no cervical lymphadenopathy, and he was partially dentate. Visible intra-orally was a tender ulceration on the right buccal mucosa and a nodular, hemorrhagic growth on the right lower edentulous ridge. Irregular erosions were also present on the left buccal mucosa. Differential diagnosis included lesions of traumatic or neoplastic etiology. Histopathologic examination of specimens from both lesions found well-differentiated SCC. Immunohistochemical staining was positive for P16, suggesting tumor was infected with human papillomavirus. The patient was referred to a head and neck surgeon for management of oral malignancy and further evaluation of the left buccal mucosal lesion.

Conclusions: KID syndrome is a rare genetic disorder with significant potential complications, including mucocutaneous malignancies. Lifetime monitoring of the affected patients through regular, periodic screenings is critical to early recognition of potential mucocutaneous abnormalities, initiating much-needed palliation and timely definitive management.

CR0361 A CASE OF BILATERAL PAROTID GLAND SWELLING CAUSED BY SARCOIDOSIS Pan Wei, Zhimin Yan, Hong Hua, Peking University School of Stomatology, Beijing, China

Background: Sarcoidosis is a systemic granulomatous disease that mainly affects the lungs, lymph nodes, liver, and spleen. Parotid swelling as the primary complaint is rare and occurs in only 6% of patients with sarcoidosis. Consequently, an initial head and neck presentation of this disease is not always recognized.

Summary: A 54-year-old woman came to our clinic with complaints of painless bilateral parotid gland enlargement over a 4-month period. No systemic symptoms such as fever, cough, and weight loss were reported. The physical examination found a bilateral, firm, painless swelling in the parotid region, and the intraoral examinations were unremarkable. Computed tomography of the head and neck and ultrasonography examination were both negative for discrete mass. To establish the diagnosis, serologic examinations and labial salivary gland biopsy was suggested. The results showed that the serum angiotensin-converting enzyme (S-ACE) level was significantly elevated (131 U/L), the Sjögren syndrome autoantibodies SSA and SSB, antinuclear antibody, and rheumatoid factor were negative, and the serum IgG4 level was normal. The histologic examination by hematoxylin-eosin staining found noncaseating granulomas infiltrating and replacing the glandular parenchyma. Special staining ruled out the presence of mycobacterial infections. The diagnosis of parotid gland sarcoidosis was established based on the histologic examination and elevated serum ACE level. As we recommended, the patient consulted a pulmonologist, who chose not to begin steroid therapy.

Conclusions: A case of asymptomatic bilateral parotid gland swelling is a diagnostic dilemma, because we have to
differentiate among neoplasm, sialosis, tuberculous, actinomycosis, orofacial granulomatosis, and systemic disorders affecting salivary glands, such as Sjögren syndrome, IgG4-related disease, and sarcoidosis. In the differential diagnosis, it is important to include a thorough medical history, physical examinations, radiologic and serologic tests, and pathologic examinations.

**CR0299 HERPES ZOSTER VIRUS–ASSOCIATED ERYTHEMA MULTIFORME IN A CHILD E.A. Hallah, P. Thakrar, R.J. Cook, King’s College London Dental Institute, Guy’s and St Thomas’ Hospital, London, United Kingdom**

**Background:** Erythema multiforme (EM) is a mucocutaneous condition, rarely associated with varicella zoster virus (VZV) infection in children, despite the virus’s high incidence as a childhood pathogen. In the literature, only 2 cases of VZV associated with EM have been recorded, one in a 5-year-old and the other in a 13-year-old. One case of VZV associated with Stevens-Johnson syndrome in a 12-month-old has also been reported to date.

**Summary:** A 10-year-old girl presented with a 2-year history of recurrent severe oral EM episodes, requiring multiple hospital admissions for lethargy, diet, and fluid support. On each admission, the condition responded to systemic corticosteroids but proved recalcitrant to subsequent prophylactic acyclovir, such that she had eventually been maintained on low-dose prednisolone alone. Direct questioning found that she had had a severe primary VZV infection at age 2, which had necessitated admission to a high-dependency unit. She was otherwise fit and healthy, and all herpes simplex virus serology was negative at presentation to our unit. There was no evidence of mycoplasma pneumonia infection or other common triggers in the history. The prophylactic use of systemic valacyclovir 500 mg twice daily proved effective in preventing further acute episodes and facilitated total withdrawal of all systemic corticosteroid therapy. Fatigue and somnolence have resolved, and normal energy levels have returned, along with return to full-time education participation.

**Conclusions:** VZV-associated EM is a rare condition. However, VZV must be considered as a possible trigger for EM-type eruptions. Failure of previous prophylactic acyclovir treatment may be due to not achieving sufficient tissue concentration of acyclovir. Systemic use of valacyclovir in patients with recurrent EM (or herpes simplex virus infection) can provide better therapeutic results and lowers the risk of selecting acyclovir-resistant VZV strains.

**CR0324 UNUSUAL CASE OF GRANULOMATOSIS WITH POLYANGITIS (WEGENER GRANULOMATOSIS)**

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**Background:** Granulomatosis with polyangiitis (GPA) is a rare multisystem disease associated with small-vessel vasculitis of unknown etiology. Diagnosis is through clinical and laboratory findings, of which the main marker is circulating antineutrophil cytoplasmic antibodies (cANCA) with anti–proteinase 3 (PR3) specificity. Characterization of common clinicopathologic features of disease activity in patients with vasculitis aids early diagnosis.

**Summary:** A 57-year-old woman presented in 2005 to the neurology service with sudden-onset progressive sensorineural hearing loss. She was found to be cANCA positive. A diagnosis of GPA was subsequently confirmed. She was treated initially with cyclophosphamide and subsequently with methotrexate. In 2007 she developed a dry cough, and a chest radiograph found cavitating pulmonary lesions. Cyclophosphamide was recommenced in combination with oral prednisolone, and later azathioprine was added. Two years later, her disease reactivated with a crusty nose and other symptoms, for which she was treated with methotrexate and leflunomide. This resulted in stabilization of her disease, and serology was subsequently cANCA negative. She was then maintained on low-dose immunosuppressive therapy. In 2013, she presented to the Oral Medicine department complaining of localized red, boggy, and bleeding gingival swellings. Examination found the typical strawberry gingivae appearance consistent with a diagnosis of GPA. This was her first oral manifestation of the disease.

**Conclusions:** Well-known oral manifestations of active GPA, such as oral ulceration or strawberry gingivitis, are often seen at initial presentation. However, our patient had experienced many episodes of disease activity accompanied by positive serologic markers in the absence of any oral involvement. Her recent presentation with oral manifestations typical of GPA, but without other clinical or serologic evidence of her diagnosis, emphasizes the need for awareness of the significance of the clinical appearances. Close monitoring for early detection of any recurrence of her systemic disease is indicated.

**CR0325 INCIDENTAL FINDING OF BISPHOSPHONATE-RELATED OSTEONECROSIS OF THE JAWS AFTER SELF-EXTRACTION**

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**Background:** The bisphosphonate class of drugs is a widely used, effective class of medication used in the treatment of skeletal complications and hypercalcemia of malignancies, such as multiple myeloma and metastatic solid tumors. However, bisphosphonate-related osteonecrosis of the jaws (BRONJ) is not an uncommon reported complication of this therapy.

**Summary:** A 59-year-old black man presented for extraction of all his teeth as a result of multiple odontogenic abscesses and advanced periodontal disease. In addition, a complaint of “sharp tooth build-up” cutting into his tongue was made. His medical history was positive for type 2 diabetes, hypertension, hyperlipidemia, chronic kidney disease, and hepatitis C. On intraoral examination, the patient was partially dentate, with generalized gingival recession and grade 2 to 3 mobility of all his present teeth. Also noted in the lower right posterior quadrant was an area of hard exophytic mass, with surrounding gingival inflammation. Periapical radiographs found a bony sequestrum at the alveolar crest in the area of the mandibular right first premolar through the mandibular right second molar. The patient was questioned on history of bisphosphonate use, which he denied. After gentle interrogation, the patient reported self-extracting a mobile tooth in the area where the exophytic mass was noted, about a year before presentation. His medical records included a positive history of multiple myeloma with ongoing dexamethasone (Decadron) and bortezomib (Velcade) therapy. In addition, the patient had previously taken zoledronic acid. Cone beam computed tomography and panoramic radiographs found multiple
areas of bony necrosis and sequestra. Also noted were punched-out lesions along the mandibular rami bilaterally.

**Conclusions:** The importance of developing a complete medical history and obtaining a medical consultation with relevant practitioners cannot be overemphasized. In addition, proper patient education and dental evaluation before and during bisphosphonate use should be considered as one of the important protocols in patient treatment.

**O10430 DIFFUSE REFLECTANCE SPECTROSCOPY FOR MAPPING NORMAL ORAL MUCOSAL TISSUE**

**Authors:** Omar Hamadah, Razan Hafez, Wesam Bachir, Dental Faculty and Higher Institute for Laser Research and Applications, Damascus, Syria

**Objectives:** To evaluate the ability of diffuse reflectance spectroscopy (DRS) to differentiate between normal oral mucosal regions according to their histologic nature in the oral cavity.

**Methods:** A total of 21 healthy patients aged 21 to 75 years were diagnosed as healthy and probed with a portable DRS system. Diffuse reflectance spectra were recorded in vivo in the range of 450-650 nm. In this study, 3 oral mucosal areas were considered, including the masticatory mucosa, lining mucosa, and specialized mucosa. Spectral features based on spectral intensity ratios were determined at 5 specific wavelengths (512, 540, 558, 575, and 620 nm). The 3 studied groups representing different anatomic regions in the oral cavity were compared using analysis of variance and post hoc Bonferroni test.

**Results:** There was a significant difference in mean diffuse spectral ratios (512/540, 512/558, 512/575, 540/558, 558/620, 575/620) between groups (P < .05). The post hoc Bonferroni test detected significant difference in the aforementioned spectral ratios between the masticatory mucosa group and the lining mucosa group (P < .05) and between the masticatory mucosa group and the specialized mucosa group (P = .024 at ratio 558/620 and P = .024 at ratio 575/620). Significant difference in mean spectral ratios was also found between the lining mucosa group and the specialized mucosa group (P = .022 at ratio 512/558 and P = .038 at ratio 512/575).

**Conclusions:** The results indicated the feasibility of DRS as an optical tool for differentiation of oral epithelial tissue. The study enabled the creation of a DRS databank of normal oral mucosal tissue with specific spectral features that may be mapped to enhance the discrimination of oral tissue. The findings could be used for guiding the examiner on the histologic nature of oral mucosa and identifying early changes in oral tissues.

**O10390 NEW FRONTIERS FOR RADIOTHERAPY-INDUCED ORAL MUCOSITIS AND RADIOTHERMATISIS MANAGEMENT**

**Authors:** Margherita Gobbo, Giulia Ottaviani, Serena Zucchinia, Roberto Di Lenarda, Biasotto Matteo, Division of Oral Medicine and Pathology, Dental Science Department, University of Trieste, Trieste, Italy

**Objectives:** Oral mucositis (OM) and radiodermatitis (RD) are serious side effects of radiotherapy (RT), often leading to RT suspension, need for analgesics, and enteral/parenteral nutrition. Laser therapy is a novel therapy used for prevention and management of OM. This prospective study aimed to explore the beneficial effect of class IV high-power laser therapy (HPLT) on RT-induced OM, but it also proposed an innovative strategy to manage RD in patients with breast cancer.

**Methods:** A group of 53 patients with cancer affected by OM, during or after RT with or without chemotherapy, were treated with HPLT during 4 consecutive days (970 nm, 5 W (50%), 35-6000 Hz, 230 s). Assessment of OM (World Health Organization [WHO] scale), pain (visual analog scale [VAS]), functional ability, subjective parameters, site/severity of ulcerations, and erythema were recorded on days 1 to 4 and at follow-up visits on days 7, 14, and 21. Friedmann, McNemar, and Wilcoxon tests (SPSS, version 13.0) were used appropriately. 17 patients with breast cancer affected by RD were treated by HPLT (6 sessions during 2 weeks) and monitored during 3 weeks (days 19, 26, 33) for OM grade, discomfort, and itching.

**Results:** Progressive improvement of WHO score from day 7 onward, and of VAS from day 2 onward (P < .001), was registered. All patients’ functional capacity improved on day 4 (P < .05). All subjective parameters improved on day 14 (P < .001), and voice improved on day 21 (P < .001). Ulceration dimensions and erythema severity significantly decreased over time in all oral sites examined (P < .05). In the same way, HPLT proved beneficial in the amelioration of RD for all the parameters considered (P < .001).

**Conclusions:** Regardless of OM grade/site and of kind/site of tumor, HPLT seemed effective in healing OM. Remarkably, we can hypothesize its beneficial role in the management of RD. In both cases, effective treatment could improve quality of life through a safe, easy, innovative approach.

**O10311 CLASS IV LASER BIOSTIMULATION AND TUMOR ANGIOGENESIS**

**Authors:** Giulia Ottaviani, Margherita Gobbo, Rossana Bussoni, Serena Zucchinia, Roberto Di Lenarda, Biasotto Matteo, Division of Oral Medicine and Pathology, Dental Science Department, University of Trieste, Trieste, Italy

**Objectives:** Given that angiogenesis is considered one of the main effects of laser biostimulation, although it may represent an undesired risk for patients bearing a tumor of the oral cavity, we used a murine carcinogenesis model to verify its effect on tumor-associated angiogenesis, and subsequent tumor growth.

**Methods:** In vivo study: Oral cancerous lesions were induced in a total of 40 mice through 4-nitroquinoline 1-oxide (4-NQO) diluted in drinking water. After 16 weeks, all animals’ cages were reverted to regular water. Mucosal changes were documented twice a week and oral cavity examination was performed until week 22. During the 17th week, the tumor area was directly irradiated with class IV diode laser in 20 animals for 4 consecutive days. Animals were euthanized for tissue retrieval. Histopathologic examinations were performed. Subsequently, the role of laser therapy on tumor angiogenesis was evaluated by perfusing tumors with fluorescent NanoFluospheres, followed by quantitative evaluation of the fluorescence and 3-dimensional reconstruction of the vascular network by confocal microscopy. In vitro study: Human coronary artery smooth muscle cells were cultured in SmcGM medium and irradiated with the same class IV diode laser, specifically designed to provide a uniform irradiation to a multiwell plate (96 wells). Cultured cells were exposed to different laser protocols. At 2, 6, and 24 hours after laser irradiation, the ATP content was measured using the ATPlite Luminescence Assay System.

**Results:** Neither tumor growth nor tumor angiogenesis increased in the laser-treated group; laser seemed to isolate tumors, decreasing dysplastic areas, instead. Moreover, laser-
treated tumors showed less ectasic and permeable vessels, with absence of background NanoFluospheres’ leakiness. In vitro, laser protocols significantly increased ATP content at 2 and 6 hours after irradiation \( (P < .005) \).

Conclusions: This is one of the first in vivo and in vitro combined studies. Results suggest class IV laser biostimulation could be considered a safe technique even when performed in cancerous areas of the oral cavity.


Objectives: HIV-infected individuals are at increased risk of oral cavity Kaposi sarcoma and non-Hodgkin lymphoma. However, it is suggested this patient population may also be at increased risk of oral cavity squamous cell carcinoma (OSCC). It remains unclear whether this is secondary to known risk factors (such as smoking and alcohol) or relates to HIV-specific factors, such as coinfection with human papillomavirus or Candida species, or the use of highly active antiretroviral therapy (HAART).

Methods: Each unit identified HIV-infected individuals who presented with or subsequently developed OSCC, oral mucosal dysplasia, or both over a period of up to 10 years. A retrospective chart and histopathologic report review was undertaken in each center, and the outcomes were collated.

Results: A total of 18 HIV-infected individuals with OSCC or dysplasia were identified: 9 from London, United Kingdom; 7 from New York, NY, USA; and 2 from Sydney, Australia. All but one of the patients were male, with an average age at OSCC/dysplasia diagnosis of 50 years (range, 37-67 years). The cohort had been diagnosed with HIV infection a mean of 12 years before their first OSCC/dysplasia diagnosis (range, 1-28 years); 83% of the patients were current or ex-smokers. A total of 48 OSCC/dysplastic lesions were diagnosed in this cohort. The commonest sites were the tongue (31%), buccal mucosa (22%), and palate (15%); 35% of the patients had a CD4 count (< cells/mm\(^3\)) of 200-400, 25% 400-600, and 37.5% > 600 at lesion diagnosis. One individual had a CD4 count < 200 cells/mm\(^3\). Approximately 90% had an undetectable viral load, and 16 of the 18 individuals were on HAART at the time of diagnosis. Seven individuals had multiple synchronous OSCC/dysplastic lesions. Two patients had new or recurrent OSCC/dysplastic lesions identified 7 and 9 years after first lesion diagnosis.

Conclusions: In all 3 cities, some HIV-infected individuals developed OSCC, oral mucosal dysplasia, or both. Further analysis will better characterize this tricenter international cohort.

O10396 MAST CELLS AND MICROVESSEL DENSITY IN ORAL DYSPLASIA AND ORAL SQUAMOUS CELL CARCINOMA Caroline Brandi Schlaepfer Sales, Renata Oliveira de Souza, Ludmila de Faro Valverde, Rosane Borges Dias, Vanessa Sousa Nazaré Guimarães, Robson Passos dos Santos, Marcilei Eliza Cavichioli Baum, Clarissa Araújo Gurgel Rocha, Oswaldo Cruz Foundation, Department of Molecular Biology and Pathology Laboratory, Salvador, Bahia, Brazil

Objectives: To investigate the distribution of mast cells and microvessel density (MVD) in oral dysplasia (OD) and oral squamous cell carcinoma (OSCC).

Methods: Fourteen OD and 56 OSCC specimens were submitted to immunohistochemistry with the Advance System (Dako) using antibodies against CD34 and mast cell tryptase proteins. The mast cell density (MD) (cells/mm\(^2\)) and the MVD (vessels/mm\(^2\)) were calculated at a minimum of 3 and maximum of 5 hot spot areas, in each case. All studied proteins were associated with clinical parameters and histologic grade of OD and OSCC using GraphPad Prism 5.01.

Results: We found no statistical differences in OD and OSCC for MD and MVD, considering various clinical parameters such as sex, histologic grade, subsite, perineural invasion, and vascular invasion. The MD and MVD were significantly highly in OD when compared with OSCC \((P = .01\) and \(P = .0003\), respectively). In OD and OSCC, there were no correlations between MD and MVD.

Conclusions: In our study, MD and MVD apparently did not contribute to the pathogenesis of OD and OSCC.


O10425 PROLIFERATION MARKERS AND RADIOLOGIC FEATURES IN KERATOCYSTIC ODONTOGENIC TUMOR Rosane Borges Dias, Caroline Brandi Schlaepfer Sales, Ludmila de Faro Valverde, Patrícia Keler Machado, Vanessa Sousa Nazaré Guimarães, Robson Dos Passos Silva, Viviane Almeida Sarmiento, Jean Nunes Dos Santos, Clarissa Araujo Gurgel, Oswaldo Cruz Foundation, Laboratory of Pathology and Molecular Biology, Salvador, Bahia, Brazil

Objectives: To investigate the association between Ki-67, p53, and p63 proteins with radiologic features described for keratocystic odontogenic tumor (KOT).

Methods: Thirty-seven panoramic radiographs obtained from patients with KOT were scanned and evaluated on a monitor widescreen. The brightness and contrast of all images were adjusted using Photoshop CS2 software (Adobe). Immunohistochemistry for Ki-67, p63, and p53 proteins was performed with the EnVision System, and results were described according to the proportion of positive cells (0, < 5%; 1+, 5-25%; 2+, 25-50%; 3+, > 50%) for each protein.

Results: Thirty-one KOTs were observed in posterior of mandible, and the unilocular aspect was predominant \((n = 26)\). Nineteen KOTs distorted the mandibular canal, and 11 displaced a tooth. Satellite cysts were associated with multilocular aspect \((P < .016)\). The distribution of Ki-67, p63, and p53 positive cells was similar between KOT with unilocular and multilocular aspects and not related to changes in the position of the mandibular canal \((P > .05)\) or tooth displacement \((P > .05)\).

Conclusions: Our results suggest that there is no relationship between proliferative markers (Ki-67, p53, and p63) and radiographs in KOT.

O10438 VASCULAR ENDOTHELIAL GROWTH FACTOR A IS RELATED WITH ORAL SQUAMOUS CELL CARCINOMA WITH CLINICAL PARAMETERS OF AGGRESSIVENESS Caroline Brandi Schlaepfer Sales, Renata Oliveira de Souza, Ludmila de Faro Valverde, Rosane Borges Dias,
Marcile Eliza Cavichioli Baun, Eduardo Antônio Gonçalves Ramos, Fernando Augusto Soures, Jean Nunes dos Santos, Clarissa Araújo Gurgel Rocha, Oswaldo Cruz Foundation, Laboratory of Pathology and Molecular Biology, Salvador, Bahia, Brazil

**Objectives:** To investigate vascular endothelial growth factor A (VEGFA) in transcriptional and protein level in oral squamous cell carcinoma (OSCC) and its association with clinical parameters.

**Methods:** A total of 44 OSCC specimens, 8 nonneoplastic specimens of tissue adjacent to the tumor (N2), and 3 non-neoplastic oral mucosa specimens pooled into a group (N1) were evaluated in this study. Quantitative polymerase chain reactions were conducted in the ABI 7900 HT machine and using Taqman gene expression assay for VEGFA gene (00900055_m1). Gene expression analysis was carried out with the Livack (2001) method (2 - ΔΔCQ). Normalization was performed with 18 S and GAPDH (glyceraldehyde-3-phosphate dehydrogenase) reference genes, and N1 was the calibrator. For VEGFA protein evaluation, 21 OSCC specimens distributed in a tissue microarray (TMA) were submitted to immunohistochemistry with the Advance System (Dako) using VEGFA antibody. VEGFA protein was analyzed regarding positive cell, intensity, and cellular location. The statistical analyses were performed using GraphPad Prism 6.

**Results:** We detected upregulation of the VEGFA gene in 23 OSCC specimens (52%) and in 5 specimens (62%) from the N2 group. These groups were statistically compared, and no difference was detected in transcript amount (P = .49; Student t test). Higher levels of VEGFA transcript were observed in T3-T4 tumors (P = .01; Student test), III-IV OSCC clinical stage (P = .01; Student t test), and OSCC cases where lymph nodes metastasis were detected (P = .01; Student t test). Cytoplasmic positivity staining for VEGFA was detected in OSCC parenchymal cells (n = 13; 61%) and tumor stroma, especially fibroblasts and endothelial cells, in 16 cases (76%).

**Conclusions:** Our result suggests an important role of the VEGFA gene in the biologic behavior of OSCC and a possible role of nonneoplastic cells adjacent to the tumor in the secretion of VEGFA.

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**OIO255 LICHEN AND DYSPLASIA VS LICHEN PLANUS CASES AND DYSPLASIA CASES**

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**Objectives:** The potential of oral lichen planus (LP) for malignant transformation is controversial. Some consider that true transformations occur, but others think that LP and dysplasia (LD) are distinct pathologic entities. Our aim was to compare the clinical characteristics of LD cases with oral dysplasia (DYS), LP, and lichenoid reaction (LR).

**Methods:** Patients treated at the Department of Oral Medicine between 2007 and 2012 with a histologic diagnosis of LP, LR, DYS, or LD were included. Patient information (age, gender, ethnic origin, smoking habits, and medical status) and parameters of oral manifestation (lesion distribution, site, type, and number) were compared.

**Results:** A total of 235 biopsies from 235 patients (92 men, 143 women; average age, 56 years) were included; 54% were never smokers and 25% were current smokers. The LD group (n = 79) had more bilateral cases when compared with the DYS group (n = 30), 70% vs 40.7%, respectively (P = .0008), and occurred at a lower average age (26 vs 62 years, respectively; P = .043). All other parameters were similar. The LD group had a lower percentage of multiple sites than the LP group (n = 57), 77.2% vs 94.7%, respectively (P = .021), while all other parameters were similar. When compared with the LR patients, the LD group had a higher percentage of men (41.8% vs 27.9%, P = .043).

**Conclusions:** As the clinical characteristics of LD were more similar to those of the LP and LR groups than to those of dysplasia, these findings may indicate that LD should be considered as part of the lichen planus disorder spectrum rather than a separate entity, although further analysis of larger groups is warranted.

**OIO266 COSTS OF INVESTIGATIONS PERFORMED IN AN ORAL MEDICINE UNIT**

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**Objectives:** To evaluate the cost of investigations performed in an oral medicine unit over a 3-year period for 8 common diagnoses: burning mouth syndrome (BMS), recurrent aphthous stomatitis (RAS), pemphigus vulgaris (PV), mucous membrane pemphigoid (MMP), oral lichen planus (OLP), hypосalivation, candidiasis/angular cheilitis, and orofacial granulomatosis (OFG)/Crohn disease.

**Methods:** Data were obtained from the clinical data repository regarding investigations ordered by oral medicine clinicians from July 2010 to July 2013. The number and type of investigations performed for each patient and their diagnoses recorded in our clinical data spreadsheet were cross-tabulated. Information regarding cost of individual investigations was added to the dataset. For each of the 8 diagnoses, we calculated the total number of investigations performed, and the average number of investigations per patient. Then we calculated the overall cost of investigations for each diagnosis.

**Results:** The diagnosis with the highest total number of investigations was OLP (2467), reflecting the large number of referrals for this condition. The diagnosis with the lowest total number of investigations was OFG (545). The diagnoses with the highest average number of investigations per patient were PV and MMP (13.9 and 11.5, respectively). The diagnosis with the lowest average number of investigations per patient was OLP (3.1). The diagnosis with the highest overall cost of investigations was Sjögren syndrome ($25806.93; US $42164.03).

**Conclusions:** There is significant variation in the total cost and number of investigations performed for different diagnoses in our unit. This may be due to differences in management (such as the use of systemic vs topical agents and the required monitoring tests) or to the use of imaging. The results also reflect differences in diagnosis prevalence with our patient population.

**OIO286 ND:YAG LASER PHOTOCOAGULATION OF BENIGN ORAL VASCULAR LESIONS**

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Objectives: This study aimed to evaluate the results of treatment of benign oral vascular lesions with neodymium:yttrium-aluminum-garnet (Nd:YAG) laser.

Methods: Fifteen patients with oral vascular lesions were treated with a noncontact photocoagulation method with Nd:YAG laser (5 W, 70 Hz, 6.25 J/cm²) and then submitted to biostimulation with Nd:YAG laser (1.5 W, 15 Hz, 1.56 J/cm², defocused) for 60 seconds. All patients were evaluated weekly until complete resolution of the lesions.

Results: None of the patients presented postoperative pain, and 6 patients (40%) experienced postoperative complications (necrosis, swelling, scar, and infection); 2 of them presented with more than 1 complication. Twelve patients (87%) presented complete resolution after 1 session of laser photocoagulation. After treatment, all cases had complete resolution of the lesion.

Conclusions: Nd:YAG laser photocoagulation is safe and a promising treatment for vascular lesions, but additional randomized controlled studies are necessary to define the best intervention methods, timing, and long-term safety.

OI0358 WORKPLACE-BASED ASSESSMENTS IN ORAL MEDICINE: TRAINERS’ AND TRAINEES’ PERSPECTIVES Sabine Jurge, Department of Oral Medicine, Eastman Dental Hospital, University College London Hospitals NHS Foundation Trust, and Eastman Dental Institute, University College London, London, United Kingdom

Objectives: Workplace-based assessments (WBAs) are used as both formative and summative assessment tools of learning outcomes in Oral Medicine (OM) specialty training in the United Kingdom. This evaluative study explores OM trainers’ and trainees’ views on WBA and describes any differences depending on the stage of the training for the trainees and length of time postspecialization of the trainers.

Methods: A targeted sampling was used, and all the UK current OM specialty trainees and their trainers were invited to participate. Separate semistructured anonymous questionnaires were designed for trainers and trainees on the SurveyMonkey online survey software tool. The main focus was on feasibility, validity, reliability, and educational value. Descriptive statistics were used. Qualitative data were coded, and the themes and subthemes were generated.

Results: Of the 16 trainers and 13 trainees invited, 12 and 10, respectively, completed the questionnaires (response rate, 75% and 77%, respectively). Over the 12-month period of the OM specialty training, on average each trainee had completed 4.7 case based discussions (CbD), 3.4 mini-clinical evaluation exercises (CEX), and 1.3 direct observation of procedural skills (DOPS). These numbers were higher for the trainees at the earlier stage of their training. Overall, WBA were perceived by both trainers and trainees as valid, reliable assessments with good educational value, although there were individual differences. The trainee suggested that ideal mean numbers of WBA over a 12-month training period were 7.7 CbD, 6 mini-CEX, and 3.4 DOPS. There were differences between more junior and senior trainees. Trainers’ answers varied, but the mean numbers were 18 CbD, 7.6 mini-CEX, and 8.3 DOPS. In qualitative analysis, the main themes were time/feasibility, process, and educational value. Trainees had an additional theme of feedback. Time constraint was mentioned as the main difficulty by both trainers and trainees.

Conclusions: WBAs can be valid, reliable assessment tools with good educational value, if conducted properly. Good-quality feedback with a plan for further training is essential.