国際セッション口演

（C会場）

5月25日（土） C会場　 8：30～9：30

IS-01

Implant fracture failure rate and potential associated risk indicators: An up to 12-year retrospective study of implants in 5,124 patients

Dong-Woon Lee

Keywords: cervical feature, dental implant, diameter, implant fracture, late implant failure

Objectives: This study investigated fracture rates and risk indicators for fractures in internal connection dental implants.

Material and Methods: We performed a retrospective analysis of 19,006 internal connection implants used in fixed restoration in 5,124 patients (4,570 males, 554 females) at the Dental Hospital of Veterans Health Service Medical Center between 2006 and 2015. Patients were followed through June 2018 (0.03-12.39 years post-installation). Clinical factors (age, sex, implant diameter, implant length, placement site, bone graft, fixture material, cervical feature, abutment connection, microthread, and platform switching) were recorded. Kaplan-Meier survival analysis identified risk indicators associated with an implant fracture. Cox regression models elucidated potential fracture risks.

Results: One hundred and seventy-four implants fractured in 135 patients, for an incidence rate of 0.92% after an average of 4.95 ± 2.14 years of use. Kaplan-Meier estimates showed that the 3-, 5-, and 10-year survival rates of implants were 99.8%, 99.2%, and 97.7%, respectively. In the multivariable Cox regression model, the diameter, location, history of bone graft, and microthread presence were significantly correlated with implant fractures. Wide-diameter implants had a reduced fracture risk within 90 months, after which the diameter did not correlate with fractures. Implants placed in the anterior mandible had a lower fracture risk within 90 months; mandibular premolar implants corresponded with a lower risk after 90 months. Implants with- out a history of bone graft or microthreads were more likely to fracture throughout the follow-up time.

Conclusions: These results elucidate risk indicators for implant fractures and facilitate their reduction in clinical practice.

IS-02

Demonstration of urease activity in subgingival plaque sample of periodontitis patients in a tertiary care center of Nepal

Simant Lamichhane

Keywords: Dental plaque, *Helicobacter pylori*, Periodontitis, Urease

Perio-systemic connection is a topic with a long history. Many research has been carried out in the past which have highlighted the two-way relation between periodontal disease and systemic health and the mystery of few new links are yet to be established. Similar association is between the *Helicobacter pylori* that produces the urease activity and dental plaque harbored in periodontal sites. The urease activity is produced by many oral and gastric microorganisms which have demonstrated systemic implications as well. Urea can be detected both from saliva and gingival crevicular fluid which could suggest that oral cavity can act as an extra-gastric reservoir of many microbes leading to serious systemic diseases. The urease activity was detected using rapid urease test kit from hundred cases diagnosed with periodontitis as a pilot study in our center which suggested urease activity was found positive in 85 patients (n% =85%). This was our primitive study and we have applied for research using more advanced methods using bacterial culture method and polymerase chain reaction techniques. This presentation would highlight the past experience about our pilot study and our future plans to investigate in detail regarding *H. pylori*, urease activity in gastritis/ non-gastritis patients in periodontal sites.

IS-03

LepR-expressing cells contribute to endogenous periodontal healing post periodontitis

Chunmei Xu

Keywords: LepR, Periodontitis, Periodontal ligament cells, Lineage tracing, Bone formation

Identifying promising cell subpopulations responsible for endogenous periodontal healing is the prerequisite for accurate and predictable regulation of local tissue regeneration. Various cell lineages have been studied, and results showed that LepR-expressing cells ($LepR^+$ cells) contribute to periodontal healing post periodontitis. Using a ligature-induced periodontitis and a self-healing murine model with $LepR^{Cre/+}$; $R26R^{tdTomato/+}$ transgenic mice, our primary findings revealed that (1) the osteogenic ability of $LepR^+$ cells was greatly inhibited in response to periodontal inflammation, but notably enhanced when local stimuli was removed. (2) $LepR^+$ lineage cells directly contributed to the new bone formation, while conditional ablation of $LepR^+$ cells led to compromised tissue recovery, further proving the necessary role of $LepR^+$ cells in periodontal healing. (3) WNT signaling was closely related with improved osteogenic capacity of $LepR^+$ lineage cells, and conditional upregulation of WNT signaling or application of sclerostin neutralized antibody promoted the osteogenic differentiation of $LepR^+$ cells. Additionally, co-localization of $LepR^+$ cells with blood vessels and PDGFRβ expression suggested pericyte characteristics of $LepR^+$ cells. Moreover, $LepR^+$ cells exhibited enhanced migration ability, and no obvious change was detected in proliferation rate when the local stimuli was removed. Altogether, recruiting peri-vascular $LepR^+$ cells and precisely orchestrating their regenerative capacity serve as promising strategies for inducing endogenous periodontal regeneration in the future.

IS-04

Relationship between the immediate postpartum periodontal status and adverse pregnancy outcome

Teerachate Nantakeeratipat

Keywords: Periodontal diseases, 2018 AAP classification, Preterm low birth weight, Adverse pregnancy outcomes

Objective: We aimed to assess the relationship between periodontal status and adverse pregnancy outcomes by immediate postpartum periodontal examination and diagnosis, using the 2018 AAP periodontal classification.

Materials and methods: We recruited the postpartum mothers (N= 125) and then divided them into four groups regarding the gestational day (GD) and newborns' birth weight (BW); the mothers with GD ≥ 259 days and BW ≥ 2,500g (control), the mothers with GD < 259 days and BW ≥ 2,500g (PT), the mothers with GD ≥ 259 days and BW < 2,500g (LW), and the mothers with GD < 259 days and BW < 2,500g (PT-LW). We obtained a maternal periodontal assessment within 3 days after delivery.

Results: There was no significant difference between periodontal diagnosis within any groups. Interestingly, bleeding on probing (BOP) of the PT-LW group was significantly higher than that of the control group. In addition, using the control and the PT-LW group data, we found a mild inverse relationship between BOP and birth weight.

Conclusion: Unlike the studies in other regions, Southeast Asian populations tend to get married and become pregnant at young ages when periodontitis usually does not occur. However, we emphasize that an initial sign of gingival inflammation, especially BOP, is involved in adverse pregnancy outcomes and oral health care should be given during the pregnancy.

IS-05

Hydroxyapatite crystal particles promotes bone resorption in experimental periodontitis in rats

Ralph Jacob Manaig Elazegui

Keywords: periodontitis, hydroxyapatite crystals, inflammation, bone resorption

Objectives: It has been reported that neutrophils and macrophages stimulated with pulverized dental calculus produce IL-1β which then promotes osteoclastogenesis. The purpose of this study was to investigate if alveolar bone resorption is promoted by the administration of artificial dental calculus in the gingival sulcus of a periodontitis rat model.

Materials and Methods: Twelve-week male Lewis rats were ligated with silk sutures on the right (experimental) and left (control) second molars. Hydroxyapatite crystals (500μg/ml) in 3% hydroxymethylcellulose were administered to the gingival sulcus of experimental side and 3% hydroxymethylcellulose only to the gingival sulcus of control side every day for 7 or 14 days. After sacrifice, palatal alveolar bone levels were measured by μCT. Serial sections were made after demineralization and subjected to TRAP staining to measure osteoclast number.

Results: μCT images of both 7- and 14-day groups revealed increased bone resorption in experimental group compared to control group. Furthermore, TRAP-positive cells, indicative of osteoclast activity, were scarce in the control group but were prominent in the experimental group after 14 days.

Conclusion: In this experiment, bone resorption was significantly enhanced in the experimental group after 14 days of artificial calculus administration, suggesting that it promotes bone resorption.

IS-06

The incidence of periodontitis among breast cancer patients: Real-world evidence

Ya-Hsin Wu

Keywords: Breast cancer, periodontitis, cohort study

Background: This study aimed to examine the incidence of periodontitis in breast cancer patients and identify potential interventions to prevent periodontitis.

Materials and Methods: We enrolled 5275 breast cancer patients and 5275 matched comparison subjects in Taiwan's National Health Insurance Database between 2000 and 2016. Cox proportional hazards regression analysis estimated the development of periodontitis, accounting for different treatment regimens and covariates.

Results: The breast cancer patients showed a substantially higher incidence of periodontitis than those without (adjusted Hazard Ratios[aHR]=1.63; 95% CI=1.46-1.80). Among breast cancer patients, radiotherapy (aHR=0.79; 95% CI=0.73-0.86) and hormone therapy (aHR=0.83; 95% CI=0.76-0.90) significantly reduced the risk of periodontitis compared to those who did not receive such treatment.

Conclusion: Since breast cancer increases the risk of developing periodontitis, these patients should receive regular dental care to help prevent and manage periodontitis.