PERIODONTAL REGENERATION OF DEEP INFRABONY DEFECT WITH XENOGENEIC 3D MATRIX: A CASE REPORT

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Aim: the present case report aims to evaluate the healing process of an infrabony defect, mesial to tooth 1.1, treated by means of periodontal regenerative surgery with a combination of enamel matrix derivatives (EMD) and a 3D volume stable xenogeneic collagen matrix (XCM) at 4 years follow-up. Primary outcomes were PPD reduction, CAL gain, and the amount of bone fill (BF) by means of periapical radiographs. Secondary outcomes were Recession Width (Rec) and PROMs.

Methods: the defect was approached with a papilla preservation incision and a single flap elevation, on the buccal aspect. At the end of instrumentation, EMD was applied on the clean root surface. After EMD application, a XCM was trimmed according to the space and morphology of the defect and inserted to fill it. Finally, a suture was applied to reach primary tension-free closure of the flap at papilla level.

Results: the PPD, at the mesial-buccal aspect, shifted from a baseline value of 12 mm to 5 mm at 4 years follow-up; CAL gain was 7 mm; the infrabony component of the defect was completely filled, with a residual suprabony component of the PPD; no soft tissue recession was recorded at papilla level; PROMs, evaluated with Visual Analog Scale (VAS, 0-10), was rated 1.

Conclusions: within the limitations of the present case report, the use of XCM in combination with EMD for the treatment of a deep infrabony defect proved to be effective since it achieved promising results in terms of PPD reduction and CAL gain.

COMBINED PERIODONTAL/RESTORATIVE TREATMENT FOR DEEP GINGIVAL RECESSION AND NCCLS

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Aim: gingival recessions associated with non-carious cervical lesions (NCCLs) compromise the smile esthetics. This study aimed to present a combined periodontal/restorative approach for the treatment of deep marginal recessions and NCCLs.

Methods: two patients with deep multiple gingival recessions and NCCLs in the maxillary arches came to our attention complaining esthetic dissatisfaction. After medical and dental anamnesis, radiographic evaluations, dental/periodontal parameters record and smile analyses, combined periodontal/restorative treatments were proposed. First, NCCLs were restored with a resin composite and its adhesive system up to the maximum root coverage level. After 2 weeks from the restorations, the periodontal surgery consisted in coronally displaced flaps with site-specific application of connective grafts, using the classes V restorations as pre-surgical guidance. Recalls were periodically fixed, to monitor the complete healing of the periodontal tissues.

Results: no pain or dental sensitivity were reported over the 1 yr follow up and the patients were satisfied with the esthetic results. Complete root coverage was achieved in all included teeth, and no discoloration or retention loss were observed in the restorations.

Conclusions: the combined periodontal and restorative treatments allowed to finalize the clinical cases of gingival recessions and NCCLs with high esthetic standard and patient's satisfaction.

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M-MIST SURGERY: CASE REPORT

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Aim: the aim of this study is to show that an M MIST flap and a gently elevation flap should be considered for an improved esthetic outcome due to a minimized risk of prospective scar-tissue formation.

Methods: before performing surgery we waited at least 6 months after the non surgical periodontal treatment. The surgical approach was an M MIST, consisting of a limited interdental incision in which only a buccal triangular flap is elevated, while the papilla is left in place. The palatal/lingual tissues are not involved in the surgery. The Patient is female, 55 years, probing depth 9 mm. We start the reflection of flap with micro instruments to clean and remove inflammatory tissue too. We used ultrasonic instrument and mini five manual curette. During the manual phases we used H_2O_2 solution and Clorexidine 0,2% to clean into the intrabony defect. We decided to use a mix of biomaterials and some autogenous blood too. We performed a Laurell Gottlow suture with a Prolene 6/0 to close the wound.

Results: effect of tissue regeneration surgery with M MIST technique shows a preservation of blood vessels for a better healing and an immediately esthetics healing achievements during the following weeks. radiographic control also shows a visible gain, as periodontal stability.

Conclusions: the M-MIST is not always applicable, when a defect wraps around the lingual aspect of a tooth, elevation of the interdental soft tissues becomes necessary and a Minimally Invasive Surgical Technique (MIST) becomes the preferred approach.

LATERAL BILAMINAR TECHNIQUE IN SURGICAL MANAGEMENT OF MULTIPLE RECESSIONS

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Aim: the aim of the present study was to describe multiple bilaminar technique with a lateral approach as a therapeutic solution for root coverage in multiple gingival recessions.

Methods: in this study the mucogingival surgery was performed by coronally advanced flap combined with two connective tissues grafts. From the first molar to the canine, all horizontal incisions were made paramarginal, oblique and converging to the line passing through the center of the buccal surface of the canine.

A vertical releasing incision was made from the mesial aspect of canine to the alveolar mucosa. Next, the epithelium-connective tissue was separated from the underlying muscular and periosteal layer by superficial incisions parallel to the mucosal plane. The connective grafts were sutured to the periosteum by resorbable sutures.

Results: after 5 years surgery, the development of a keratinized gingiva band at the buccal surface of the teeth 46, 45, and 44 can be noticed and it has ensuring good camouflage of the treated area in terms of color and thickness relating to adjacent soft tissue.

Conclusions: the multiple bilaminar technique with lateral approach performed by coronally advanced flap with a mesial vertical releasing incision and two connective tissues grafts can certainly be considered for the treatment of multiple gingival recessions on mandibular posterior teeth with an inadequate proportion of keratinized mucosa.

BIOLOGICAL EFFECTS OF CANNABIDIOL ON ORAL CELL POPULATIONS: *IN VITRO* STUDY

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Aim: the aim of the study is to investigate the *in vitro* biological effects determined by acute and chronic administration of Cannabidiol (CBD) on human gingival fibroblasts and human oral keratinocytes.

Methods: human fibroblasts and keratinocytes were treated for 24 and 72h with CBD concentrations ranging from 1 to 100 μM, administered continuously (acute treatment) or for 30 minutes every 8h (chronic treatment). Viability was determined using MTT assay, cell morphology with SEM analysis, cell migration by Scratch assay, apoptosis and cell cycle with cytofluorimetry and RT-PCR analysis, DNA damages with Immunofluorescence.

Results: CBD showed significant cytotoxicity, increase in apoptosis, and decreased cell migration with 6 μM during acute treatment and with 50 μM in chronic treatment for both cell lines. SEM analysis confirmed morphological alterations. At 25 μM for 72h a rise in keratinocytes migration was observed, also related to a significant reduction in apoptosis and cell cycle related gene expression, and a decrease in cannabinoid receptors expression. CBD induced a dose dependent DNA damage in keratinocytes with all doses and at both time points, and no significant increase in the percentage of γH2AX foci positive cells was detected.

Conclusions: acute treatment causes significant effects compared to chronic treatment due to high concentrations of CBD that were strongly toxic on both oral populations, while at 1 μM CBD results were biocompatible. Intermediate concentrations, such as 25 μM, show lower cytotoxicity and improve wound closure, compared to chronic treatment.

THE IMPORTANCE OF SURGICAL TECHNIQUE IN GTR. EXPERIMENTAL STUDY WITH CLINICAL, RADIOLOGIC

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Aim: aim of our work is to evaluate the importance of the partial thickness flap in guided bone regeneration by comparing two different surgical techniques (full thickness flap and partial thickness flap) in order to demonstrate the importance of the periosteum in osteogenesis and how the partial thickness flap preserves the bone and increases the success rate allowing rapid bone regeneration.

Methods: 30 patients with periodontal problems (two-walls and three-walls defects) were selected.
On the same patient, on one side the partial thickness flap and on the other side the full thickness flap were performed. Results were evaluated in radiological, clinical recovery and clinical attack terms, probing reduction and post-operative bone resorption.

Results: it can be evaluated how in patients on whom the partial thickness flap was carried out, there is a significantly better result in terms of: increase in bone crest levels on radiographic examination, recovery of clinical attack on clinical inspection examination, reduction of pocket depth at the survey. The clinical, radiological results are compatible with the concept of "periodontal health".

Conclusions: based on the study we can say that the technique of the Partial Thickness Flap, assisted by an adequate selection of the case to be treated, allows us to obtain excellent results. It can be seen that the healing times with this technique are much lower than those obtained with bone regenerations carried out with other methods, which often give infectious problems or that present difficulties of handling.

CONSERVATIVE PARADIGM, PERIODONTAL APPROACH TO ROOT FRACTURE IN VITAL TEETH. CASE SERIES

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Aim: as reported in the literature, the root fracture is a rare occurrence. We are reporting two cases of root fracture in vital teeth in periodontal involved patients with long follow up. As suggested by Andreasen et al root fracture could interest coronal third, middle third, or apical third; the more apical the fracture, the more possibility to remain vital the tooth has. Teeth interested by apical fracture have 89% of survival rate; the vitality could be due to the elasticity of the pulp tissue.

Methods: cases courtesy by Prof Franco Vezzoni. Two adult patients with periodontal pathology after traumatic injuries come to clinical observation; after a general control of the oral cavity, X-ray were taken and a fracture rime was discovered. Patient C fractured, after a frontal trauma, 11 in the apical third and 22 on the incisal margin in 1975; Patient S fractured 21 and 22 in the middle third in 2018. Therapy consisted in 40-day immobilization by splinting.

Results: according with data present in literature, during long-term follow-up teeth have tended to remain vital and no high grade of mobility could be detected.

Patient C has 20 yy of follow-up, Patient S has 3 yy of follow-up.

Conclusions: maintaining fractured elements with opportune treatment can be considered a valuable therapeutic option, mostly in patients with periodontal implications and with a reduced number of therapeutic options.

Clinicians should take into consideration the importance of maintaining an occlusal stability through the presence of the highest possible number of elements in arch.

PERI-IMPLANTITIS INDUCED MEDICATION-RELATED OSTEONECROSIS OF THE JAW

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Aim: the aim of the present study is to report a case series of patients with peri-implantitis induced medication-related osteonecrosis of the jaw (MRONJ), describing the clinical and radiologic features of the condition and the surgical treatment outcome.

Methods: thirty-six consecutive patients with clinical diagnosis of peri-implantitis associated with MRONJ were retrospectively included in the study. Surgical treatment was performed with a standardized operative protocol, involving implant removal, sequestrectomy, debridement of soft tissue and bone curettage. Follow-up evaluating surgical outcome was performed at 12 months after surgery.

Results: patients were almost equally distributed in terms of underlying diseases in osteoporotic and oncologic patients. All MRONJ lesions were symptomatic, and in 15 patients bone exposure was detected. In total, 123 implants were evaluated, with MRONJ being present around 68 implants. Twenty-four patients were diagnosed with Stage III MRONJ, and twelve patients with Stage II MRONJ. Surgical treatment leaded to complete healing in 84.4% of cases, with 100% success for maxillary MRONJ.

Conclusions: the clinical signs of peri-implantitis may reveal the presence of an underlying MRONJ diagnosis in patients under pharmacological treatment with anti-resorptive/antiangiogenic drugs.

Surgical treatment seems to have a positive impact on MRONJ treatment in cases of peri-implant involvement.

COMPARISON BETWEEN CLINICAL AND ULTRASONOGRAPHY MEASUREMENT OF GINGIVAL THICKNESS

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Aim: gingival thickness plays a fundamental role in planning regenerative and mucogingival treatments as well as determining success rate of these therapies. The objective of this study was to investigate the accuracy of gingival thickness measurement by two methods of clinical evaluation and intraoral ultrasonography.

Methods: the gingival thickness was measured on 30 patients in the midbuccal area of elements 1.2 and 1.6. For clinical measurement a #15 hand K-file equipped with a rubber stop was vertically inserted into the gingiva, measuring the length with a digital caliper.

Ultrasonographic measurement was performed using an intraoral probe with a frequency of 12 MHz on the gingival surface, in the entry point of the file. Statistical analysis was performed by paired t-test, correlation coefficient and receiver operating characteristic (ROC) curve ($\alpha = 0.05$).

Results: in the anterior region there was not significantly difference ($p = 0.434$) between test and control, at the 95% confidence level. In the posterior region, the mean gingival thickness measured by the two methods was significantly different ($p = 0.006$).

The power of ultrasonography in both regions was significant (>50%). The power in the anterior region was greater than in the posterior region. The sensitivity of ultrasonographic evaluation in both regions was 0.833, while the specificity in the anterior region (0.611) was more than the posterior one (0.583).

Conclusions: the use of ultrasonography with an intraoral probe seemed to provide an acceptable accuracy for the determination of gingival thickness.

INFLAMMASOME EXPRESSION IN PERIODONTITIS AND PERI-IMPLANTITIS

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Aim: this study evaluated for the first time the expression of inflammasome-related genes in the gingival tissue of peri-implantitis (PI) patients as compared to periodontitis patients (PE).

Moreover, a qualitative histological description and semi-quantitative assessment of inflammatory score were performed.

Methods: gum tissue was collected from 5 stage III/IV periodontitis and 5 peri-implantitis patients during surgical procedures. Total RNA was extracted, quantified, reverse transcribed to cDNA and analyzed by a qRT-PCR system. The expression of the inflammasome NLRP2, NLRP3, AIM2 and related transcripts CASP1, ASC, IL-1β, IL-18 was assessed.

The gingival tissue was also histologically assessed and different stains were employed to evaluate the presence of inflammatory cells and to define their phenotype by immunohistochemistry.

Results: a significantly higher expression of AIM2, IL-1β and NLRP3 was suggested in the PI group, whilst IL-18 had a higher expression in PE patients.

The histological assessment showed a high intra-group variability in terms of inflammation score, with different amounts of lymphocytes CD20+, CD4+, CD8+; plasma cells and histiocytes.

Conclusions: based on these preliminary data, a higher expression of specific inflammasome related transcripts is suggested in peri-implantitis patients.

The data warrant confirmation in a larger sample of patients to draw more robust conclusions but they open the way for the search of potential future therapeutic targets.

GINGIVAL RECESSION: PREVALENCE IN A GROUP OF UNIVERSITY STUDENTS

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Aim: this study aimed to investigate the prevalence and distributions of gingival recessions in a young population and identify potential risk factors.

Methods: this study was conducted on 100 students (75% attending the degree course in Dentistry) the mean age of the sample (55% male) was 24.92±2.16 years.

The patients were subjected to a questionnaire to investigate their oral hygiene habits. Subsequently, a periodontal evaluation was performed using a Hu-Friedy PCP-15 periodontal probe.

Results: the mean FMPS and FMBS detected were 15.2±14.8 and 3.3±4.0, respectively. Data analysis showed that 65% of the subjects used a manual toothbrush and that the force applied during brushing maneuvers was self-reported as high in 25% of cases. 82% of students had at least one gum recession, out of a total of 418 recessions experienced, 75% had a depth of 1 mm, 21% had a depth of 2 mm, 3% of 3 mm, and 2 gingival recessions were 4 mm.

68% of gingival recessions were found on the mandibular arch, with a greater prevalence at the level of the lower right canine, 36% of students not attending dental school use a horizontal brushing technique. No statistically significant differences were found between electric and manual toothbrushes.

Conclusions: the prevalence of gingival recessions is higher in male subjects. The presence of recessions has been associated with the use of a toothbrush with medium and hard bristles. However, a higher prevalence was found among students attending other degree courses, where a horizontal brushing technique is common.

PRELIMINARY STUDY ON PCL-BMB 3D-PRINTED SCAFFOLD FOR ALVEOLAR BONE REGENERATION

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Aim: 3D-printing technology for scaffold realization, is a valid solution to optimize results and minimize collateral effects of maxillary surgery. Periodontal ligament stem cells (PDLSC) and adipose stem cells (ASC) have been plated on composite 3D-printed scaffolds (polycaprolactone (PCL) bovine-derived mineral bone (BMB)).

Methods: the comparation was carried out on three different types of materials: PCL/BMB 70/30, pure PCL and pure BMB. Dry technique was used to prepare PCL/BMB 70/30. All Scaffolds were 3D-printed with same standard parameters to hold PDLSC and ASC cells. Viability at 3, 7 and 14 days was carried out using CellTiter-Glo kit to test cells proliferation. Cells were also subjected to osteogenic medium to observe *in vitro* differentiation for 2 months and then a Real-Time PCR was performed to evaluate the expression of COLL1, RUNX2, OCN, and ALP genes. Morphological analysis was realized with SEM, and EDX was used to analyze collagenic matrix.

Results: between all materials there is a statistical difference in ASCs proliferation on neat PCL. Regarding BMB, PDLSCs shows a relevant proliferation rate. PCR data indicate a significant expression of COLL1 in all samples. OCN expression is higher in PDLSCs with an enhanced calcification compared to ASCs and it is confirmed by SEM and EDX.

Conclusions: PCL/BMB blend showed an improved osteoinductivity and biocompatibility compared to neat PCL. This result represents a relevant starting point for a customizable, resistant and osteoconductive material for tissues regeneration.

PERIODONTAL CONDITION IN CIRRHOTIC PATIENT AWAITING LIVER TRANSPLANTATION

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Aim: the aim of this study was to evaluate the dental and periodontal status of cirrhotic patients (CP) who were candidates for liver transplantation.

Methods: twenty cirrhotic patients and twenty control patients (C) were investigated (mean age 52 years). The dental and periodontal examination was performed and the following parameters were recorded: CPITN, DMFT, PLI, BOP, CAL and PPD. The two groups underwent periodontal treatment and were reevaluated after 6 weeks.

Results: 140 cirrhotic subjects were selected and proposed to participate in the study, 29 were enrolled. The mean DMFT% value in the two groups was found statistically different 42% in cirrhotic patients and 23.4% in healthy patients, more than double (p <0,05). Cirrhotic showed a mean value of BOP (20,07) and CAL (2,56) not significantly different respect to control BOP (25,30) and CAL (3,12), the PLI (65,85) of healthy patients was statistically greater respect to CP-PLI (41,72) (p <0,05). The mean variation of the periodontal indices in the two groups after the treatment was similar. An important reduction of purulent sites was highlighted in the CP group and there was a greater decrease in B.O.P.

Conclusions: DMFT index was statistically greater in CP respect to control, meaning a worse oral condition in subjects with liver disease Many of the cirrhotic patients had gingival inflammation despite less plaque index than the control. A greater motivation of the patient is necessary to immediately carry out a dental check-up, in order to be able to arrive at the transplant in the best conditions of oral health.

INTENSIVE PERIODONTAL TREATMENT IN T2DM: EFFECTS ON LIPID PROFILE AND ENDOTHELIAL FUNCTION

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Aim: local eradication of periodontal infection could potentially have a much broader impact on the diabetic condition by also contributing to the modification of the lipid profile, which is directly compromised in the alteration of endothelium-dependent vasodilation. The aim of this trial was to assess the benefits of intensive periodontal treatment (IPT) on the lipid profile and endothelial function of diabetic patients.

Methods: this was a 6-month, randomized controlled trial involving diabetic patients with generalized periodontitis. The study group comprised 290 individuals who were randomly assigned to receive Intensive Periodontal Treatment (IPT, Intervention Group) or conventional adult prophylaxis (Control Periodontal Treatment, CPT, Control Group). Outcomes encompassed lipid profile involving serum total cholesterol, serum triglyceride, low-density lipoprotein cholesterol, high-density lipo-protein cholesterol, and flow-mediated vasodilation (FMD) as an index of endothelium-dependent vasodilation (primary outcomes); periodontal indices and high-sensitive C-reactive protein were evaluated at baseline, 3 and 6 months after periodontal treatment.

Results: an increase in endothelium-dependent flow-mediated dilatation (FMD) was observed in the Intensive Periodontal Treatment group in comparison with Control (p <0.001), but results are not statistically different. There were no differences in lipid profile in individuals of both groups.

Conclusions: an intensive periodontal treatment might improve endothelial function, suggesting a direct beneficial effect on the vasculature, possibly mediated by systemic inflammatory reduction.

However, no statistically significant differences between groups were observed, and no benefits were proved on lipid profile.

PERIODONTAL TREATMENT ON PLASMA LEVELS OF ADMA: A RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: endothelial dysfunction is one of the early pathogenic events of the atherosclerotic process. Severe periodontitis is considered to be an independent contributing risk factor for the pathophysiology of endothelial dysfunction. High blood concentration of asymmetric dimethylarginine (ADMA), an L-arginine analogue that inhibits nitric oxide (NO) formation, has emerged as one of the most powerful independent risk predictors of cardiovascular disease. Abrogation of periodontal inflammation might have clinical relevance, affecting the ADMA.

Insufficient clinical evidence exists for drawing clear conclusions regarding the long-term effects of periodontal disease on endothelial function, and even less evidence is available specifically on ADMA concentrations and their relationship with periodontitis. The objective of this study was to evaluate the effects of intensive periodontal treatment in modulating the endothelial function via the assessment of plasma ADMA concentration in patients diagnosed severe periodontitis.

Methods: this was a 6-month randomized controlled trial, including 140 patients between 41 and 63 years old who were diagnosed with severe periodontitis, free from cardiovascular disease (CVD), and had traditional cardiovascular risk factors. All patients underwent a complete medical and clinical periodontal examination, a laboratory analysis of ADMA, and an ultrasound assessment of FMD of the right brachial artery. After the screening, they were randomly assigned to receive either intensive periodontal treatment (test group, n = 70) or community-based periodontal care (control group, n = 70). A full examination was carried out at baseline, 3 and 6 months after the periodontal treatment.

Results: a total of 236 individuals diagnosed with periodontitis were screened. One hundred forty participants were enrolled. No statistically significant difference was observed over the time in ADMA concentration after the intensive periodontal treatment within the test group. No differences were revealed between the groups in the ADMA concentration at baseline and during follow-up.

Conclusions: intensive periodontal treatment does not affect the plasma levels of ADMA in patients without any risk for cardiovascular disease.

EFFECT ON TISSUE THICKNESS BY MANAGING EMERGENCY PROFILE IN THE CORONALLY ADVANCED FLAP

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Aim: to evaluate tissue modification tendency when performing Class V restoration in patients planned for recession reduction through coronally advanced flap.

Methods: 50 teeth were recorded, 47 were affected by the vestibular recession (Miller 1), and 3 were without recessions. 17 had a cervical abrasion. Patients underwent the following protocol. Firstly, Class V restoration has been executed followed by alginate impressions. After that, a plaster cast have been developed. Finally, a periodontal chart has been performed. At baseline and at follow-up (average elapsed time = 132 days ± 48) were scanned to create STL files matched and analyzed with software.

Results: the modified emergence profile obtained through the composite resulted in inducing a tissue change in horizontal and vertical dimensions. This leads to an increase in thickness at the level of the free gingival margin.

Conclusions: Class V restorations with an increased emergence profile have shown to be effective in changing tissue thickness during an average observation time of 3 months.

VOLUMETRIC CHANGES AT EDENTULOUS SITES AUGMENTED WITH VCMX OR SCTG

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Aim: comparing soft tissue volumetric and linear changes at intercalated edentulous ridge defects after augmentation procedure using a volume-stable collagen-based matrix (VCMX) or a subepithelial connective tissue graft (SCTG). Demonstrating the non-inferiority of VCMX compared to SCTG would provide a less invasive and better tolerated technique for soft tissue augmentation to optimize the aesthetics of the prosthetic rehabilitation.

Methods: a single-center, randomized, non-inferiority study was conducted with two parallel groups and a 1:1 allocation ratio. 13 patients with a Seibert class I were randomly assigned to the test group (VCMX) and the control group (SCTG) and had soft tissue augmentation by an envelope flap. Optical impressions were taken using an intra-oral 3D scanner at baseline (T_0), one month after surgery (T_1) and 3 months after surgery (T_2). The images were exported as STL files to be superimposed and analyzed.

Results: the mean volume gain was 41.4±20.6 mm^3 between T_0-T_2 for VCMX group, whereas in the SCTG group the mean volume gain was 65.4±35.0 mm^3. For the VCMX group, the mean linear changes between T_0-T_2 at 1, 3, and 5 mm were 0.42±0.43 mm, 0.83±0.39 mm and 0.86±0.45. For the SCTG group, the mean of linear changes between T_0-T_2 at 1, 3, and 5 mm were 1.03±0.33 mm, 1.58±0.64 mm and 2.29±0.82 respectively.

Conclusions: these preliminary findings suggest that both SCTG and VCMX can be used in crestal augmentation in class I Seibert defects: both groups achieved positive volumetric and linear changes at 3 months follow-up; SCTG group achieved a greater increase.

EFFECT ON SUBGINGIVAL MICROBIOME BY SUBGINGIVAL AIR-POLISHING WITH ERYTHRITOL: RCT

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Aim: the aim of this study was to evaluate the effect on periodontitis-related subgingival microbiome of air-polishing during non surgical treatment of deep bleeding pockets in stage III-IV periodontitis patients.

Methods: 40 patients with stage III-IV periodontitis were selected and pockets with probing depth 5-9 mm and bleeding on probing were selected as experimental sites (ES). All patients underwent a full-mouth session of supragingival air-polishing and ultrasonic instrumentation. The test group received additional subgingival air-polishing at ES. Subgingival microbial samples were taken from the deepest ES at baseline. Microbiological outcome was the change of microbiome at 3 months: analysis of periodontal pathogens and other subgingival plaque bacteria sampled was performed through a real-time quantitative PCR microarray.

Results: in the test group, we observed a statistical increase of some good species (*Abiotropha defectiva, Capnocytophaga sputigena*, and *Lautropia mirabilis*) and a decrease of pathogens such as *Actinomyces israelii, Catonella morbi, Filifactor alocis, Porphyromonas endodontalis, Sele-nomonas sputigena, Tannerella forsythia, Treponema denticola* and *Treponema socranskii*.

In the control group, we observed statistical significance only in the decrease of *Filifactor alocis, Tannerella forsythia,* and *Treponema socranskii*.

Conclusions: subgingival air-polishing seems to cause a shift of the periodontal microbiome toward a more eubiotic condition compared to a conventional treatment in deep bleeding periodontal pockets.

CAF CTG *VS* CAF FOR THE TREATMENT OF RT2 MAXILLARY RECESSIONS: 10-YEAR RESULTS OF A RCT

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Aim: the aim of the present study was to report the 10-year follow-up of a randomized clinical trial evaluating root coverage outcomes at single RT2 maxillary recessions after a Coronally Advanced Flap (CAF) with or without the addition of a Connective Tissue Graft (CTG).

Methods: 21 of the original 29 patients (11 treated with CAF + CTG and 10 with CAF), were available for the 10-year follow-up. A calibrated blind examiner performed all the measurements. Outcome measures included complete root coverage (CRC), recession reduction (RecRed), Root coverage Esthetic Score (RES), and Keratinized Tissue (KT) Gain. Visual Analogue Scale (VAS) was used to evaluate patient satisfaction.

Results: complete root coverage was maintained in 60% of the test group and 20% of the control group after ten years, with a significant difference (OR = 39) favoring CAF + CTG. The addition of CTG was associated with greater KT gain (p = 0.0002) and greater papilla tip recession (p = 0.023) than CAF alone.

No difference was detected regarding RecRed, RES, and patient satisfaction.

Conclusions: the addition of a CTG under the CAF improves the possibility of maintaining complete root coverage up to 10-years after the treatment of single maxillary RT2 recessions.

ADJUNCTIVE THERAPY WITH A SPERMIDINE-BASED GEL FOR THE TREATMENT OF PERI-IMPLANT MUCOSITIS

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Aim: peri-implant mucositis is an inflammatory lesion which, if not correctly treated, could rapidly progress to peri-implantitis, leading to an irreversible marginal bone loss and implant failure. Although the efficacy of non-surgical therapy, only 43.7% of the treated implants achieve a complete inflammatory resolution. Spermidine is a biogenic polyamine used in medicine due to its anti-inflammatory and immuno-modulating properties, although it has not yet been used in peri-implant therapy. Therefore, the aim of this study is to evaluate the efficacy of a spermidine-based gel as an adjuvant to non-surgical treatment of mucositis.

Methods: six patients with peri-implant mucositis were selected. The clinical variables were BoP (Bleeding on Probing; %), PD (Probing Depth; mm) and mPII (modified Plaque Index; 0-3). After a non-surgical therapy performed by means of an ultrasonic scaler with a PEEK tip, the spermidine-based gel "A-Trophic" was first applied in the peri-implant sulcus with a blunt-tipped needle, followed by gel "B-Sealing". All parameters were recorded at baseline and at 21-day. Data analysis was performed with Wilcoxon test ($p < 0.05$).

Results: the results showed a statistically significant reduction for BoP (61±29%) and PD (0.94±0.66 mm), while no differences were recorded for mPII ($p < 0.102$).

Conclusions: despite the small number of patients, spermidine-based gel could represent an effective additional aid to the treatment of peri-implant mucositis. Nevertheless, the study results will still need to be confirmed at 3-month follow-up.

LASER MICROTEXTURED COLLAR IMPLANTS *VERSUS* SMOOTH COLLAR IMPLANTS: 10 YEARS OF FOLLOW-UP

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Aim: the objective of this study is to compare clinical outcomes of implants with laser microtextured collar (LM) to implants with smooth collar (SC) after 10 years of follow-up.

Methods: this study was designed as a retrospective analysis in which seven SC implants and four LM implants were selected.

The clinical and radiological variables were Probing Depth or PD (mesial, distal, buccal, oral; mm) and Marginal Bone Loss or MBL (mesial and distal; mm).

All parameters were recorded at baseline and at 10-year follow-up. Intra-group analysis was performed by Wilcoxon signed-rank test, while Mann-Whitney test was adopted for inter-group comparison.

Results: the SC group showed a statistically significant difference for mesial MBL (0.87±0.3) and distal MBL (0.89±0.3), while no statistically significant differences were observed in LM group. Inter-group comparison did not demonstrate statistically significant differences for mesial PD (SC: 4.86±0.4; LM: 4.75±0.5), distal PD (SC: 4.71±0.5; LM: 4.50±0.6), buccal PD (SC: 4.00±0.6; LM: 4.50±0.6), oral PD (SC: 4.43±0.5; LM: 4.50±0.6), mesial MBL (SC: 1.11±0.2; LM: 1.03±0.2) and distal MBL (SC: 1.11±0.2; LM: 1.10±0.2) at the 10-year follow-up.

Conclusions: despite the small numbers of patients, the results suggest that LM implants provide more favorable clinical conditions (MBL) compared to SC implants, although both ensured an implants survival at 10 years.

TOPICAL OZONE THERAPY. OZONATED OLIVE OIL AND SALIVARY MMP-8: A CLINICAL STUDY

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Aim: extracellular matrix metalloproteinases (MMPs) play a key role in the periodontal tissue damage in patients with periodontitis. Scaling and root planning (SRP) try to control the amount of oral biofilm and to decrease the bacterial load. Non-surgical periodontal treatment can be combined with drug treatment and physiotherapeutic procedures such as topical ozone. The aim of this study was to assess in a group of patients diagnosed with periodontitis: (1) the efficacy of non-surgical periodontal treatment supported using ozonated olive oil mouthwash on salivary metalloproteinase (MMP-8) and (2) the variation of periodontal indices.

Methods: ninety-six subjects with diagnosed periodontitis were included in the study and randomly allocated to the study group (SRP + mouthwash) or the control group (SRP). The duration of the study was 3 months. Data on MMP-8, plaque index (PI), bleeding on probing (BoP) were recorded at T_0, T_1 (14 days), T_2 (1 month) and T_3 (6 months). Differences between groups were assessed using Student's t-test for independent samples.

Results: significant improvements in PI, BoP, and salivary MMP-8 levels were observed in both groups. Analysis of the differences in the relative changes in the indices showed the effectiveness of ozonated olive oil in reducing MMP-8 levels. At the same time, ozonated olive oil slowed down the level of MMP-8 also with a decrease in the BoP index.

Conclusions: scaling and root plating with the help of mouthwash with ozonated olive oil were more effective in reducing salivary MMP-8 than scaling and root plating alone.

CORONALLY ADVANCED FLAP IN MULTIPLE RECESSIONS TREATMENT

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Aim: the aim of the present study was to evaluate the effectiveness of coronally advanced flap for treatment of multiple gingival recessions on teeth 1.6, 1.5, 1.3 placing keratinized tissue apically.

Methods: after a professional hygiene session, a mucogingival surgery was performed by coronally advanced flap technique. The oblique paramarginal incision has to converge at the "fulcrum tooth", that is the axis around which the flap rotates and moves coronally. The oblique incision also allows the apex of surgical papilla to be moved toward the apex of the corresponding anatomical papilla. At the apical level, the flap was partial thickness. After exposed root surface scaling and root planing, the de-epithelialization of anatomic papillae was required in order to create a recipient bed for the surgical papillae. Suture removal was performed 15 days after surgery.

Results: one year after surgery, it can be noticed that the coronal keratinized tissue increased in volume and width and remained stable over time without anesthetic scars. It also provided a good camouflage of the treated area in terms of color and thickness compared to the adjacent soft tissues.

Conclusions: in case of multiple recessions in patients with aesthetic needs, the coronal advanced flap can be considered satisfactory with good results after one year follow-up and few postoperative discomforts.

PAPILLA PRESERVATION TECHNIQUE: A CASE SERIES

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Aim: the aim of this study was to describe the clinical and surgical approach of two case series treated with the entire papilla preservation technique.

Methods: two clinical case series of intrabony defects on mandibular molars were treated with the entire papilla preservation technique. A buccal full-thickness muco-periosteal flap extended to the defect-associated papilla was performed. The defects were rinsed with sterile saline and the exposed roots were treated applying EDTA (Ethylenediaminetetraacetic acid). Enamel matrix derivative was applied onto the root surfaces and, after that, the heterologous bone chips were placed in the intrabony defects.
The flap was sutured with 5/0 suture.

Results: the entire papilla preservation technique is a new surgical approach similar to tunneling for the regenerative treatment of large and deep intraosseous defects. This approach was proposed in 2017 to preserve the whole integrity of defect-associated papilla providing a tunnel-like undermining incision. The entire preserved papilla provided an intact gingival chamber to stabilize the blood clot and improved wound healing. This technique could promote primary healing above the biomaterial and increase the stability of clot formation within the intraosseous defect.

Conclusions: in the two clinical cased the papilla preservation technique showed excellent healing results and seemed to provide ideal clinical conditions to promote the early and late healing phases.

THE EXPRESSION OF INFLAMMASOMES IN PERIODONTITIS PATIENTS

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Aim: the aim of this study was to compare the expression of inflammasome-related genes (AIM2, NLRP2, NLRP3, ASC, CASP-1, IL-1β, 1L-18) in the gingival tissue of periodontitis and healthy patients.

Methods: 5 healthy (H) and 5 stage III/IV periodontitis (P) patients were recruited. Total RNA was extracted and quantified from samples of gingival tissue collected during surgeries. A reverse-transcription to cDNA and a qRT-PCR were then performed to analyse the mRNA levels. The gingival tissue was also histologically assessed and different stains were employed to evaluate the presence of inflammatory cells and to to define their phenotype by immunohistochemistry.

Results: similar levels of expression are suggested for ASC and IL-1β, while NLRP2 and NLRP3, CASP-1 and IL-18 had a non-statistically significant trend for overexpression in the P group. AIM2 tended to have a higher expression in the H group ($p > 0.05$).

Despite a significant intra-group variability was observed, it was histologically observed that the inflammatory infiltrate was higher in the P group, with rare granulocytes and the predominance of CD4+ and CD8+ T-cells, B-cells (CD20+), plasma cells and histiocytes.

Conclusions: the gene expression level and histology/immunohistochemistry analyses suggest a high intra-group variability. While inflammasome-related genes might correlate with the higher inflammation identified in periodontitis patients, no significant differences were detected. A higher sample size is warranted to draw more robust conclusions.

GASEOUS OZONE THERAPY AND PERIODONTAL TREATMENT ON OXIDATIVE STRESS MEDIATORS IN T2DM

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Aim: chronic inflammation and cumulative oxidative stress have been theorized as two common pathways of the interconnection between periodontitis and diabetes. Improvement in oxidizing status has been demonstrated in periodontal patients with diabetes treated with proper non-surgical periodontal treatment. In addition to periodontal treatment, Gaseous ozone therapy has been reported to possess anti-inflammatory properties and the ability to stimulate the endogenous antioxidant defence mechanism. To date, the antioxidant effect of gaseous ozone, in addition with periodontal treatment in diabetic patients, has been examined in only one study. The aim of this study was to determine the efficacy of gaseous ozone therapy as an alternative approach to 2 supporting non-surgical periodontal therapy (NSPT), aimed at improving antioxidant machinery and interfering with ROS production on plasma levels in diabetic individuals diagnosed with moderate or severe periodontitis.

Methods: one hundred and eighty patients with periodontitis and type 2 diabetes mellitus were randomly assigned to receive non-surgical periodontal treatment (NSPT) plus gaseous ozone therapy (A) NSPT alone (B). Clinical and periodontal parameters and plasma levels of oxidant-antioxidant (TOS-TAS) levels, glutathione (GSH), and malondialdehyde (MDA) were recorded at baseline and at 3- (T1) and at 6-months (T2) after treatment.

Results: both treatments were efficacious in reducing clinical parameters. However, there were no significant differences regarding oxidative stress parameters in group A compared to group B, and the levels of TOS and TAS ($p > 0.001$) were registered.

Conclusions: in the present study, gaseous ozone therapy did not enhance the effect of periodontal treatment in reducing oxidative stress in plasma levels of periodontitis patients with type II diabetes. Trial registration: The study was registered with ISRCTN17281691.

A CLINICAL AND HISTOLOGICAL ANALYSIS OF DENTIN MATRIX IN ALVEOLAR RIDGE PRESERVATION

Russo V.

Aim: the aim of the study is to evaluate the clinical and histological efficacy of Autogenous Tooth-Derived Mineralised Dentin Matrix (DDM) covered with free gingival graft (FGG) in the Alveolar Ridge Preservation Technique in periodontally maintained patients.

Methods: for this study it was used a split-mouth protocol, in which 14 patients requiring double extraction of a single-rooted tooth were enrolled. After the extraction, the tooth was cut in small pieces and inserted in milling machine to obtain DDM. Sites were randomized in two different groups: the test group, characterized by the introduction of DDM covered by free gingival graft (FGG) and the control group, characterized by spontaneous healing associated with FGG.

Results: all enrolled patients successfully completed the study. the statistically significant parameters were:
Viable bone was 30.22% t 14.48% in the control group compared to 34.23%‡13.56% in the test group.
Connective tissue, the control group showed an average of 29.23%‡10.16% compared to 27.36% t 9.65% in the test group.

Conclusions: the use of mineralised autogenous dentin grafts has resulted in greater viable bone formation and less tissue dimensional changes than spontaneous healing. Consequently, the use of mineralised matrix grafts derived from autogenous teeth for alveolar ridge preservation has the potential to become a viable substitute for other grafting materials in the field of implants.

BIOLOGICAL PROPERTIES OF 3D-PRINTED PCL-ATZ SCAFFOLDS FOR PERIODONTAL REGENERATION

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Aim: biological properties of polycaprolactone (PCL) 3D-printed scaffolds w/ or w/o alumina toughened zirconia (ATZ) were evaluated as suitable substrate material for alveolar bone and periodontal ligament (PDL) regeneration.

Methods: the ATZ was incorporated in PCL by solvent casting method. PCL/ATZ 80/20 w/w%, 60/40 w/w% composites and pure PCL were prepared. A scaffold with a porous and circular geometry was 3D printed for biological assays with ASC52 hTert cells line. 24h adhesion test and cell viability assay at 3, 7, 14 days was performed by CellTiter-Glo kit. Scaffolds were held in osteogenic medium for 2 months, then ALP, COLL1, OCN and RUNX2 were quantified with Real-Time PCR (RT-PCR). SEM micrographs of the 3 scaffolds were acquired along with EDX analysis to quantify the presence of calcium deposition.

Results: all the scaffolds allowed ASC adhesion and growth, in particular PCL/ATZ 80/20 w/w% showed better biocompatibility, although the osteoinductivity was reduced with the addition of ATZ. There were no significant differences on ALP and RUNX2 expression, while both COLL1 and OCN were reduced in presence of ATZ filler. These results were consistent with SEM images and EDX quantification of calcium aggregates in the new tissue formation.

Conclusions: the presence of ATZ powder in PCL reduced the osteoinductivity of the scaffolds. This plays a relevant role in the final choice of the material to be used in PDL regeneration, as it could limit the possibility of tooth ankylosis. Future tests will be focused on other biological and mechanical properties of the blends.

COMPARISON OF CYTOTOXICITY BETWEEN PREHYDRATED AND DRIED ACELLULAR PORCINE DERMAL MATRICES

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Aim: the aim of this study was to compare, *in vitro*, the indirect and direct cytotoxicity of a porcine dried acellular dermal matrix (PDADM) versus a porcine hydrated acellular dermal matrix (PHADM), both used for periodontal and peri-implant soft tissue regeneration.

Methods: for evaluated the direct cytotoxicity was used the Trypan exclusion method (TEM) and the reagent WST-1 test, using human primary mesenchymal stem cells (HPMSCs) seeded directly into a PDADM and PHADM after seven days. Two standard indirect cytotoxicity tests namely, lactate dehydrogenase (LTT) and MTT (3-[4,5-dimethyl-2-thiazolyl]-2,5-diphenyl 2H-tetrazoliumbromide) were performed using HPMSCs cultivated in eluates from the matrices incubated for 0.16 h (10 min), 1 h, and 24 h in a serum-free cell culture medium. A one-way analysis of variance (ANOVA) with a Tukey's post-hoc test was used for multiple comparisons and was considered to be significant with a ($p < 0.05$).

Results: the direct cytotoxicity levels were significantly lower values of HPMSCs on the PHADM compared with the PDADM, instead the indirect cytotoxicity levels were low for both the PHADM and PDADM. They were lower for the PHADM with a statistically significant difference ($p < 0.005$).

Conclusions: the increased cellular viability hypothesized by the hydrated form allowed better cell adhesion and proliferation and faster and earlier revascularization. Hence the results of the present study demonstrated a different biological behavior between PHADM and PDADM, with the hydrated form showing lower direct and indirect cytotoxicity.

LONGITUDINAL STUDY ON THE TREATMENT OF PERIODONTITIS: PROGNOSTIC FACTORS FOR TOOTH LOSS

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Aim: to investigate factors potentially predicting tooth loss in periodontal patients after at least 10 years of SPT.

Methods: the analyzed sample consisted of 20 subjects, treated and maintained in different periodontal specialist practices. A statistical analysis was conducted at patient and tooth level, using tooth loss at 10 years as the primary outcome. In addition, a sub-analysis was performed on elements with PPD ≥5 mm at re-evaluation.

Results: 512 teeth were present at baseline. During steps 1 and 2, 23 teeth were extracted. After re-evaluation, 121 teeth underwent periodontal surgical therapy. Out of the 489 teeth present at re-evaluation, 44 were lost at 10 years. Stage IV Periodontitis patients tend to lose more teeth than stage III patients. Mobility was found to be correlated to the risk of tooth loss (OR = 3.1). In addition, molars had a more than four-fold increased risk of being lost at 10 years and teeth with more than 4 pockets were found to be at higher risk for tooth loss (OR = 50.2).

On teeth presenting residual pockets after steps 1 and 2 of therapy, periodontal surgery appears to be a protective factor to tooth mortality with an OR = 7.9.

Conclusions: the stage of periodontitis correlates with the likelihood of tooth loss after 10 years in subjects treated for periodontitis and placed in a maintenance system. Molars, mobile teeth and elements with ≥5 pockets tend to have a higher chance of being lost after 10 years. Periodontal surgery at teeth with residual pockets after re-evaluation significantly decreases tooth loss.

AGREEMENT IN DEFINING THE PERI-IMPLANT HEALTH STATUS ACCORDING TO THE 2018 CLASSIFICATION

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Aim: to evaluate the agreement between examiners in defining the peri-implant health status according to the 2018 Classification of peri-implant health and diseases and their accuracy against a reference diagnosis.

Methods: ten undergraduate dental students, 10 general dentists and 10 experts in implant dentistry participated in this study. All examiners were provided with clinical and radiographic documentation of 25 dental implants. Eleven out 25 cases were also provided with baseline readings. They were asked to diagnose all cases using the 2018 Classification. Agreement among examiners was evaluated using the Fleiss kappa statistics. Accuracy was estimated using percentage of complete agreement and quadratic weighted kappa for pairwise comparisons between each examiner and a gold standard diagnosis.

Results: pairwise comparisons between each examiner and the gold standard showed a mean quadratic weighted kappa value of 0.544. The percentage of complete agreement with the gold standard diagnosis was 59.8%. Expertise in implantology affected accuracy positively ($p < 0.001$) while the absence of baseline readings negatively ($p < 0.001$). With respect to the inter-examiner agreement, Fleiss kappa was 0.50 (95% CIs: 0.48 - 0.51).

Conclusions: both inter-examiner agreement and accuracy in defining the peri-implant health status according to the 2018 Classification were mostly moderate. Some difficulties arose in presence of specific challenging scenarios.

SEX-SPECIFIC IMMUNOLOGICAL FEATURES OF ORAL MICROBIOME IN DISEASED AND HEALTHY INDIVIDUALS

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Aim: to exam if a sex-based dimorphism exists in the humoral immune response to the periodontal microbiota (outcome), in a propensity score matched (PSM) population of adult men and women.

Methods: one-to-one PSM was applied to adult individuals (≥40 years) enrolled in the National Health and Nutrition Examination Survey (NHANES) III, to obtain exact matches for age, ethnicity, periodontitis diagnosis and severity, smoking habits, body mass index (BMI) between sexes. Participants underwent determination of serum antibodies to 21 periodontal microorganisms and periodontal and biochemical evaluations. Machine learning (ML) approaches were applied to test if specific antibodies could predict sex and if a sex-specific immunological phenotype could discriminate between healthy and individuals with periodontitis.

Results: 2724 matched female and male participants (n. 1362/group) were included in the study. Antibody titers to various microorganisms were found to be significantly different between men and women, both in healthy and periodontitis individuals. In ML, antibody titers to oral microbiome predicted sex with a sensitivity up to 67% and a specificity up to 55% during periodontitis, but not in healthy individuals.
Age, BMI, and smoking did not substantially improve classification capacity.

Conclusions: humoral immune response to periodontal microbiota appears to be sex-specific. Future investigations are needed to clarify the clinical meaning of our findings, and if a sexual dimorphism in the immune response carries prognostic implications in health and disease.

THE USE OF MOUTH RINSES IN PERIODONTAL PRACTICE AND THEIR SIDE EFFECTS: A REVIEW

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Aim: the main goal of this review was to search the literature for side effects reported in clinical trials investigating the efficacy of several mouthwashes on plaque, gingivitis, and halitosis.

Methods: three databases (Cochrane central register of controlled trials, Medline via PubMed and CINAHL via EBSCO) were searched up to September 2022, paper written in English, Spanish, French and Italian were included in the selection.

Results: after a thorough screening of the databases and after removing duplicates 514 articles were retrieved. 155 articles remained after reading the abstracts and were subsequently fully reviewed. Only 86 publications met the eligibility criteria and were included in our study. Staining was the most common adverse effect reported in these studies, particularly when associated with the prolonged use of chlorhexidine - based mouth washes but, in most cases, study relied on patients reports and not on quantitative measurements.

Among the reviewed actives there were chlorhexidine, chlorhexidine + hyaluronidase, hyaluronic acid and hydrogen peroxide, cetylpyridinium chloride and essential oils.

Conclusions: the lack of side effects reported may be due partly to a lack of a uniform method of reporting the side effects and a lack of objective measures and adequate duration, which makes it difficult to contextualize it. New and more complete research as well as specific guidelines for reporting adverse events are needed in order to draw conclusions.

EFFECTIVENESS OF HYALURONIC ACID APPLICATION IN SURGICAL TREATMENT OF GINGIVAL RECESSION

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Aim: the aim of this systematic review was to provide further scientific evidence on the efficacy of application of hyaluronic acid in the coverage gingival recessions in terms of recession reduction (RD), clinical attachment level (CAL) gain and pocket depth (PD).

Methods: an electronic search of the literature on the main databases was conducted. Only articles written in English and without time exclusion criteria until May 2022 were screened. Initially, 405 articles were identified. Finally, 4 studies were included after the review process. It was not possible to perform a meta-analysis of the articles selected because of the differences among the surgical treatments and commercial formulations and compositions of hyaluronic acid.

Results: in this research, both RCTs examined RT1 gingival recessions were treated with coronally advanced flap (CAF). Recessions were treated with either Modified Coronally Advanced Tunnel (MCAT) or LCT Laterally Closed Tunnel (LCT) combined with (subepithelial connective tissue graft) sCTG and hyaluronic acid in all case series. The obtained results of RD reduction are in accordance with the literature in both the two RCTs and the two Case Series.

Conclusions: the studies analyzed no significant variation was found in PD variable.

Modifications of CAL are connected to variations of RD. HA seems to improve the clinical outcomes of the described surgical treatment. However, the limitations of this systematic scoping review do not allow to draw significant conclusions about the application of HA in surgical gingival recession treatment.

PERIODONTITIS AND CARDIOVASCULAR DISEASE RISK: IMPACT ON MIRNA PROFILES

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Aim: recent literature has shown the involvement of miRNA in several epigenetic processes linked with periodontal disease, increased oxidative stress and cardiovascular disease (CVD). Aim of this study was to assess the impact of periodontitis on gingival crevicular fluid (GCF) miRNA expression associated with CVD risk; other aim was to evaluate possible confounders that influenced this association.

Methods: 115 subjects were enrolled and divided into 4 groups: healthy controls (n = 28), subjects with CVD (n = 28), periodontitis (n = 30) and periodontitis+CVD (n = 29).

All subjects underwent regular periodontal examinations and blood sampling. After GCF sampling, miRNA 7a-5p, 21-3p, 21-5p, 100-5p, 125-5p, 200b-3p, and 200b-5p expression was analysed using a real-time quantitative polymerase chain reaction (RT-PCR).

Results: the results showed that periodontitis and periodontitis+CVD subjects presents significantly different GCF miRNAs expression compared to healthy controls and CVD subjects: there were higher GCF miRNA 7a-5p, 21-3p, 21-5p, 200b-3p, and 200b-5p ($p < .05$) and lower miRNA 100-5p, and 125-5p levels ($p < .05$). In addition, the multivariate regression analysis evidenced that periodontitis (miRNA 21-3p, 100-5p) and periodontal inflames surface area (PISA) (miRNA 7a-5p, 21-3p, 21-5p, 100-5p, 125-5p, 200b-3p) were significant predictors of GCF miRNAs concentration ($p < .05$).

Conclusions: the results of this study highlighted that the periodontitis and periodontitis+CVD group showed higher GCF miRNAs expression than the other two groups. In addition, periodontitis and its extent (PISA) were revealed as significant predictors of GCF miRNAs associated with CVD risk.

USE OF SONIC INSTRUMENTS IN PERIODONTOLOGY

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Aim: the study aims to evaluate how Sonic Line instruments by Komet® can treat compromised periodontal pockets. In addition, the study aims to determine how these instruments perform better than other ultrasonic instruments, even when treating implant-related tartar.

Materials and Methods: twenty patients (aged 30-45 years) were selected. The selection criteria were based on:

- completion of the periodontal portfolio: six-point periodontal probing for each dental element, recording of PD, CAL, bleeding, multi-rooted tooth furcations, dental mobility, gingival recessions.
- Recording of the presence of dental implants.
- Evaluation of the periodontal risk.

The subjects selected were treated in two sessions: the first, using Komet® Sonic Line Scaler instruments. The second, for recall and control, was set up 40 days after the first, and the periodontal indices were compared to those obtained at the first visit using a millimeter periodontal probe.

Results: the results focused on the Komet® SF10 sonic tips. These tips allowed for less invasive scraping of the tooth root, resulting in a greater periodontal recovery and reduced postoperative sensitivity.

For teeth showing furcations, it is possible to use the SF11 sonic tip, which, thanks to its specific shape, allows for the atraumatic removal of plaque while respecting the soft tissues.

Conclusions: within the clinical cases treated in this study, sonic instruments allowed for gentle and precise removal of supra- and sub-gingival tartar, with easy cleaning of pockets deeper than 4 mm.

INFLUENCE OF PD AND CVD ON LEVELS OF SOLUBLE UROKINASE-TYPE PLASMINOGEN ACTIVATOR RECEPTOR

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Aim: this study aimed to assess soluble urokinase plasminogen activator receptor (suPAR) as a biomarker of periodontitis and coronary heart disease (CHD) by examining the effects of gingival health, periodontitis, and CHD on suPAR levels in plasma and saliva.

Methods: the enrolled patients were divided into four groups: healthy controls (n = 33), patients with periodontitis (n = 31), CHD (n = 29), and a combination of periodontitis + CHD (n = 29). All patients underwent clinical and periodontal evaluation and were assessed based on socioeconomic status, smoking history, serum lipids and glucose level, high-sensitivity C-reactive protein (hs-CRP) testing, and plasma and salivary suPAR levels.

Results: compared to CHD and healthy controls, patients with periodontitis (P <.001) and periodontitis + CHD (P <.001) had higher median plasma and salivary suPAR levels. Furthermore, univariate regression analysis demonstrated that plasma and salivary suPAR levels were significantly negatively affected directly by both hs-CRP (P <.001) and periodontitis (P <.001). Periodontitis was the only significant predictor of plasma suPAR (P = .035), and hs-CRP was the only significant predictor of salivary suPAR (P <.001), according to the results of the multivariate regression analysis.

Conclusions: in comparison to CHD and healthy controls, individuals with periodontitis and periodontitis + CHD had greater levels of suPAR in both saliva and plasma.

Furthermore, the elevated suPAR levels in plasma and saliva were only significantly predicted by periodontitis and hs-CRP, respectively.

DIFFERENT TECHNIQUES OF CROWN LENGTHENING FOR RESTORATIVE APPROACHES IN ESTHETIC SECTOR

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Aim: Crown lengthening (CL) is one of the most common periodontal surgical procedures for restoring sub-gingival caries, crown or root fractures and for aesthetic enhancement. Its aim is to re-establish the biological width in a more apical position. In this study we compare three different aesthetic CL surgical approaches and describe the main indications and recommendations.

Methods: the first one is gingivectomy and subsequent osteotomy in a single step.

The second one consists of an osteotomy and an erbium laser gingivectomy after a 4-month healing.

The last one consists of a flapless technique in which the osteotomy and gingivectomy are performed at the same surgical time without the need of a full thickness flap.

Results: for thick phenotype patients, wide keratinized tissue and wide vestibular plate, the one phase technique achieves a faster result.

The two phases approach reduces the risk associated with removal of soft tissue and permits to achieve better results preserving keratinized tissue width. It is ideal for patients with a thin phenotype and the total treatment time is not relevant avoiding the necessity of provisional restorations.

Flapless procedure is the chosen technique in medium or fine biotypes. This approach is indicated when buccal bone is thin and the height of the final keratinized tissue is 3.0 mm minimum.

Conclusions: the techniques depend on the initial clinical situation and the periodontal biotype. The periodontal diagnosis and operator experience are critical factors in clinical outcome.

CT BUCCAL BONE EVALUATION AFTER ORTHODONTITC PROCLINATION OF THE LOWER CENTRAL INCISORS

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Aim: this is a work-in-progress retrospective study whose purpose is to evaluate the buccal bone remodeling of the lower central incisors after orthodontics proclination using CT.

Methods: CTs were selected according to the inclusion and exclusion criteria. From the owned records it was possible to select 31 patients which were satisfying the criteria. Between these patients 46 teeth were electable for the measuring evaluation. Using a software (Weasis Dicom Viewer) the bone height and thickness were measured, before and after the treatment. The bone height represents the distance between the CEJ and the highest point of the buccal bone. The bone thickness represents the section area. It's a work in progress and the statistical analysis was not completed yet; It will be necessary to confront the measurement at T_0 and T_1.

Results:

1. In 16 teeth it was found an increased thickness and a decreased height.
2. In 14 teeth both the values were decreased.
3. In 9 teeth the thickness and the height were increased.
4. In 4 teeth the height was increased while the thickness was decreased.
5. In 3 teeth the height didn't change, and the thickness was decreased.
6. In no cases the heigh didn't change and the thickness was increased.

Conclusions: it's interesting to see how the remodeling pattern changes between the selected teeth, considering that the same treatment was used.

For further evaluations the statistic analysis is needed. In the final study we aim to evaluate if the remodeling patterns change according to the degree of proclination and the collected data will be combined with periodontal charts and clinical photos.

A NOVEL POINT-OF-CARE TEST FOR PERIODONTAL BIOMARKERS DETECTION

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Aim: in this study a novel highly sensitive point-of-care test (POCT), based on an optical biosensor exploiting the principles of surface plasmon resonance (SPR) to detect periodontal biomarkers, has been tested for the analysis of salivary MMP-8.

Methods: a plastic optical fiber (POF) was suitably modified and functionalized by an antibody self-assembled monolayer (SAM) for MMP-8 plasmonic detection. A white light source and a spectrometer connected to the biosensor were used to quantify MMP-8 level in both buffer and real matrix (saliva) by analysing the shift of the resonance wavelength determined by the specific antigen-antibody binding upon the SAM.

Results: dose-response curves by serial dilutions of human recombinant MMP-8 were realized, obtaining a limit of detection (LOD) of 40 pM in buffer and 225 pM in saliva, markedly lower than the LODs reported in the literature for other currently available POCTs for MMP-8. As a proof of concept for future biomedical applications, the proposed POCT was also able to discriminate between saliva samples from a periodontitis patient and a periodontally healthy subject.

Conclusions: although the present promising findings need to be validated by well-designed clinical studies, the proposed SPR-POF technology, also employable for simultaneous multiple biomarkers detection (patent application submitted), may represent an adjunctive low-cost diagnostic tool to real-time monitor periodontal conditions and intervene with even more targeted and timely therapy, preventing the onset of local and systemic complications.

EFFICACY OF PERIORISK ON PSYCHOLOGICAL OUTCOMES IN ANXIOUS AND/OR DEPRESSED PATIENTS

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Aim: to evaluate (i) the psychological profile and level of supragingival plaque control at first periodontal consultation and (ii) the efficacy of communicating periodontal risk on psychological outcomes and supragingival plaque control in patients with moderate to severe anxiety/depression (A/D) and matched controls (C).

Methods: pnts presenting for first periodontal consultation were enrolled in a randomized trial. The periodontal visit was followed by a 8' consultation performed as usual (Treatment as Usual; TaU) or implemented with the communication of *PerioRisk* level (RISK). Psychological outcomes were assessed before and immediately after TaU/RISK using the Positive Affect Negative Affect Scale (PANAS) and Protection Motivation Theory (PMT). In patients presenting at 8-12 weeks, Plaque Index (PII) was re-evaluated.

Results: thirty patients (15 D/A, 15 C) were included. Before TaU/RISK, A/D patients showed lower scores for positive emotions ($p < 0.001$) and higher scores for negative emotions ($p = 0.003$) compared to C patients. Although the consultation had positive effects on several PANAS and PMT items as well as PII, no significant differences in treatment effect was found between TaU and RISK.

Conclusions: an 8' consultation either implemented or not with the communication of *PerioRisk* level can effectively improve psychological outcomes and supragingival plaque control, even in A/D patients.

GUT MICROBIAL CHANGES AFTER STEP II OF THERAPY IN PATIENTS WITH STAGE III-IV PERIODONTITIS

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Aim: to compare the composition of the intestinal microbiome between subjects with stage III-IV periodontitis and periodontally healthy controls and to longitudinally evaluate the effect of periodontal treatment on the gut microbial composition.

Methods: stool and saliva samples from stage III-IV periodontitis patients (P; n = 47) were collected and analyzed by 16S rRNA gene sequencing, before and 3 months after steps I-II of periodontal treatment. Periodontally healthy matched subjects (H; n = 47) were used as controls. Principal component analysis (PCA) was carried out to identify oral-gut microbial profiles. P and H were compared in terms of PCA and microbial taxa; P were longitudinally compared before and after treatment.

Results: gut microbial profiles of P significantly differed from H ($p < 0.001$), being characterized by lower beta-diversity. Periodontal treatment was associated with a significant change in gut microbiota ($p < 0.001$), with post-treatment profiles tending to H ($p > 0.05$).

Genera *Bacteroides, Faecalibacterium*, and *Lachnospiraceae* were the most represented in P fecal samples, whereas genus *Lactobacillus* was more enriched in H. Periodontal treatment significantly reduced gut genera *Bacteroides*, *Eubacterium*, *Lachnoclostridium*, *Lachnospira*, *Lachnospiraceae*, *Oscillospiraceae*, *Roseburia* and *Ruminococcaceae*.

Conclusions: discriminating oral-gut microbial signatures of periodontitis were found.

Periodontal treatment significantly reversed the gut microbial composition, raising novel clinical implications about the relevance of the gum-gut axis.