

duties of Oral Health professionals. International Dental Journal. Special Issue: Abstracts of the 102nd FDI Annual World Dental Congress – September 2014. February 2015, Volume 65, Issue Supplement S1 Pages 1–232. [P286, p 205]

P0306

Results of comparative study of periodontal pocket microbial flora with different microbiological techniques in patients with chronic and aggressive generalized periodontitis

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Aim: Comparative evaluation of level of informativeness of microbiological techniques – PCR and mass spectrometry – should be performed to develop guidelines for periodontists

Material and Methods: We examined 45 patients, 25–68 y.o. (mean age 46.5 ± 21.5) with chronic (30) and aggressive (15) generalized periodontitis without severe somatic illness. The samples were taken with sterile paper points, that were introduced in periodontal pockets for 10 s, and then put in tubes with Brain Heart Infusion Broth, and after that the tubes were put in anaerobic jar. The samples were studied with PCR-based method (6 periodontal pathogens primer set) and mass-spectrometry.

Results: PCR-based diagnosis detected A.a. in 64% of examined patients, at that A.a. is the most often recognized in mild and moderate chronic generalized periodontitis cases, and A.a. is present in 100% cases of aggressive periodontitis. Other pathogens were also found (P.g. in 50% of examined patients, P.i. in 36%, P.e. in 14%, F.n. in 7%). P.g. and F.n. are most frequently encountered in samples of severe chronic generalized periodontitis. *Treponema denticola* was not found in any sample. In comparison with PCR-based diagnosis mass-spectrometry doesn't reveal obligatory periodontal pathogens in most cases. But it showed the presence of pathogens, non-specific for the oral cavity (*Staph. aureus* spp., *Strept. pyogenes* spp., *St. epidermidis*, *Wolinella recta*, *Esherichia coli*, *Enter. faecalis*, *Klebsiella* spp), that are usually found during inflammatory processes of skin, digestive, urogenital and respiratory systems.

Conclusion: PCR can be done for express diagnosis but mass-spectrometry should be performed for more profound examination of microflora (in case of complications).

P0307

Analysis of the root surface property using the Raman spectroscopy

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Aim: Raman spectroscopy provides information about molecular vibrations that can be used for sample identification and quantitation. The aim of this study was to investigate what kind of change is observed in Raman spectrum when the root surface becomes clean.

Material and Methods: Thirty five extracted human teeth, partially covered with calculus on the root surface, were evalu-

ated using a portable spectrophotometer (Enwave Optronics, Inc. ProRaman-L). Four situations were estimated, (i) there were a lot of calculus on root surface, (ii) there were still the unevenness of the root surface after calculus removal, (iii) after debridement and exposed to healthy cementum (iv) kept doing debridement, it means overtreatment. A 785 nm, 100 mW laser was used for Raman excitation. Integration time was 10 s, and 10 times measured spectra were averaged. The corrected spectrum was normalized by hydroxyapatite Raman band intensity at 960 cm^{-1} .

Results: (i) When dental calculus is abundant, strong fluorescence was solely observed. (ii) With debridement of calculus, the fluorescence level was gradually decreased and a hydroxyapatite Raman band at 960 cm^{-1} was observed. (iii, iv) A similar trend was shown by the root planning. In addition, due to the lower level of fluorescence, other hydroxyapatite Raman bands at 440, 580 cm^{-1} and organic compound Raman band at $\sim 2940 \text{ cm}^{-1}$ were also observed.

Conclusion: For dentist and dental hygienist, this method that can evaluate the condition of root surface quantitatively is useful. In the future, we expect that the root surface evaluation method using Raman spectroscopy will be used clinically.

P0308

Mandibular alveolar bone dehiscences and fenestrations: a CT evaluation of 600 teeth in an Italian caucasian population

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Aim: The use of a cone beam computed tomography (CBCT) to measure horizontal width of facial alveolar bone overlying healthy mandibular incisors and canines to determine prevalence of alveolar bone dehiscences and fenestrations.

Material and Methods: 100 systemically healthy patients, aged between 18 and 30 years were selected. The thickness of the facial bone in sagittal scansions were measured perpendicular to the long axis of the tooth at two locations: 2 mm apical to the cemento-enamel junction and at the middle of the root. iCAT software primary and secondary reconstructions of the data were performed.

Results: Dehiscences have shown a mean value of $6.78 \pm 1.90 \text{ mm}$ whereas fenestrations of $4.89 \pm 1.74 \text{ mm}$. The average bone width at 2 mm was assessed at $0.81 \pm 0.23 \text{ mm}$, while at the middle of the root was $0.77 \pm 0.28 \text{ mm}$. The overall prevalence of dehiscences was 89.16%, whereas for fenestration was 5.16%. Dehiscences were more frequent in older ($6.87 \pm 1.99 \text{ mm}$) and female patients ($6.80 \pm 1.81 \text{ mm}$). Fenestrations on the contrary were more frequent in younger ($4.90 \pm 1.73 \text{ mm}$) and male patients ($5.11 \pm 1.71 \text{ mm}$). Bone width at two mm was thinner in older patients ($0.84 \pm 0.22 \text{ mm}$) and statistically significant (0.0007) thinner in female patients (0.71 ± 0.13).

Conclusion: CBCT was an effective and convenient tool for identifying and diagnosing fenestrations and dehiscences and for measuring vestibular bone width. The study evidenced high prevalence of a thin facial bone that may contribute to fenestrations, dehiscences and soft tissue recessions, which are important in both implant and/or orthodontic treatment planning. CBCT prior to treatment in some cases should be recommended for selecting the proper treatment approach.

P1024

Dimensions of interradicular septum in posterior teeth using cone beam computed tomography

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Aim: Alveolar bone dimensions prior to extraction may be a significant prognostic factor in immediate implants. The use of CBCT is preferred to analyze the buccal and lingual dimensions. The interradicular septum is an anatomic accident that can be used to achieve primary stability in postextraction posterior sockets. The purpose of this retrospective study is to analyze the septum dimensions in the dentate posterior mandible based on CBCT images.

The null hypothesis was that posterior locations are not adequate sites for immediate implants.

Material and Methods: 200 CBCT scans were taken using confidential image acquisition from patients of the Faculty of Dentistry, University of Seville. Cross sections were performed to measure. The data was stored in DICOM format and analyzed with Romexis Viewer (Planmeca Dentsply).

Parameters: Thickness of interradicular septum of upper molars: 2 measurements were made, the buccal palatal distance from one root to another (DV-MV to P). Thickness of interradicular septum of lower molars: mesial to the distal root distance (M to D). All measurements performed in a coronal section at 4 mm from the crest level.

Results: Waiting for the final statistical result, the preliminary values from the septum of upper and lower molars are 3.54 ± 0.54 mm and 3.65 ± 0.89 mm respectively.

Conclusion: The use of CBCT has a prognosis value to decide the most suitable treatment approach. In order to use the interradicular septum, an implant could be placed too axially and would have to be restored with an angled abutment.

P1025

Comparative evaluation of two methods of microbiological testing in periimplantitis patients

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Aim: To compare informativeness of PCR-based diagnosis and mass-spectrometry in providing clinicians with maximum information about bacterial load of periimplant tissues.

Material and Methods: 35 patients without severe somatic disorder, aged 35–68, were assessed (mean age 51.5 ± 16.5). Peri-implant pocket microflora was studied with PCR (polymerase chain reaction) and mass-spectrometry. Samples were taken with sterile paper points introduced into pockets for 10 s and then put in tubes with Brain Heart Infusion Broth and after in anaerobic jar.

Results: PCR-based diagnosis detected main periodontal pathogens in the evaluated pockets (A.a. in 31%, P.g. in 50%, P.i. in 25%, F.n. in 31%, P.e. in 19%), *Treponema denticola* was not detected. P.g. and P.i. were most often found in partially edentulous patients and P.g. and F.n. – in fully edentulous patients. Mass-spectrometry revealed pathogens that were not in

PCR primer kit but are responsible for inflammation in oral cavity and in other organs and systems: *Staph. aureus* spp., *Staph. epidermidis*, *Escherichia coli*, *Enterococcus faecalis*, etc.

Conclusion: Combination of both methods allows to test more profoundly periodontal pocket microorganisms in periimplantitis patients. Mass-spectrometry may be considered as an additional method to PCR-based diagnosis to receive complete information necessary to select the most efficient antimicrobial therapy.

P1026

Prospective Controlled Clinical Study of titanium-zirconium alloyed diameter-reduced implants (Roxolid®) in type 2 diabetic patients. A preliminary study

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Aim: This preliminary study aims to clinically evaluate the use of Straumann-Roxolid implants with a reduced diameter of 3.3 mm and a hydrophilic surface (SLActive) for the treatment of single-tooth restorations in type-II-diabetes patients.

Material and Methods: Study design: Prospective, controlled clinical trial. 23 patients were treated with a single implant to replace maxillary and mandibular incisors, canines or bicuspsids. The test group included 8 patients with controlled type-II-diabetes and the control group included 15 healthy patients. The implants were placed in healed extraction sockets, subjected to transgingival healing and were loaded two months post-surgery. Six months after restoration hemoglobin HbA1c levels were determined and standardized radiographs were measured to assess vertical bone level changes. The statistical methods used were ANOVA and ANCOVA (age as covariate), $p < 0.05$.

Results: Significant bone level changes were detected between the second and third visit, and for the group of diabetic patients. The diabetic group showed less bone loss than the control group ($p < 0.05$). The age had less influence on the results than membership of either group. However, it could be seen that between implant placement and the second visit, that patients under 55 showed significantly lower bone level changes ($p < 0.05$).

Conclusion: Straumann Roxolid dental implants with a reduced diameter and a hydrophilic surface can be clinically recommended in type-II-diabetes patients within the limited patient number and follow-up period of this study.

P1027

Factors associated with dental implant survival: a 38-month retrospective analysis

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Aim: The aim of this study is to determine whether implant survival rates are affected by known risk factors that may contribute to implant failure and potential risk indicators associated with implant failure.

Material and Methods: Data were collected from 206 patients who received a total of 561 single or multiple dental implants. Data were recorded regarding the success and survival rates of the implants. Implant failure was defined according to implant