国際セッション口演

IO-01

Comparative assessment of anterior maxillary alveolar ridge preservation with and without adjunctive use of enamel matrix derivative: A randomized clinical trial

Jae-Hong Lee

Keywords: Bone regeneration, Enamel matrix derivatives, Randomized controlled trial, Wound healing

Objectives: The aim of this randomized, controlled, parallel-arm study was to evaluate the (a) radiographic bone dimensional changes, (b) postoperative discomfort, and (c) early soft tissue wound healing outcomes, following extraction of maxillary anterior teeth and treatment with alveolar ridge preservation (ARP) with and without the adjunctive use of enamel matrix derivative (EMD).

Materials and methods: Thirty extraction sockets were randomly assigned to two groups: deproteinized bovine bone mineral with 10% collagen covered with collagen membrane with the adjunctive use of EMD (test group) and without EMD (control group). Bone dimensional changes were measured using cone beam computed tomography at 3 and 5 months after ARP. The severity and duration of pain and swelling were evaluated using self-reported questionnaires, and soft tissue wound healing outcomes were assessed clinically. Chi-square tests and t-tests were conducted to compare differences between the two groups.

Results: Radiographic and clinical analyses showed no significant differences in horizontal and vertical bone dimensional changes and soft tissue wound healing outcomes between the two groups. There were no significant differences in the severity of pain and swelling between the two groups, but the durations of pain (df=1.20, p=.008) and swelling (df=1.06, p=.029) were significantly reduced in the test group.

Conclusions: ARP with the adjunctive use of EMD reduced the durations of postoperative pain and swelling following maxillary anterior teeth extraction.

IO-02

A biphasic feature of $Gli1^{+}$-mesenchymal progenitors during cementogenesis that is partly controlled by Wnt/β-catenin signaling

Xudong Xie

Keywords: periodontium, cementum, Gli1, Wnt/β-catenin, mesenchymal progenitors

Cementum, a specialized bony layer covering an entire molar root surface, anchors teeth into alveolar bone. *Gli1*, a transcriptional activator in Hedgehog signaling, has been identified as a mesenchymal progenitor cell marker in various tissues, including periodontal ligament (PDL). To address the mechanisms by which *Gli1*+ progenitor cells contribute to cementogenesis, we used the *Gli1-lacZ* knock in line to mark Gli1+ progenitors and the *Gli1-CreERT2; Rosa* 26 tomato line (named $Gli1^{Lin}$) to trace the Gli1 progeny cells during cementogenesis. Our data unexpectedly displayed a biphasic feature of *Gli1*+ PDL progenitor cells and cementum growth: a negative relationship of a *Gli1*+ progenitor cell numbers and cementogenesis but a positive correlation between *Gli1*-derived progeny cell number and cementum growth. DTA-ablation of $Gli1^{Lin}$ cells led to a cementum hypoplasia, further supporting the crucial role of $Gli1^{Lin}$ cells in cementogenesis. Gain of function studies (by constitutive stabilization of β-catenin in $Gli1^{Lin}$ cells) revealed a cementum hyperplasia. A loss of function (by conditional deletion of β-catenin in Gli1+ cells) led to a reduction of postnatal cementum growth. Together, our studies support a vital role of *Gli1*+ progenitor cells in cementogenesis, in which canonical Wnt signaling controls the cell fate of Gli1+ mesenchymal progenitors.

IO-03

Relation of high-sensitivity C-reactive protein in serum of patient with cardiovascular diseases and severe periodontitis

Rungtiwa Srisuwantha

Keywords: high-sensitivity C-reactive protein, cardiovascular diseases, plaque index

Cardiovascular diseases (CVD) and periodontal diseases are inflammatory diseases. The aim of this study was to assess the possible relationship between clinical periodontal parameter, bacteria profiles and inflammatory markers (high-sensitivity C-reactive protein (hs-CRP), interleukin-1b (IL1-b), tumor necrosis factor α (TNF-α) in CVD and periodontitis patient.

Forty patients which confirmed diagnosis of atherosclerotic cardiovascular disease (ACVD) and/or had one of five risk factors were selected. Periodontitis was classified as two groups: mild to moderate probing pocket depth (PPD) group and deep PPD group. PPD, clinical attachment level (CAL), plaque index (PI) and gingival index (GI) were recorded. Blood samples and subgingival plaque were collected. Serum Hs-CRP for all subjects was 2.12 ± 2.04 mg/L. TNF-α and IL1-b were 1.06 ± 0.28 pg/ml and 0.20 ± 0.22 pg/ml, respectively. We founded 22 (55%) patients who were positive for P. gingivalis, 10(25%) for T.forsythia and 10 (25%) T. denticola. P. gingivalis tended to have a higher prevalence rate compared another bacteria in plaque. The moderate correlation between Hs-CRP and PI was obvious in deep PPD group, where we observed correlation coefficients of 0.407,but there was no significant difference. In deep PPD group, the correlation between Hs-CRP and CAL was 0.266, Hs-CRP and GI was 0.276. In contrast to sites with PPD < 6 mm tended to be lower positive correlation coefficients between Hs-CRP and PI, CAL, and GI (r=0.091, r=0.142, r=0.012, respectively).

Patient with severe gingival inflammation and high levels of dental plaque may be at risk for CVD. Elimination of periodontal infection and dental visit should be one of the treatment of patients with CVD.

IO-04

Development of a leukocyte biomarker, first step

Yuusuke Nonomura

Keywords: Periodontitis, Tissue injury, Dimension, Equivalent circuit of periodontitis, Leukocyte count, Leukocyte biomarker, Classification of periodontitis, AAP, EFP, Grade with L1~3T-1, Metrology

Object: Conventionally, no biomarkers and systems, including leukocyte count and flow-cytometry, can be used to measure tissue injury for diagnosing inflammation. Therefore, in this study, the problems which were not able to diagnose inflammation by leukocytes were clarified.

Material and Method: The equivalent circuit model of periodontitis was made from the viewpoint and thereby the problems (phenomenon) was analysed. The circle explorer took the isolated tissue section from the periodontal pocket, and the model was examined.

Results: It proved that the local leukocyte count had not converted the information of space-time continuum (STC) with L3/T ($\Delta S/\Delta t$) which is dimensions of tissue injury. On the other hand, a part of the information was conserved in the tissue section and in the leukocyte count of venous blood (arterial blood). In next report, a part of the information of the experimental gingivitis is also conserved it.

Conclusion: It is measurement of periodontitis to measure the STC of leukocyte manifold in tissue injury with the dimensions of L3 T-1. Hence, it is leukocytes biomarker. Accordingly, the leukocytes biomarker was developed based on the above-mentioned logic, and the sensitivity of the biomarker is about 100 times, for the value of the pocket depth and the velocity corresponding to the grade, [in periodontitis classification of AAP and EFP].

IO-05

Long-term follow-up of successful therapeutic measures for a peri-implantitis patient with a history of generalized chronic periodontitis: A case report

Eiji Ichimaru

Keywords: peri-implantitis, peri-implant mucositis, supportive periodontal implant therapy, chronic periodontitis, long-term follow up

Introduction: The aim of this case report is to assess therapeutic measures of peri-implantitis in the long term.

Case Presentation: 62 years old, female patient with generalized chronic periodontitis (stage 3, grade B) received regular implant therapy, including placement at 47, 46, 44, 35, and 37 sites and interim prosthesis with cementation and definitive prosthesis with screw retention, after periodontitis was stabilized with periodontal initial therapy. Supportive periodontal and implant therapy (SPIT) was then initiated. Peri-implantitis was developed in 47, 46 and 37 sites two years after the initiation. Since she was periodontally healthy at that time, preventive measures were continued. Therapies for peri-implantitis were performed: reinforcing self-oral hygiene measure, nonsurgical debridement for implant, removing possible residual luting cement, modifying prosthesis to improve hygiene and resective surgery. SPIT was then resumed.

Peri-implant inflammatory symptoms improved. The progressive bone loss has ceased, with some recovery, at 47, 46 and 37 sites, for 5 years and 6 months after SPIT had resumed, although small amount of suppuration/exudate was occasionally observed at 37.

Conclusion: Those consecutive therapies to reduce risk factors were effective to resolve peri-implantitis. Small amount of suppuration/exudate observed even after ceasing progressive bone loss indicated that the goal for therapy of peri-implantitis should be established with definitive diagnostic criteria.

IO-06

How to treat the Endo-perio lesion.

Fumihiko Kimura

Keywords: Endodontic treatment, Periodontal treatment, Endo-perio disease

In the daily practice, we often meet with the cases "wondering if we can preserve this tooth or not, what kind of approach we should take if we would preserve this tooth,"

The endo-perio lesion shows deep periodontal pocket connecting to the apical lesion, we haven't researched much yet and we don't have an definitive way of the treatment.

One famous classification of endo-perio lesion is the Simon's classification but not every case can be applied to this classification.

In 2018 AAP and EFP published a new classification of periodontal disease and there is also an endo-perio classification included. But the treatment plan responds to them are not described enough.

As a learning object through the lecture I will explain all about endo-perio including history, definition, curing rate, classification and strategy.